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Work Package 2A – Floodplain Analysis

Frank Marshall Business Park Floodplain Analysis and Scoped Master Servicing Plan Study, Haldimand County

J.L.Richards
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1.0 Introduction

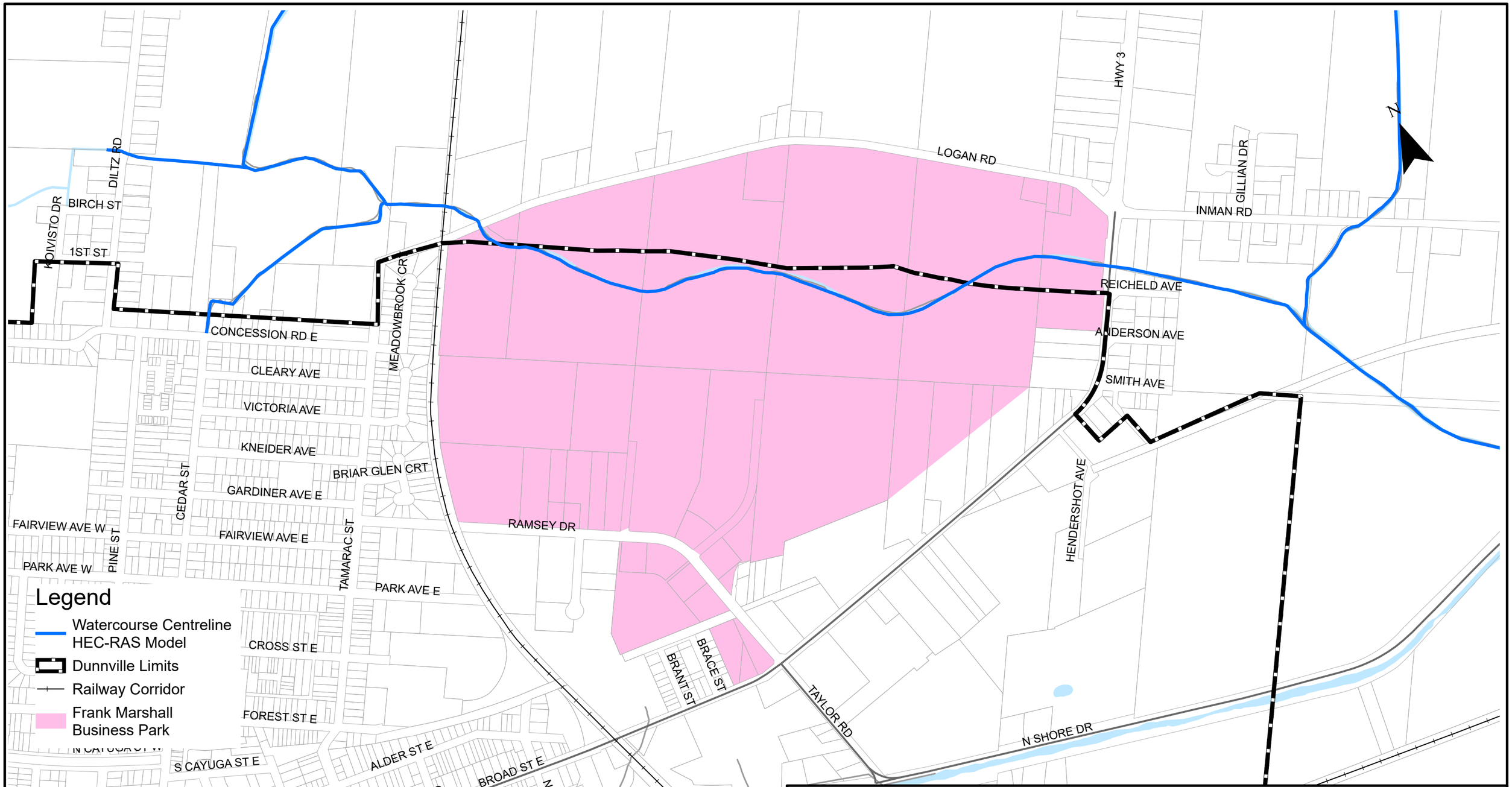
Haldimand County (County) has retained J.L. Richards & Associates Ltd. (JLR) to prepare a Floodplain Analysis and Scoped Master Servicing Plan for the Frank Marshall Business Park (FMBP) in the Community of Dunnville. This work is carried out in support of Phase 2 of the Haldimand County Official Plan Update (by others), to be completed in the Fall 2021. From the terms provided in the Request for Proposal (RFP), the Floodplain Analysis will determine if and where a two-zone concept for the floodplain can be applied within the limits of the FMBP with the goal of permitting development within the flood fringe. The Scoped Master Servicing Plan will provide recommendations on water, sanitary, stormwater, and road infrastructure to develop the FMBP into a mixed-use neighbourhood.

The purpose of Work Package 2A is to document the development of the flood fringe extents from the hydrologic and hydraulic modelling developed in Work Package 1A. This Work Package 2A report should be read in conjunction with the Work Package 1A report.

1.1 Location and Study Extents

The hydrologic and hydraulic modelling described below relates to lands tributary to Maple Creek, which has its headwaters to the north-west of FMBP, flows through FMBP and discharges into the Grand River downstream of Dunnville. The watercourse and subcatchment is shown in Figure 1-1 in relation to the study area.

The extent of the modelling includes the main Maple Creek channel from 100 metres upstream of the railway corridor between North Shore Drive and the Grand River outlet to Diltz Road. The model includes three (3) tributaries including a short tributary also from Diltz Road, a tributary carrying urban stormwater runoff from the main Dunnville settlement and Dent Drain from the north-east crossing under Inman Road.



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FRANK MARSHALL BUSINESS PARK FLOODPLAIN ANALYSIS AND SCOPED MASTER SERVICING PLAN STUDY
DUNNVILLE, HALDIMAND COUNTY, ONTARIO

DRAWING:

STUDY AREA AND MODEL EXTENTS

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2.0 Flood Fringe Criteria

2.1 Current Grand River Conservation Authority Policy

The Grand River Conservation Authority (GRCA) has outlined a general approach to developing a Two Zone flood plain policy in order to identify flood plain lands where filling or construction will not create an unacceptable risk to life or property, or will not result in increased flood risk upstream or downstream of the proposed Two Zone policy areas (GRCA, 2015). Such lands would be identified as the Flood Fringe. The criteria set out by the GRCA:

- Flow velocity during the Regulatory event not to exceed 1.0m/s,
- The product of depth and velocity during the Regulatory event not to exceed the 0.4m²/s (2x2 rule),
- Flood Fringe not to encroach within 15m of the banks of the watercourse,
- Depth of flooding along access routes to residential units not to exceed 0.8m,
- Depth of flooding along access routes to commercial or industrial structures not to exceed 1.2m,
- Depth of flooding adjacent to residential units not to exceed 1.2m,
- Depth of flooding adjacent of commercial or industrial structures not to exceed 2.0m,
- Flood Fringe to apply to existing structures or infilling,
- Increase in upstream flood elevation not to exceed 0.1m,
- No substantial loss of flood plain storage, such that downstream flow rates would increase,
- Lands are not subject to frequent flooding, defined as areas within 25 year floodplain.

The GRCA expects that these criteria will be used to implement new two zone areas.

2.2 Proposed Flood Fringe Criteria

The criteria proposed for development of a flood fringe within the Frank Marshall Business Park study area is:

- Flow velocity during the Regulatory event not to exceed 1.0m/s,
- The product of depth and velocity during the Regulatory event not to exceed the 0.4m²/s (2x2 rule),
- Flood Fringe not to encroach within 15m of the banks of the watercourse,
- Depth of flooding not to exceed 0.8m *(most critical depth from GRCA criteria)*,
- Flood Fringe to apply to existing structures or infilling,
- Increase in upstream flood elevation not to exceed 0.1m,
- No substantial loss of flood plain storage, such that downstream flow rates would increase,

- Lands are not subject to frequent flooding, defined as areas within 25 year floodplain.

The regulatory event for the purposes of flood fringe assessment will be the 48 hour Hurricane Hazel event with a downstream boundary condition of 174.91 m representing the water level in the Grand River at the same time as the peak flow from Maple Creek.

When assessing the impacts of the flood fringe to raise upstream water levels it will be assumed that all flood fringe lands are raised out of the flood plain and no longer contribute storage to the floodplain. This is a highly conservative assumption as road corridors, parking areas, rear yards and open space areas will remain within the flood elevations and will continue to contribute towards flood plain storage.

A baseline scenario will be used from which to determine the 0.1m increase in upstream flood elevation. The baseline scenario will assume that developed areas within any potential future flood fringe extents already reduce the storage capacity of the flood plain. The DEM used to determine the storage capacity of the creek flood plain is the bare earth surface which does not account for any buildings or trees etc. Therefore the baseline scenario removes storage equivalent to any buildings etc. already developed within the future flood fringe extents.

3.0 Land Use and Flood Fringe

3.1 Proposed Land Uses

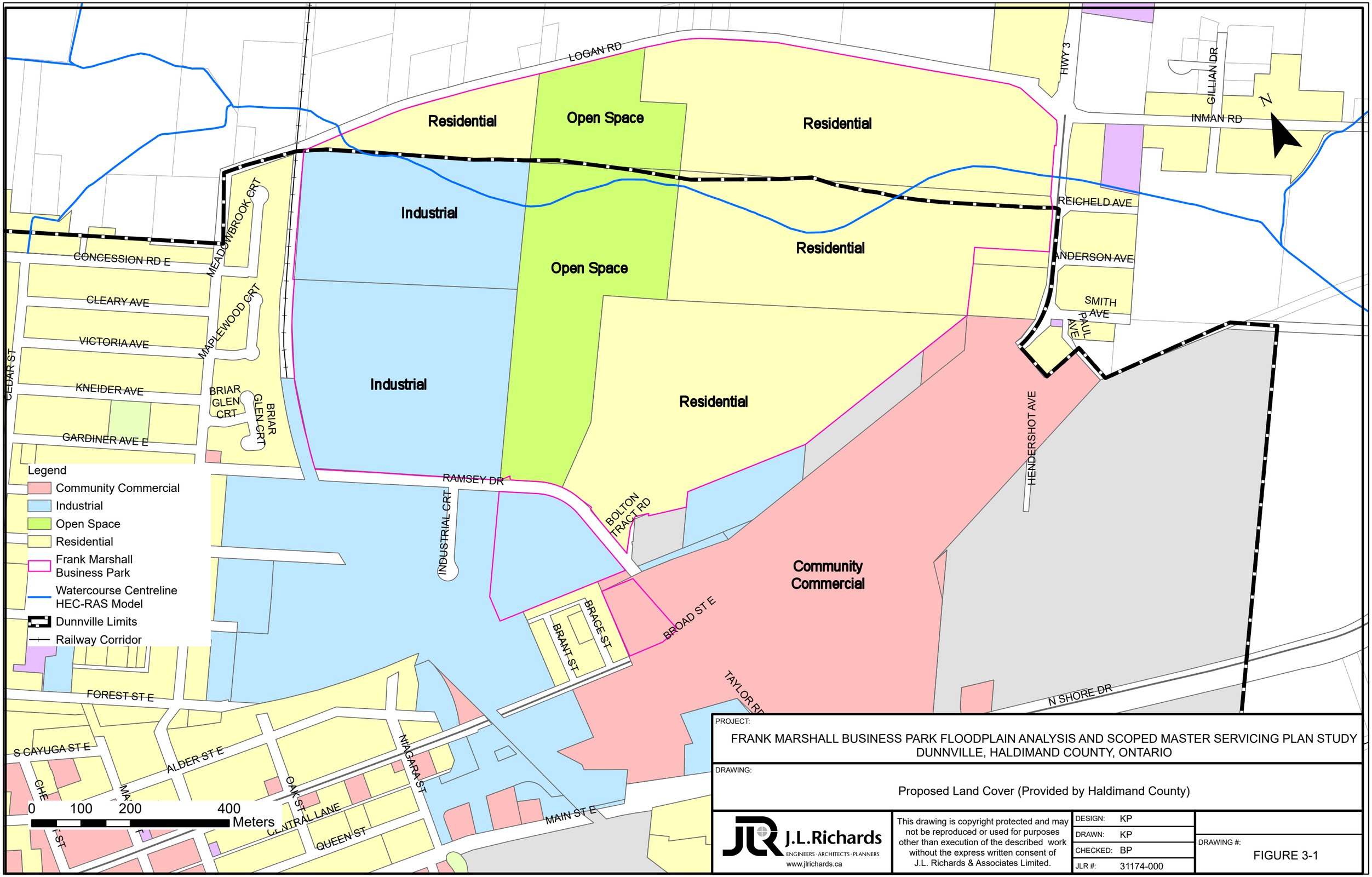
Haldimand County provided in the intended land uses within the Frank Marshall Business Park in the event that the entire site is open to development. The land uses include industrial to the west of the site along the rail corridor then moving east a strip of open space corresponding with the arena site and residential including some affordable housing to be developed by the County. Along the Highway 3 corridor at the western boundary of the site is proposed community commercial. The land uses are shown in Figure 3-1.

3.2 Proposed Flood Fringe Areas

The proposed flood fringe areas maximise the available development within the proposed land uses while maintaining the criteria outlined in Section 2.2. The county indicated a desire to maintain the industrial portion with access to the rail corridor, allow flooding on the open space areas and facilitate development of the residential parcel next to the arena site.

Delineation of the proposed flood fringe areas also followed the general principals of facilitating development of entire parcels where possible and keeping the flood fringe delineation to parcel boundaries or allowing an ideal distance of 160 metres from right of way corridors to facilitate development with local roads in residential or industrial lots. This means that the flood fringe does not necessarily follow natural contour lines but assumes that potentially entire parcels have been raised out of the floodplain storage. This approach was selected to provide greater potential development areas versus an offset from the various flood depth criteria.

A number of possible iterations of the flood fringe were developed and tested and these are shown on Figure 3-2.



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Proposed Land Cover (Provided by Haldimand County)

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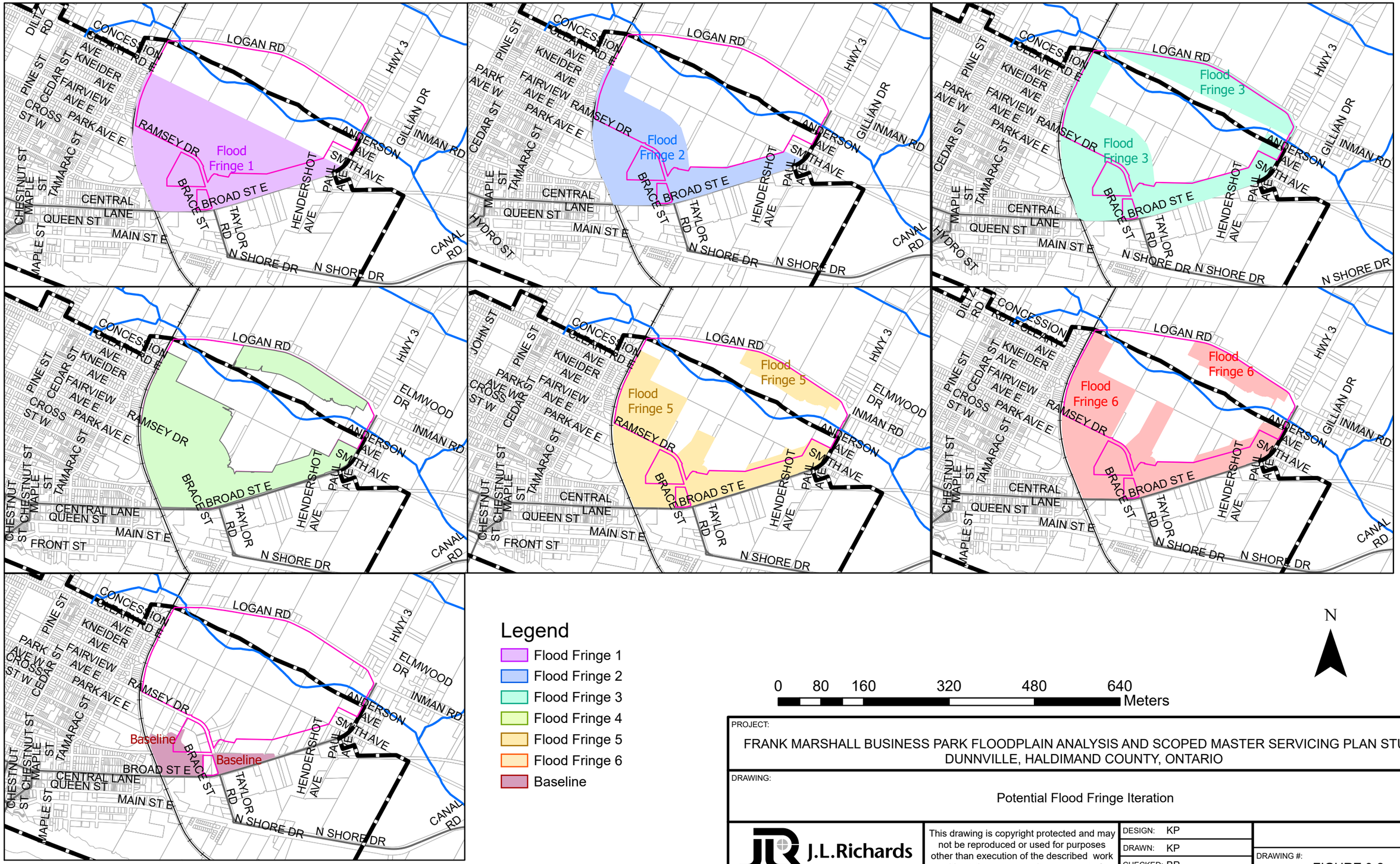

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DRAWING:

Potential Flood Fringe Iteration

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4.0 Flood Fringe Analysis and Results

4.1 Flood Fringe Assessment Methodology

The methodology for assessing the impacts of flood fringe within the Frank Marshall Business Park utilises the GAWSER hydrologic modelling and HEC-RAS hydraulic modelling work already completed for Work Package 1A. The following steps were undertaken for determining water levels in Maple Creek under each flood fringe scenario, including the Baseline scenario.

1. Modify the existing terrain to increase the elevation of areas to be in the flood fringe to an elevation of 180 m to remove available storage from the model;

2. Develop stage storage curves for the modified terrain for the lands upstream of Highway 3 and Canal Road culverts;

3. Incorporate the modified stage storage curves into the rating curves for the GAWSER Model and run the GAWSER model to determine headwater elevations at the two culvert crossings;

4. Determine if the headwater elevations at the culvert crossings are within the 0.1 m increase from the baseline required by the Flood Fringe Criteria;

5. Depending on the results at Step 4, iterate a further flood fringe scenario from Step 1 above to either reduce or increase storage capacity with the flood fringe;

6. Once a flood fringe is confirmed use the headwater elevations in a HEC-RAS simulation with the existing terrain to establish flood extents and final flood fringe areas.

Further description of each of the stages is provided in below.

4.2 Rating Curve Development

Rating curves at the HWY-3 and Canal Road culverts were developed for input to the GAWSER model for the existing, baseline and six iterations.

For the baseline and each flood fringe iteration the HEC-RAS RAS Mapper tool was used to modify the terrain to incorporate the flood fringe areas as a surface at 180 m elevation, more than 1 metre above any of the floodplain elevations. The modification of the terrain was the equivalent of removing the available storage from the floodplain. Similar to the process used for the existing terrain outlined in the Work Package 1A report, HEC-RAS was then used to produce the stage-storage rating curve for each modified terrain upstream of the HWY-3 culvert and upstream of the Canal Road Culvert using the compute E-V tool. The stage storage curves developed at the Highway 3 culvert for the 174.91 m boundary condition are shown in Figure 4-1.

As per the steps for the existing condition detailed in Work Package 1A, the HY-8 model results for each of the culverts was then used to complete the rating curves with flows for input to the GAWSER models. Rating curves are compared in Figure 4-2.

Figure 4-1: Stage Storage Curve Comparison

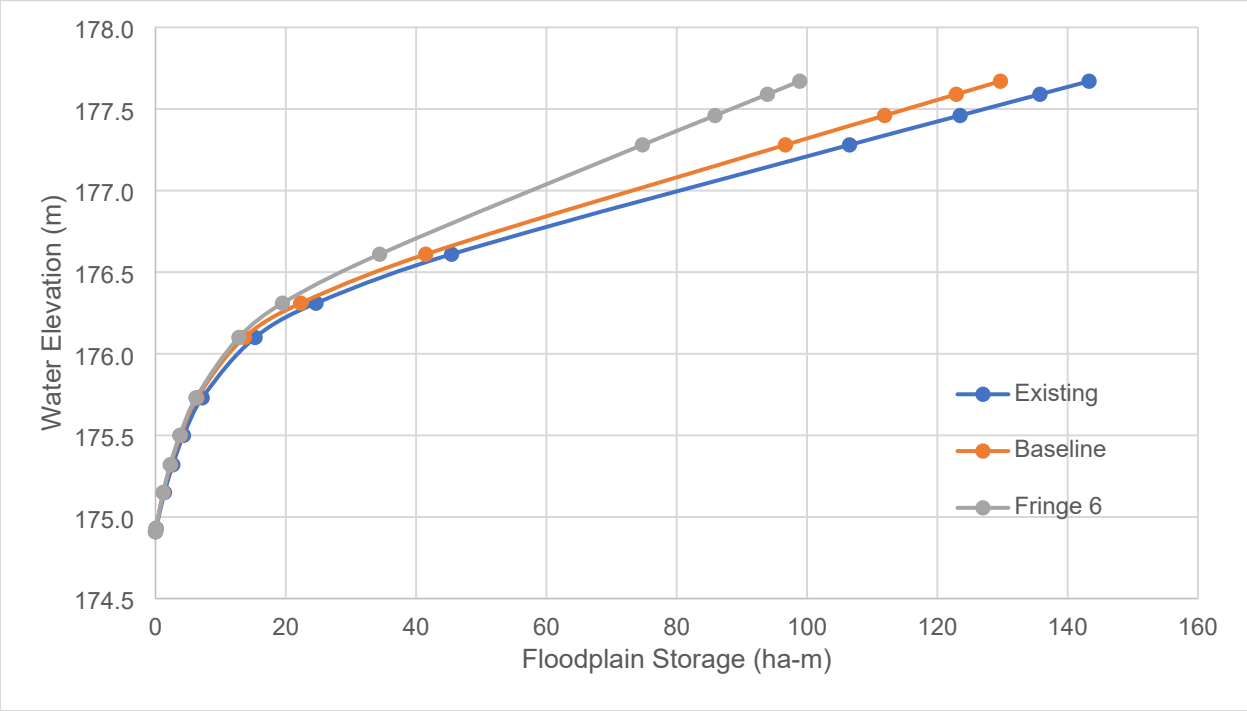
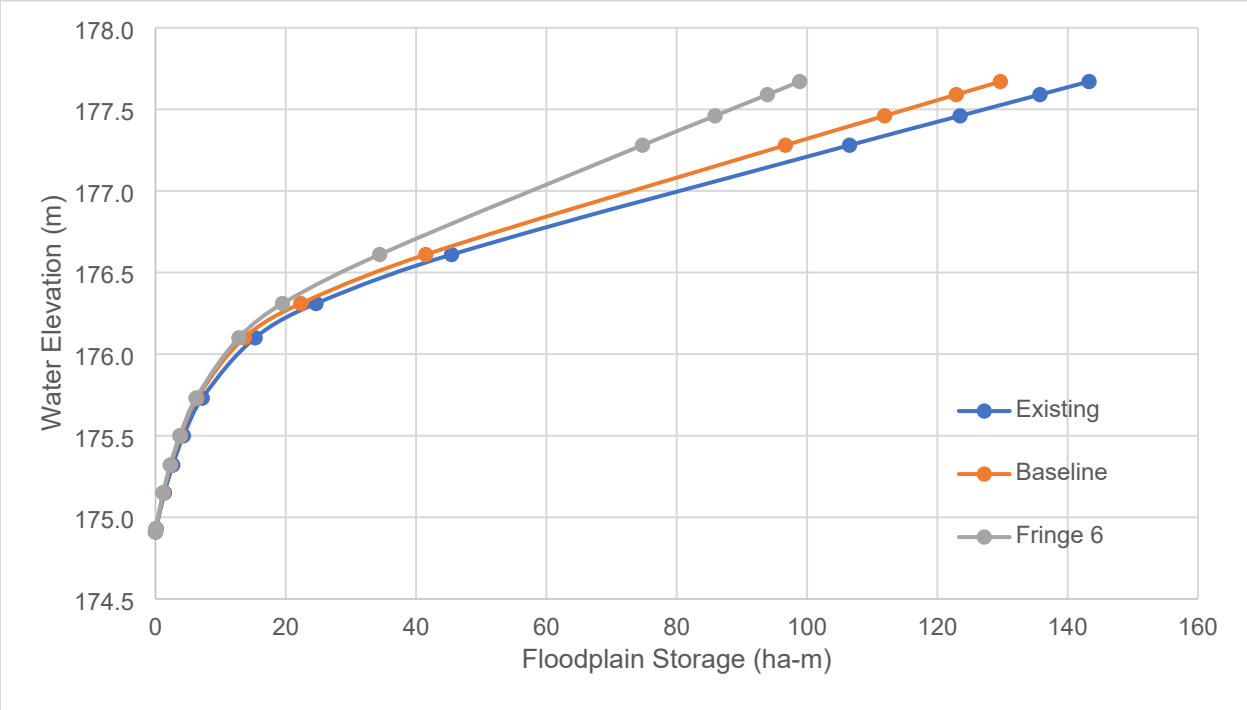


Figure 4-2: Rating Curve Comparison



4.3 Hydrologic Modelling Results

The baseline and flood fringe rating curves at the Highway 3 and Canal Road culverts were incorporated into the GAWSER model to determine the headwater elevations at the culverts. Full discussion on the GAWSER model is included in the Work Package 1A report. The results of the baseline and flood fringe simulations for the 174.91 m boundary condition and 48-hour Regional Storm are shown in Table 4-1 at Highway 3 and Table 4-2 for Canal Road.

Table 4-1: Fringe Iteration Results Comparison - Headwater Elevations at Highway 3 Culvert (48-hour Regional Event)

Scenario	Headwater Elevation (m)	Difference to Baseline (m)
Existing Condition	176.530	
Baseline Condition	176.570	
Fringe iteration 4	176.655	+ 0.085
Fringe iteration 5	176.650	+ 0.080
Fringe iteration 6	176.668	+ 0.098

Table 4-2: Fringe Iteration Results Comparison - Headwater Elevations at Canal Road Culvert (48-hour Regional Event)

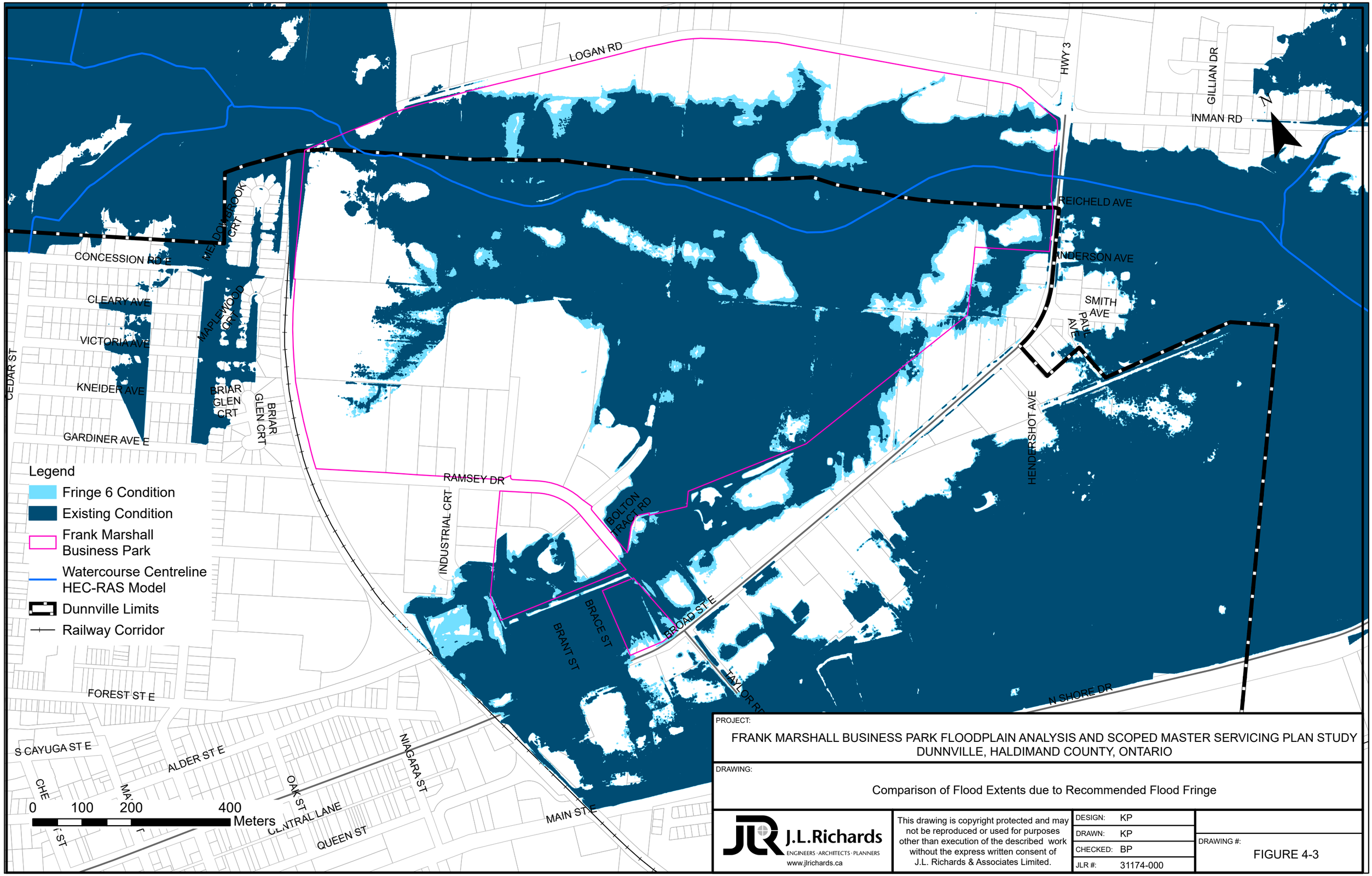
Scenario	Headwater Elevation (m)	Difference to Baseline (m)
Existing Condition	176.436	
Baseline Condition	176.451	
Fringe iteration 4	176.475	+ 0.024
Fringe iteration 5	176.477	+ 0.026
Fringe iteration 6	176.482	+ 0.031

The results of the GAWSER modelling show that the Fringe Iteration 6 provides the maximum developable area for the Frank Marshall Business Park while maintaining less than 100 mm increase in the flood elevations in the 48-hour regional event. There is negligible difference in water levels at the Canal Road culvert due to the loss in storage upstream of Highway 3.

In the 1:100 year event the increases in headwater depth upstream of Highway 3 are limited to 3 mm above the baseline and 11 m above the existing. There is no change in water levels at the Canal Road culvert.

4.4 Hydraulic Modelling Results

Only the iteration 6 flood fringe was brought forward to the HEC-RAS model. The internal boundary conditions were set at the levels of 176.668 m for the Highway 3 culvert and 176.482 m for the Canal Road culvert in the 48-hour Regional Event. The floodplain mapping differences as a result of the flood fringe iteration 6 are shown on Figure 4-3. The proposed flood fringe extents are shown on Figure 4-4.



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DRAWING:

Comparison of Flood Extents due to Recommended Flood Fringe

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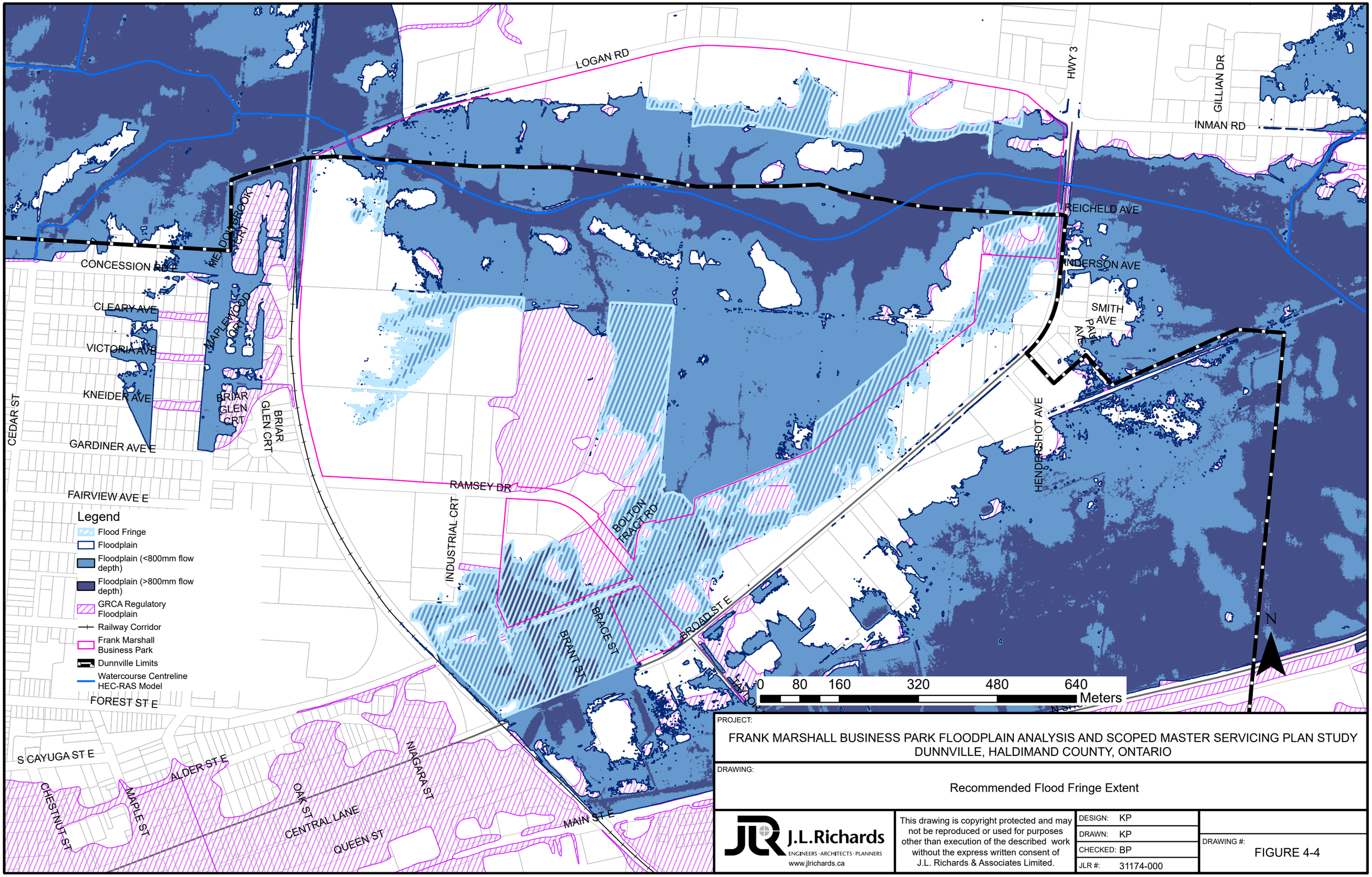

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Recommended Flood Fringe Extent

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4.5 Recommended Flood Fringe

Flood Fringe Iteration 6 is recommended as the flood fringe areas. This is due to:

- Provides the County with residential land uses internal to the Frank Marshall Business Park area and along Logan Road to the north of Maple Creek with flooding depths less than 800 mm;
- Provides the County with industrial development adjacent to the railway line with flooding depths less than 800 mm;
- Provides the County with community commercial development land along the Highway 3 corridor with flooding depths less than 800 mm; and,
- Is consistent with Grand River Conservation Authority criteria to maintain increases in flood elevations less than 100 mm in the regional storm event.

This report has been prepared for the exclusive use of Haldimand County, for the stated purpose, for the Frank Marshall Business Park Floodplain Mapping. Its discussions and conclusions are summary in nature and cannot be properly used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report was prepared for the sole benefit and use of Haldimand County and may not be used or relied on by any other party without the express written consent of J.L. Richards & Associates Limited.

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Appendix A

Rating Curves

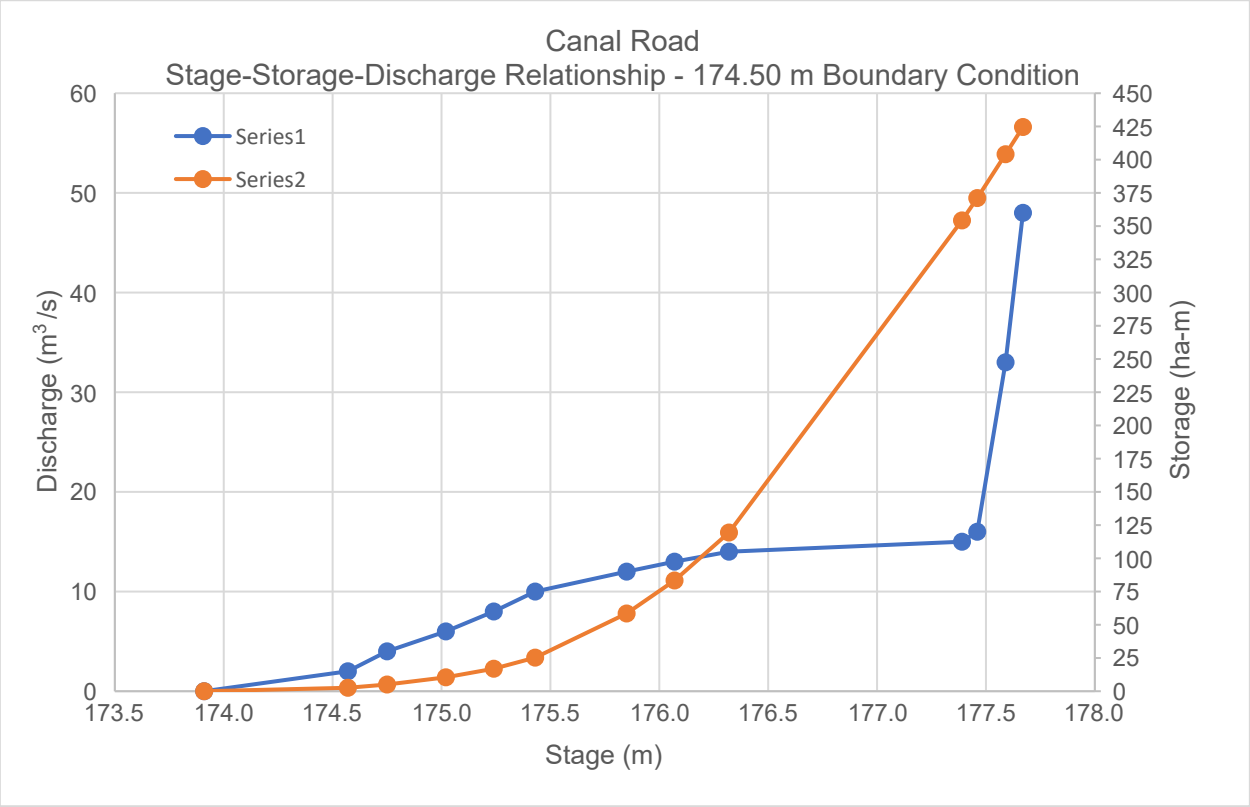
RATING CURVES:

Baseline Condition

Canal Road Culvert Rating Curve for GAWSER Model:

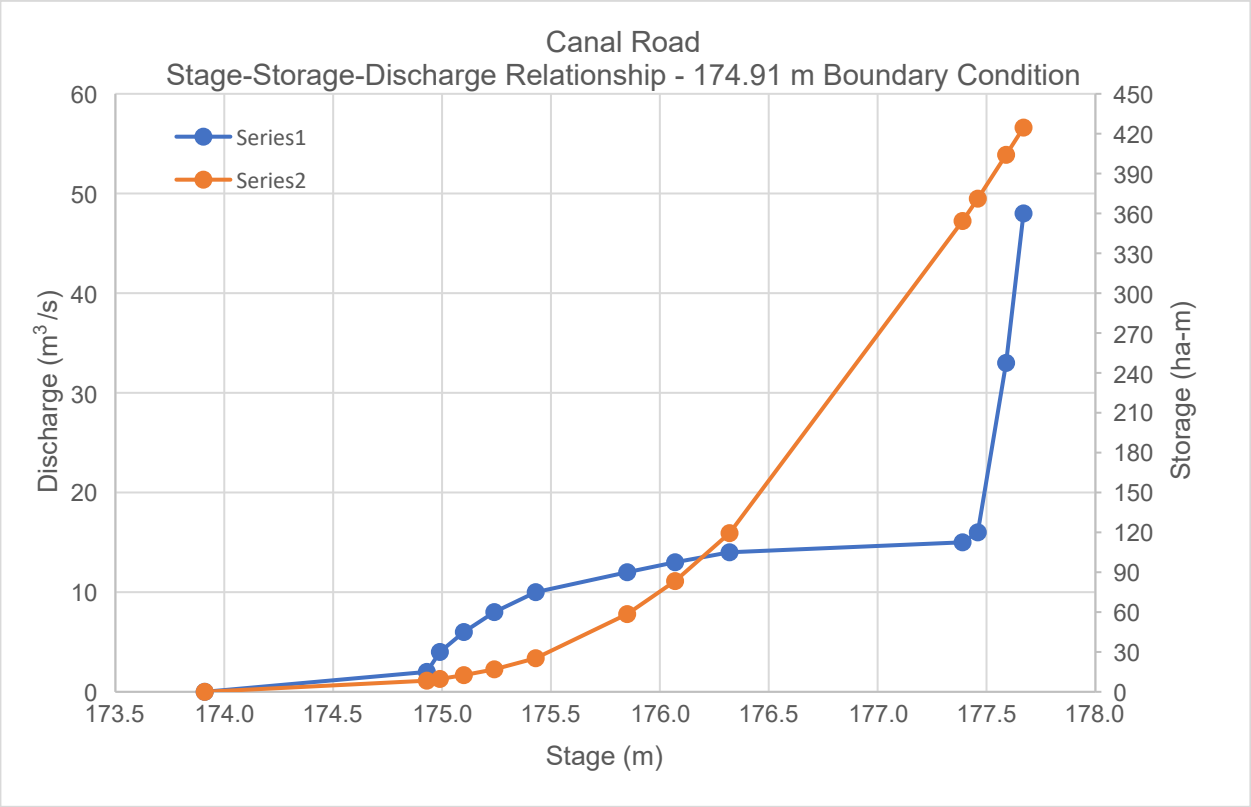
Tailwater Boundary Condition: 174.5 m

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.91	0.00	0.000
174.57	2.0	2.587
174.75	4.0	5.048
175.02	6.0	10.470
175.24	8.0	16.929
175.43	10.0	25.280
175.85	12.0	58.491
176.07	13.0	83.338
176.32	14.0	119.412
177.39	15.0	354.291
177.46	16.0	371.109
177.59	33.0	404.093
177.67	48.0	424.586



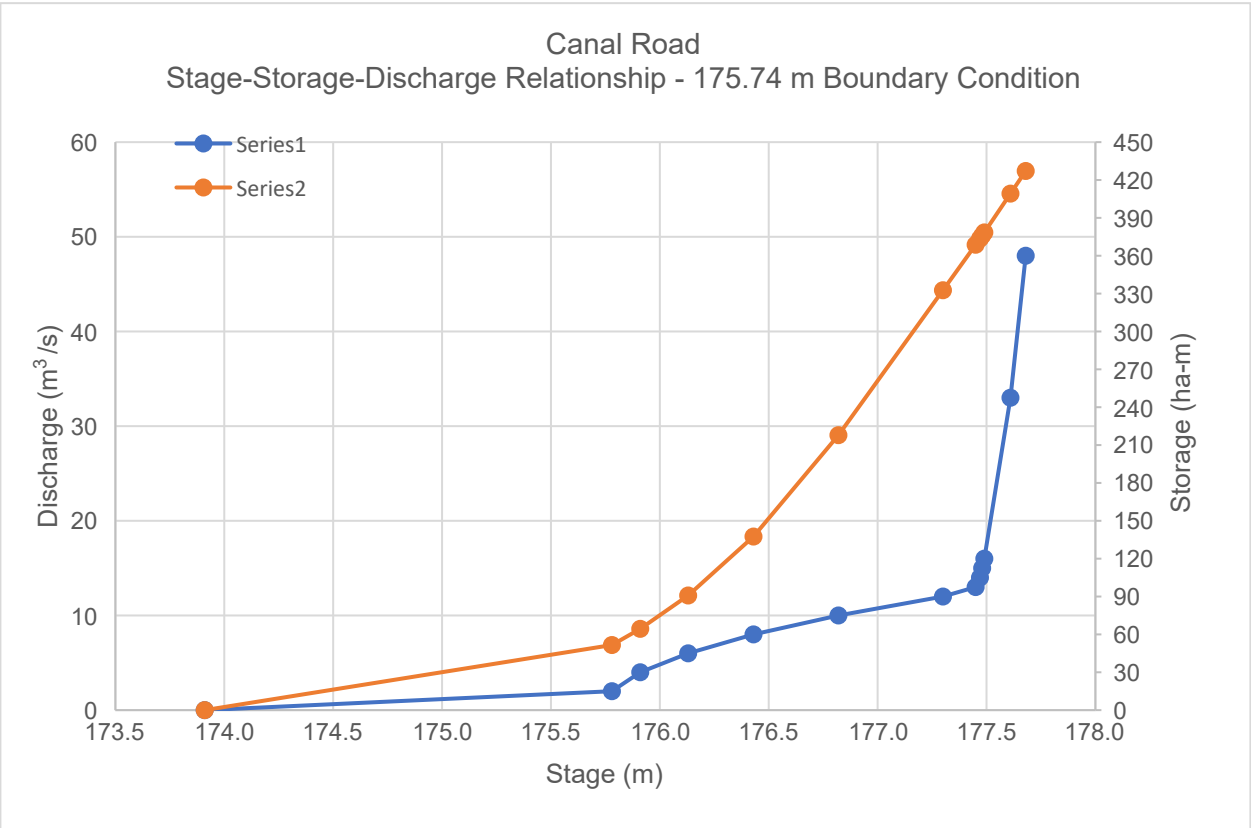
Tailwater Boundary Condition: 174.91 m

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.91	0.00	0.000
174.93	2.0	8.390
174.99	4.0	9.688
175.10	6.0	12.553
175.24	8.0	16.929
175.43	10.0	25.280
175.85	12.0	58.491
176.07	13.0	83.338
176.32	14.0	119.412
177.39	15.0	354.291
177.46	16.0	371.109
177.59	33.0	404.093
177.67	48.0	424.586



Tailwater Boundary Condition: 175.74 m

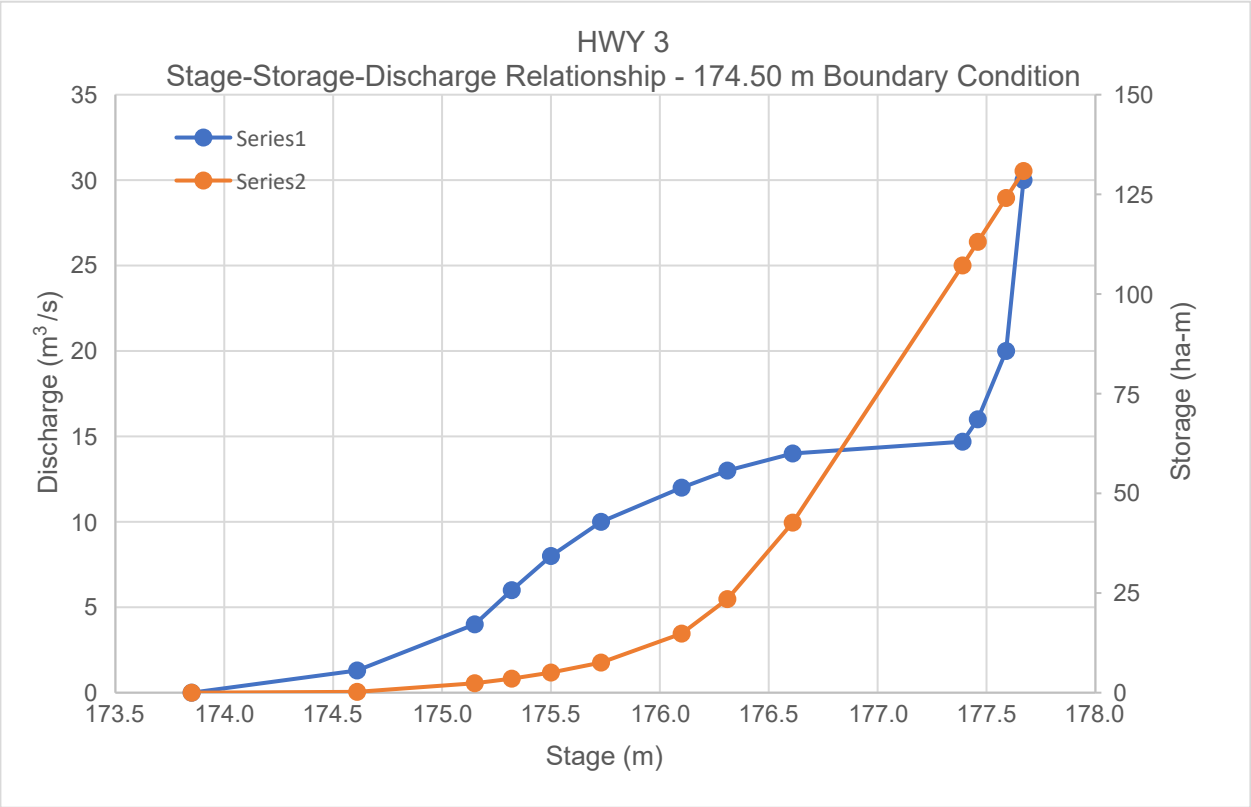
Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.91	0.00	0.000
175.78	2.0	51.585
175.91	4.0	64.410
176.13	6.0	90.829
176.43	8.0	137.524
176.82	10.0	217.849
177.30	12.0	332.668
177.45	13.0	368.706
177.47	14.0	373.511
177.48	15.0	375.914
177.49	16.0	378.476
177.61	33.0	409.216
177.68	48.0	427.148



HWY3 Culvert Rating Curve for GAWSER Model:

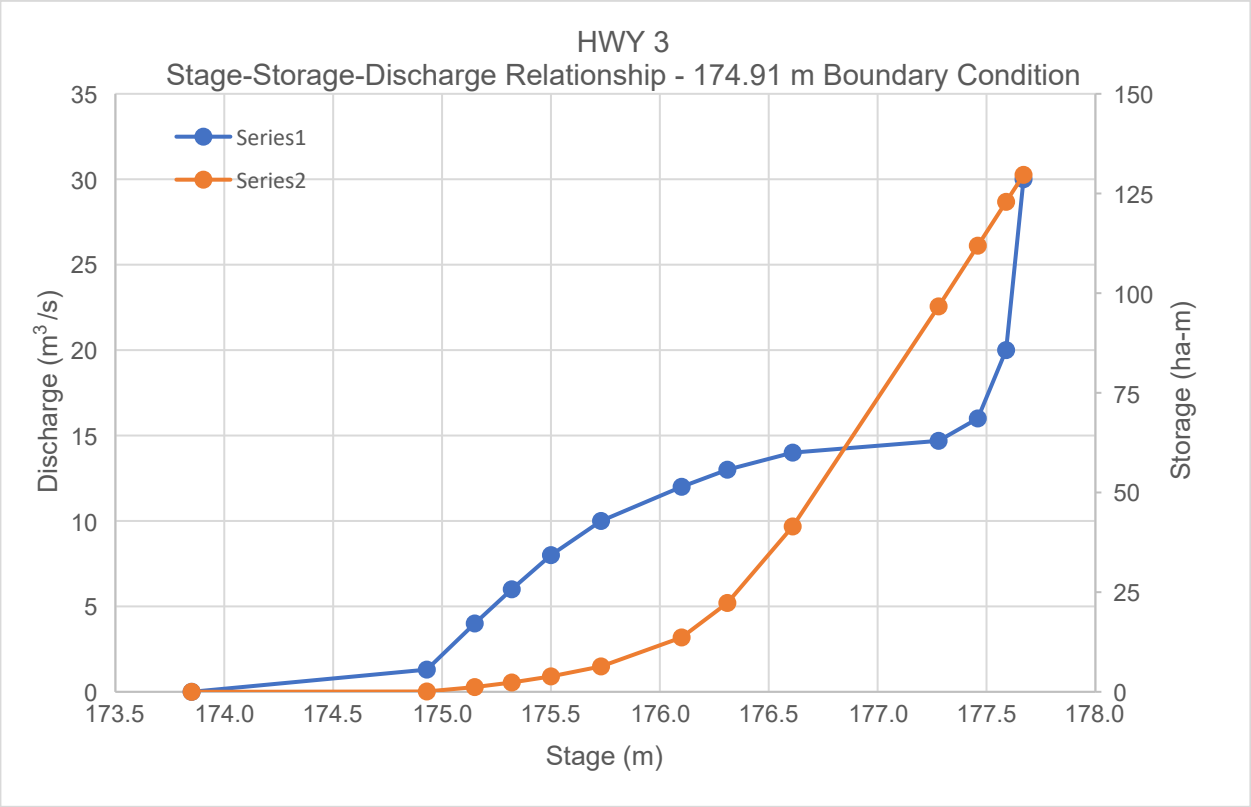
Tailwater Boundary Condition: 174.5 m

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.85	0.00	0.000
174.61	1.3	0.208
175.15	4.0	2.370
175.32	6.0	3.520
175.50	8.0	5.050
175.73	10.0	7.553
176.10	12.0	14.820
176.31	13.0	23.471
176.61	14.0	42.660
177.39	14.7	107.167
177.46	16.0	113.090
177.59	20.0	124.088
177.67	30.0	130.856



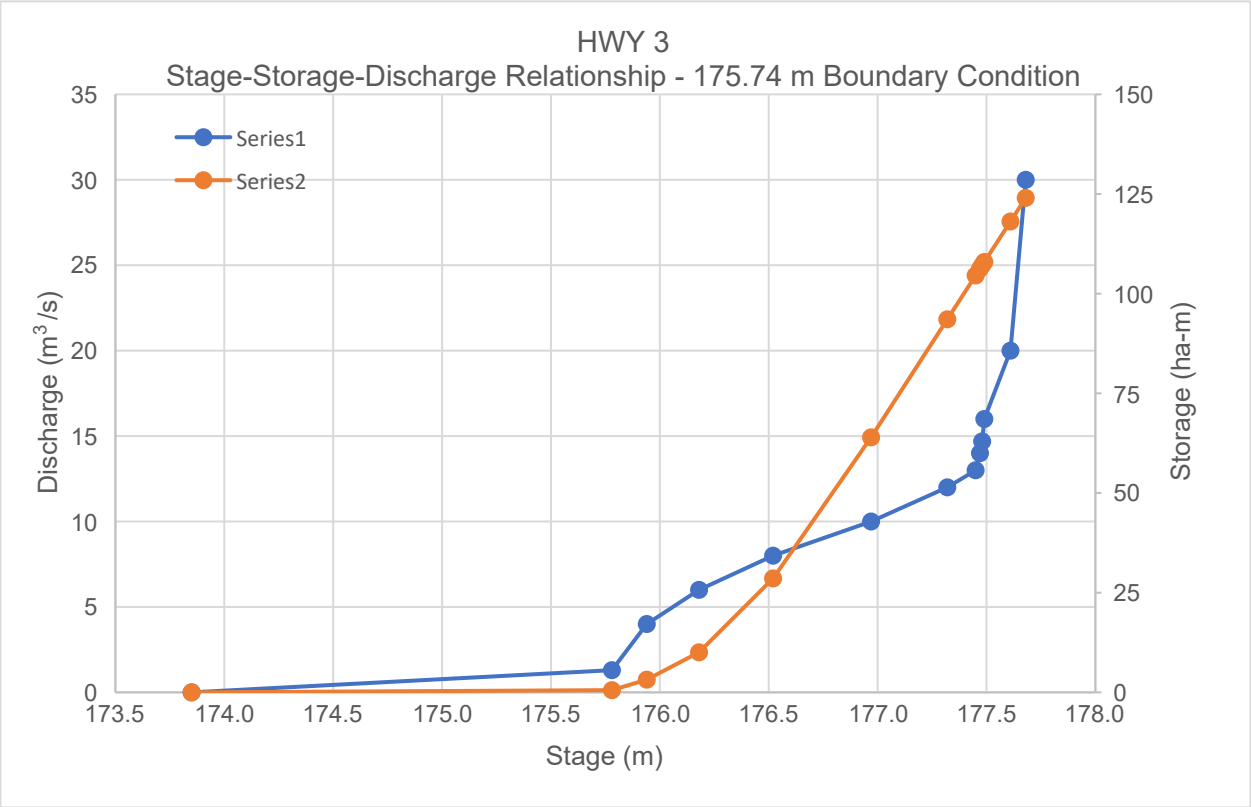
Tailwater Boundary Condition: 174.91 m

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.85	0.00	0.000
174.93	1.3	0.086
175.15	4.0	1.188
175.32	6.0	2.338
175.50	8.0	3.868
175.73	10.0	6.371
176.10	12.0	13.638
176.31	13.0	22.289
176.61	14.0	41.478
177.28	14.7	96.679
177.46	16.0	111.907
177.59	20.0	122.906
177.67	30.0	129.674



Tailwater Boundary Condition: 175.74 m

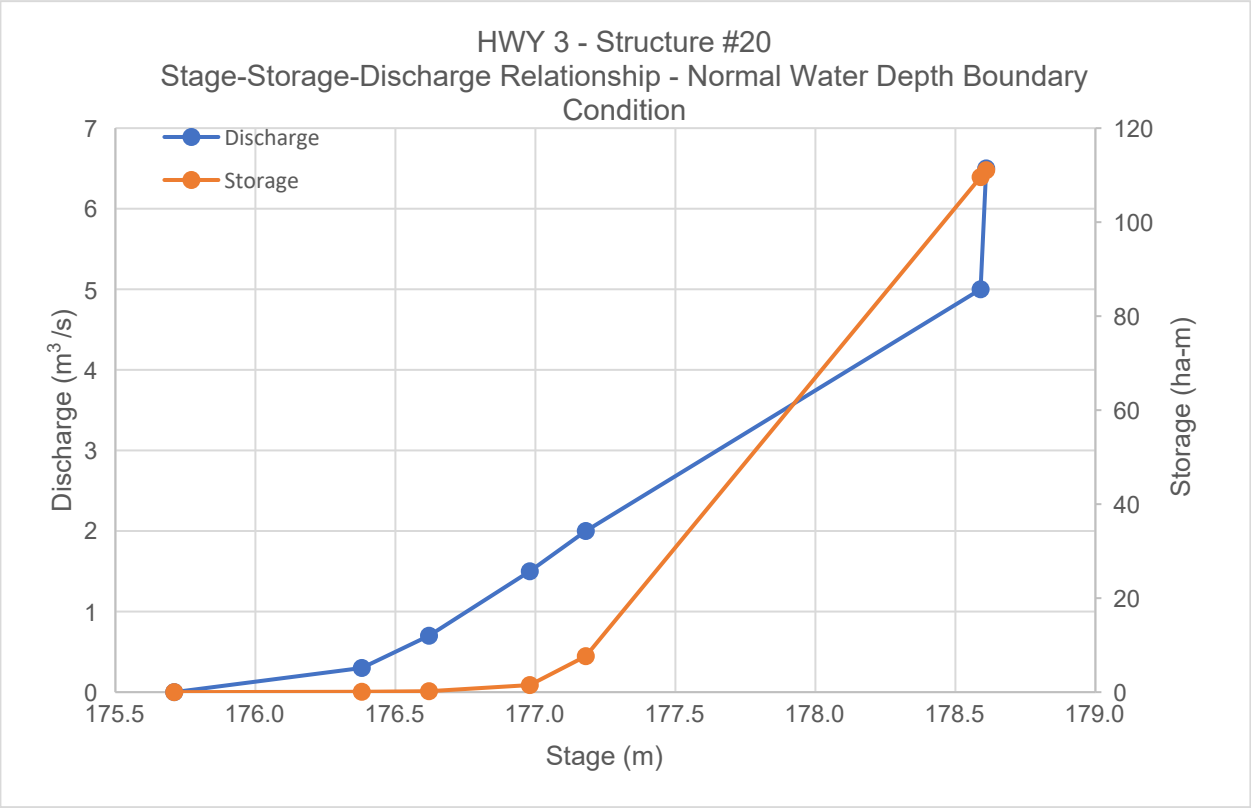
Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.85	0.00	0.000
175.78	1.3	0.557
175.94	4.0	3.191
176.18	6.0	10.046
176.52	8.0	28.585
176.97	10.0	63.965
177.32	12.0	93.575
177.45	13.0	104.574
177.47	14.0	106.266
177.48	14.7	107.112
177.49	16.0	107.958
177.61	20.0	118.110
177.68	30.0	124.032



HWY3 Culvert - Structure #20 Rating Curve for GAWSER Model:

Tailwater Boundary Condition: Normal Water Depth

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
175.71	0.0	0.000
176.38	0.3	0.079
176.62	0.7	0.199
176.98	1.5	1.506
177.18	2.0	7.654
178.59	5.0	109.582
178.61	6.5	111.054



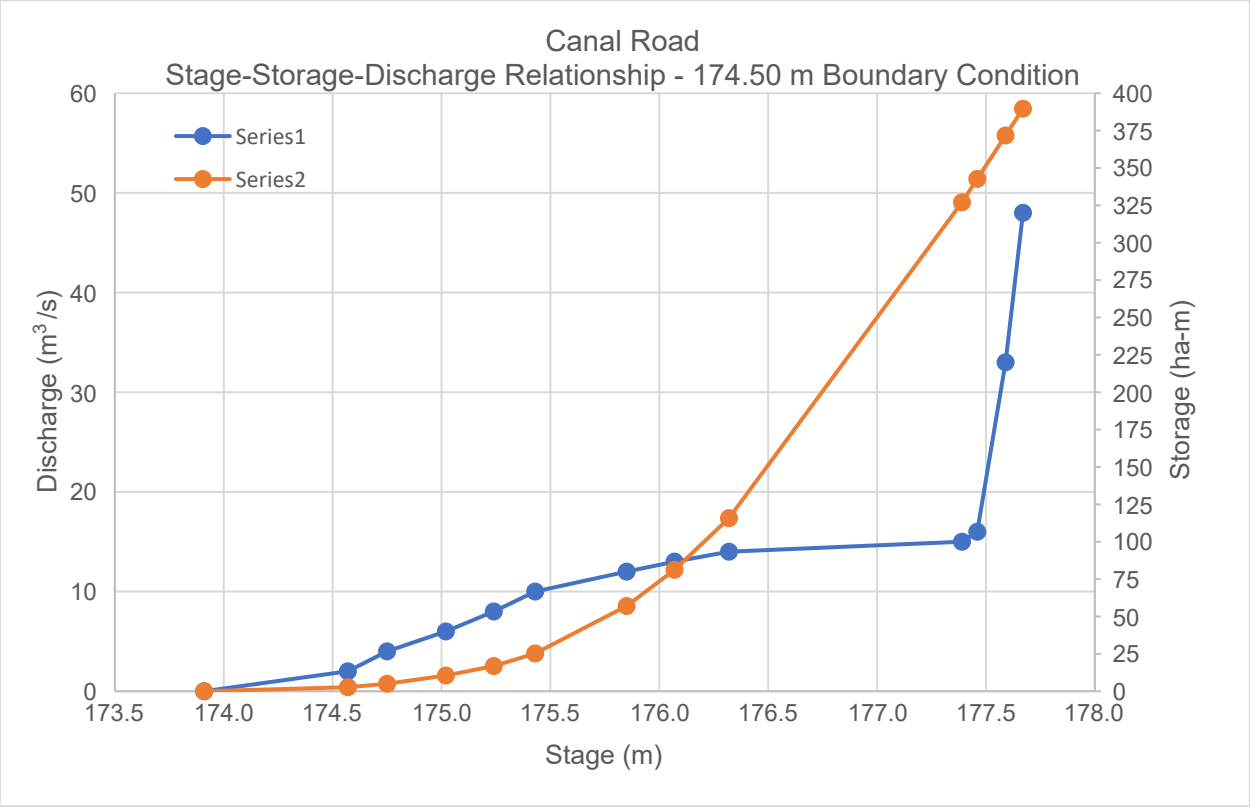
RATING CURVES:

Fringe 6 Condition

Canal Road Culvert Rating Curve for GAWSER Model:

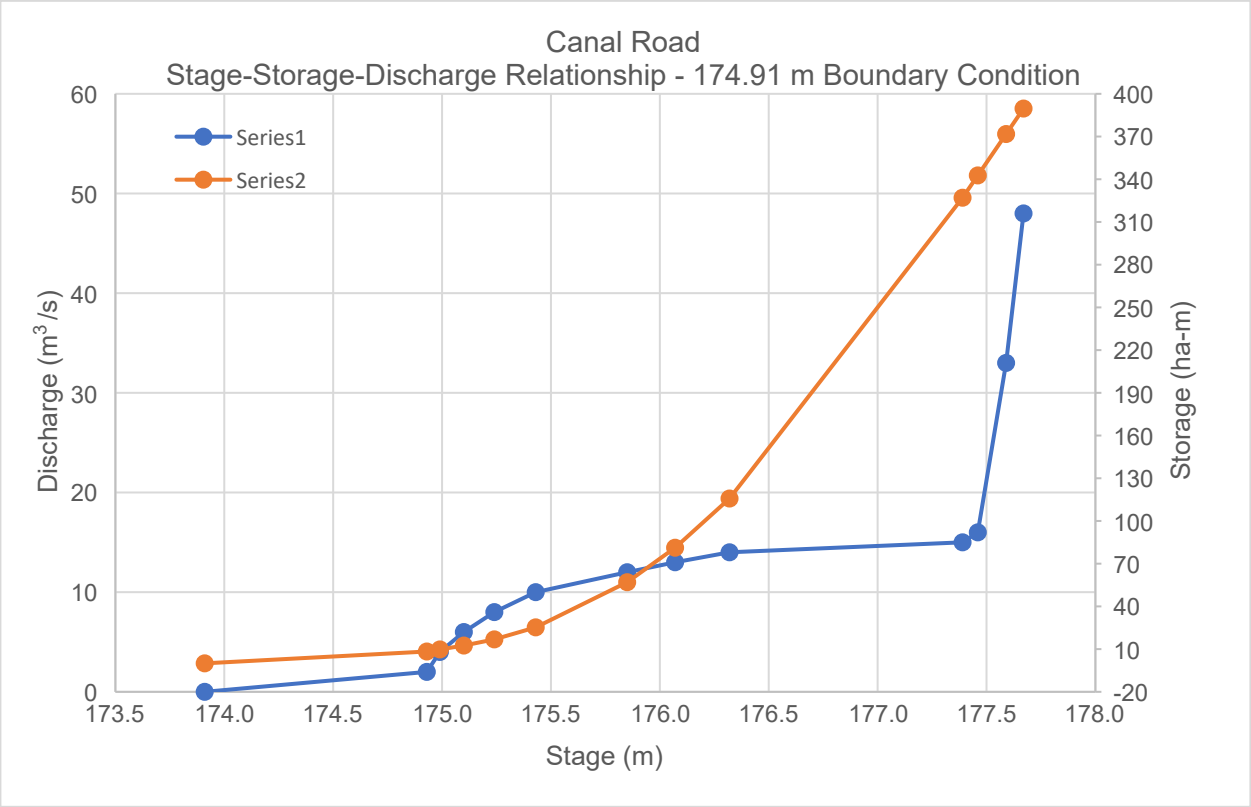
Tailwater Boundary Condition: 174.5 m

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.91	0.00	0.000
174.57	2.0	2.681
174.75	4.0	4.997
175.02	6.0	10.497
175.24	8.0	16.834
175.43	10.0	25.279
175.85	12.0	56.991
176.07	13.0	81.208
176.32	14.0	115.766
177.39	15.0	327.029
177.46	16.0	342.687
177.59	33.0	371.766
177.67	48.0	389.661



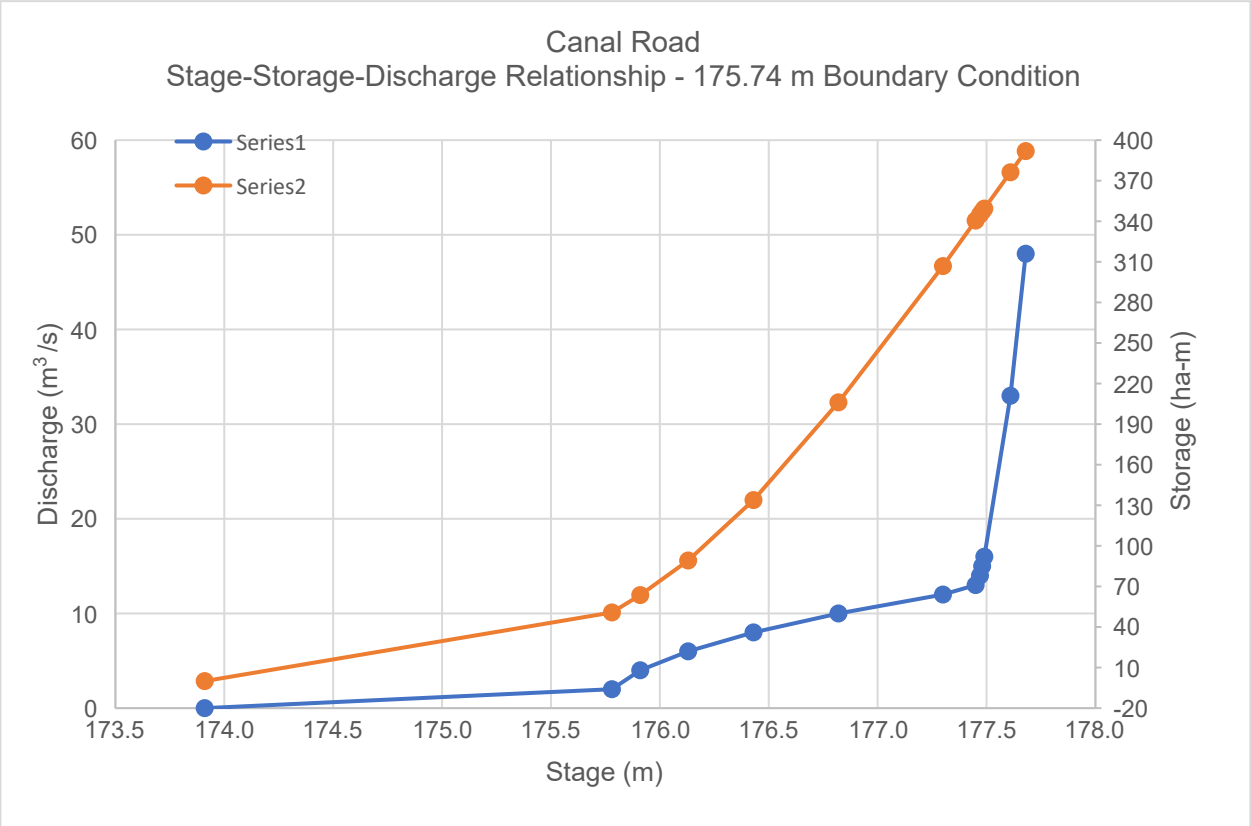
Tailwater Boundary Condition: 174.91 m

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.91	0.00	0.000
174.93	2.0	8.315
174.99	4.0	9.770
175.10	6.0	12.504
175.24	8.0	16.834
175.43	10.0	25.279
175.85	12.0	56.991
176.07	13.0	81.208
176.32	14.0	115.766
177.39	15.0	327.029
177.46	16.0	342.687
177.59	33.0	371.766
177.67	48.0	389.661



Tailwater Boundary Condition: 175.74 m

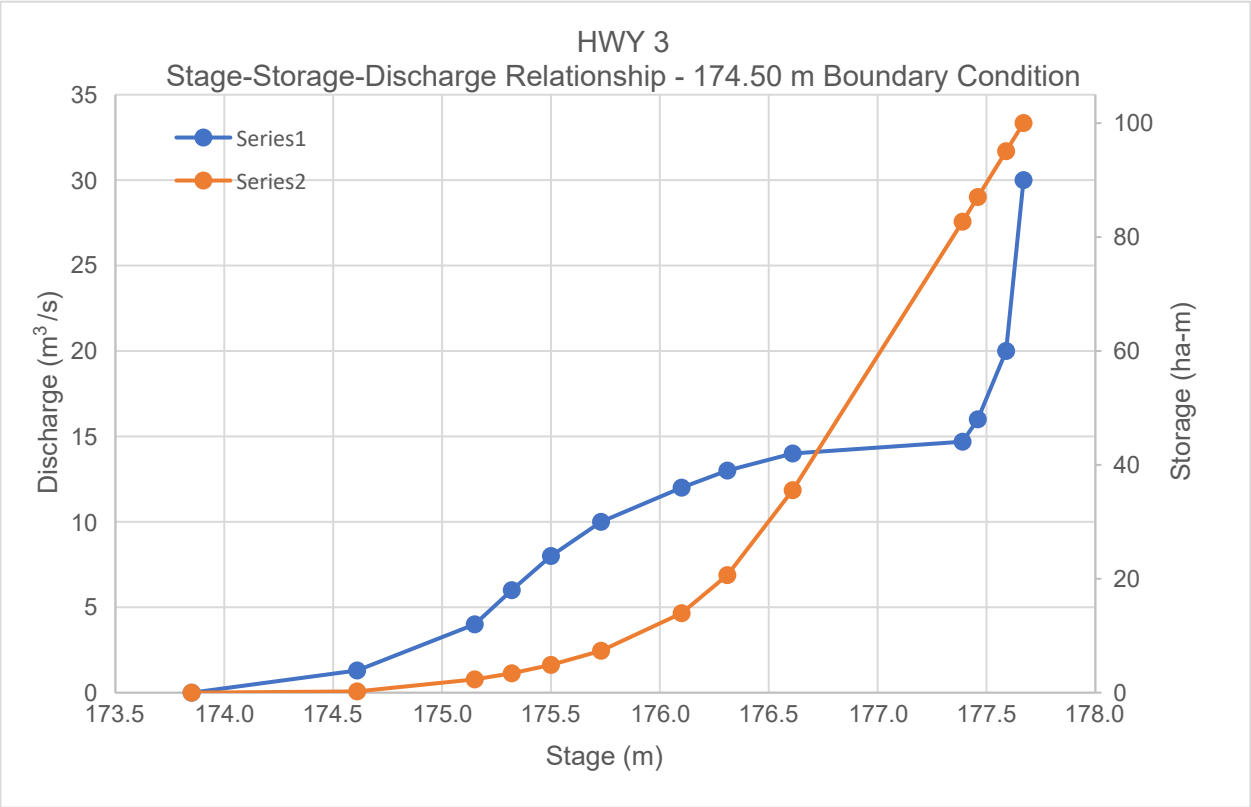
Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.91	0.00	0.000
175.78	2.0	50.754
175.91	4.0	63.596
176.13	6.0	89.166
176.43	8.0	133.853
176.82	10.0	206.110
177.30	12.0	306.898
177.45	13.0	340.540
177.47	14.0	344.924
177.48	15.0	347.161
177.49	16.0	349.398
177.61	33.0	376.240
177.68	48.0	391.898



HWY3 Culvert Rating Curve for GAWSER Model:

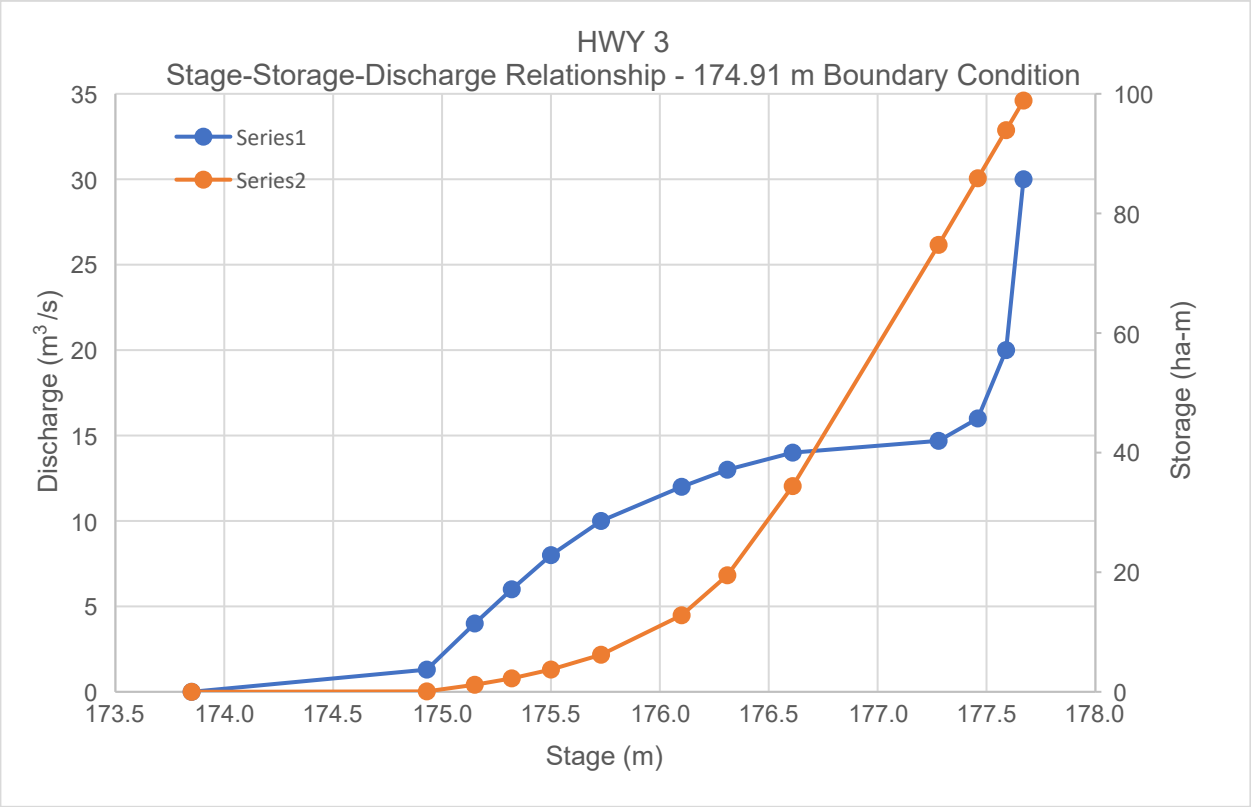
Tailwater Boundary Condition: 174.5 m

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.85	0.00	0.000
174.61	1.3	0.223
175.15	4.0	2.335
175.32	6.0	3.406
175.50	8.0	4.880
175.73	10.0	7.358
176.10	12.0	13.957
176.31	13.0	20.643
176.61	14.0	35.558
177.39	14.7	82.703
177.46	16.0	87.034
177.59	20.0	95.078
177.67	30.0	100.028



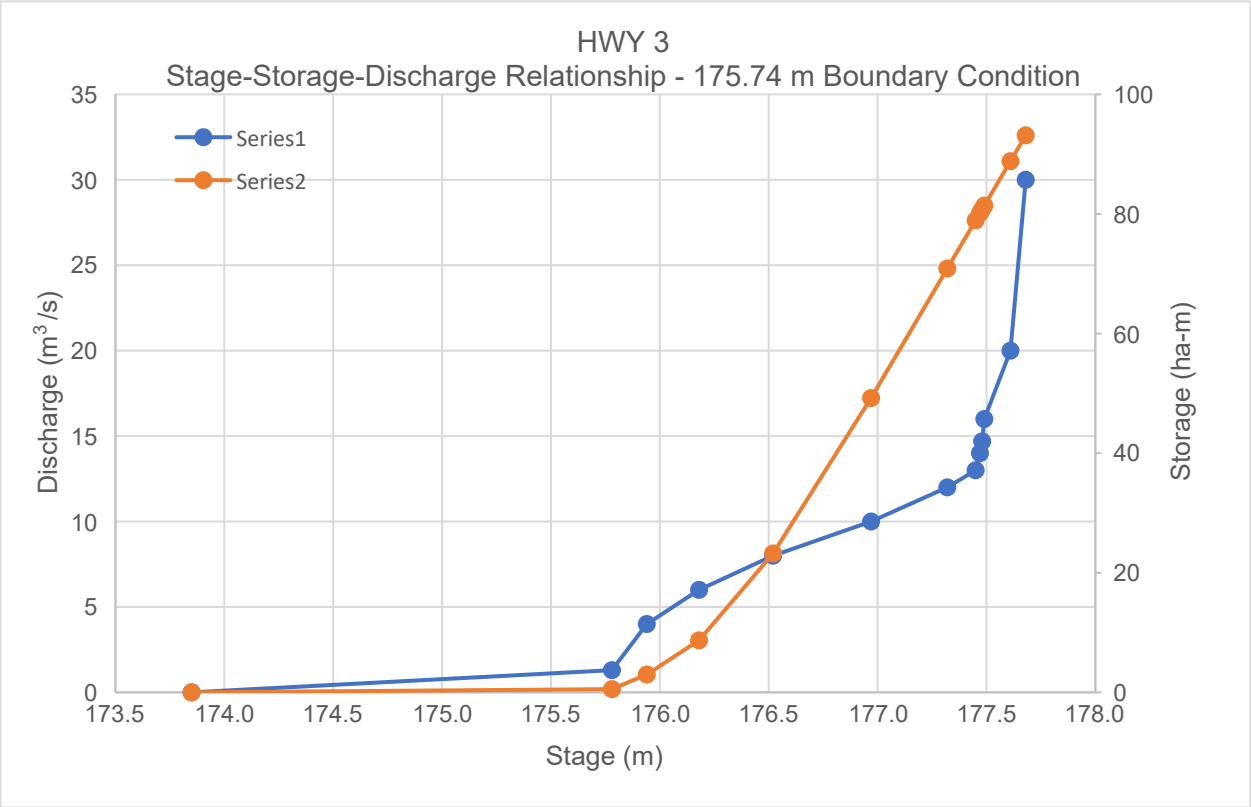
Tailwater Boundary Condition: 174.91 m

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.85	0.00	0.000
174.93	1.3	0.073
175.15	4.0	1.179
175.32	6.0	2.250
175.50	8.0	3.724
175.73	10.0	6.202
176.10	12.0	12.801
176.31	13.0	19.487
176.61	14.0	34.402
177.28	14.7	74.740
177.46	16.0	85.878
177.59	20.0	93.922
177.67	30.0	98.872



Tailwater Boundary Condition: 175.74 m

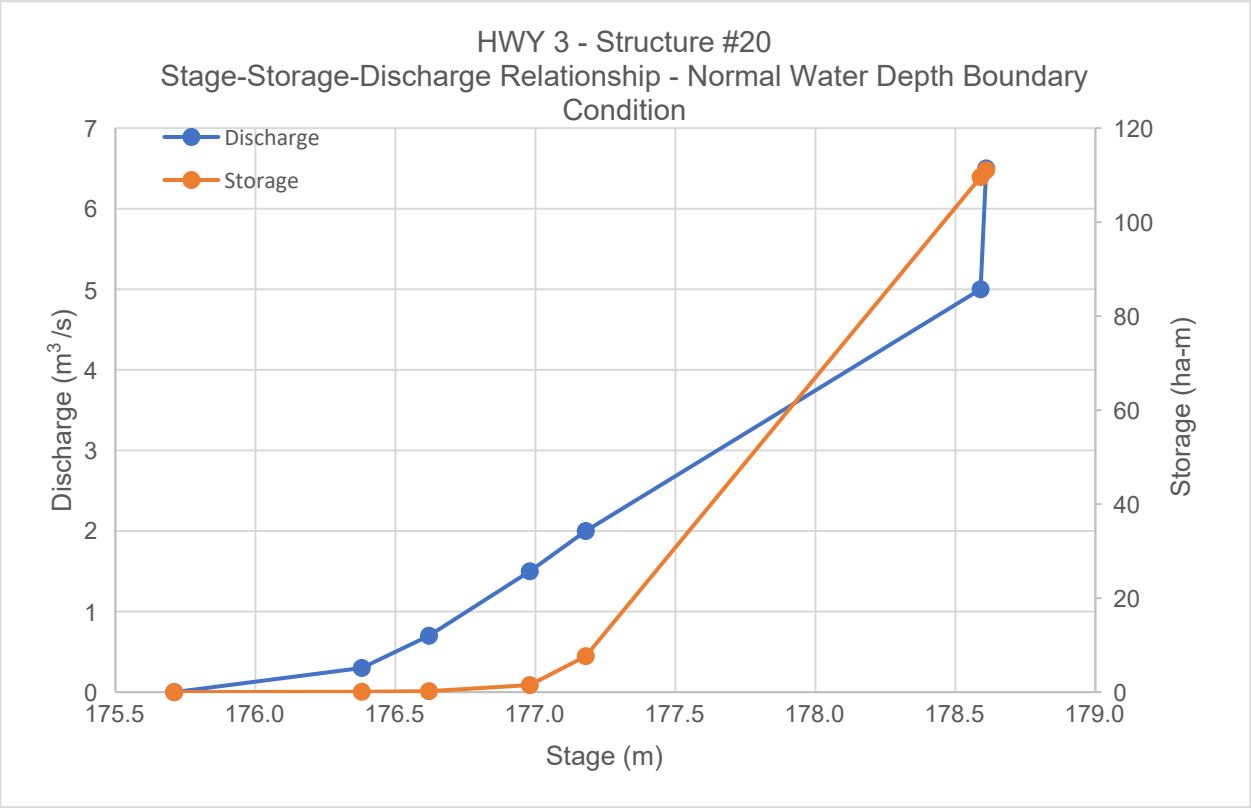
Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
173.85	0.00	0.000
175.78	1.3	0.539
175.94	4.0	2.987
176.18	6.0	8.700
176.52	8.0	23.227
176.97	10.0	49.222
177.32	12.0	70.879
177.45	13.0	78.923
177.47	14.0	80.160
177.48	14.7	80.779
177.49	16.0	81.398
177.61	20.0	88.823
177.68	30.0	93.155



HWY3 Culvert - Structure #20 Rating Curve for GAWSER Model:

Tailwater Boundary Condition: Normal Water Depth

Stage (m)	Culvert Discharge (cms)	Storage (ha-m)
175.71	0.0	0.000
176.38	0.3	0.079
176.62	0.7	0.199
176.98	1.5	1.506
177.18	2.0	7.654
178.59	5.0	109.582
178.61	6.5	111.054



Appendix B

GAWSER Model Files

GAWSER Model Output:

Baseline Conditions

Simulation Results for 174.5 m Boundary Condition

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 174.50 m

```
                  GAWSER V6.9.20 - Released - Feb. 18, 2020
                  =========================================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
                   =======================================

   Input file 1=MREG10MI.evt
   Input file 2=BC_2yr.wat
   Output file =48hBC2yr.lst
*
*
START               KUNITS=2  TOTAL DRAINAGE AREA:  TDA=20.3 SQ KM
                    BASEFLOW AT OUTLET:  QBSS=0.0  QBGW=0..5  CMS
                    PRINT OPTIONS:  ECHO=1 output=1 plots=1 RCS=1 SUBW=1
                          PLOT CUTOFF TIME =80 HRS  SUM=0  FREE=0
                    PARAMETER ADJUSTMENT FACTORS:  FDS=1.00  FKEFF=0.30
                      FCS=0.35 FD=0.35 FSAV=1.0  FKO=1.0  FKSS=1.0  FKMF=1
                    INITIAL SOIL/SNOW WATER CONTENT FACTORS:
                      FIMCI=1.00  FIMCII=1.00  FIWE=1.0
                    GLOBAL RAINFALL SCALING FACTOR: GFRF=1.00
                    SIMULATION CONTROLS: TTI=0.1666 IDEL=4 HOURS=80
                    SUBWATERSHED INITAL BASEFLOWS IN CMS -999
*
*MAPLE CREEK WATERSHED MODEL
*WATERSHED FILE
*CREATED JUNE 15,1995 BY D. BOYD
*REVISED SEPTEMBER 20, 2021 BY I.DZEPAROSKI
* ==========================================================================
*
**************************** ENTER SOILS DATA FOR **************************
*
**************************************************************************
* REFERENCED FROM THE GRAND RIVER HYDROLOGY STUDY
**************************************************************************
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ---------------------------------------------------------------
**** Go to event file to get rain and runoff
*
CHANGE INPUT FILE
*
*    Rating Curve for Typical off channel (Flat slopes)
*
COMPUTE RATING CURVE ID=6 VS NO=1.2 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.6 M  CHNSLP=0.001 FLSLP=0.001
                    N=0.35  DIST=39.15  N=-0.15  DIST=40.85
                    N=0.35  DIST=80.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.6   39.15 100.2   39.75 100.0
                    40.25  100.0   40.85 100.2   80.00 100.6
                     RFN=0   RCODE=1
*
*    Rating Curve for Typical off channel (Steep slopes)
*
COMPUTE RATING CURVE ID=5 VS NO=1.1 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.8 M  CHNSLP=0.010 FLSLP=0.010
                    N=0.35  DIST=24.45  N=-0.15  DIST=25.55
                    N=0.35  DIST=50.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.8   24.45 100.3   24.75 100.0
                    25.25  100.0   25.55 100.3   50.00 100.8
                     RFN=0   RCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 ***************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1227.1  NO SEG=3  MIN ELEV=98.1 m
                    MAX ELEV=101.0  m CHNSLP=0.000086 FLSLP=0.000172
                    N=0.070   DIST=100.0   N=-0.050    DIST=105.7
                    N=0.070   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST    ELEV
                       0.0  101.0  100.0   100.0 101.95   98.1
                    103.75   98.1  105.7   100.0  200.0  101.0
                    RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1227  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 ***************************
*
* Calculate runoff hydrograph for basin 1227.
* Note revised drainage area based on the LiDAR 2017 DEM
*
COMPUTE FLOWRATE    ID=1 NHD=1227 DA=1.116 SQKM    L=2700 m  W=1425 m
                                  ZONE PROPORTIONS
                     I    II    III   IV    V    XII   XIII  XIV
                    3.0   0.0   10.1   0.8   0.0   73.8  1.9  10.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*

*************** CALCULATE ROUTING SECTION OF 1227 ****************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=3228  NO SEG=3  MIN ELEV=98.3 m
                     MAX ELEV=101.0  m  CHNSLP=0.00118 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.060    DIST=105.2
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  102.0   98.3
                     103.20   98.3  105.2   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*
************************  ROUTE CHANNEL No. 3228 ****************************
*
*
ROUTE CHANNEL       ID=2  HYD NO=3228  INFLOW=1  LENGTH=1010 m
                    SLOPE=0.00118  RATING CURVE=3  NSECT=2  PCODE=1
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1229  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1229 ***************************
*
* Calculate runoff hydrograph for basin 1229.
*
COMPUTE FLOWRATE    ID=1 NHD=1229 DA=1.095 SQKM    L=1000 m  W=1200 m
                                  ZONE PROPORTIONS
                       I    II    III   IV    V    XII   XIII  XIV
                    3.0   0.9    6.0   1.6   50.0  23.2  3.0  12.3
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 ***************************
*
* Calculate Main Channel Rating curve for basin 1225
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1225  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 ***************************
*
* Calculate runoff hydrograph for basin 1225.
*
COMPUTE FLOWRATE    ID=4 NHD=1225 DA=1.220 SQKM    L=1600 m  W=1235 m
                                  ZONE PROPORTIONS
                     I    II    III   IV    V    XII   XIII  XIV
                    3.0   0.0   0.0    0.0   0.0  58.8  5.2  33.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Route 1229 outflow through channel 5229.
*
ROUTE CHANNEL       ID=3  HYD NO=5229  INFLOW=1  LENGTH=1550 m
                    SLOPE=0.0010   RATING CURVE=1  NSECT=2  PCODE=1
*
*************************  ADD 5229 AND 1225  ******************************
*
ADD HYD              ID=1 HYD NO=2229 IDA=4 IDB=3
*
*
*************************  ADD 2229 AND 3228  ******************************
*
ADD HYD              ID=3 HYD NO=2231 IDA=2 IDB=1
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 174.50 m

```
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=101.0  m  CHNSLP=0.00135 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.055    DIST=106
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0 102.25   98.5
                     103.75   98.5  106.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1228  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
*
* Calculate runoff hydrograph for basin 1228.
*
COMPUTE FLOWRATE    ID=1 NHD=1228 DA=0.423 SQKM    L=1600 m  W=980 m
                                      ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0   0.0   0.0   74.5  4.4  18.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FTB=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*
*************************  ADD 1228 AND 2230  ******************************
*
ADD HYD              ID=2 HYD NO=2232 IDA=1 IDB=3
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:3413)*************************
*
PRINT HYD           ID=2
*

*************** CALCULATE ROUTING SECTION OF 1224  **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=1223  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.0003 FLSLP=0.0006
                     N=0.070   DIST=100.0    N=-0.050    DIST=105
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  101.9   98.2
                     103.10   98.2  105.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*

*------------------------  SUB-WATERSHED 1224  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1224 **************************
*
* Calculate runoff hydrograph for basin 1224.
*
COMPUTE FLOWRATE    ID=1 NHD=1224 DA=0.828 SQKM L=2700 m  W=930 m
                                      ZONE PROPORTIONS
                     I    II    III    IV     V   XII   XIII  XIV
                    3.0   2.1   0.0    1.1   0.0  85.9  5.3  3.7
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 1224 AND 2232  ******************************
*
ADD HYD              ID=4 HYD NO=2233 IDA=1 IDB=2
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:2586.51)**********************
*
PRINT HYD           ID=4
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
*COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
*                    MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
*                    N=0.040   DIST=100.0   N=-0.060    DIST=105.6
*                    N=0.040   DIST=200.0
*                     DIST   ELEV   DIST   ELEV   DIST   ELEV
*                      0.0  101.0  100.0   100.0 101.8   98.2
*                    103.8   98.2  105.6   100.0 106.0  100.0
*                    200.0   101.0
*                    RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1221  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1221
*                 - Off channel section also used for main channel
*                   no obvious main channel section for this catchment.
*                 - Note intermediate catchment, length and wide based on
*                   smaller catchments contributing laterally to stream.
*************** CALCULATE RUNOFF FOR BASIN No.1221 **************************
*
* Calculate runoff hydrograph for basin 1221.
*
COMPUTE FLOWRATE    ID=1 NHD=1221 DA=0.451 SQKM  L=600 m  W=970 m
                                      ZONE PROPORTIONS
                     I     II    III   IV     V    XII   XIII  XIV
                    3.0    1.1   39.0   2.0  3.7  40.3   4.9  6.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Calculate Channel Routing Rating curve for main channel catchment 1220
* Invert data from Dunnville MDP Pat Warren Drain Profile
* Channel data from 1:2000 Meridian floodplain mapping
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=4.0    N=-0.050    DIST=7.0
                     N=0.050   DIST=11.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    4.0   176.0   4.5  175.5
                       6.5  175.5    7.0   176.0  11.0  178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1220  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1220 **************************
*
* Calculate runoff hydrograph for basin 1220.
*
COMPUTE FLOWRATE    ID=2 NHD=1220 DA=1.215 SQKM    L=2300 m  W=850 m
                                      ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  19.5   3.7  5.8  13.9  10.4   42.9
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:13837)************************
*
PRINT HYD           ID=2
*
*************************  ADD 1221 AND 3231  ******************************
*
ADD HYD              ID=3 HYD NO=2221.1 IDA=1 IDB=4
*
*************************  ADD 2221.1 AND 1220  ****************************
*
ADD HYD              ID=5 HYD NO=2218.2 IDA=3 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:12741)************************
*
PRINT HYD           ID=5
*
*************************  ADD 1221 AND 3231  ******************************
*
* Calculate Channel Routing Rating curve for reach d/s of flow node 2219.1
*
COMPUTE RATING CURVE ID=3  VS NO=3228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=177.5  m  CHNSLP=0.0007   FLSLP=0.0014
                     N=0.050   DIST=76.0    N=-0.060    DIST=82
                     N=0.050   DIST=188.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  177.5   60.0   177.0  74.0  176.5
                       76.  176.0   78.0   175.5  81.0  175.5
                       82.  176.0   84.0   176.5 142.0  177.0
                      188.  177.5   RFN=0 PCODE=1
*
************************  ROUTE CHANNEL No. 5229 ****************************
*
* Route hydrograph to confluence with Dunnville Branch
*
ROUTE CHANNEL       ID=6  HYD NO=3218.1  INFLOW=5  LENGTH=400 m
                    SLOPE=0.0007 RATING CURVE=3  NSECT=2  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1611 **************************
*
* Calculate runoff hydrograph for basin 1611.
* Typical rural road cross section of ditch.
*
COMPUTE RATING CURVE ID=1  VS NO=1611.1  NO SEG=3  MIN ELEV=99.3 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.030   DIST=11.1    N=-0.030    DIST=13.4
                     N=0.030   DIST=23.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   10.0  100.0   11.1   99.3
                      12.3   99.3   13.4  100.0   23.0   100.5
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=1 NHD=1611 DA=0.629 SQKM    L=2000 m  W=1525 m
                                      ZONE PROPORTIONS
                      I     II    III   IV     V    XII   XIII  XIV
                     3.0   0.0   42.4  21.4  13.2   2.1  0.4   17.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.13  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
PRINT HYD           ID=1
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                          I   II    III   IV    V    XII   XIII  XIV
                    DS=   2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF= 0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=   0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=    0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=  0   200   200   200   200   250   250   250
                    HI=   0   0.01  100   100   100   200   200   200
                    SMCI= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
```

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                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
**** Go to event file to get rain and runoff
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1610 **************************
*
* Note Basin 1610 represents Dunnville urban settlment
* Percentage impervious esitmates impervious level was assessed based on
* the aerial photo and impervious levels calculated for the similar type of
* residential development
* Standard Urban Rating Curve for basin mainchannel (flat slopes)
* Referenced from Laurel Creek Study. Slopes adjusted to local Topograph
*
COMPUTE RATING CURVE ID=4  VS NO=0.5  NO SEG=1  MIN ELEV=0.0 m
                     MAX ELEV=0.05 m  CHNSLP=0.002  FLSLP=0.002
                     N=-0.013  DIST=100.00
                     DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   1.0    0.01   0.0    99.99   0.0
                     100.0   1.0
                     RFN=0 PCODE=1
*
* Calculate Main Channel Routing Curve for Catchment 1610
*
COMPUTE RATING CURVE ID=1  VS NO=3610  NO SEG=3  MIN ELEV=176.5 m
                     MAX ELEV=178.4  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.045   DIST=64.0    N=-0.050    DIST=66
                     N=0.050   DIST=70.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.4   20.0   178.0  62.0  177.5
                       64.  177.0   65.0   176.5  66.0  176.5
                       70.  178.0
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=2 NHD=1610 DA=1.006 SQKM    L=1990 m  W=44.444 m
                                      ZONE PROPORTIONS
                     I     II    III    IV     V    XII   XIII  XIV
                    55.0   0.0   25.0   19.0   3.0   0.0   0.0   0.0
                    RATING CURVES IDC=1  IDOC=4  QRMC=0.90  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.25 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1040 m
                    SLOPE=0.0010 RATING CURVE=1  NSECT=5 PCODE=1
*
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1889)**************************
*
PRINT HYD           ID=4
*************************  ADD 3611 AND 1610  ******************************
*
* Add routed hydrograph with Urban Dunnville portion.
*
ADD HYD              ID=5 HYD NO=1601.1 IDA=4 IDB=2
*
*************************  ADD 1601.1 AND 1219.1   *************************
*
* Add Urban Dunnville portion with upstream headwaters areas
*
ADD HYD              ID=4 HYD NO=2219.1 IDA=6 IDB=5
*
*
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
*
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
*
* Main Channel Routing Section for catchment 1218
* No dominent main channel use off channel for main channel
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1218  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1218
*
*************** CALCULATE RUNOFF FOR BASIN No.1218 **************************
*
* Calculate runoff hydrograph for basin 1218.
*
COMPUTE FLOWRATE    ID=2 NHD=1218 DA=0.194 SQKM    L=900 m  W=585 m
                                      ZONE PROPORTIONS
                     I    II    III     IV    V    XII   XIII  XIV
                    3.0   0.0  75.4   10.4   11.2   0.0  0.0   0.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*************************  ADD 1601.1 AND 1219.1   *************************
*
ADD HYD              ID=6 HYD NO=2217.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11584)*************************
*
PRINT HYD           ID=6
*
*
* Main Channel Routing Section for catchment 1216
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Sections Estimated from field survey
*
COMPUTE RATING CURVE ID=1  VS NO=1216.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=30    N=-0.045    DIST=33.9
                     N=0.050   DIST=53.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   30.0   100.0  31.2   98.5
                       32.7   98.5   33.9   100.0  53.0  101.5
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1216  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1216
*
*************** CALCULATE RUNOFF FOR BASIN No.1216 **************************
*
* Calculate runoff hydrograph for basin 1216.
* Intermediate Catchment
* Combined Philip Catchments 1216 and 1217
*
COMPUTE FLOWRATE    ID=2 NHD=1216 DA=0.280 SQKM    L=900 m  W=690 m
                                      ZONE PROPORTIONS
                     I    II    III    IV    V   XII    XIII  XIV
                    3.0  0.0  59.4   15.2  10.1 11.0   1.2   0.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2218.1 AND 1216   ***************************
*
ADD HYD              ID=4 HYD NO=2216.1 IDA=2 IDB=6
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11547)*************************
*
PRINT HYD           ID=4
*
*
* Main Channel Routing Section for catchment 1209
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Section Estimated in the field by D. Boyd and H Benemeer.
*
COMPUTE RATING CURVE ID=1  VS NO=1209.1  NO SEG=3  MIN ELEV=98.8 m
                     MAX ELEV=100.3  m  CHNSLP=0.004   FLSLP=0.08
                     N=0.050   DIST=20    N=-0.040    DIST=22
                     N=0.050   DIST=42.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  20.7   98.8
                       21.3   98.8   22.0   100.0  42.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1209  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1209
*
*************** CALCULATE RUNOFF FOR BASIN No.1209 **************************
*
* Calculate runoff hydrograph for basin 1209.
* Intermediate Catchment
*
*
COMPUTE FLOWRATE    ID=2 NHD=1209 DA=1.449 SQKM L=1500 m  W=1095 m
                                      ZONE PROPORTIONS
                     I    II    III    IV     V    XII   XIII  XIV
                    3.0   0.0   64.5  13.5  18.0  0.7   0.3   0.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.3  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2216.1 AND 1209   ***************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:10797)*************************
*
ADD HYD              ID=5 HYD NO=2209.1 IDA=2 IDB=4
*
PRINT HYD            ID=5
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION: 1995.000
                          WATER        FLOW         TOP          FLOWS
                          LEVEL        AREA        WIDTH         RATE
                            m          Sq m          m            cms
                          175.01       10.47       10.17          1.00
                          175.15       12.13       13.53          5.00
```

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                        175.39       15.90       19.08         10.00
                        175.58       20.09       25.96         15.00
                        175.73       24.87       34.77         20.00
                        176.04       38.50       51.98         35.00
                        176.12       42.91       55.90         40.00
                        176.19       47.37       59.57         45.00
                        176.24       50.08       61.75         50.00
                        176.30       54.08       64.79         55.00
                        176.36       58.01       67.64         60.00
                        176.48       66.03       73.11         70.00
                        176.59       75.04       91.70         80.00
                        176.94      119.08      159.13        110.00
*
************************  ROUTE CHANNEL No. 2209.1 ***************************
*
* Route 2209.1 outflow through channel 3209.1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:6081)**************************
*
ROUTE CHANNEL       ID=4  HYD NO=3209  INFLOW=5  LENGTH=2200 m
                    SLOPE=0.00033 RATING CURVE=4  NSECT=5 PCODE=1
*
PRINT HYD           ID=4
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3
*
ROUTE RESERVOIR      ID=5 HYD NO=6209 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.8
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.85      0.00           0.00
                        174.61      1.30           0.208
                        175.15      4.00           2.370
                        175.32      6.00           3.520
                        175.50      8.00           5.050
                        175.73     10.00           7.553
                        176.10     12.00          14.820
                        176.31     13.00          23.471
                        176.61     14.00          42.660
                        177.39     14.69         107.167
                        177.46     16.00         113.090
                        177.59     20.00         124.088
                        177.67     30.00         130.856
*
* Main Channel Routing Section for catchment 1208
* Dominant Main Channel would be road ditchs in this catchment not
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1208  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1208 and 1210
*                 - FKO of 1.75 used to reflect rural residential development
*************** CALCULATE RUNOFF FOR BASIN No.1208 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1208 DA=0.251 SQKM L=500.0 m  W=2005 m
                     I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.0  48.4  17.7  30.7  0.0  0.0   0.2
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.75  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 5209.1 AND 1208   ***************************
*
ADD HYD              ID=6 HYD NO=2208.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5648)**************************
*
PRINT HYD           ID=6
*
*****************************************************************************
* Confluence with the Dent Drain
*****************************************************************************
*
*****************************************************************************
* Dent Drain Modelling
*****************************************************************************
*
* Main Channel Routing Section for catchment 1308
* Dominant Main Channel would be municipal drain
* Sections measured in field by D. Boyd slopes from Municipal drain files.
*
COMPUTE RATING CURVE ID=1  VS NO=1308.1  NO SEG=3  MIN ELEV=175.1 m
                     MAX ELEV=178.0  m  CHNSLP=0.00025   FLSLP=0.0005
                     N=0.080   DIST=20    N=-0.060    DIST=27
                     N=0.080   DIST=47.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  22.0   97.0
                      25.0   97.0   27.0   100.0  47.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1308  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*************** CALCULATE RUNOFF FOR BASIN No.1308 ***************************
*
COMPUTE FLOWRATE    ID=1 NHD=1308 DA=4.639 SQKM L=4700 m  W=1040 m
                     I    II    III   IV     V    XII   XIII  XIV
                    5.5   0.8  0.0  0.0   0.0   34.4   5.8   53.5
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5305)**************************
*
PRINT HYD           ID=1
*
* Main Channel Routing Section for catchment 1304
* Dominant Main Channel would be municipal drain
* Section estimated from field inspection D. Boyd, H. Benemeer and from
* 1:2000 mapping
* Slope of drain referenced from Dunnville MDP.
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=175.75 m
                     MAX ELEV=178.0  m  CHNSLP=0.0005   FLSLP=0.001
                     N=0.080   DIST=4    N=-0.055    DIST=13.1
                     N=0.080   DIST=17.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   178.0   2.0   177.5   4.0  177.0
                       7.3  175.75   9.8  175.75  13.1  177.0
                      17.0   178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1304  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1304 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1304 DA=1.968 SQKM L=2800 m  W=1075 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  31.4  14.2  15.9  20.0  6.5   8.2
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*****************************************************************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3365)**************************
*
PRINT HYD           ID=2
*
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3-Structure #20
*
ROUTE RESERVOIR      ID=5 HYD NO=621 INFLOW=2 PCODE=1 OPTION=4
                     ILEVEL=175.71
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        175.71      0.00           0.000
                        176.38      0.30           0.079
                        176.62      0.70           0.199
                        176.98      1.50           1.506
                        177.18      2.00           7.654
                        178.59      5.00         109.582
                        178.61      6.50         111.054
*
* Main Channel Routing Section for catchment 1310
* Dominant Main Channel would be municipal drain
* Slope of drain referenced from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.3  m  CHNSLP=0.00072   FLSLP=0.0014
                     N=0.080   DIST=20    N=-0.060    DIST=24.9
                     N=0.080   DIST=44.9
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0  100.0   21.8   98.5
                      23.1   98.5   24.9  100.0   44.9  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1310  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*
*************** CALCULATE RUNOFF FOR BASIN No.1310 ***************************
*
COMPUTE FLOWRATE    ID=3 NHD=1310 DA=1.759 SQKM L=2800 m  W=1030 m
                     I    II    III   IV     V    XII   XIII  XIV
                    4.5   14.7  0.0  0.0  0.0   12.2  8.3  63.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1

PRINT HYD           ID=3
*
*************************  ADD 1308 AND 1310   ***************************
*
ADD HYD              ID=4 HYD NO=1306.2 IDA=1 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4536)**************************
*
PRINT HYD           ID=4
*
*****************************************************************************
*
*************************  ADD 1306.1 AND 1304   ***************************
*
ADD HYD              ID=1 HYD NO=1302.2 IDA=4 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3842)**************************
*
PRINT HYD           ID=1
*
*****************************************************************************
*
*
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 174.50 m

```
* Main Channel Routing Section for Dent Drain
* Reference from 1:2000 floodplain mapping
*
COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.080   DIST=10    N=-0.060    DIST=24
                     N=0.080   DIST=31.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    2.0   178.0  10.0  177.0
                      14.0  176.5   16.0   176.0  17.0  175.0
                      18.0  175.0   19.0   176.0  21.0  176.5
                      24.0  177.0   28.0   177.5  31.0  178.0
                     RFN=0 PCODE=0

                        RATING CURVE FOR VALLEY SECTION   3611.100

                     WATER LEVEL  FLOW AREA   TOP WIDTH    FLOWRATE
                         m          Sq m          m          cms
                         175.000      0.0000       1.000      0.0000
                         175.077      0.0828       1.154      0.0073
                         175.154      0.1775       1.308      0.0232
                         175.231      0.2840       1.462      0.0463
                         175.308      0.4023       1.615      0.0761
                         175.385      0.5325       1.769      0.1129
                         175.462      0.6745       1.923      0.1567
                         175.538      0.8284       2.077      0.2078
                         175.615      0.9940       2.231      0.2665
                         175.692      1.1715       2.385      0.3330
                         175.769      1.3609       2.538      0.4077
                         175.846      1.5620       2.692      0.4908
                         175.923      1.7750       2.846      0.5827
                         176.000      1.9999       3.000      0.6837
                         176.077      2.2543       3.615      0.7536
                         176.154      2.5560       4.230      0.8503
                         176.231      2.9051       4.846      0.9734
                         176.308      3.3014       5.461      1.1233
                         176.385      3.7452       6.076      1.3009
                         176.461      4.2362       6.692      1.5077
                         176.538      4.7791       7.537      1.7166
                         176.615      5.4003       8.614      1.9418
                         176.692      6.1043       9.691      2.2171
                         176.769      6.8911      10.768      2.5435
                         176.846      7.7608      11.845      2.9230
                         176.923      8.7134      12.922      3.3581
                         177.000      9.7487      13.999      3.8512
                         177.077     10.8728      15.229      4.5887
                         177.154     12.0916      16.460      5.3900
                         177.231     13.4050      17.691      6.2611
                         177.308     14.8131      18.921      7.2074
                         177.385     16.3158      20.152      8.2335
                         177.461     17.9133      21.383      9.3436
                         177.538     19.6039      22.537     10.5444
                         177.615     21.3788      23.614     11.8383
                         177.692     23.2366      24.691     13.2252
                         177.769     25.1772      25.767     14.7079
                         177.846     27.2006      26.844     16.2891
                         177.923     29.3069      27.921     17.9714
                         178.000     31.4960      28.998     19.7576
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1200 m
                    SLOPE=0.001   RATING CURVE=4  NSECT=5  PCODE=0
*
* Main Channel Routing Section for catchment 1302
* Dominant Main Channel would not be municipal drain
* Off channel section assumed for main channel
* Significant depression storage in this catchment
*
*------------------------  SUB-WATERSHED 1302  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1301 and 1302
*
*************** CALCULATE RUNOFF FOR BASIN No.1302 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1302 DA=0.696 SQKM L=1200 m  W=870 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   1.2  24.4  3.5 15.3   36.2  0.5  15.9
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
**************************  ADD 3611 AND 1302   ****************************
*
ADD HYD              ID=5 HYD NO=1301.1 IDA=3 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1139)**************************
*
PRINT HYD           ID=5
*
**************************  ADD 1301.1 AND 1302   ****************************
*
* Confluence of Dent Drain with main Maple Creek
*
ADD HYD              ID=4 HYD NO=2207.1 IDA=5 IDB=6
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
**************************  ADD 2207.1 AND 1206   ****************************
*
ADD HYD              ID=6 HYD NO=2206.1 IDA=4 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4079)**************************
*
PRINT HYD           ID=6
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  772.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m            cms
                         175.00       54.83      126.07          1.00
                         175.02       56.82      127.69          5.00
                         175.06       62.61      132.33         10.00
                         175.12       71.34      139.02         15.00
                         175.19       82.06      146.82         20.00
                         175.41      116.32      169.36         35.00
                         175.47      126.17      175.30         40.00
                         175.53      136.98      185.13         45.00
                         175.59      148.10      197.24         50.00
                         175.65      159.38      208.80         55.00
                         175.70      170.17      219.28         60.00
                         175.80      193.69      240.56         70.00
                         175.90      218.28      260.95         80.00
                         176.22      324.88      508.51        110.00
*
*
************************  ROUTE CHANNEL No. 3207 ****************************
*
* Route 2207.1 outflow through channel 3207.
*
ROUTE CHANNEL       ID=4  HYD NO=3207  INFLOW=6  LENGTH=800 m
                    SLOPE=0.00033  RATING CURVE=4  NSECT=5  PCODE=1
*
*
* Main Channel Routing Section for catchment 1206
* Dominant Main Channel would not be municipal drain
* Assume off channel section for main channel section in this catchment.
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
*COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
*                     I    II    III   IV     V    XII   XIII  XIV
*                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
*                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
*                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
*                    KSS=5 hr  KGW=384 hr  PCODE=1
*
**************************  ADD 3207.1 AND 1206   ****************************
*
*ADD HYD              ID=4 HYD NO=2206.1 IDA=3 IDB=5
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1955)**************************
*
PRINT HYD           ID=4
*
*  Existing Canal Road Culvet without Cut for additional relief
*
ROUTE RESERVOIR      ID=6 HYD NO=620 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.90
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.91       0.0           0.0
                        174.57       2.00          2.587
                        174.75       4.00          5.048
                        175.02       6.00         10.470
                        175.24       8.00         16.929
                        175.43      10.00         25.280
                        175.85      12.00         58.491
                        176.07      13.00         83.338
                        176.32      14.00        119.412
                        177.39      15.00        354.291
                        177.46      16.00        371.109
                        177.59      33.00        404.093
                        177.67      48.00        424.586
PLOT HYD              IDA=6 IDB=4
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  110.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m            cms
                         175.00       49.32      280.11          1.00
                         175.01       50.98      282.63          5.00
                         175.03       55.94      290.05         10.00
                         175.06       63.74      301.34         15.00
                         175.09       74.19      315.83         20.00
                         175.20      117.62      370.03         35.00
                         175.26      133.39      387.85         40.00
                         175.30      148.44      404.12         45.00
                         175.34      164.45      420.72         50.00
                         175.37      180.68      436.93         55.00
                         175.41      197.24      452.86         60.00
                         175.49      234.04      486.40         70.00
                         175.57      274.51      499.63         80.00
                         175.92      456.51      530.71        110.00
*
************************  ROUTE CHANNEL No. 3206.1 ****************************
*
* Route 2206.1 outflow through channel 3206.1
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 174.50 m

```
 *
 ROUTE CHANNEL       ID=5  HYD NO=3209  INFLOW=4  LENGTH=500 m
                     SLOPE=0.00033 RATING CURVE=1  NSECT=5 PCODE=1
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
 *
 * Main Channel Routing Section for catchment 1201
 * Dominant Main Channel would not be municipal drain
 * Assume off channel section for main channel section in this catchment.
 *
 *------------------------  SUB-WATERSHED 1201  ----------------------------
 *
 *   DESCRIPTION:  - Headwaters subwatershed
 *                 - Catchment information from Philips Dunnville MDP
 *                 - Catchment 1201
 *                 - FTB set to 3 given the swampy natural of this watershed
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1201 **************************
 *
 COMPUTE FLOWRATE    ID=1 NHD=1201 DA=0.413 SQKM L=700 m  W=1940 m
                      I    II    III   IV     V    XII   XIII  XIV
                     6.7   0.0  35.7  25.6  32.0   0.0  0.0   0.0
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1

                           OUTFLOW HYDROGRAPH SUMMARY
                           ==========================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
```

HYDROGRAPH NUMBER	UPSTREAM DRAINAGE AREA-Sq.km.	VOLUME mm	PEAK DISCHARGE cms	TIME TO PEAK HRS.
1227	1.1160	135.29	2.262	52.312
3228	1.1160	134.81	2.253	52.812
1229	1.0950	148.44	1.957	53.312
1225	1.2200	107.92	2.489	49.980
5229	1.0950	147.01	1.942	54.145
2229	2.3150	126.41	3.868	52.312
2231	3.4310	129.14	6.116	52.646
1228	0.4230	121.94	0.929	49.314
2232	3.8540	128.35	6.855	52.312
1224	0.8280	144.16	2.566	49.813
2233	4.6820	131.15	9.035	51.146
1221	0.4510	184.56	1.384	50.813
1220	1.2150	129.32	3.110	49.480
2221	5.1330	135.84	10.414	51.146
2218	6.3480	134.59	13.260	50.480
3218	6.3480	134.59	13.260	50.480
1611	0.6290	204.40	1.895	49.980
1610	1.0060	273.03	12.402	46.148
3611	0.6290	204.40	1.895	49.980
1601	1.6350	246.63	13.481	46.148
2219	7.9830	157.54	19.335	47.148
1218	0.1940	247.52	0.761	50.980
2217	8.1770	159.67	19.784	47.148
1216	0.2800	240.67	1.573	48.314
2216	8.4570	162.36	21.168	47.148
1209	1.4490	250.24	6.661	48.814
2209	9.9060	175.21	26.764	47.148
3209	9.9060	175.21	26.764	47.148
6209	9.9060	173.99	13.865	56.477
1208	0.2510	227.94	0.738	51.979
2208	10.1570	176.51	27.186	47.148
1308	4.6390	92.46	9.620	48.814
1304	1.9680	194.95	6.038	50.980
621	1.9680	153.92	2.187	62.975
1310	1.7590	93.95	2.811	50.480
1306	6.3980	92.87	11.947	49.147
1302	8.3660	116.88	17.285	49.813
3611	8.3660	116.88	17.285	49.813
1302	0.6960	161.92	1.600	52.979
1301	9.0620	120.34	18.423	49.980
2207	19.2190	150.03	42.749	49.647
1206	1.4510	213.75	4.397	51.979
2206	20.6700	154.50	46.329	49.980
3207	20.6700	154.50	46.329	49.980
620	20.6700	101.46	14.111	63.808
3209	20.6700	154.50	46.329#	49.980

```
                   ----------------------------------------------------
                   Note: * Storage/outflow table exceeded
                         # Rating curve exceeded
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 **************************
 *
 ****************************************************************************
 *
 * Catchments 1202, 1203,1204 and 1205 combined from Phillips study.
 *
 ****************************************************************************
 *
 * Main Channel Routing Section for Drain
 * Reference Municipal drain report
 *
 COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                      MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                      N=0.080   DIST=10    N=-0.060    DIST=24
                      N=0.080   DIST=31.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  178.0    2.0  178.0  10.0  177.0
                       14.0  176.5   16.0  176.0  17.0  175.0
                       18.0  175.0   19.0  176.0  21.0  176.5
                       24.0  177.0   28.0  177.5  31.0  178.0
                      RFN=0 PCODE=1
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 **************************
 *
 COMPUTE FLOWRATE    ID=2 NHD=1205 DA=1.362 SQKM L=3400 m  W=1315 m
                      I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.6  8.4   1.8  0.9  65.1  7.1   13.1
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: KO=3.0  TLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1
 *
 *************************  ADD 3206.1 AND 1201   ****************************
 *
 ADD HYD              ID=4 HYD NO=2201.1 IDA=1 IDB=5
 *
 *************************  ADD 2201.1 AND 1205  *****************************
 *
 ADD HYD              ID=5 HYD NO=2201.1 IDA=4 IDB=2
 *
 *************HEC-RAS FLOW CHANGE LOCATION (ID:256)**************************
 *
 PRINT HYD           ID=5
 *
 ****************************************************************************
 FINISH
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 174.50 m

```
                OUTFLOW HYDROGRAPH SUMMARY
                ==========================

        MAPLE WATERSHED MODEL
        EVENT FILE : REGIONAL STORM
        July 18, 1995

              UPSTREAM                 PEAK     TIME TO
HYDROGRAPH   DRAINAGE     VOLUME    DISCHARGE    PEAK
  NUMBER    AREA-Sq.km.     mm         cms       HRS.
-------------------------------------------------------
   1201       0.4130     216.05       1.070    53.145
   1205       1.3620      66.50       0.977    61.975
   2201      21.0830     155.71      47.195    49.980
   2201      22.4450     150.29      47.415    49.980
-------------------------------------------------------
Note: * Storage/outflow table exceeded
      # Rating curve exceeded


          WATERSHED RESPONSE VOLUMES (  mm   )
          =====================================

    RAIN/SNOWMELT= 285.000           OVERLAND=  152.628
       SUBSURFACE=   1.300        GROUNDWATER=   36.169
           SS NET=   9.772             GW NET=  120.891
      EVAPORATION=   0.000        SUBLIMATION=    0.000

    DRAINAGE AREA IN RUNOFF COMPUTATIONS=   22.445 km^2
```

GAWSER Model Output:

Baseline Conditions

Simulation Results for 174.91 m Boundary Condition

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 174.91 m

```
                  GAWSER V6.9.20 - Released - Feb. 18, 2020
                  =========================================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
                   =======================================

   Input file 1=MREG10MI.evt
   Input file 2=BC_GR.wat
   Output file =48hBCGR.1st
*
*
START               KUNITS=2  TOTAL DRAINAGE AREA:  TDA=20.3 SQ KM
                    BASEFLOW AT OUTLET:  QBSS=0.0  QBGW=0..5  CMS
                    PRINT OPTIONS:  ECHO=1 output=1 plots=1 RCS=1 SUBW=1
                          PLOT CUTOFF TIME =80 HRS  SUM=0  FREE=0
                    PARAMETER ADJUSTMENT FACTORS:  FDS=1.00  FKEFF=0.30
                      FCS=0.35 FD=0.35 FSAV=1.0  FKO=1.0  FKSS=1.0  FKMF=1
                    INITIAL SOIL/SNOW WATER CONTENT FACTORS:
                      FIMCI=1.00  FIMCII=1.00  FIWE=1.0
                    GLOBAL RAINFALL SCALING FACTOR: GFRF=1.00
                    SIMULATION CONTROLS: TTI=0.1666 IDEL=4 HOURS=80
                    SUBWATERSHED INITAL BASEFLOWS IN CMS -999
*
*MAPLE CREEK WATERSHED MODEL
*WATERSHED FILE
*CREATED JUNE 15,1995 BY D. BOYD
*REVISED SEPTEMBER 20, 2021 BY I.DZEPAROSKI
* ==========================================================================
*
**************************** ENTER SOILS DATA FOR **************************
*
**************************************************************************
* REFERENCED FROM THE GRAND RIVER HYDROLOGY STUDY
**************************************************************************
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ---------------------------------------------------------------
**** Go to event file to get rain and runoff
*
CHANGE INPUT FILE
*
*    Rating Curve for Typical off channel (Flat slopes)
*
COMPUTE RATING CURVE ID=6 VS NO=1.2 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.6 M  CHNSLP=0.001 FLSLP=0.001
                    N=0.35  DIST=39.15  N=-0.15  DIST=40.85
                    N=0.35  DIST=80.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.6   39.15 100.2   39.75 100.0
                    40.25  100.0   40.85 100.2   80.00 100.6
                     RFN=0   RCODE=1
*
*    Rating Curve for Typical off channel (Steep slopes)
*
COMPUTE RATING CURVE ID=5 VS NO=1.1 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.8 M  CHNSLP=0.010 FLSLP=0.010
                    N=0.35  DIST=24.45  N=-0.15  DIST=25.55
                    N=0.35  DIST=50.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.8   24.45 100.3   24.75 100.0
                    25.25  100.0   25.55 100.3   50.00 100.8
                     RFN=0   RCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 ***************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1227.1  NO SEG=3  MIN ELEV=98.1 m
                    MAX ELEV=101.0  m CHNSLP=0.000086 FLSLP=0.000172
                    N=0.070   DIST=100.0   N=-0.050    DIST=105.7
                    N=0.070   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST    ELEV
                       0.0  101.0  100.0   100.0 101.95   98.1
                    103.75   98.1  105.7   100.0  200.0  101.0
                    RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1227  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 ***************************
*
* Calculate runoff hydrograph for basin 1227.
* Note revised drainage area based on the LiDAR 2017 DEM
*
COMPUTE FLOWRATE    ID=1 NHD=1227 DA=1.116 SQKM    L=2700 m  W=1425 m
                                  ZONE PROPORTIONS
                     I    II    III   IV    V    XII   XIII  XIV
                    3.0   0.0   10.1   0.8   0.0   73.8  1.9  10.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*

*************** CALCULATE ROUTING SECTION OF 1227 ****************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=3228  NO SEG=3  MIN ELEV=98.3 m
                     MAX ELEV=101.0  m  CHNSLP=0.00118 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.060    DIST=105.2
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  102.0   98.3
                     103.20   98.3  105.2   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*
************************  ROUTE CHANNEL No. 3228 ****************************
*
*
ROUTE CHANNEL       ID=2  HYD NO=3228  INFLOW=1  LENGTH=1010 m
                    SLOPE=0.00118  RATING CURVE=3  NSECT=2  PCODE=1
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1229  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1229 ***************************
*
* Calculate runoff hydrograph for basin 1229.
*
COMPUTE FLOWRATE    ID=1 NHD=1229 DA=1.095 SQKM    L=1000 m  W=1200 m
                                  ZONE PROPORTIONS
                       I    II    III   IV    V    XII   XIII  XIV
                    3.0   0.9    6.0   1.6   50.0  23.2  3.0  12.3
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 ***************************
*
* Calculate Main Channel Rating curve for basin 1225
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1225  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 ***************************
*
* Calculate runoff hydrograph for basin 1225.
*
COMPUTE FLOWRATE    ID=4 NHD=1225 DA=1.220 SQKM    L=1600 m  W=1235 m
                                  ZONE PROPORTIONS
                     I    II    III   IV    V    XII   XIII  XIV
                    3.0   0.0   0.0    0.0   0.0  58.8  5.2  33.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Route 1229 outflow through channel 5229.
*
ROUTE CHANNEL       ID=3  HYD NO=5229  INFLOW=1  LENGTH=1550 m
                    SLOPE=0.0010   RATING CURVE=1  NSECT=2  PCODE=1
*
*************************  ADD 5229 AND 1225  ******************************
*
ADD HYD              ID=1 HYD NO=2229 IDA=4 IDB=3
*
*
*************************  ADD 2229 AND 3228  ******************************
*
ADD HYD              ID=3 HYD NO=2231 IDA=2 IDB=1
```

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```
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=101.0  m  CHNSLP=0.00135 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.055    DIST=106
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0 102.25   98.5
                     103.75   98.5  106.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1228  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
*
* Calculate runoff hydrograph for basin 1228.
*
COMPUTE FLOWRATE    ID=1 NHD=1228 DA=0.423 SQKM    L=1600 m  W=980 m
                                      ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0   0.0   0.0   74.5  4.4  18.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FTB=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*
*************************  ADD 1228 AND 2230  ******************************
*
ADD HYD              ID=2 HYD NO=2232 IDA=1 IDB=3
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:3413)*************************
*
PRINT HYD           ID=2
*

*************** CALCULATE ROUTING SECTION OF 1224  **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=1223  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.0003 FLSLP=0.0006
                     N=0.070   DIST=100.0    N=-0.050    DIST=105
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  101.9   98.2
                     103.10   98.2  105.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*

*------------------------  SUB-WATERSHED 1224  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1224 **************************
*
* Calculate runoff hydrograph for basin 1224.
*
COMPUTE FLOWRATE    ID=1 NHD=1224 DA=0.828 SQKM L=2700 m  W=930 m
                                      ZONE PROPORTIONS
                     I    II    III    IV     V   XII   XIII  XIV
                    3.0   2.1   0.0    1.1   0.0  85.9  5.3  3.7
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 1224 AND 2232  ******************************
*
ADD HYD              ID=4 HYD NO=2233 IDA=1 IDB=2
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:2586.51)**********************
*
PRINT HYD           ID=4
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
*COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
*                    MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
*                    N=0.040   DIST=100.0   N=-0.060    DIST=105.6
*                    N=0.040   DIST=200.0
*                     DIST   ELEV   DIST   ELEV   DIST   ELEV
*                      0.0  101.0  100.0   100.0 101.8   98.2
*                    103.8   98.2  105.6   100.0 106.0  100.0
*                    200.0   101.0
*                    RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1221  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1221
*                 - Off channel section also used for main channel
*                   no obvious main channel section for this catchment.
*                 - Note intermediate catchment, length and wide based on
*                   smaller catchments contributing laterally to stream.
*************** CALCULATE RUNOFF FOR BASIN No.1221 **************************
*
* Calculate runoff hydrograph for basin 1221.
*
COMPUTE FLOWRATE    ID=1 NHD=1221 DA=0.451 SQKM  L=600 m  W=970 m
                                      ZONE PROPORTIONS
                     I     II    III   IV     V    XII   XIII  XIV
                    3.0    1.1   39.0   2.0  3.7  40.3   4.9  6.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Calculate Channel Routing Rating curve for main channel catchment 1220
* Invert data from Dunnville MDP Pat Warren Drain Profile
* Channel data from 1:2000 Meridian floodplain mapping
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=4.0    N=-0.050    DIST=7.0
                     N=0.050   DIST=11.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    4.0   176.0   4.5  175.5
                       6.5  175.5    7.0   176.0  11.0  178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1220  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1220 **************************
*
* Calculate runoff hydrograph for basin 1220.
*
COMPUTE FLOWRATE    ID=2 NHD=1220 DA=1.215 SQKM    L=2300 m  W=850 m
                                      ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  19.5   3.7  5.8  13.9  10.4   42.9
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:13837)************************
*
PRINT HYD           ID=2
*
*************************  ADD 1221 AND 3231  ******************************
*
ADD HYD              ID=3 HYD NO=2221.1 IDA=1 IDB=4
*
*************************  ADD 2221.1 AND 1220  ****************************
*
ADD HYD              ID=5 HYD NO=2218.2 IDA=3 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:12741)************************
*
PRINT HYD           ID=5
*
*************************  ADD 1221 AND 3231  ******************************
*
* Calculate Channel Routing Rating curve for reach d/s of flow node 2219.1
*
COMPUTE RATING CURVE ID=3  VS NO=3228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=177.5  m  CHNSLP=0.0007   FLSLP=0.0014
                     N=0.050   DIST=76.0    N=-0.060    DIST=82
                     N=0.050   DIST=188.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  177.5   60.0   177.0  74.0  176.5
                       76.  176.0   78.0   175.5  81.0  175.5
                       82.  176.0   84.0   176.5 142.0  177.0
                      188.  177.5   RFN=0 PCODE=1
*
************************  ROUTE CHANNEL No. 5229 ****************************
*
* Route hydrograph to confluence with Dunnville Branch
*
ROUTE CHANNEL       ID=6  HYD NO=3218.1  INFLOW=5  LENGTH=400 m
                    SLOPE=0.0007 RATING CURVE=3  NSECT=2  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1611 **************************
*
* Calculate runoff hydrograph for basin 1611.
* Typical rural road cross section of ditch.
*
COMPUTE RATING CURVE ID=1  VS NO=1611.1  NO SEG=3  MIN ELEV=99.3 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.030   DIST=11.1    N=-0.030    DIST=13.4
                     N=0.030   DIST=23.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   10.0  100.0   11.1   99.3
                      12.3   99.3   13.4  100.0   23.0   100.5
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=1 NHD=1611 DA=0.629 SQKM    L=2000 m  W=1525 m
                                      ZONE PROPORTIONS
                      I     II    III   IV     V    XII   XIII  XIV
                     3.0   0.0   42.4  21.4  13.2   2.1  0.4   17.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.13  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
PRINT HYD           ID=1
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                          I   II    III   IV    V    XII   XIII  XIV
                    DS=   2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF= 0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=   0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=    0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=  0   200   200   200   200   250   250   250
                    HI=   0   0.01  100   100   100   200   200   200
                    SMCI= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
```

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                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
**** Go to event file to get rain and runoff
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1610 **************************
*
* Note Basin 1610 represents Dunnville urban settlment
* Percentage impervious esitmates impervious level was assessed based on
* the aerial photo and impervious levels calculated for the similar type of
* residential development
* Standard Urban Rating Curve for basin mainchannel (flat slopes)
* Referenced from Laurel Creek Study. Slopes adjusted to local Topograph
*
COMPUTE RATING CURVE ID=4  VS NO=0.5  NO SEG=1  MIN ELEV=0.0 m
                     MAX ELEV=0.05 m  CHNSLP=0.002  FLSLP=0.002
                     N=-0.013  DIST=100.00
                     DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   1.0    0.01   0.0    99.99   0.0
                     100.0   1.0
                     RFN=0 PCODE=1
*
* Calculate Main Channel Routing Curve for Catchment 1610
*
COMPUTE RATING CURVE ID=1  VS NO=3610  NO SEG=3  MIN ELEV=176.5 m
                     MAX ELEV=178.4  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.045   DIST=64.0    N=-0.050    DIST=66
                     N=0.050   DIST=70.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.4   20.0   178.0  62.0  177.5
                       64.  177.0   65.0   176.5  66.0  176.5
                       70.  178.0
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=2 NHD=1610 DA=1.006 SQKM    L=1990 m  W=44.444 m
                                       ZONE PROPORTIONS
                     I     II    III    IV      V    XII   XIII  XIV
                    55.0   0.0   25.0   19.0   3.0   0.0   0.0   0.0
                    RATING CURVES IDC=1  IDOC=4  QRMC=0.90  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.25 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1040 m
                    SLOPE=0.0010 RATING CURVE=1  NSECT=5 PCODE=1
*
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1889)**************************
*
PRINT HYD           ID=4
*************************  ADD 3611 AND 1610  ******************************
*
* Add routed hydrograph with Urban Dunnville portion.
*
ADD HYD              ID=5 HYD NO=1601.1 IDA=4 IDB=2
*
*************************  ADD 1601.1 AND 1219.1   *************************
*
* Add Urban Dunnville portion with upstream headwaters areas
*
ADD HYD              ID=4 HYD NO=2219.1 IDA=6 IDB=5
*
*
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
*
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
*
* Main Channel Routing Section for catchment 1218
* No dominent main channel use off channel for main channel
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1218  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1218
*
*************** CALCULATE RUNOFF FOR BASIN No.1218 **************************
*
* Calculate runoff hydrograph for basin 1218.
*
COMPUTE FLOWRATE    ID=2 NHD=1218 DA=0.194 SQKM    L=900 m  W=585 m
                                       ZONE PROPORTIONS
                     I    II    III     IV    V    XII   XIII  XIV
                    3.0   0.0  75.4   10.4   11.2   0.0  0.0   0.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*************************  ADD 1601.1 AND 1219.1   *************************
*
ADD HYD              ID=6 HYD NO=2217.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11584)*************************
*
PRINT HYD           ID=6
*
*
* Main Channel Routing Section for catchment 1216
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Sections Estimated from field survey
*
COMPUTE RATING CURVE ID=1  VS NO=1216.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=30    N=-0.045    DIST=33.9
                     N=0.050   DIST=53.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   30.0   100.0  31.2   98.5
                       32.7   98.5   33.9   100.0  53.0  101.5
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1216  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1216
*
*************** CALCULATE RUNOFF FOR BASIN No.1216 **************************
*
* Calculate runoff hydrograph for basin 1216.
* Intermediate Catchment
* Combined Philip Catchments 1216 and 1217
*
COMPUTE FLOWRATE    ID=2 NHD=1216 DA=0.280 SQKM    L=900 m  W=690 m
                                       ZONE PROPORTIONS
                     I    II   III    IV    V   XII    XIII  XIV
                    3.0  0.0  59.4   15.2  10.1 11.0   1.2   0.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2218.1 AND 1216   ***************************
*
ADD HYD              ID=4 HYD NO=2216.1 IDA=2 IDB=6
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11547)*************************
*
PRINT HYD           ID=4
*
*
* Main Channel Routing Section for catchment 1209
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Section Estimated in the field by D. Boyd and H Benemeer.
*
COMPUTE RATING CURVE ID=1  VS NO=1209.1  NO SEG=3  MIN ELEV=98.8 m
                     MAX ELEV=100.3  m  CHNSLP=0.004   FLSLP=0.08
                     N=0.050   DIST=20    N=-0.040    DIST=22
                     N=0.050   DIST=42.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  20.7   98.8
                       21.3   98.8   22.0   100.0  42.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1209  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1209
*
*************** CALCULATE RUNOFF FOR BASIN No.1209 **************************
*
* Calculate runoff hydrograph for basin 1209.
* Intermediate Catchment
*
*
COMPUTE FLOWRATE    ID=2 NHD=1209 DA=1.449 SQKM L=1500 m  W=1095 m
                                       ZONE PROPORTIONS
                     I    II    III    IV     V    XII   XIII  XIV
                    3.0   0.0   64.5  13.5  18.0  0.7   0.3   0.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.3  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2216.1 AND 1209   ***************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:10797)*************************
*
ADD HYD              ID=5 HYD NO=2209.1 IDA=2 IDB=4
*
PRINT HYD            ID=5
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION: 1995.000
                          WATER        FLOW         TOP          FLOWS
                          LEVEL        AREA        WIDTH         RATE
                            m          Sq m          m            cms
                          175.01       10.47       10.17          1.00
                          175.15       12.13       13.53          5.00
```

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```
                          175.39       15.90       19.08         10.00
                          175.58       20.09       25.96         15.00
                          175.73       24.87       34.77         20.00
                          176.04       38.50       51.98         35.00
                          176.12       42.91       55.90         40.00
                          176.19       47.37       59.57         45.00
                          176.24       50.08       61.75         50.00
                          176.30       54.08       64.79         55.00
                          176.36       58.01       67.64         60.00
                          176.48       66.03       73.11         70.00
                          176.59       75.04       91.70         80.00
                          176.94      119.08      159.13        110.00
*
************************  ROUTE CHANNEL No. 2209.1 ***************************
*
* Route 2209.1 outflow through channel 3209.1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:6081)**************************
*
ROUTE CHANNEL       ID=4  HYD NO=3209  INFLOW=5  LENGTH=2200 m
                    SLOPE=0.00033 RATING CURVE=4  NSECT=5 PCODE=1
*
PRINT HYD           ID=4
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3
*
ROUTE RESERVOIR      ID=5 HYD NO=6209 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.8
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.85      0.00           0.00
                        174.93      1.30           0.086
                        175.15      4.00           1.188
                        175.32      6.00           2.338
                        175.50      8.00           3.868
                        175.73     10.00           6.371
                        176.10     12.00          13.638
                        176.31     13.00          22.289
                        176.61     14.00          41.478
                        177.28     14.69          96.679
                        177.46     16.00         111.907
                        177.59     20.00         122.906
                        177.67     30.00         129.674
*
* Main Channel Routing Section for catchment 1208
* Dominant Main Channel would be road ditchs in this catchment not
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1208  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1208 and 1210
*                 - FKO of 1.75 used to reflect rural residential development
*************** CALCULATE RUNOFF FOR BASIN No.1208 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1208 DA=0.251 SQKM L=500.0 m  W=2005 m
                     I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.0  48.4  17.7  30.7  0.0  0.0   0.2
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.75  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 5209.1 AND 1208   ***************************
*
ADD HYD              ID=6 HYD NO=2208.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5648)**************************
*
PRINT HYD           ID=6
*
*****************************************************************************
* Confluence with the Dent Drain
*****************************************************************************
*
*****************************************************************************
* Dent Drain Modelling
*****************************************************************************
*
* Main Channel Routing Section for catchment 1308
* Dominant Main Channel would be municipal drain
* Sections measured in field by D. Boyd slopes from Municipal drain files.
*
COMPUTE RATING CURVE ID=1  VS NO=1308.1  NO SEG=3  MIN ELEV=175.1 m
                     MAX ELEV=178.0  m  CHNSLP=0.00025   FLSLP=0.0005
                     N=0.080   DIST=20    N=-0.060    DIST=27
                     N=0.080   DIST=47.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  22.0   97.0
                      25.0   97.0   27.0   100.0  47.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1308  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*************** CALCULATE RUNOFF FOR BASIN No.1308 ***************************
*
COMPUTE FLOWRATE    ID=1 NHD=1308 DA=4.639 SQKM L=4700 m  W=1040 m
                     I    II    III   IV     V    XII   XIII  XIV
                    5.5  0.8  0.0  0.0   0.0   34.4   5.8   53.5
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5305)**************************
*
PRINT HYD           ID=1
*
* Main Channel Routing Section for catchment 1304
* Dominant Main Channel would be municipal drain
* Section estimated from field inspection D. Boyd, H. Benemeer and from
* 1:2000 mapping
* Slope of drain referenced from Dunnville MDP.
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=175.75 m
                     MAX ELEV=178.0  m  CHNSLP=0.0005   FLSLP=0.001
                     N=0.080   DIST=4    N=-0.055    DIST=13.1
                     N=0.080   DIST=17.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   178.0   2.0   177.5   4.0  177.0
                       7.3  175.75   9.8  175.75  13.1  177.0
                      17.0   178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1304  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1304 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1304 DA=1.968 SQKM L=2800 m  W=1075 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  31.4  14.2  15.9  20.0  6.5   8.2
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*****************************************************************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3365)**************************
*
PRINT HYD           ID=2
*
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3-Structure #20
*
ROUTE RESERVOIR      ID=5 HYD NO=621 INFLOW=2 PCODE=1 OPTION=4
                     ILEVEL=175.71
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        175.71      0.00           0.000
                        176.38      0.30           0.079
                        176.62      0.70           0.199
                        176.98      1.50           1.506
                        177.18      2.00           7.654
                        178.59      5.00         109.582
                        178.61      6.50         111.054
*
* Main Channel Routing Section for catchment 1310
* Dominant Main Channel would be municipal drain
* Slope of drain referenced from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.3  m  CHNSLP=0.00072   FLSLP=0.0014
                     N=0.080   DIST=20    N=-0.060    DIST=24.9
                     N=0.080   DIST=44.9
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0  100.0   21.8   98.5
                      23.1   98.5   24.9  100.0   44.9  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1310  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*
*************** CALCULATE RUNOFF FOR BASIN No.1310 ***************************
*
COMPUTE FLOWRATE    ID=3 NHD=1310 DA=1.759 SQKM L=2800 m  W=1030 m
                     I    II    III   IV     V    XII   XIII  XIV
                    4.5   14.7  0.0  0.0  0.0   12.2  8.3  63.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1

PRINT HYD           ID=3
*
*************************  ADD 1308 AND 1310   ***************************
*
ADD HYD              ID=4 HYD NO=1306.2 IDA=1 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4536)**************************
*
PRINT HYD           ID=4
*
*****************************************************************************
*
*************************  ADD 1306.1 AND 1304   ***************************
*
ADD HYD              ID=1 HYD NO=1302.2 IDA=4 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3842)**************************
*
PRINT HYD           ID=1
*
*****************************************************************************
*
*
```

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```
* Main Channel Routing Section for Dent Drain
* Reference from 1:2000 floodplain mapping
*
COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.080   DIST=10    N=-0.060    DIST=24
                     N=0.080   DIST=31.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    2.0   178.0  10.0  177.0
                      14.0  176.5   16.0   176.0  17.0  175.0
                      18.0  175.0   19.0   176.0  21.0  176.5
                      24.0  177.0   28.0   177.5  31.0  178.0
                     RFN=0 PCODE=0

                        RATING CURVE FOR VALLEY SECTION   3611.100

                     WATER LEVEL  FLOW AREA   TOP WIDTH    FLOWRATE
                         m          Sq m          m          cms
                         175.000      0.0000       1.000      0.0000
                         175.077      0.0828       1.154      0.0073
                         175.154      0.1775       1.308      0.0232
                         175.231      0.2840       1.462      0.0463
                         175.308      0.4023       1.615      0.0761
                         175.385      0.5325       1.769      0.1129
                         175.462      0.6745       1.923      0.1567
                         175.538      0.8284       2.077      0.2078
                         175.615      0.9940       2.231      0.2665
                         175.692      1.1715       2.385      0.3330
                         175.769      1.3609       2.538      0.4077
                         175.846      1.5620       2.692      0.4908
                         175.923      1.7750       2.846      0.5827
                         176.000      1.9999       3.000      0.6837
                         176.077      2.2543       3.615      0.7536
                         176.154      2.5560       4.230      0.8503
                         176.231      2.9051       4.846      0.9734
                         176.308      3.3014       5.461      1.1233
                         176.385      3.7452       6.076      1.3009
                         176.461      4.2362       6.692      1.5077
                         176.538      4.7791       7.537      1.7166
                         176.615      5.4003       8.614      1.9418
                         176.692      6.1043       9.691      2.2171
                         176.769      6.8911      10.768      2.5435
                         176.846      7.7608      11.845      2.9230
                         176.923      8.7134      12.922      3.3581
                         177.000      9.7487      13.999      3.8512
                         177.077     10.8728      15.229      4.5887
                         177.154     12.0916      16.460      5.3900
                         177.231     13.4050      17.691      6.2611
                         177.308     14.8131      18.921      7.2074
                         177.385     16.3158      20.152      8.2335
                         177.461     17.9133      21.383      9.3436
                         177.538     19.6039      22.537     10.5444
                         177.615     21.3788      23.614     11.8383
                         177.692     23.2366      24.691     13.2252
                         177.769     25.1772      25.767     14.7079
                         177.846     27.2006      26.844     16.2891
                         177.923     29.3069      27.921     17.9714
                         178.000     31.4960      28.998     19.7576
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1200 m
                    SLOPE=0.001   RATING CURVE=4  NSECT=5  PCODE=0
*
* Main Channel Routing Section for catchment 1302
* Dominant Main Channel would not be municipal drain
* Off channel section assumed for main channel
* Significant depression storage in this catchment
*
*------------------------  SUB-WATERSHED 1302  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1301 and 1302
*
*************** CALCULATE RUNOFF FOR BASIN No.1302 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1302 DA=0.696 SQKM L=1200 m  W=870 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   1.2  24.4  3.5 15.3   36.2  0.5  15.9
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 3611 AND 1302   ****************************
*
ADD HYD              ID=5 HYD NO=1301.1 IDA=3 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1139)**************************
*
PRINT HYD           ID=5
*
*************************  ADD 1301.1 AND 1302   ****************************
*
* Confluence of Dent Drain with main Maple Creek
*
ADD HYD              ID=4 HYD NO=2207.1 IDA=5 IDB=6
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2207.1 AND 1206   ****************************
*
ADD HYD              ID=6 HYD NO=2206.1 IDA=4 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4079)**************************
*
PRINT HYD           ID=6
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  772.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m           cms
                         175.00       54.83      126.07          1.00
                         175.02       56.82      127.69          5.00
                         175.06       62.61      132.33         10.00
                         175.12       71.34      139.02         15.00
                         175.19       82.06      146.82         20.00
                         175.41      116.32      169.36         35.00
                         175.47      126.17      175.30         40.00
                         175.53      136.98      185.13         45.00
                         175.59      148.10      197.24         50.00
                         175.65      159.38      208.80         55.00
                         175.70      170.17      219.28         60.00
                         175.80      193.69      240.56         70.00
                         175.90      218.28      260.95         80.00
                         176.22      324.88      508.51        110.00
*
*
************************  ROUTE CHANNEL No. 3207 ****************************
*
* Route 2207.1 outflow through channel 3207.
*
ROUTE CHANNEL       ID=4  HYD NO=3207  INFLOW=6  LENGTH=800 m
                    SLOPE=0.00033  RATING CURVE=4  NSECT=5  PCODE=1
*
*
* Main Channel Routing Section for catchment 1206
* Dominant Main Channel would not be municipal drain
* Assume off channel section for main channel section in this catchment.
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
*COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
*                     I    II    III   IV     V    XII   XIII  XIV
*                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
*                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
*                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
*                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 3207.1 AND 1206   ****************************
*
*ADD HYD              ID=4 HYD NO=2206.1 IDA=3 IDB=5
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1955)**************************
*
PRINT HYD           ID=4
*
*  Existing Canal Road Culvet without Cut for additional relief
*
ROUTE RESERVOIR      ID=6 HYD NO=620 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.90
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.91       0.0           0.0
                        174.93       2.00          8.390
                        174.99       4.00          9.688
                        175.10       6.00         12.553
                        175.24       8.00         16.929
                        175.43      10.00         25.280
                        175.85      12.00         58.491
                        176.07      13.00         83.338
                        176.32      14.00        19.412
                        177.39      15.00        354.291
                        177.46      16.00        371.109
                        177.59      33.00        404.093
                        177.67      48.00        424.586
PLOT HYD              IDA=6 IDB=4
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  110.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m           cms
                         175.00       49.32      280.11          1.00
                         175.01       50.98      282.63          5.00
                         175.03       55.94      290.05         10.00
                         175.06       63.74      301.34         15.00
                         175.09       74.19      315.83         20.00
                         175.20      117.62      370.03         35.00
                         175.26      133.39      387.85         40.00
                         175.30      148.44      404.12         45.00
                         175.34      164.45      420.72         50.00
                         175.37      180.68      436.93         55.00
                         175.41      197.24      452.86         60.00
                         175.49      234.04      486.40         70.00
                         175.57      274.51      499.63         80.00
                         175.92      456.51      530.71        110.00
*
************************  ROUTE CHANNEL No. 3206.1 ****************************
*
* Route 2206.1 outflow through channel 3206.1
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 174.91 m

```
 *
 ROUTE CHANNEL       ID=5  HYD NO=3209  INFLOW=4  LENGTH=500 m
                     SLOPE=0.00033 RATING CURVE=1  NSECT=5 PCODE=1
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
 *
 * Main Channel Routing Section for catchment 1201
 * Dominant Main Channel would not be municipal drain
 * Assume off channel section for main channel section in this catchment.
 *
 *------------------------  SUB-WATERSHED 1201  ----------------------------
 *
 *   DESCRIPTION:  - Headwaters subwatershed
 *                 - Catchment information from Philips Dunnville MDP
 *                 - Catchment 1201
 *                 - FTB set to 3 given the swampy natural of this watershed
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1201 **************************
 *
 COMPUTE FLOWRATE    ID=1 NHD=1201 DA=0.413 SQKM L=700 m  W=1940 m
                      I    II    III   IV     V    XII   XIII  XIV
                     6.7   0.0  35.7  25.6  32.0   0.0  0.0   0.0
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1

                           OUTFLOW HYDROGRAPH SUMMARY
                           ==========================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
```

HYDROGRAPH NUMBER	UPSTREAM DRAINAGE AREA-Sq.km.	VOLUME mm	PEAK DISCHARGE cms	TIME TO PEAK HRS.
1227	1.1160	135.29	2.262	52.312
3228	1.1160	134.81	2.253	52.812
1229	1.0950	148.44	1.957	53.312
1225	1.2200	107.92	2.489	49.980
5229	1.0950	147.01	1.942	54.145
2229	2.3150	126.41	3.868	52.312
2231	3.4310	129.14	6.116	52.646
1228	0.4230	121.94	0.929	49.314
2232	3.8540	128.35	6.855	52.312
1224	0.8280	144.16	2.566	49.813
2233	4.6820	131.15	9.035	51.146
1221	0.4510	184.56	1.384	50.813
1220	1.2150	129.32	3.110	49.480
2221	5.1330	135.84	10.414	51.146
2218	6.3480	134.59	13.260	50.480
3218	6.3480	134.59	13.260	50.480
1611	0.6290	204.40	1.895	49.980
1610	1.0060	273.03	12.402	46.148
3611	0.6290	204.40	1.895	49.980
1601	1.6350	246.63	13.481	46.148
2219	7.9830	157.54	19.335	47.148
1218	0.1940	247.52	0.761	50.980
2217	8.1770	159.67	19.784	47.148
1216	0.2800	240.67	1.573	48.314
2216	8.4570	162.36	21.168	47.148
1209	1.4490	250.24	6.661	48.814
2209	9.9060	175.21	26.764	47.148
3209	9.9060	175.21	26.764	47.148
6209	9.9060	174.73	13.867	56.477
1208	0.2510	227.94	0.738	51.979
2208	10.1570	176.51	27.186	47.148
1308	4.6390	92.46	9.620	48.814
1304	1.9680	194.95	6.038	50.980
621	1.9680	153.92	2.187	62.975
1310	1.7590	93.95	2.811	50.480
1306	6.3980	92.87	11.947	49.147
1302	8.3660	116.88	17.285	49.813
3611	8.3660	116.88	17.285	49.813
1302	0.6960	161.92	1.600	52.979
1301	9.0620	120.34	18.423	49.980
2207	19.2190	150.03	42.749	49.647
1206	1.4510	213.75	4.397	51.979
2206	20.6700	154.50	46.329	49.980
3207	20.6700	154.50	46.329	49.980
620	20.6700	100.26	14.122	63.808
3209	20.6700	154.50	46.329#	49.980

```
                   ----------------------------------------------------
                   Note: * Storage/outflow table exceeded
                         # Rating curve exceeded
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 **************************
 *
 ****************************************************************************
 *
 * Catchments 1202, 1203,1204 and 1205 combined from Phillips study.
 *
 ****************************************************************************
 *
 * Main Channel Routing Section for Drain
 * Reference Municipal drain report
 *
 COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                      MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                      N=0.080   DIST=10    N=-0.060    DIST=24
                      N=0.080   DIST=31.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  178.0    2.0  178.0  10.0  177.0
                       14.0  176.5   16.0  176.0  17.0  175.0
                       18.0  175.0   19.0  176.0  21.0  176.5
                       24.0  177.0   28.0  177.5  31.0  178.0
                      RFN=0 PCODE=1
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 **************************
 *
 COMPUTE FLOWRATE    ID=2 NHD=1205 DA=1.362 SQKM L=3400 m  W=1315 m
                      I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.6  8.4   1.8  0.9  65.1  7.1   13.1
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: KO=3.0  TLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1
 *
 *************************  ADD 3206.1 AND 1201   ****************************
 *
 ADD HYD              ID=4 HYD NO=2201.1 IDA=1 IDB=5
 *
 *************************  ADD 2201.1 AND 1205  *****************************
 *
 ADD HYD              ID=5 HYD NO=2201.1 IDA=4 IDB=2
 *
 *************HEC-RAS FLOW CHANGE LOCATION (ID:256)**************************
 *
 PRINT HYD           ID=5
 *
 ****************************************************************************
 FINISH
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 174.91 m

```
              OUTFLOW HYDROGRAPH SUMMARY
              ==========================

       MAPLE WATERSHED MODEL
       EVENT FILE : REGIONAL STORM
       July 18, 1995

             UPSTREAM                 PEAK     TIME TO
HYDROGRAPH   DRAINAGE     VOLUME    DISCHARGE    PEAK
  NUMBER    AREA-Sq.km.     mm         cms       HRS.
-------------------------------------------------------
   1201       0.4130     216.05       1.070    53.145
   1205       1.3620      66.50       0.977    61.975
   2201      21.0830     155.71      47.195    49.980
   2201      22.4450     150.29      47.415    49.980
-------------------------------------------------------
Note: * Storage/outflow table exceeded
      # Rating curve exceeded


         WATERSHED RESPONSE VOLUMES (  mm   )
         =====================================

    RAIN/SNOWMELT= 285.000           OVERLAND=  152.628
       SUBSURFACE=   1.300        GROUNDWATER=   36.169
           SS NET=   9.772             GW NET=  120.891
      EVAPORATION=   0.000        SUBLIMATION=    0.000

    DRAINAGE AREA IN RUNOFF COMPUTATIONS=   22.445 km^2
```

GAWSER Model Output:

Baseline Conditions

Simulation Results for 175.74 m Boundary Condition

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 175.74 m

```
                  GAWSER V6.9.20 - Released - Feb. 18, 2020
                  =========================================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
                   =======================================

   Input file 1=MREG10MI.evt
   Input file 2=BC_REG.wat
   Output file =48hBCREG.1st
*
*
START               KUNITS=2  TOTAL DRAINAGE AREA:  TDA=20.3 SQ KM
                    BASEFLOW AT OUTLET:  QBSS=0.0  QBGW=0..5  CMS
                    PRINT OPTIONS:  ECHO=1 output=1 plots=1 RCS=1 SUBW=1
                          PLOT CUTOFF TIME =80 HRS  SUM=0  FREE=0
                    PARAMETER ADJUSTMENT FACTORS:  FDS=1.00  FKEFF=0.30
                      FCS=0.35 FD=0.35 FSAV=1.0  FKO=1.0  FKSS=1.0  FKMF=1
                    INITIAL SOIL/SNOW WATER CONTENT FACTORS:
                      FIMCI=1.00  FIMCII=1.00  FIWE=1.0
                    GLOBAL RAINFALL SCALING FACTOR: GFRF=1.00
                    SIMULATION CONTROLS: TTI=0.1666 IDEL=4 HOURS=80
                    SUBWATERSHED INITAL BASEFLOWS IN CMS -999
*
*MAPLE CREEK WATERSHED MODEL
*WATERSHED FILE
*CREATED JUNE 15,1995 BY D. BOYD
*REVISED SEPTEMBER 20, 2021 BY I.DZEPAROSKI
* ==========================================================================
*
**************************** ENTER SOILS DATA FOR **************************
*
**************************************************************************
* REFERENCED FROM THE GRAND RIVER HYDROLOGY STUDY
**************************************************************************
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                        I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ---------------------------------------------------------------
**** Go to event file to get rain and runoff
*
CHANGE INPUT FILE
*
*    Rating Curve for Typical off channel (Flat slopes)
*
COMPUTE RATING CURVE ID=6 VS NO=1.2 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.6 M  CHNSLP=0.001 FLSLP=0.001
                    N=0.35  DIST=39.15  N=-0.15  DIST=40.85
                    N=0.35  DIST=80.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.6   39.15 100.2   39.75 100.0
                    40.25  100.0   40.85 100.2   80.00 100.6
                     RFN=0   RCODE=1
*
*    Rating Curve for Typical off channel (Steep slopes)
*
COMPUTE RATING CURVE ID=5 VS NO=1.1 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.8 M  CHNSLP=0.010 FLSLP=0.010
                    N=0.35  DIST=24.45  N=-0.15  DIST=25.55
                    N=0.35  DIST=50.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.8   24.45 100.3   24.75 100.0
                    25.25  100.0   25.55 100.3   50.00 100.8
                     RFN=0   RCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1227.1  NO SEG=3  MIN ELEV=98.1 m
                    MAX ELEV=101.0  m CHNSLP=0.000086 FLSLP=0.000172
                    N=0.070   DIST=100.0   N=-0.050    DIST=105.7
                    N=0.070   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST    ELEV
                       0.0  101.0  100.0   100.0 101.95   98.1
                    103.75   98.1  105.7   100.0  200.0  101.0
                    RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1227  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 **************************
*
* Calculate runoff hydrograph for basin 1227.
* Note revised drainage area based on the LiDAR 2017 DEM
*
COMPUTE FLOWRATE    ID=1 NHD=1227 DA=1.116 SQKM    L=2700 m  W=1425 m
                                   ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   10.1   0.8   0.0   73.8  1.9  10.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*

*************** CALCULATE ROUTING SECTION OF 1227 ***************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=3228  NO SEG=3  MIN ELEV=98.3 m
                     MAX ELEV=101.0  m  CHNSLP=0.00118 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.060    DIST=105.2
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  102.0   98.3
                     103.20   98.3  105.2   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*
************************  ROUTE CHANNEL No. 3228 ****************************
*
*
ROUTE CHANNEL       ID=2  HYD NO=3228  INFLOW=1  LENGTH=1010 m
                    SLOPE=0.00118  RATING CURVE=3  NSECT=2  PCODE=1
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1229  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1229 **************************
*
* Calculate runoff hydrograph for basin 1229.
*
COMPUTE FLOWRATE    ID=1 NHD=1229 DA=1.095 SQKM    L=1000 m  W=1200 m
                                   ZONE PROPORTIONS
                       I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.9    6.0   1.6   50.0  23.2  3.0  12.3
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 **************************
*
* Calculate Main Channel Rating curve for basin 1225
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1225  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 **************************
*
* Calculate runoff hydrograph for basin 1225.
*
COMPUTE FLOWRATE    ID=4 NHD=1225 DA=1.220 SQKM    L=1600 m  W=1235 m
                                   ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0    0.0   0.0  58.8  5.2  33.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Route 1229 outflow through channel 5229.
*
ROUTE CHANNEL       ID=3  HYD NO=5229  INFLOW=1  LENGTH=1550 m
                    SLOPE=0.0010   RATING CURVE=1  NSECT=2  PCODE=1
*
*************************  ADD 5229 AND 1225  ******************************
*
ADD HYD              ID=1 HYD NO=2229 IDA=4 IDB=3
*
*
*************************  ADD 2229 AND 3228  ******************************
*
ADD HYD              ID=3 HYD NO=2231 IDA=2 IDB=1
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 175.74 m

```
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=101.0  m  CHNSLP=0.00135 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.055    DIST=106
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0 102.25   98.5
                     103.75   98.5  106.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1228  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
*
* Calculate runoff hydrograph for basin 1228.
*
COMPUTE FLOWRATE    ID=1 NHD=1228 DA=0.423 SQKM    L=1600 m  W=980 m
                                      ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0   0.0   0.0   74.5  4.4  18.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FTB=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*
*************************  ADD 1228 AND 2230  ******************************
*
ADD HYD              ID=2 HYD NO=2232 IDA=1 IDB=3
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:3413)*************************
*
PRINT HYD           ID=2
*

*************** CALCULATE ROUTING SECTION OF 1224  **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=1223  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.0003 FLSLP=0.0006
                     N=0.070   DIST=100.0    N=-0.050    DIST=105
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  101.9   98.2
                     103.10   98.2  105.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*

*------------------------  SUB-WATERSHED 1224  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1224 **************************
*
* Calculate runoff hydrograph for basin 1224.
*
COMPUTE FLOWRATE    ID=1 NHD=1224 DA=0.828 SQKM L=2700 m  W=930 m
                                      ZONE PROPORTIONS
                     I    II    III    IV     V   XII   XIII  XIV
                    3.0   2.1   0.0    1.1   0.0  85.9  5.3  3.7
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 1224 AND 2232  ******************************
*
ADD HYD              ID=4 HYD NO=2233 IDA=1 IDB=2
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:2586.51)**********************
*
PRINT HYD           ID=4
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
*COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
*                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
*                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
*                     N=0.040   DIST=200.0
*                       DIST   ELEV   DIST   ELEV   DIST   ELEV
*                        0.0  101.0  100.0   100.0 101.8   98.2
*                     103.8   98.2  105.6   100.0 106.0  100.0
*                     200.0   101.0
*                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1221  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1221
*                 - Off channel section also used for main channel
*                   no obvious main channel section for this catchment.
*                 - Note intermediate catchment, length and wide based on
*                   smaller catchments contributing laterally to stream.
*************** CALCULATE RUNOFF FOR BASIN No.1221 **************************
*
* Calculate runoff hydrograph for basin 1221.
*
COMPUTE FLOWRATE    ID=1 NHD=1221 DA=0.451 SQKM  L=600 m  W=970 m
                                      ZONE PROPORTIONS
                     I     II    III   IV     V    XII   XIII  XIV
                    3.0    1.1   39.0   2.0  3.7  40.3   4.9  6.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Calculate Channel Routing Rating curve for main channel catchment 1220
* Invert data from Dunnville MDP Pat Warren Drain Profile
* Channel data from 1:2000 Meridian floodplain mapping
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=4.0    N=-0.050    DIST=7.0
                     N=0.050   DIST=11.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  178.0    4.0   176.0   4.5  175.5
                        6.5  175.5    7.0   176.0  11.0  178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1220  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1220 **************************
*
* Calculate runoff hydrograph for basin 1220.
*
COMPUTE FLOWRATE    ID=2 NHD=1220 DA=1.215 SQKM    L=2300 m  W=850 m
                                      ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  19.5   3.7  5.8  13.9  10.4   42.9
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:13837)************************
*
PRINT HYD           ID=2
*
*************************  ADD 1221 AND 3231  ******************************
*
ADD HYD              ID=3 HYD NO=2221.1 IDA=1 IDB=4
*
*************************  ADD 2221.1 AND 1220  ****************************
*
ADD HYD              ID=5 HYD NO=2218.2 IDA=3 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:12741)************************
*
PRINT HYD           ID=5
*
*************************  ADD 1221 AND 3231  ******************************
*
* Calculate Channel Routing Rating curve for reach d/s of flow node 2219.1
*
COMPUTE RATING CURVE ID=3  VS NO=3228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=177.5  m  CHNSLP=0.0007   FLSLP=0.0014
                     N=0.050   DIST=76.0    N=-0.060    DIST=82
                     N=0.050   DIST=188.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  177.5   60.0   177.0  74.0  176.5
                        76.  176.0   78.0   175.5  81.0  175.5
                        82.  176.0   84.0   176.5 142.0  177.0
                       188.  177.5   RFN=0 PCODE=1
*
************************  ROUTE CHANNEL No. 5229 ****************************
*
* Route hydrograph to confluence with Dunnville Branch
*
ROUTE CHANNEL       ID=6  HYD NO=3218.1  INFLOW=5  LENGTH=400 m
                    SLOPE=0.0007 RATING CURVE=3  NSECT=2  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1611 **************************
*
* Calculate runoff hydrograph for basin 1611.
* Typical rural road cross section of ditch.
*
COMPUTE RATING CURVE ID=1  VS NO=1611.1  NO SEG=3  MIN ELEV=99.3 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.030   DIST=11.1    N=-0.030    DIST=13.4
                     N=0.030   DIST=23.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  100.5   10.0  100.0   11.1   99.3
                       12.3   99.3   13.4  100.0   23.0   100.5
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=1 NHD=1611 DA=0.629 SQKM    L=2000 m  W=1525 m
                                      ZONE PROPORTIONS
                      I     II    III   IV     V    XII   XIII  XIV
                     3.0   0.0   42.4  21.4  13.2   2.1  0.4   17.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.13  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
PRINT HYD           ID=1
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                          I   II    III   IV    V    XII   XIII  XIV
                    DS=   2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF= 0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=   0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=    0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=  0   200   200   200   200   250   250   250
                    HI=   0   0.01  100   100   100   200   200   200
                    SMCI= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
```

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                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
**** Go to event file to get rain and runoff
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1610 **************************
*
* Note Basin 1610 represents Dunnville urban settlment
* Percentage impervious esitmates impervious level was assessed based on
* the aerial photo and impervious levels calculated for the similar type of
* residential development
* Standard Urban Rating Curve for basin mainchannel (flat slopes)
* Referenced from Laurel Creek Study. Slopes adjusted to local Topograph
*
COMPUTE RATING CURVE ID=4  VS NO=0.5  NO SEG=1  MIN ELEV=0.0 m
                     MAX ELEV=0.05 m  CHNSLP=0.002  FLSLP=0.002
                     N=-0.013  DIST=100.00
                     DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   1.0    0.01   0.0    99.99   0.0
                     100.0   1.0
                     RFN=0 PCODE=1
*
* Calculate Main Channel Routing Curve for Catchment 1610
*
COMPUTE RATING CURVE ID=1  VS NO=3610  NO SEG=3  MIN ELEV=176.5 m
                     MAX ELEV=178.4  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.045   DIST=64.0    N=-0.050    DIST=66
                     N=0.050   DIST=70.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.4   20.0   178.0  62.0  177.5
                       64.  177.0   65.0   176.5  66.0  176.5
                       70.  178.0
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=2 NHD=1610 DA=1.006 SQKM    L=1990 m  W=44.444 m
                                       ZONE PROPORTIONS
                     I     II    III    IV      V    XII   XIII  XIV
                    55.0   0.0   25.0   19.0   3.0   0.0   0.0   0.0
                    RATING CURVES IDC=1  IDOC=4  QRMC=0.90  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.25 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1040 m
                    SLOPE=0.0010 RATING CURVE=1  NSECT=5 PCODE=1
*
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1889)**************************
*
PRINT HYD           ID=4
*************************  ADD 3611 AND 1610  ******************************
*
* Add routed hydrograph with Urban Dunnville portion.
*
ADD HYD              ID=5 HYD NO=1601.1 IDA=4 IDB=2
*
*************************  ADD 1601.1 AND 1219.1   *************************
*
* Add Urban Dunnville portion with upstream headwaters areas
*
ADD HYD              ID=4 HYD NO=2219.1 IDA=6 IDB=5
*
*
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
*
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
*
* Main Channel Routing Section for catchment 1218
* No dominent main channel use off channel for main channel
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1218  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1218
*
*************** CALCULATE RUNOFF FOR BASIN No.1218 **************************
*
* Calculate runoff hydrograph for basin 1218.
*
COMPUTE FLOWRATE    ID=2 NHD=1218 DA=0.194 SQKM    L=900 m  W=585 m
                                       ZONE PROPORTIONS
                     I    II    III     IV    V    XII   XIII  XIV
                    3.0   0.0  75.4   10.4   11.2   0.0  0.0   0.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*************************  ADD 1601.1 AND 1219.1   *************************
*
ADD HYD              ID=6 HYD NO=2217.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11584)*************************
*
PRINT HYD           ID=6
*
*
* Main Channel Routing Section for catchment 1216
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Sections Estimated from field survey
*
COMPUTE RATING CURVE ID=1  VS NO=1216.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=30    N=-0.045    DIST=33.9
                     N=0.050   DIST=53.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   30.0   100.0  31.2   98.5
                       32.7   98.5   33.9   100.0  53.0  101.5
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1216  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1216
*
*************** CALCULATE RUNOFF FOR BASIN No.1216 **************************
*
* Calculate runoff hydrograph for basin 1216.
* Intermediate Catchment
* Combined Philip Catchments 1216 and 1217
*
COMPUTE FLOWRATE    ID=2 NHD=1216 DA=0.280 SQKM    L=900 m  W=690 m
                                       ZONE PROPORTIONS
                     I    II   III    IV    V   XII    XIII  XIV
                    3.0  0.0  59.4   15.2  10.1 11.0   1.2   0.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2218.1 AND 1216   ***************************
*
ADD HYD              ID=4 HYD NO=2216.1 IDA=2 IDB=6
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11547)*************************
*
PRINT HYD           ID=4
*
*
* Main Channel Routing Section for catchment 1209
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Section Estimated in the field by D. Boyd and H Benemeer.
*
COMPUTE RATING CURVE ID=1  VS NO=1209.1  NO SEG=3  MIN ELEV=98.8 m
                     MAX ELEV=100.3  m  CHNSLP=0.004   FLSLP=0.08
                     N=0.050   DIST=20    N=-0.040    DIST=22
                     N=0.050   DIST=42.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  20.7   98.8
                       21.3   98.8   22.0   100.0  42.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1209  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1209
*
*************** CALCULATE RUNOFF FOR BASIN No.1209 **************************
*
* Calculate runoff hydrograph for basin 1209.
* Intermediate Catchment
*
*
COMPUTE FLOWRATE    ID=2 NHD=1209 DA=1.449 SQKM L=1500 m  W=1095 m
                                       ZONE PROPORTIONS
                     I    II    III    IV     V    XII   XIII  XIV
                    3.0   0.0   64.5  13.5  18.0  0.7   0.3   0.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.3  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2216.1 AND 1209   ***************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:10797)*************************
*
ADD HYD              ID=5 HYD NO=2209.1 IDA=2 IDB=4
*
PRINT HYD            ID=5
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION: 1995.000
                          WATER        FLOW         TOP          FLOWS
                          LEVEL        AREA        WIDTH         RATE
                            m          Sq m          m            cms
                          175.01       10.47       10.17          1.00
                          175.15       12.13       13.53          5.00
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 175.74 m

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                          175.39       15.90       19.08         10.00
                          175.58       20.09       25.96         15.00
                          175.73       24.87       34.77         20.00
                          176.04       38.50       51.98         35.00
                          176.12       42.91       55.90         40.00
                          176.19       47.37       59.57         45.00
                          176.24       50.08       61.75         50.00
                          176.30       54.08       64.79         55.00
                          176.36       58.01       67.64         60.00
                          176.48       66.03       73.11         70.00
                          176.59       75.04       91.70         80.00
                          176.94      119.08      159.13        110.00
*
************************  ROUTE CHANNEL No. 2209.1 ***************************
*
* Route 2209.1 outflow through channel 3209.1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:6081)**************************
*
ROUTE CHANNEL       ID=4  HYD NO=3209  INFLOW=5  LENGTH=2200 m
                    SLOPE=0.00033 RATING CURVE=4  NSECT=5 PCODE=1
*
PRINT HYD           ID=4
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3
*
ROUTE RESERVOIR      ID=5 HYD NO=6209 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.8
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.85      0.00           0.00
                        175.78      1.30           0.557
                        175.94      4.00           3.191
                        176.18      6.00          10.046
                        176.52      8.00          28.585
                        176.97     10.00          63.965
                        177.32     12.00          93.575
                        177.45     13.00         104.574
                        177.47     14.00         106.266
                        177.48     14.69         107.112
                        177.49     16.00         107.958
                        177.61     20.00         118.110
                        177.68     30.00         124.032
*
* Main Channel Routing Section for catchment 1208
* Dominant Main Channel would be road ditchs in this catchment not
* Maple Creek Main Channel
*
*-----------------------  SUB-WATERSHED 1208  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1208 and 1210
*                 - FKO of 1.75 used to reflect rural residential development
*************** CALCULATE RUNOFF FOR BASIN No.1208 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1208 DA=0.251 SQKM L=500.0 m  W=2005 m
                     I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.0  48.4  17.7  30.7  0.0  0.0   0.2
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.75  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
************************  ADD 5209.1 AND 1208   ***************************
*
ADD HYD              ID=6 HYD NO=2208.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5648)**************************
*
PRINT HYD           ID=6
*
*****************************************************************************
* Confluence with the Dent Drain
*****************************************************************************
*
*****************************************************************************
* Dent Drain Modelling
*****************************************************************************
*
* Main Channel Routing Section for catchment 1308
* Dominant Main Channel would be municipal drain
* Sections measured in field by D. Boyd slopes from Municipal drain files.
*
COMPUTE RATING CURVE ID=1  VS NO=1308.1  NO SEG=3  MIN ELEV=175.1 m
                     MAX ELEV=178.0  m  CHNSLP=0.00025   FLSLP=0.0005
                     N=0.080   DIST=20    N=-0.060    DIST=27
                     N=0.080   DIST=47.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  22.0   97.0
                      25.0   97.0   27.0   100.0  47.0  100.3
                     RFN=0 PCODE=1
*
*-----------------------  SUB-WATERSHED 1308  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*************** CALCULATE RUNOFF FOR BASIN No.1308 ***************************
*
COMPUTE FLOWRATE    ID=1 NHD=1308 DA=4.639 SQKM L=4700 m  W=1040 m
                     I    II    III   IV     V    XII   XIII  XIV
                    5.5   0.8  0.0  0.0   0.0   34.4   5.8   53.5
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5305)**************************
*
PRINT HYD           ID=1
*
* Main Channel Routing Section for catchment 1304
* Dominant Main Channel would be municipal drain
* Section estimated from field inspection D. Boyd, H. Benemeer and from
* 1:2000 mapping
* Slope of drain referenced from Dunnville MDP.
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=175.75 m
                     MAX ELEV=178.0  m  CHNSLP=0.0005   FLSLP=0.001
                     N=0.080   DIST=4    N=-0.055    DIST=13.1
                     N=0.080   DIST=17.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   178.0   2.0   177.5   4.0  177.0
                       7.3  175.75   9.8  175.75  13.1  177.0
                      17.0   178.0
                     RFN=0 PCODE=1
*
*-----------------------  SUB-WATERSHED 1304  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1304 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1304 DA=1.968 SQKM L=2800 m  W=1075 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  31.4  14.2  15.9  20.0  6.5   8.2
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*****************************************************************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3365)**************************
*
PRINT HYD           ID=2
*
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3-Structure #20
*
ROUTE RESERVOIR      ID=5 HYD NO=621 INFLOW=2 PCODE=1 OPTION=4
                     ILEVEL=175.71
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        175.71      0.00           0.000
                        176.38      0.30           0.079
                        176.62      0.70           0.199
                        176.98      1.50           1.506
                        177.18      2.00           7.654
                        178.59      5.00         109.582
                        178.61      6.50         111.054
*
* Main Channel Routing Section for catchment 1310
* Dominant Main Channel would be municipal drain
* Slope of drain referenced from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.3  m  CHNSLP=0.00072   FLSLP=0.0014
                     N=0.080   DIST=20    N=-0.060    DIST=24.9
                     N=0.080   DIST=44.9
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0  100.0   21.8   98.5
                      23.1   98.5   24.9  100.0   44.9  100.3
                     RFN=0 PCODE=1
*
*-----------------------  SUB-WATERSHED 1310  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*
*************** CALCULATE RUNOFF FOR BASIN No.1310 ***************************
*
COMPUTE FLOWRATE    ID=3 NHD=1310 DA=1.759 SQKM L=2800 m  W=1030 m
                     I    II    III   IV     V    XII   XIII  XIV
                    4.5   14.7  0.0  0.0  0.0   12.2  8.3  63.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1

PRINT HYD           ID=3
*
************************  ADD 1308 AND 1310   ***************************
*
ADD HYD              ID=4 HYD NO=1306.2 IDA=1 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4536)**************************
*
PRINT HYD           ID=4
*
*****************************************************************************
*
************************  ADD 1306.1 AND 1304   ***************************
*
ADD HYD              ID=1 HYD NO=1302.2 IDA=4 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3842)**************************
*
PRINT HYD           ID=1
*
*****************************************************************************
*
*
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 175.74 m

```
* Main Channel Routing Section for Dent Drain
* Reference from 1:2000 floodplain mapping
*
COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.080   DIST=10    N=-0.060    DIST=24
                     N=0.080   DIST=31.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    2.0   178.0  10.0  177.0
                      14.0  176.5   16.0   176.0  17.0  175.0
                      18.0  175.0   19.0   176.0  21.0  176.5
                      24.0  177.0   28.0   177.5  31.0  178.0
                     RFN=0 PCODE=0

                        RATING CURVE FOR VALLEY SECTION   3611.100

                     WATER LEVEL  FLOW AREA   TOP WIDTH    FLOWRATE
                         m          Sq m          m          cms
                         175.000      0.0000       1.000      0.0000
                         175.077      0.0828       1.154      0.0073
                         175.154      0.1775       1.308      0.0232
                         175.231      0.2840       1.462      0.0463
                         175.308      0.4023       1.615      0.0761
                         175.385      0.5325       1.769      0.1129
                         175.462      0.6745       1.923      0.1567
                         175.538      0.8284       2.077      0.2078
                         175.615      0.9940       2.231      0.2665
                         175.692      1.1715       2.385      0.3330
                         175.769      1.3609       2.538      0.4077
                         175.846      1.5620       2.692      0.4908
                         175.923      1.7750       2.846      0.5827
                         176.000      1.9999       3.000      0.6837
                         176.077      2.2543       3.615      0.7536
                         176.154      2.5560       4.230      0.8503
                         176.231      2.9051       4.846      0.9734
                         176.308      3.3014       5.461      1.1233
                         176.385      3.7452       6.076      1.3009
                         176.461      4.2362       6.692      1.5077
                         176.538      4.7791       7.537      1.7166
                         176.615      5.4003       8.614      1.9418
                         176.692      6.1043       9.691      2.2171
                         176.769      6.8911      10.768      2.5435
                         176.846      7.7608      11.845      2.9230
                         176.923      8.7134      12.922      3.3581
                         177.000      9.7487      13.999      3.8512
                         177.077     10.8728      15.229      4.5887
                         177.154     12.0916      16.460      5.3900
                         177.231     13.4050      17.691      6.2611
                         177.308     14.8131      18.921      7.2074
                         177.385     16.3158      20.152      8.2335
                         177.461     17.9133      21.383      9.3436
                         177.538     19.6039      22.537     10.5444
                         177.615     21.3788      23.614     11.8383
                         177.692     23.2366      24.691     13.2252
                         177.769     25.1772      25.767     14.7079
                         177.846     27.2006      26.844     16.2891
                         177.923     29.3069      27.921     17.9714
                         178.000     31.4960      28.998     19.7576
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1200 m
                    SLOPE=0.001   RATING CURVE=4  NSECT=5  PCODE=0
*
* Main Channel Routing Section for catchment 1302
* Dominant Main Channel would not be municipal drain
* Off channel section assumed for main channel
* Significant depression storage in this catchment
*
*------------------------  SUB-WATERSHED 1302  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1301 and 1302
*
*************** CALCULATE RUNOFF FOR BASIN No.1302 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1302 DA=0.696 SQKM L=1200 m  W=870 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   1.2  24.4  3.5 15.3   36.2  0.5  15.9
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
**************************  ADD 3611 AND 1302   ****************************
*
ADD HYD              ID=5 HYD NO=1301.1 IDA=3 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1139)**************************
*
PRINT HYD           ID=5
*
**************************  ADD 1301.1 AND 1302   ****************************
*
* Confluence of Dent Drain with main Maple Creek
*
ADD HYD              ID=4 HYD NO=2207.1 IDA=5 IDB=6
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
**************************  ADD 2207.1 AND 1206   ****************************
*
ADD HYD              ID=6 HYD NO=2206.1 IDA=4 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4079)**************************
*
PRINT HYD           ID=6
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  772.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m            cms
                         175.00       54.83      126.07          1.00
                         175.02       56.82      127.69          5.00
                         175.06       62.61      132.33         10.00
                         175.12       71.34      139.02         15.00
                         175.19       82.06      146.82         20.00
                         175.41      116.32      169.36         35.00
                         175.47      126.17      175.30         40.00
                         175.53      136.98      185.13         45.00
                         175.59      148.10      197.24         50.00
                         175.65      159.38      208.80         55.00
                         175.70      170.17      219.28         60.00
                         175.80      193.69      240.56         70.00
                         175.90      218.28      260.95         80.00
                         176.22      324.88      508.51        110.00
*
*
************************  ROUTE CHANNEL No. 3207 ****************************
*
* Route 2207.1 outflow through channel 3207.
*
ROUTE CHANNEL       ID=4  HYD NO=3207  INFLOW=6  LENGTH=800 m
                    SLOPE=0.00033  RATING CURVE=4  NSECT=5  PCODE=1
*
*
* Main Channel Routing Section for catchment 1206
* Dominant Main Channel would not be municipal drain
* Assume off channel section for main channel section in this catchment.
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
*COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
*                     I    II    III   IV     V    XII   XIII  XIV
*                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
*                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
*                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
*                    KSS=5 hr  KGW=384 hr  PCODE=1
*
**************************  ADD 3207.1 AND 1206   ****************************
*
*ADD HYD              ID=4 HYD NO=2206.1 IDA=3 IDB=5
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1955)**************************
*
PRINT HYD           ID=4
*
*  Existing Canal Road Culvet without Cut for additional relief
*
ROUTE RESERVOIR      ID=6 HYD NO=620 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.90
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.91        0.0          0.000
                        175.78       2.00         51.585
                        175.91       4.00         64.410
                        176.13       6.00         90.829
                        176.43       8.00        137.524
                        176.82      10.00        217.849
                        177.30      12.00        332.668
                        177.45      13.00        368.706
                        177.47      14.00        373.511
                        177.48      15.00        375.914
                        177.49      16.00        378.476
                        177.61      33.00        409.216
                        177.68      48.00        427.148
PLOT HYD              IDA=6 IDB=4
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  110.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m            cms
                         175.00       49.32      280.11          1.00
                         175.01       50.98      282.63          5.00
                         175.03       55.94      290.05         10.00
                         175.06       63.74      301.34         15.00
                         175.09       74.19      315.83         20.00
                         175.20      117.62      370.03         35.00
                         175.26      133.39      387.85         40.00
                         175.30      148.44      404.12         45.00
                         175.34      164.45      420.72         50.00
                         175.37      180.68      436.93         55.00
                         175.41      197.24      452.86         60.00
                         175.49      234.04      486.40         70.00
                         175.57      274.51      499.63         80.00
                         175.92      456.51      530.71        110.00
*
************************  ROUTE CHANNEL No. 3206.1 ****************************
*
* Route 2206.1 outflow through channel 3206.1
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 175.74 m

```
 *
 ROUTE CHANNEL       ID=5  HYD NO=3209  INFLOW=4  LENGTH=500 m
                     SLOPE=0.00033 RATING CURVE=1  NSECT=5 PCODE=1
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
 *
 * Main Channel Routing Section for catchment 1201
 * Dominant Main Channel would not be municipal drain
 * Assume off channel section for main channel section in this catchment.
 *
 *------------------------  SUB-WATERSHED 1201  ----------------------------
 *
 *   DESCRIPTION:  - Headwaters subwatershed
 *                 - Catchment information from Philips Dunnville MDP
 *                 - Catchment 1201
 *                 - FTB set to 3 given the swampy natural of this watershed
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1201 **************************
 *
 COMPUTE FLOWRATE    ID=1 NHD=1201 DA=0.413 SQKM L=700 m  W=1940 m
                      I    II    III   IV     V    XII   XIII  XIV
                     6.7   0.0  35.7  25.6  32.0   0.0  0.0   0.0
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1

                           OUTFLOW HYDROGRAPH SUMMARY
                           ==========================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
```

HYDROGRAPH NUMBER	UPSTREAM DRAINAGE AREA-Sq.km.	VOLUME mm	PEAK DISCHARGE cms	TIME TO PEAK HRS.
1227	1.1160	135.29	2.262	52.312
3228	1.1160	134.81	2.253	52.812
1229	1.0950	148.44	1.957	53.312
1225	1.2200	107.92	2.489	49.980
5229	1.0950	147.01	1.942	54.145
2229	2.3150	126.41	3.868	52.312
2231	3.4310	129.14	6.116	52.646
1228	0.4230	121.94	0.929	49.314
2232	3.8540	128.35	6.855	52.312
1224	0.8280	144.16	2.566	49.813
2233	4.6820	131.15	9.035	51.146
1221	0.4510	184.56	1.384	50.813
1220	1.2150	129.32	3.110	49.480
2221	5.1330	135.84	10.414	51.146
2218	6.3480	134.59	13.260	50.480
3218	6.3480	134.59	13.260	50.480
1611	0.6290	204.40	1.895	49.980
1610	1.0060	273.03	12.402	46.148
3611	0.6290	204.40	1.895	49.980
1601	1.6350	246.63	13.481	46.148
2219	7.9830	157.54	19.335	47.148
1218	0.1940	247.52	0.761	50.980
2217	8.1770	159.67	19.784	47.148
1216	0.2800	240.67	1.573	48.314
2216	8.4570	162.36	21.168	47.148
1209	1.4490	250.24	6.661	48.814
2209	9.9060	175.21	26.764	47.148
3209	9.9060	175.21	26.764	47.148
6209	9.9060	143.67	10.026	59.809
1208	0.2510	227.94	0.738	51.979
2208	10.1570	176.51	27.186	47.148
1308	4.6390	92.46	9.620	48.814
1304	1.9680	194.95	6.038	50.980
621	1.9680	153.92	2.187	62.975
1310	1.7590	93.95	2.811	50.480
1306	6.3980	92.87	11.947	49.147
1302	8.3660	116.88	17.285	49.813
3611	8.3660	116.88	17.285	49.813
1302	0.6960	161.92	1.600	52.979
1301	9.0620	120.34	18.423	49.980
2207	19.2190	150.03	42.749	49.647
1206	1.4510	213.75	4.397	51.979
2206	20.6700	154.50	46.329	49.980
3207	20.6700	154.50	46.329	49.980
620	20.6700	57.60	9.916	67.973
3209	20.6700	154.50	46.329#	49.980

```
                   ----------------------------------------------------
                   Note: * Storage/outflow table exceeded
                         # Rating curve exceeded
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 **************************
 *
 ****************************************************************************
 *
 * Catchments 1202, 1203,1204 and 1205 combined from Phillips study.
 *
 ****************************************************************************
 *
 * Main Channel Routing Section for Drain
 * Reference Municipal drain report
 *
 COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                      MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                      N=0.080   DIST=10    N=-0.060    DIST=24
                      N=0.080   DIST=31.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  178.0    2.0  178.0  10.0  177.0
                       14.0  176.5   16.0  176.0  17.0  175.0
                       18.0  175.0   19.0  176.0  21.0  176.5
                       24.0  177.0   28.0  177.5  31.0  178.0
                      RFN=0 PCODE=1
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 **************************
 *
 COMPUTE FLOWRATE    ID=2 NHD=1205 DA=1.362 SQKM L=3400 m  W=1315 m
                      I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.6  8.4   1.8  0.9  65.1  7.1   13.1
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: KO=3.0  TLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1
 *
 *************************  ADD 3206.1 AND 1201   ****************************
 *
 ADD HYD              ID=4 HYD NO=2201.1 IDA=1 IDB=5
 *
 *************************  ADD 2201.1 AND 1205  *****************************
 *
 ADD HYD              ID=5 HYD NO=2201.1 IDA=4 IDB=2
 *
 *************HEC-RAS FLOW CHANGE LOCATION (ID:256)**************************
 *
 PRINT HYD           ID=5
 *
 ****************************************************************************
 FINISH
```

GAWSER Model Baseline Conditions - Regional Storm – Boundary Condition 175.74 m

```
                OUTFLOW HYDROGRAPH SUMMARY
                ==========================

        MAPLE WATERSHED MODEL
        EVENT FILE : REGIONAL STORM
        July 18, 1995

              UPSTREAM                 PEAK     TIME TO
HYDROGRAPH   DRAINAGE     VOLUME    DISCHARGE    PEAK
  NUMBER    AREA-Sq.km.     mm         cms       HRS.
-------------------------------------------------------
   1201       0.4130     216.05       1.070    53.145
   1205       1.3620      66.50       0.977    61.975
   2201      21.0830     155.71      47.195    49.980
   2201      22.4450     150.29      47.415    49.980
-------------------------------------------------------
Note: * Storage/outflow table exceeded
      # Rating curve exceeded


          WATERSHED RESPONSE VOLUMES (  mm   )
          =====================================

    RAIN/SNOWMELT= 285.000           OVERLAND=  152.628
       SUBSURFACE=   1.300        GROUNDWATER=   36.169
           SS NET=   9.772             GW NET=  120.891
      EVAPORATION=   0.000        SUBLIMATION=    0.000

    DRAINAGE AREA IN RUNOFF COMPUTATIONS=   22.445 km^2
```

GAWSER Model Output:

Fringe6 Conditions

Simulation Results for 174.5 m Boundary Condition

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 174.50 m

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                  GAWSER V6.9.20 - Released - Feb. 18, 2020
                  =========================================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
                   =======================================

   Input file 1=MREG10MI.evt
   Input file 2=BC_2yr.wat
   Output file =48hBC2yr.lst
*
*
START                KUNITS=2  TOTAL DRAINAGE AREA:  TDA=20.3 SQ KM
                     BASEFLOW AT OUTLET:  QBSS=0.0  QBGW=0..5  CMS
                     PRINT OPTIONS:  ECHO=1 output=1 plots=1 RCS=1 SUBW=1
                           PLOT CUTOFF TIME =80 HRS  SUM=0  FREE=0
                     PARAMETER ADJUSTMENT FACTORS:  FDS=1.00  FKEFF=0.30
                       FCS=0.35 FD=0.35 FSAV=1.0  FKO=1.0  FKSS=1.0  FKMF=1
                     INITIAL SOIL/SNOW WATER CONTENT FACTORS:
                       FIMCI=1.00  FIMCII=1.00  FIWE=1.0
                     GLOBAL RAINFALL SCALING FACTOR: GFRF=1.00
                     SIMULATION CONTROLS: TTI=0.1666 IDEL=4 HOURS=80
                     SUBWATERSHED INITAL BASEFLOWS IN CMS -999
*
*MAPLE CREEK WATERSHED MODEL
*WATERSHED FILE
*CREATED JUNE 15,1995 BY D. BOYD
*REVISED SEPTEMBER 20, 2021 BY I.DZEPAROSKI
* ==========================================================================
*
**************************** ENTER SOILS DATA FOR **************************
*
**************************************************************************
* REFERENCED FROM THE GRAND RIVER HYDROLOGY STUDY
**************************************************************************
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                          I   II    III   IV    V    XII   XIII  XIV
                     DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                     KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                     CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                     D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                     SAV=   0   200   200   200   200   250   250   250
                     HI=    0   0.01  100   100   100   200   200   200
                     SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                     IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                     FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                     WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                     HII=   0  0.01   250   250   250   400   400   600
                     SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                     IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                     FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                     WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                     X=     0    1     1     1     0     0     0     0
                     FATR=  1    1     1     1     1     1     1     1
* ---------------------------------------------------------------
**** Go to event file to get rain and runoff
*
CHANGE INPUT FILE
*
*    Rating Curve for Typical off channel (Flat slopes)
*
COMPUTE RATING CURVE ID=6 VS NO=1.2 NO SEG=3 MIN  ELEV=100 m
                     MAX ELEV=100.6 M  CHNSLP=0.001 FLSLP=0.001
                     N=0.35  DIST=39.15  N=-0.15  DIST=40.85
                     N=0.35  DIST=80.00
                      DIST   ELEV    DIST  ELEV    DIST  ELEV
                      0.00  100.6   39.15 100.2   39.75 100.0
                     40.25  100.0   40.85 100.2   80.00 100.6
                      RFN=0   RCODE=1
*
*    Rating Curve for Typical off channel (Steep slopes)
*
COMPUTE RATING CURVE ID=5 VS NO=1.1 NO SEG=3 MIN  ELEV=100 m
                     MAX ELEV=100.8 M  CHNSLP=0.010 FLSLP=0.010
                     N=0.35  DIST=24.45  N=-0.15  DIST=25.55
                     N=0.35  DIST=50.00
                      DIST   ELEV    DIST  ELEV    DIST  ELEV
                      0.00  100.8   24.45 100.3   24.75 100.0
                     25.25  100.0   25.55 100.3   50.00 100.8
                      RFN=0   RCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1227.1  NO SEG=3  MIN ELEV=98.1 m
                     MAX ELEV=101.0  m CHNSLP=0.000086 FLSLP=0.000172
                     N=0.070   DIST=100.0   N=-0.050    DIST=105.7
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0 101.95   98.1
                     103.75   98.1  105.7   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1227  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 **************************
*
* Calculate runoff hydrograph for basin 1227.
* Note revised drainage area based on the LiDAR 2017 DEM
*
COMPUTE FLOWRATE    ID=1 NHD=1227 DA=1.116 SQKM    L=2700 m  W=1425 m
                                   ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   10.1   0.8   0.0   73.8  1.9  10.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*

*************** CALCULATE ROUTING SECTION OF 1227 ***************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=3228  NO SEG=3  MIN ELEV=98.3 m
                     MAX ELEV=101.0  m  CHNSLP=0.00118 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.060    DIST=105.2
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  102.0   98.3
                     103.20   98.3  105.2   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*
************************  ROUTE CHANNEL No. 3228 ****************************
*
*
ROUTE CHANNEL       ID=2  HYD NO=3228  INFLOW=1  LENGTH=1010 m
                    SLOPE=0.00118  RATING CURVE=3  NSECT=2  PCODE=1
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1229  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1229 **************************
*
* Calculate runoff hydrograph for basin 1229.
*
COMPUTE FLOWRATE    ID=1 NHD=1229 DA=1.095 SQKM    L=1000 m  W=1200 m
                                   ZONE PROPORTIONS
                      I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.9    6.0   1.6   50.0  23.2  3.0  12.3
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 **************************
*
* Calculate Main Channel Rating curve for basin 1225
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1225  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 **************************
*
* Calculate runoff hydrograph for basin 1225.
*
COMPUTE FLOWRATE    ID=4 NHD=1225 DA=1.220 SQKM    L=1600 m  W=1235 m
                                   ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0    0.0   0.0  58.8  5.2  33.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Route 1229 outflow through channel 5229.
*
ROUTE CHANNEL       ID=3  HYD NO=5229  INFLOW=1  LENGTH=1550 m
                    SLOPE=0.0010   RATING CURVE=1  NSECT=2  PCODE=1
*
*************************  ADD 5229 AND 1225  ****************************
*
ADD HYD              ID=1 HYD NO=2229 IDA=4 IDB=3
*
*
*************************  ADD 2229 AND 3228  ****************************
*
ADD HYD              ID=3 HYD NO=2231 IDA=2 IDB=1
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*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=101.0  m  CHNSLP=0.00135 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.055    DIST=106
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0 102.25   98.5
                     103.75   98.5  106.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1228  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
*
* Calculate runoff hydrograph for basin 1228.
*
COMPUTE FLOWRATE    ID=1 NHD=1228 DA=0.423 SQKM    L=1600 m  W=980 m
                                      ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0   0.0   0.0   74.5  4.4  18.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FTB=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*
*************************  ADD 1228 AND 2230  ******************************
*
ADD HYD              ID=2 HYD NO=2232 IDA=1 IDB=3
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:3413)*************************
*
PRINT HYD           ID=2
*

*************** CALCULATE ROUTING SECTION OF 1224  **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=1223  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.0003 FLSLP=0.0006
                     N=0.070   DIST=100.0    N=-0.050    DIST=105
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  101.9   98.2
                     103.10   98.2  105.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*

*------------------------  SUB-WATERSHED 1224  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1224 **************************
*
* Calculate runoff hydrograph for basin 1224.
*
COMPUTE FLOWRATE    ID=1 NHD=1224 DA=0.828 SQKM L=2700 m  W=930 m
                                      ZONE PROPORTIONS
                     I    II    III    IV     V   XII   XIII  XIV
                    3.0   2.1   0.0    1.1   0.0  85.9  5.3  3.7
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 1224 AND 2232  ******************************
*
ADD HYD              ID=4 HYD NO=2233 IDA=1 IDB=2
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:2586.51)**********************
*
PRINT HYD           ID=4
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
*COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
*                    MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
*                    N=0.040   DIST=100.0   N=-0.060    DIST=105.6
*                    N=0.040   DIST=200.0
*                     DIST   ELEV   DIST   ELEV   DIST   ELEV
*                      0.0  101.0  100.0   100.0 101.8   98.2
*                    103.8   98.2  105.6   100.0 106.0  100.0
*                    200.0   101.0
*                    RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1221  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1221
*                 - Off channel section also used for main channel
*                   no obvious main channel section for this catchment.
*                 - Note intermediate catchment, length and wide based on
*                   smaller catchments contributing laterally to stream.
*************** CALCULATE RUNOFF FOR BASIN No.1221 **************************
*
* Calculate runoff hydrograph for basin 1221.
*
COMPUTE FLOWRATE    ID=1 NHD=1221 DA=0.451 SQKM  L=600 m  W=970 m
                                      ZONE PROPORTIONS
                     I     II    III   IV     V    XII   XIII  XIV
                    3.0    1.1   39.0   2.0  3.7  40.3   4.9  6.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Calculate Channel Routing Rating curve for main channel catchment 1220
* Invert data from Dunnville MDP Pat Warren Drain Profile
* Channel data from 1:2000 Meridian floodplain mapping
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=4.0    N=-0.050    DIST=7.0
                     N=0.050   DIST=11.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    4.0   176.0   4.5  175.5
                       6.5  175.5    7.0   176.0  11.0  178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1220  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1220 **************************
*
* Calculate runoff hydrograph for basin 1220.
*
COMPUTE FLOWRATE    ID=2 NHD=1220 DA=1.215 SQKM    L=2300 m  W=850 m
                                      ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  19.5   3.7  5.8  13.9  10.4   42.9
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:13837)************************
*
PRINT HYD           ID=2
*
*************************  ADD 1221 AND 3231  ******************************
*
ADD HYD              ID=3 HYD NO=2221.1 IDA=1 IDB=4
*
*************************  ADD 2221.1 AND 1220  ****************************
*
ADD HYD              ID=5 HYD NO=2218.2 IDA=3 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:12741)************************
*
PRINT HYD           ID=5
*
*************************  ADD 1221 AND 3231  ******************************
*
* Calculate Channel Routing Rating curve for reach d/s of flow node 2219.1
*
COMPUTE RATING CURVE ID=3  VS NO=3228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=177.5  m  CHNSLP=0.0007   FLSLP=0.0014
                     N=0.050   DIST=76.0    N=-0.060    DIST=82
                     N=0.050   DIST=188.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  177.5   60.0   177.0  74.0  176.5
                       76.  176.0   78.0   175.5  81.0  175.5
                       82.  176.0   84.0   176.5 142.0  177.0
                      188.  177.5   RFN=0 PCODE=1
*
************************  ROUTE CHANNEL No. 5229 ****************************
*
* Route hydrograph to confluence with Dunnville Branch
*
ROUTE CHANNEL       ID=6  HYD NO=3218.1  INFLOW=5  LENGTH=400 m
                    SLOPE=0.0007 RATING CURVE=3  NSECT=2  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1611 **************************
*
* Calculate runoff hydrograph for basin 1611.
* Typical rural road cross section of ditch.
*
COMPUTE RATING CURVE ID=1  VS NO=1611.1  NO SEG=3  MIN ELEV=99.3 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.030   DIST=11.1    N=-0.030    DIST=13.4
                     N=0.030   DIST=23.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   10.0  100.0   11.1   99.3
                      12.3   99.3   13.4  100.0   23.0   100.5
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=1 NHD=1611 DA=0.629 SQKM    L=2000 m  W=1525 m
                                      ZONE PROPORTIONS
                      I     II    III   IV     V    XII   XIII  XIV
                     3.0   0.0   42.4  21.4  13.2   2.1  0.4   17.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.13  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
PRINT HYD           ID=1
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                          I   II    III   IV    V    XII   XIII  XIV
                    DS=   2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF= 0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=   0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=    0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=  0   200   200   200   200   250   250   250
                    HI=   0   0.01  100   100   100   200   200   200
                    SMCI= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
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                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
**** Go to event file to get rain and runoff
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1610 **************************
*
* Note Basin 1610 represents Dunnville urban settlment
* Percentage impervious esitmates impervious level was assessed based on
* the aerial photo and impervious levels calculated for the similar type of
* residential development
* Standard Urban Rating Curve for basin mainchannel (flat slopes)
* Referenced from Laurel Creek Study. Slopes adjusted to local Topograph
*
COMPUTE RATING CURVE ID=4  VS NO=0.5  NO SEG=1  MIN ELEV=0.0 m
                     MAX ELEV=0.05 m  CHNSLP=0.002  FLSLP=0.002
                     N=-0.013  DIST=100.00
                     DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   1.0    0.01   0.0    99.99   0.0
                     100.0   1.0
                     RFN=0 PCODE=1
*
* Calculate Main Channel Routing Curve for Catchment 1610
*
COMPUTE RATING CURVE ID=1  VS NO=3610  NO SEG=3  MIN ELEV=176.5 m
                     MAX ELEV=178.4  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.045   DIST=64.0    N=-0.050    DIST=66
                     N=0.050   DIST=70.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.4   20.0   178.0  62.0  177.5
                       64.  177.0   65.0   176.5  66.0  176.5
                       70.  178.0
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=2 NHD=1610 DA=1.006 SQKM    L=1990 m  W=44.444 m
                                        ZONE PROPORTIONS
                     I     II    III    IV      V    XII   XIII  XIV
                    55.0   0.0   25.0   19.0   3.0   0.0   0.0   0.0
                    RATING CURVES IDC=1  IDOC=4  QRMC=0.90  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.25 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1040 m
                    SLOPE=0.0010 RATING CURVE=1  NSECT=5 PCODE=1
*
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1889)**************************
*
PRINT HYD           ID=4
*************************  ADD 3611 AND 1610  ******************************
*
* Add routed hydrograph with Urban Dunnville portion.
*
ADD HYD               ID=5 HYD NO=1601.1 IDA=4 IDB=2
*
*************************  ADD 1601.1 AND 1219.1   *************************
*
* Add Urban Dunnville portion with upstream headwaters areas
*
ADD HYD               ID=4 HYD NO=2219.1 IDA=6 IDB=5
*
*
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
*
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
*
* Main Channel Routing Section for catchment 1218
* No dominent main channel use off channel for main channel
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1218  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1218
*
*************** CALCULATE RUNOFF FOR BASIN No.1218 **************************
*
* Calculate runoff hydrograph for basin 1218.
*
COMPUTE FLOWRATE    ID=2 NHD=1218 DA=0.194 SQKM    L=900 m  W=585 m
                                        ZONE PROPORTIONS
                     I    II    III     IV    V    XII   XIII  XIV
                    3.0   0.0  75.4   10.4   11.2   0.0  0.0   0.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*************************  ADD 1601.1 AND 1219.1   *************************
*
ADD HYD               ID=6 HYD NO=2217.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11584)*************************
*
PRINT HYD           ID=6
*
*
* Main Channel Routing Section for catchment 1216
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Sections Estimated from field survey
*
COMPUTE RATING CURVE ID=1  VS NO=1216.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=30    N=-0.045    DIST=33.9
                     N=0.050   DIST=53.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   30.0   100.0  31.2   98.5
                       32.7   98.5   33.9   100.0  53.0  101.5
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1216  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1216
*
*************** CALCULATE RUNOFF FOR BASIN No.1216 **************************
*
* Calculate runoff hydrograph for basin 1216.
* Intermediate Catchment
* Combined Philip Catchments 1216 and 1217
*
COMPUTE FLOWRATE    ID=2 NHD=1216 DA=0.280 SQKM    L=900 m  W=690 m
                                        ZONE PROPORTIONS
                     I    II    III    IV    V   XII    XIII  XIV
                    3.0  0.0  59.4   15.2  10.1 11.0   1.2   0.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2218.1 AND 1216   ***************************
*
ADD HYD               ID=4 HYD NO=2216.1 IDA=2 IDB=6
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11547)*************************
*
PRINT HYD           ID=4
*
*
* Main Channel Routing Section for catchment 1209
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Section Estimated in the field by D. Boyd and H Benemeer.
*
COMPUTE RATING CURVE ID=1  VS NO=1209.1  NO SEG=3  MIN ELEV=98.8 m
                     MAX ELEV=100.3  m  CHNSLP=0.004   FLSLP=0.08
                     N=0.050   DIST=20    N=-0.040    DIST=22
                     N=0.050   DIST=42.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  20.7   98.8
                       21.3   98.8   22.0   100.0  42.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1209  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1209
*
*************** CALCULATE RUNOFF FOR BASIN No.1209 **************************
*
* Calculate runoff hydrograph for basin 1209.
* Intermediate Catchment
*
*
COMPUTE FLOWRATE    ID=2 NHD=1209 DA=1.449 SQKM L=1500 m  W=1095 m
                                        ZONE PROPORTIONS
                     I    II    III    IV     V    XII   XIII  XIV
                    3.0   0.0   64.5  13.5  18.0  0.7   0.3   0.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.3  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2216.1 AND 1209   ***************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:10797)*************************
*
ADD HYD               ID=5 HYD NO=2209.1 IDA=2 IDB=4
*
PRINT HYD             ID=5
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION: 1995.000
                          WATER        FLOW         TOP          FLOWS
                          LEVEL        AREA        WIDTH         RATE
                            m          Sq m          m            cms
                          175.01       10.47       10.17          1.00
                          175.15       12.13       13.53          5.00
```

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                          175.39       15.90       19.08         10.00
                          175.58       20.09       25.96         15.00
                          175.73       24.87       34.77         20.00
                          176.04       38.50       51.98         35.00
                          176.12       42.91       55.90         40.00
                          176.19       47.37       59.57         45.00
                          176.24       50.08       61.75         50.00
                          176.30       54.08       64.79         55.00
                          176.36       58.01       67.64         60.00
                          176.48       66.03       73.11         70.00
                          176.59       75.04       91.70         80.00
                          176.94      119.08      159.13        110.00
*
************************  ROUTE CHANNEL No. 2209.1 ***************************
*
* Route 2209.1 outflow through channel 3209.1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:6081)**************************
*
ROUTE CHANNEL       ID=4  HYD NO=3209  INFLOW=5  LENGTH=2200 m
                    SLOPE=0.00033 RATING CURVE=4  NSECT=5 PCODE=1
*
PRINT HYD           ID=4
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3
*
ROUTE RESERVOIR      ID=5 HYD NO=6209 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.8
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.85      0.00           0.00
                        174.61      1.30           0.223
                        175.15      4.00           2.335
                        175.32      6.00           3.406
                        175.50      8.00           4.880
                        175.73     10.00           7.358
                        176.10     12.00          13.957
                        176.31     13.00          20.643
                        176.61     14.00          35.558
                        177.39     14.69          82.703
                        177.46     16.00          87.034
                        177.59     20.00          95.078
                        177.67     30.00         100.028
*
* Main Channel Routing Section for catchment 1208
* Dominant Main Channel would be road ditchs in this catchment not
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1208  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1208 and 1210
*                 - FKO of 1.75 used to reflect rural residential development
*************** CALCULATE RUNOFF FOR BASIN No.1208 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1208 DA=0.251 SQKM L=500.0 m  W=2005 m
                     I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.0  48.4  17.7  30.7  0.0  0.0   0.2
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.75  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 5209.1 AND 1208   ***************************
*
ADD HYD              ID=6 HYD NO=2208.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5648)**************************
*
PRINT HYD           ID=6
*
*****************************************************************************
* Confluence with the Dent Drain
*****************************************************************************
*
*****************************************************************************
* Dent Drain Modelling
*****************************************************************************
*
* Main Channel Routing Section for catchment 1308
* Dominant Main Channel would be municipal drain
* Sections measured in field by D. Boyd slopes from Municipal drain files.
*
COMPUTE RATING CURVE ID=1  VS NO=1308.1  NO SEG=3  MIN ELEV=175.1 m
                     MAX ELEV=178.0  m  CHNSLP=0.00025   FLSLP=0.0005
                     N=0.080   DIST=20    N=-0.060    DIST=27
                     N=0.080   DIST=47.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  22.0   97.0
                      25.0   97.0   27.0   100.0  47.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1308  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*************** CALCULATE RUNOFF FOR BASIN No.1308 ***************************
*
COMPUTE FLOWRATE    ID=1 NHD=1308 DA=4.639 SQKM L=4700 m  W=1040 m
                     I    II    III   IV     V    XII   XIII  XIV
                    5.5  0.8  0.0  0.0   0.0   34.4   5.8   53.5
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5305)**************************
*
PRINT HYD           ID=1
*
* Main Channel Routing Section for catchment 1304
* Dominant Main Channel would be municipal drain
* Section estimated from field inspection D. Boyd, H. Benemeer and from
* 1:2000 mapping
* Slope of drain referenced from Dunnville MDP.
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=175.75 m
                     MAX ELEV=178.0  m  CHNSLP=0.0005   FLSLP=0.001
                     N=0.080   DIST=4    N=-0.055    DIST=13.1
                     N=0.080   DIST=17.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   178.0   2.0   177.5   4.0  177.0
                       7.3  175.75   9.8  175.75  13.1  177.0
                      17.0   178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1304  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1304 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1304 DA=1.968 SQKM L=2800 m  W=1075 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  31.4  14.2  15.9  20.0  6.5   8.2
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*****************************************************************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3365)**************************
*
PRINT HYD           ID=2
*
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3-Structure #20
*
ROUTE RESERVOIR      ID=5 HYD NO=621 INFLOW=2 PCODE=1 OPTION=4
                     ILEVEL=175.71
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        175.71      0.00           0.000
                        176.38      0.30           0.079
                        176.62      0.70           0.199
                        176.98      1.50           1.506
                        177.18      2.00           7.654
                        178.59      5.00         109.582
                        178.61      6.50         111.054
*
* Main Channel Routing Section for catchment 1310
* Dominant Main Channel would be municipal drain
* Slope of drain referenced from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.3  m  CHNSLP=0.00072   FLSLP=0.0014
                     N=0.080   DIST=20    N=-0.060    DIST=24.9
                     N=0.080   DIST=44.9
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0  100.0   21.8   98.5
                      23.1   98.5   24.9  100.0   44.9  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1310  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*
*************** CALCULATE RUNOFF FOR BASIN No.1310 ***************************
*
COMPUTE FLOWRATE    ID=3 NHD=1310 DA=1.759 SQKM L=2800 m  W=1030 m
                     I    II    III   IV     V    XII   XIII  XIV
                    4.5   14.7  0.0  0.0  0.0   12.2  8.3  63.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1

PRINT HYD           ID=3
*
*************************  ADD 1308 AND 1310   ***************************
*
ADD HYD              ID=4 HYD NO=1306.2 IDA=1 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4536)**************************
*
PRINT HYD           ID=4
*
*****************************************************************************
*
*************************  ADD 1306.1 AND 1304   ***************************
*
ADD HYD              ID=1 HYD NO=1302.2 IDA=4 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3842)**************************
*
PRINT HYD           ID=1
*
*****************************************************************************
*
*
```

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```
* Main Channel Routing Section for Dent Drain
* Reference from 1:2000 floodplain mapping
*
COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.080   DIST=10    N=-0.060    DIST=24
                     N=0.080   DIST=31.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    2.0   178.0  10.0  177.0
                      14.0  176.5   16.0   176.0  17.0  175.0
                      18.0  175.0   19.0   176.0  21.0  176.5
                      24.0  177.0   28.0   177.5  31.0  178.0
                     RFN=0 PCODE=0

                        RATING CURVE FOR VALLEY SECTION   3611.100

                     WATER LEVEL  FLOW AREA   TOP WIDTH    FLOWRATE
                         m          Sq m          m          cms
                         175.000      0.0000       1.000      0.0000
                         175.077      0.0828       1.154      0.0073
                         175.154      0.1775       1.308      0.0232
                         175.231      0.2840       1.462      0.0463
                         175.308      0.4023       1.615      0.0761
                         175.385      0.5325       1.769      0.1129
                         175.462      0.6745       1.923      0.1567
                         175.538      0.8284       2.077      0.2078
                         175.615      0.9940       2.231      0.2665
                         175.692      1.1715       2.385      0.3330
                         175.769      1.3609       2.538      0.4077
                         175.846      1.5620       2.692      0.4908
                         175.923      1.7750       2.846      0.5827
                         176.000      1.9999       3.000      0.6837
                         176.077      2.2543       3.615      0.7536
                         176.154      2.5560       4.230      0.8503
                         176.231      2.9051       4.846      0.9734
                         176.308      3.3014       5.461      1.1233
                         176.385      3.7452       6.076      1.3009
                         176.461      4.2362       6.692      1.5077
                         176.538      4.7791       7.537      1.7166
                         176.615      5.4003       8.614      1.9418
                         176.692      6.1043       9.691      2.2171
                         176.769      6.8911      10.768      2.5435
                         176.846      7.7608      11.845      2.9230
                         176.923      8.7134      12.922      3.3581
                         177.000      9.7487      13.999      3.8512
                         177.077     10.8728      15.229      4.5887
                         177.154     12.0916      16.460      5.3900
                         177.231     13.4050      17.691      6.2611
                         177.308     14.8131      18.921      7.2074
                         177.385     16.3158      20.152      8.2335
                         177.461     17.9133      21.383      9.3436
                         177.538     19.6039      22.537     10.5444
                         177.615     21.3788      23.614     11.8383
                         177.692     23.2366      24.691     13.2252
                         177.769     25.1772      25.767     14.7079
                         177.846     27.2006      26.844     16.2891
                         177.923     29.3069      27.921     17.9714
                         178.000     31.4960      28.998     19.7576
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1200 m
                    SLOPE=0.001   RATING CURVE=4  NSECT=5  PCODE=0
*
* Main Channel Routing Section for catchment 1302
* Dominant Main Channel would not be municipal drain
* Off channel section assumed for main channel
* Significant depression storage in this catchment
*
*------------------------  SUB-WATERSHED 1302  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1301 and 1302
*
*************** CALCULATE RUNOFF FOR BASIN No.1302 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1302 DA=0.696 SQKM L=1200 m  W=870 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   1.2  24.4  3.5 15.3   36.2  0.5  15.9
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
**************************  ADD 3611 AND 1302   ****************************
*
ADD HYD              ID=5 HYD NO=1301.1 IDA=3 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1139)**************************
*
PRINT HYD           ID=5
*
**************************  ADD 1301.1 AND 1302   ****************************
*
* Confluence of Dent Drain with main Maple Creek
*
ADD HYD              ID=4 HYD NO=2207.1 IDA=5 IDB=6
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
**************************  ADD 2207.1 AND 1206   ****************************
*
ADD HYD              ID=6 HYD NO=2206.1 IDA=4 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4079)**************************
*
PRINT HYD           ID=6
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  772.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m           cms
                         175.00       54.83      126.07          1.00
                         175.02       56.82      127.69          5.00
                         175.06       62.61      132.33         10.00
                         175.12       71.34      139.02         15.00
                         175.19       82.06      146.82         20.00
                         175.41      116.32      169.36         35.00
                         175.47      126.17      175.30         40.00
                         175.53      136.98      185.13         45.00
                         175.59      148.10      197.24         50.00
                         175.65      159.38      208.80         55.00
                         175.70      170.17      219.28         60.00
                         175.80      193.69      240.56         70.00
                         175.90      218.28      260.95         80.00
                         176.22      324.88      508.51        110.00
*
*
************************  ROUTE CHANNEL No. 3207 ****************************
*
* Route 2207.1 outflow through channel 3207.
*
ROUTE CHANNEL       ID=4  HYD NO=3207  INFLOW=6  LENGTH=800 m
                    SLOPE=0.00033  RATING CURVE=4  NSECT=5  PCODE=1
*
*
* Main Channel Routing Section for catchment 1206
* Dominant Main Channel would not be municipal drain
* Assume off channel section for main channel section in this catchment.
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
*COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
*                     I    II    III   IV     V    XII   XIII  XIV
*                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
*                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
*                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
*                    KSS=5 hr  KGW=384 hr  PCODE=1
*
**************************  ADD 3207.1 AND 1206   ****************************
*
*ADD HYD              ID=4 HYD NO=2206.1 IDA=3 IDB=5
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1955)**************************
*
PRINT HYD           ID=4
*
*  Existing Canal Road Culvet without Cut for additional relief
*
ROUTE RESERVOIR      ID=6 HYD NO=620 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.90
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.91       0.0           0.0
                        174.57       2.00          2.681
                        174.75       4.00          4.997
                        175.02       6.00         10.497
                        175.24       8.00         16.834
                        175.43      10.00         25.279
                        175.85      12.00         56.991
                        176.07      13.00         81.208
                        176.32      14.00        115.766
                        177.39      15.00        327.029
                        177.46      16.00        342.687
                        177.59      33.00        371.766
                        177.67      48.00        389.661
PLOT HYD              IDA=6 IDB=4
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  110.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m           cms
                         175.00       49.32      280.11          1.00
                         175.01       50.98      282.63          5.00
                         175.03       55.94      290.05         10.00
                         175.06       63.74      301.34         15.00
                         175.09       74.19      315.83         20.00
                         175.20      117.62      370.03         35.00
                         175.26      133.39      387.85         40.00
                         175.30      148.44      404.12         45.00
                         175.34      164.45      420.72         50.00
                         175.37      180.68      436.93         55.00
                         175.41      197.24      452.86         60.00
                         175.49      234.04      486.40         70.00
                         175.57      274.51      499.63         80.00
                         175.92      456.51      530.71        110.00
*
************************  ROUTE CHANNEL No. 3206.1 ****************************
*
* Route 2206.1 outflow through channel 3206.1
```

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 174.50 m

```
 *
 ROUTE CHANNEL       ID=5  HYD NO=3209  INFLOW=4  LENGTH=500 m
                     SLOPE=0.00033 RATING CURVE=1  NSECT=5 PCODE=1
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
 *
 * Main Channel Routing Section for catchment 1201
 * Dominant Main Channel would not be municipal drain
 * Assume off channel section for main channel section in this catchment.
 *
 *------------------------  SUB-WATERSHED 1201  ----------------------------
 *
 *   DESCRIPTION:  - Headwaters subwatershed
 *                 - Catchment information from Philips Dunnville MDP
 *                 - Catchment 1201
 *                 - FTB set to 3 given the swampy natural of this watershed
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1201 *************************
 *
 COMPUTE FLOWRATE    ID=1 NHD=1201 DA=0.413 SQKM L=700 m  W=1940 m
                      I    II    III   IV     V    XII   XIII  XIV
                     6.7   0.0  35.7  25.6  32.0   0.0  0.0   0.0
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1

                           OUTFLOW HYDROGRAPH SUMMARY
                           ==========================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
```

HYDROGRAPH NUMBER	UPSTREAM DRAINAGE AREA-Sq.km.	VOLUME mm	PEAK DISCHARGE cms	TIME TO PEAK HRS.
1227	1.1160	135.29	2.262	52.312
3228	1.1160	134.81	2.253	52.812
1229	1.0950	148.44	1.957	53.312
1225	1.2200	107.92	2.489	49.980
5229	1.0950	147.01	1.942	54.145
2229	2.3150	126.41	3.868	52.312
2231	3.4310	129.14	6.116	52.646
1228	0.4230	121.94	0.929	49.314
2232	3.8540	128.35	6.855	52.312
1224	0.8280	144.16	2.566	49.813
2233	4.6820	131.15	9.035	51.146
1221	0.4510	184.56	1.384	50.813
1220	1.2150	129.32	3.110	49.480
2221	5.1330	135.84	10.414	51.146
2218	6.3480	134.59	13.260	50.480
3218	6.3480	134.59	13.260	50.480
1611	0.6290	204.40	1.895	49.980
1610	1.0060	273.03	12.402	46.148
3611	0.6290	204.40	1.895	49.980
1601	1.6350	246.63	13.481	46.148
2219	7.9830	157.54	19.335	47.148
1218	0.1940	247.52	0.761	50.980
2217	8.1770	159.67	19.784	47.148
1216	0.2800	240.67	1.573	48.314
2216	8.4570	162.36	21.168	47.148
1209	1.4490	250.24	6.661	48.814
2209	9.9060	175.21	26.764	47.148
3209	9.9060	175.21	26.764	47.148
6209	9.9060	174.05	14.051	56.311
1208	0.2510	227.94	0.738	51.979
2208	10.1570	176.51	27.186	47.148
1308	4.6390	92.46	9.620	48.814
1304	1.9680	194.95	6.038	50.980
621	1.9680	153.92	2.187	62.975
1310	1.7590	93.95	2.811	50.480
1306	6.3980	92.87	11.947	49.147
1302	8.3660	116.88	17.285	49.813
3611	8.3660	116.88	17.285	49.813
1302	0.6960	161.92	1.600	52.979
1301	9.0620	120.34	18.423	49.980
2207	19.2190	150.03	42.749	49.647
1206	1.4510	213.75	4.397	51.979
2206	20.6700	154.50	46.329	49.980
3207	20.6700	154.50	46.329	49.980
620	20.6700	101.69	14.139	63.808
3209	20.6700	154.50	46.329#	49.980

```
                 ----------------------------------------------------
                 Note: * Storage/outflow table exceeded
                       # Rating curve exceeded
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 *************************
 *
 ****************************************************************************
 *
 * Catchments 1202, 1203,1204 and 1205 combined from Phillips study.
 *
 ****************************************************************************
 *
 * Main Channel Routing Section for Drain
 * Reference Municipal drain report
 *
 COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                      MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                      N=0.080   DIST=10    N=-0.060    DIST=24
                      N=0.080   DIST=31.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  178.0    2.0  178.0  10.0  177.0
                       14.0  176.5   16.0  176.0  17.0  175.0
                       18.0  175.0   19.0  176.0  21.0  176.5
                       24.0  177.0   28.0  177.5  31.0  178.0
                      RFN=0 PCODE=1
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 *************************
 *
 COMPUTE FLOWRATE    ID=2 NHD=1205 DA=1.362 SQKM L=3400 m  W=1315 m
                      I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.6  8.4   1.8  0.9  65.1  7.1   13.1
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: KO=3.0  TLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1
 *
 *************************  ADD 3206.1 AND 1201   ****************************
 *
 ADD HYD              ID=4 HYD NO=2201.1 IDA=1 IDB=5
 *
 *************************  ADD 2201.1 AND 1205  *****************************
 *
 ADD HYD              ID=5 HYD NO=2201.1 IDA=4 IDB=2
 *
 *************HEC-RAS FLOW CHANGE LOCATION (ID:256)**************************
 *
 PRINT HYD           ID=5
 *
 ****************************************************************************
 FINISH
```

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 174.50 m

```
              OUTFLOW HYDROGRAPH SUMMARY
              ==========================

       MAPLE WATERSHED MODEL
       EVENT FILE : REGIONAL STORM
       July 18, 1995

             UPSTREAM                 PEAK     TIME TO
HYDROGRAPH   DRAINAGE     VOLUME    DISCHARGE    PEAK
  NUMBER    AREA-Sq.km.     mm         cms       HRS.
-------------------------------------------------------
   1201       0.4130     216.05       1.070    53.145
   1205       1.3620      66.50       0.977    61.975
   2201      21.0830     155.71      47.195    49.980
   2201      22.4450     150.29      47.415    49.980
-------------------------------------------------------
Note: * Storage/outflow table exceeded
      # Rating curve exceeded


         WATERSHED RESPONSE VOLUMES (  mm   )
         =====================================

    RAIN/SNOWMELT= 285.000           OVERLAND=  152.628
       SUBSURFACE=   1.300        GROUNDWATER=   36.169
           SS NET=   9.772             GW NET=  120.891
      EVAPORATION=   0.000        SUBLIMATION=    0.000

    DRAINAGE AREA IN RUNOFF COMPUTATIONS=   22.445 km^2
```

GAWSER Model Output:

Fringe6 Conditions

Simulation Results for 174.91 m Boundary Condition

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 174.91 m

```
                  GAWSER V6.9.20 - Released - Feb. 18, 2020
                  =========================================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
                   =======================================

   Input file 1=MREG10MI.evt
   Input file 2=BC_GR.wat
   Output file =48hBCGR.1st
*
*
START               KUNITS=2  TOTAL DRAINAGE AREA:  TDA=20.3 SQ KM
                    BASEFLOW AT OUTLET:  QBSS=0.0  QBGW=0..5  CMS
                    PRINT OPTIONS:  ECHO=1 output=1 plots=1 RCS=1 SUBW=1
                          PLOT CUTOFF TIME =80 HRS  SUM=0  FREE=0
                    PARAMETER ADJUSTMENT FACTORS:  FDS=1.00  FKEFF=0.30
                      FCS=0.35 FD=0.35 FSAV=1.0  FKO=1.0  FKSS=1.0  FKMF=1
                    INITIAL SOIL/SNOW WATER CONTENT FACTORS:
                      FIMCI=1.00  FIMCII=1.00  FIWE=1.0
                    GLOBAL RAINFALL SCALING FACTOR: GFRF=1.00
                    SIMULATION CONTROLS: TTI=0.1666 IDEL=4 HOURS=80
                    SUBWATERSHED INITAL BASEFLOWS IN CMS -999
*
*MAPLE CREEK WATERSHED MODEL
*WATERSHED FILE
*CREATED JUNE 15,1995 BY D. BOYD
*REVISED SEPTEMBER 20, 2021 BY I.DZEPAROSKI
* ==========================================================================
*
**************************** ENTER SOILS DATA FOR **************************
*
**************************************************************************
* REFERENCED FROM THE GRAND RIVER HYDROLOGY STUDY
**************************************************************************
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ---------------------------------------------------------------
**** Go to event file to get rain and runoff
*
CHANGE INPUT FILE
*
*    Rating Curve for Typical off channel (Flat slopes)
*
COMPUTE RATING CURVE ID=6 VS NO=1.2 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.6 M  CHNSLP=0.001 FLSLP=0.001
                    N=0.35  DIST=39.15  N=-0.15  DIST=40.85
                    N=0.35  DIST=80.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.6   39.15 100.2   39.75 100.0
                    40.25  100.0   40.85 100.2   80.00 100.6
                     RFN=0   RCODE=1
*
*    Rating Curve for Typical off channel (Steep slopes)
*
COMPUTE RATING CURVE ID=5 VS NO=1.1 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.8 M  CHNSLP=0.010 FLSLP=0.010
                    N=0.35  DIST=24.45  N=-0.15  DIST=25.55
                    N=0.35  DIST=50.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.8   24.45 100.3   24.75 100.0
                    25.25  100.0   25.55 100.3   50.00 100.8
                     RFN=0   RCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1227.1  NO SEG=3  MIN ELEV=98.1 m
                    MAX ELEV=101.0  m CHNSLP=0.000086 FLSLP=0.000172
                    N=0.070   DIST=100.0   N=-0.050    DIST=105.7
                    N=0.070   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST    ELEV
                       0.0  101.0  100.0   100.0 101.95   98.1
                    103.75   98.1  105.7   100.0  200.0  101.0
                    RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1227  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 **************************
*
* Calculate runoff hydrograph for basin 1227.
* Note revised drainage area based on the LiDAR 2017 DEM
*
COMPUTE FLOWRATE    ID=1 NHD=1227 DA=1.116 SQKM    L=2700 m  W=1425 m
                                   ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   10.1   0.8   0.0   73.8  1.9  10.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*

*************** CALCULATE ROUTING SECTION OF 1227 ***************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=3228  NO SEG=3  MIN ELEV=98.3 m
                     MAX ELEV=101.0  m  CHNSLP=0.00118 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.060    DIST=105.2
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  102.0   98.3
                     103.20   98.3  105.2   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*
************************  ROUTE CHANNEL No. 3228 ****************************
*
*
ROUTE CHANNEL       ID=2  HYD NO=3228  INFLOW=1  LENGTH=1010 m
                    SLOPE=0.00118  RATING CURVE=3  NSECT=2  PCODE=1
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1229  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1229 **************************
*
* Calculate runoff hydrograph for basin 1229.
*
COMPUTE FLOWRATE    ID=1 NHD=1229 DA=1.095 SQKM    L=1000 m  W=1200 m
                                   ZONE PROPORTIONS
                       I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.9    6.0   1.6   50.0  23.2  3.0  12.3
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 **************************
*
* Calculate Main Channel Rating curve for basin 1225
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1225  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 **************************
*
* Calculate runoff hydrograph for basin 1225.
*
COMPUTE FLOWRATE    ID=4 NHD=1225 DA=1.220 SQKM    L=1600 m  W=1235 m
                                   ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0    0.0   0.0  58.8  5.2  33.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Route 1229 outflow through channel 5229.
*
ROUTE CHANNEL       ID=3  HYD NO=5229  INFLOW=1  LENGTH=1550 m
                    SLOPE=0.0010   RATING CURVE=1  NSECT=2  PCODE=1
*
**************************  ADD 5229 AND 1225  ******************************
*
ADD HYD              ID=1 HYD NO=2229 IDA=4 IDB=3
*
*
**************************  ADD 2229 AND 3228  ******************************
*
ADD HYD              ID=3 HYD NO=2231 IDA=2 IDB=1
```

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```
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=101.0  m  CHNSLP=0.00135 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.055    DIST=106
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0 102.25   98.5
                     103.75   98.5  106.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1228  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
*
* Calculate runoff hydrograph for basin 1228.
*
COMPUTE FLOWRATE    ID=1 NHD=1228 DA=0.423 SQKM    L=1600 m  W=980 m
                                     ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0   0.0   0.0   74.5  4.4  18.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FTB=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*
*************************  ADD 1228 AND 2230  ******************************
*
ADD HYD              ID=2 HYD NO=2232 IDA=1 IDB=3
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:3413)*************************
*
PRINT HYD           ID=2
*

*************** CALCULATE ROUTING SECTION OF 1224  **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=1223  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.0003 FLSLP=0.0006
                     N=0.070   DIST=100.0    N=-0.050    DIST=105
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  101.9   98.2
                     103.10   98.2  105.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*

*------------------------  SUB-WATERSHED 1224  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1224 **************************
*
* Calculate runoff hydrograph for basin 1224.
*
COMPUTE FLOWRATE    ID=1 NHD=1224 DA=0.828 SQKM L=2700 m  W=930 m
                                     ZONE PROPORTIONS
                     I    II    III    IV     V   XII   XIII  XIV
                    3.0   2.1   0.0    1.1   0.0  85.9  5.3  3.7
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 1224 AND 2232  ******************************
*
ADD HYD              ID=4 HYD NO=2233 IDA=1 IDB=2
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:2586.51)**********************
*
PRINT HYD           ID=4
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
*COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
*                    MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
*                    N=0.040   DIST=100.0   N=-0.060    DIST=105.6
*                    N=0.040   DIST=200.0
*                     DIST   ELEV   DIST   ELEV   DIST   ELEV
*                      0.0  101.0  100.0   100.0 101.8   98.2
*                    103.8   98.2  105.6   100.0 106.0  100.0
*                    200.0   101.0
*                    RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1221  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1221
*                 - Off channel section also used for main channel
*                   no obvious main channel section for this catchment.
*                 - Note intermediate catchment, length and wide based on
*                   smaller catchments contributing laterally to stream.
*************** CALCULATE RUNOFF FOR BASIN No.1221 **************************
*
* Calculate runoff hydrograph for basin 1221.
*
COMPUTE FLOWRATE    ID=1 NHD=1221 DA=0.451 SQKM  L=600 m  W=970 m
                                     ZONE PROPORTIONS
                     I     II    III   IV     V    XII   XIII  XIV
                    3.0    1.1   39.0   2.0  3.7  40.3   4.9  6.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Calculate Channel Routing Rating curve for main channel catchment 1220
* Invert data from Dunnville MDP Pat Warren Drain Profile
* Channel data from 1:2000 Meridian floodplain mapping
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=4.0    N=-0.050    DIST=7.0
                     N=0.050   DIST=11.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    4.0   176.0   4.5  175.5
                       6.5  175.5    7.0   176.0  11.0  178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1220  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1220 **************************
*
* Calculate runoff hydrograph for basin 1220.
*
COMPUTE FLOWRATE    ID=2 NHD=1220 DA=1.215 SQKM    L=2300 m  W=850 m
                                     ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  19.5   3.7  5.8  13.9  10.4   42.9
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:13837)************************
*
PRINT HYD           ID=2
*
*************************  ADD 1221 AND 3231  ******************************
*
ADD HYD              ID=3 HYD NO=2221.1 IDA=1 IDB=4
*
*************************  ADD 2221.1 AND 1220  ****************************
*
ADD HYD              ID=5 HYD NO=2218.2 IDA=3 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:12741)************************
*
PRINT HYD           ID=5
*
*************************  ADD 1221 AND 3231  ******************************
*
* Calculate Channel Routing Rating curve for reach d/s of flow node 2219.1
*
COMPUTE RATING CURVE ID=3  VS NO=3228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=177.5  m  CHNSLP=0.0007   FLSLP=0.0014
                     N=0.050   DIST=76.0    N=-0.060    DIST=82
                     N=0.050   DIST=188.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  177.5   60.0   177.0  74.0  176.5
                       76.  176.0   78.0   175.5  81.0  175.5
                       82.  176.0   84.0   176.5 142.0  177.0
                      188.  177.5   RFN=0 PCODE=1
*
************************  ROUTE CHANNEL No. 5229 ****************************
*
* Route hydrograph to confluence with Dunnville Branch
*
ROUTE CHANNEL       ID=6  HYD NO=3218.1  INFLOW=5  LENGTH=400 m
                    SLOPE=0.0007 RATING CURVE=3  NSECT=2  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1611 **************************
*
* Calculate runoff hydrograph for basin 1611.
* Typical rural road cross section of ditch.
*
COMPUTE RATING CURVE ID=1  VS NO=1611.1  NO SEG=3  MIN ELEV=99.3 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.030   DIST=11.1    N=-0.030    DIST=13.4
                     N=0.030   DIST=23.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   10.0  100.0   11.1   99.3
                      12.3   99.3   13.4  100.0   23.0   100.5
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=1 NHD=1611 DA=0.629 SQKM    L=2000 m  W=1525 m
                                     ZONE PROPORTIONS
                      I     II    III   IV     V    XII   XIII  XIV
                     3.0   0.0   42.4  21.4  13.2   2.1  0.4   17.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.13  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
PRINT HYD           ID=1
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                          I   II    III   IV    V    XII   XIII  XIV
                    DS=   2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF= 0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=   0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=    0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=  0   200   200   200   200   250   250   250
                    HI=   0   0.01  100   100   100   200   200   200
                    SMCI= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
```

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                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
**** Go to event file to get rain and runoff
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1610 **************************
*
* Note Basin 1610 represents Dunnville urban settlment
* Percentage impervious esitmates impervious level was assessed based on
* the aerial photo and impervious levels calculated for the similar type of
* residential development
* Standard Urban Rating Curve for basin mainchannel (flat slopes)
* Referenced from Laurel Creek Study. Slopes adjusted to local Topograph
*
COMPUTE RATING CURVE ID=4  VS NO=0.5  NO SEG=1  MIN ELEV=0.0 m
                     MAX ELEV=0.05 m  CHNSLP=0.002  FLSLP=0.002
                     N=-0.013  DIST=100.00
                     DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   1.0    0.01   0.0    99.99   0.0
                     100.0   1.0
                     RFN=0 PCODE=1
*
* Calculate Main Channel Routing Curve for Catchment 1610
*
COMPUTE RATING CURVE ID=1  VS NO=3610  NO SEG=3  MIN ELEV=176.5 m
                     MAX ELEV=178.4  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.045   DIST=64.0    N=-0.050    DIST=66
                     N=0.050   DIST=70.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.4   20.0   178.0  62.0  177.5
                       64.  177.0   65.0   176.5  66.0  176.5
                       70.  178.0
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=2 NHD=1610 DA=1.006 SQKM    L=1990 m  W=44.444 m
                                       ZONE PROPORTIONS
                     I     II    III    IV     V    XII   XIII  XIV
                    55.0   0.0   25.0   19.0   3.0   0.0   0.0   0.0
                    RATING CURVES IDC=1  IDOC=4  QRMC=0.90  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.25 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1040 m
                    SLOPE=0.0010 RATING CURVE=1  NSECT=5 PCODE=1
*
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1889)**************************
*
PRINT HYD           ID=4
*************************  ADD 3611 AND 1610  ******************************
*
* Add routed hydrograph with Urban Dunnville portion.
*
ADD HYD              ID=5 HYD NO=1601.1 IDA=4 IDB=2
*
*************************  ADD 1601.1 AND 1219.1   *************************
*
* Add Urban Dunnville portion with upstream headwaters areas
*
ADD HYD              ID=4 HYD NO=2219.1 IDA=6 IDB=5
*
*
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
*
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
*
* Main Channel Routing Section for catchment 1218
* No dominent main channel use off channel for main channel
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1218  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1218
*
*************** CALCULATE RUNOFF FOR BASIN No.1218 **************************
*
* Calculate runoff hydrograph for basin 1218.
*
COMPUTE FLOWRATE    ID=2 NHD=1218 DA=0.194 SQKM    L=900 m  W=585 m
                                       ZONE PROPORTIONS
                     I    II    III     IV    V    XII   XIII  XIV
                    3.0   0.0  75.4   10.4   11.2   0.0  0.0   0.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*************************  ADD 1601.1 AND 1219.1   *************************
*
ADD HYD              ID=6 HYD NO=2217.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11584)*************************
*
PRINT HYD           ID=6
*
*
* Main Channel Routing Section for catchment 1216
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Sections Estimated from field survey
*
COMPUTE RATING CURVE ID=1  VS NO=1216.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=30    N=-0.045    DIST=33.9
                     N=0.050   DIST=53.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   30.0   100.0  31.2   98.5
                       32.7   98.5   33.9   100.0  53.0  101.5
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1216  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1216
*
*************** CALCULATE RUNOFF FOR BASIN No.1216 **************************
*
* Calculate runoff hydrograph for basin 1216.
* Intermediate Catchment
* Combined Philip Catchments 1216 and 1217
*
COMPUTE FLOWRATE    ID=2 NHD=1216 DA=0.280 SQKM    L=900 m  W=690 m
                                       ZONE PROPORTIONS
                     I    II    III    IV    V   XII    XIII  XIV
                    3.0  0.0  59.4   15.2  10.1 11.0   1.2   0.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2218.1 AND 1216   ***************************
*
ADD HYD              ID=4 HYD NO=2216.1 IDA=2 IDB=6
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11547)*************************
*
PRINT HYD           ID=4
*
*
* Main Channel Routing Section for catchment 1209
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Section Estimated in the field by D. Boyd and H Benemeer.
*
COMPUTE RATING CURVE ID=1  VS NO=1209.1  NO SEG=3  MIN ELEV=98.8 m
                     MAX ELEV=100.3  m  CHNSLP=0.004   FLSLP=0.08
                     N=0.050   DIST=20    N=-0.040    DIST=22
                     N=0.050   DIST=42.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  20.7   98.8
                       21.3   98.8   22.0   100.0  42.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1209  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1209
*
*************** CALCULATE RUNOFF FOR BASIN No.1209 **************************
*
* Calculate runoff hydrograph for basin 1209.
* Intermediate Catchment
*
*
COMPUTE FLOWRATE    ID=2 NHD=1209 DA=1.449 SQKM L=1500 m  W=1095 m
                                       ZONE PROPORTIONS
                     I    II    III    IV     V    XII   XIII  XIV
                    3.0   0.0   64.5  13.5  18.0  0.7   0.3   0.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.3  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2216.1 AND 1209   ***************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:10797)*************************
*
ADD HYD              ID=5 HYD NO=2209.1 IDA=2 IDB=4
*
PRINT HYD            ID=5
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION: 1995.000
                          WATER        FLOW         TOP          FLOWS
                          LEVEL        AREA        WIDTH         RATE
                            m          Sq m          m            cms
                          175.01       10.47       10.17          1.00
                          175.15       12.13       13.53          5.00
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                          175.39       15.90       19.08         10.00
                          175.58       20.09       25.96         15.00
                          175.73       24.87       34.77         20.00
                          176.04       38.50       51.98         35.00
                          176.12       42.91       55.90         40.00
                          176.19       47.37       59.57         45.00
                          176.24       50.08       61.75         50.00
                          176.30       54.08       64.79         55.00
                          176.36       58.01       67.64         60.00
                          176.48       66.03       73.11         70.00
                          176.59       75.04       91.70         80.00
                          176.94      119.08      159.13        110.00
*
************************  ROUTE CHANNEL No. 2209.1 ***************************
*
* Route 2209.1 outflow through channel 3209.1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:6081)**************************
*
ROUTE CHANNEL       ID=4  HYD NO=3209  INFLOW=5  LENGTH=2200 m
                    SLOPE=0.00033 RATING CURVE=4  NSECT=5 PCODE=1
*
PRINT HYD           ID=4
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3
*
ROUTE RESERVOIR      ID=5 HYD NO=6209 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.8
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.85      0.00           0.00
                        174.93      1.30           0.073
                        175.15      4.00           1.179
                        175.32      6.00           2.250
                        175.50      8.00           3.724
                        175.73     10.00           6.202
                        176.10     12.00          12.801
                        176.31     13.00          19.487
                        176.61     14.00          34.402
                        177.28     14.69          74.740
                        177.46     16.00          85.878
                        177.59     20.00          93.922
                        177.67     30.00          98.872
*
* Main Channel Routing Section for catchment 1208
* Dominant Main Channel would be road ditchs in this catchment not
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1208  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1208 and 1210
*                 - FKO of 1.75 used to reflect rural residential development
*************** CALCULATE RUNOFF FOR BASIN No.1208 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1208 DA=0.251 SQKM L=500.0 m  W=2005 m
                     I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.0  48.4  17.7  30.7  0.0  0.0   0.2
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.75  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 5209.1 AND 1208   ***************************
*
ADD HYD              ID=6 HYD NO=2208.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5648)**************************
*
PRINT HYD           ID=6
*
******************************************************************************
* Confluence with the Dent Drain
******************************************************************************
*
******************************************************************************
* Dent Drain Modelling
******************************************************************************
*
* Main Channel Routing Section for catchment 1308
* Dominant Main Channel would be municipal drain
* Sections measured in field by D. Boyd slopes from Municipal drain files.
*
COMPUTE RATING CURVE ID=1  VS NO=1308.1  NO SEG=3  MIN ELEV=175.1 m
                     MAX ELEV=178.0  m  CHNSLP=0.00025   FLSLP=0.0005
                     N=0.080   DIST=20    N=-0.060    DIST=27
                     N=0.080   DIST=47.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0  100.0  22.0   97.0
                      25.0   97.0   27.0  100.0  47.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1308  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*************** CALCULATE RUNOFF FOR BASIN No.1308 ***************************
*
COMPUTE FLOWRATE    ID=1 NHD=1308 DA=4.639 SQKM L=4700 m  W=1040 m
                     I    II    III   IV     V    XII   XIII  XIV
                    5.5  0.8  0.0  0.0   0.0   34.4   5.8   53.5
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5305)**************************
*
PRINT HYD           ID=1
*
* Main Channel Routing Section for catchment 1304
* Dominant Main Channel would be municipal drain
* Section estimated from field inspection D. Boyd, H. Benemeer and from
* 1:2000 mapping
* Slope of drain referenced from Dunnville MDP.
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=175.75 m
                     MAX ELEV=178.0  m  CHNSLP=0.0005   FLSLP=0.001
                     N=0.080   DIST=4    N=-0.055    DIST=13.1
                     N=0.080   DIST=17.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   178.0   2.0   177.5   4.0  177.0
                       7.3  175.75   9.8  175.75  13.1  177.0
                      17.0   178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1304  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1304 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1304 DA=1.968 SQKM L=2800 m  W=1075 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  31.4  14.2  15.9  20.0  6.5   8.2
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
******************************************************************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3365)**************************
*
PRINT HYD           ID=2
*
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3-Structure #20
*
ROUTE RESERVOIR      ID=5 HYD NO=621 INFLOW=2 PCODE=1 OPTION=4
                     ILEVEL=175.71
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        175.71      0.00           0.000
                        176.38      0.30           0.079
                        176.62      0.70           0.199
                        176.98      1.50           1.506
                        177.18      2.00           7.654
                        178.59      5.00         109.582
                        178.61      6.50         111.054
*
* Main Channel Routing Section for catchment 1310
* Dominant Main Channel would be municipal drain
* Slope of drain referenced from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.3  m  CHNSLP=0.00072   FLSLP=0.0014
                     N=0.080   DIST=20    N=-0.060    DIST=24.9
                     N=0.080   DIST=44.9
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0  100.0   21.8   98.5
                      23.1   98.5   24.9  100.0   44.9  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1310  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*
*************** CALCULATE RUNOFF FOR BASIN No.1310 ***************************
*
COMPUTE FLOWRATE    ID=3 NHD=1310 DA=1.759 SQKM L=2800 m  W=1030 m
                     I    II    III   IV     V    XII   XIII  XIV
                    4.5   14.7  0.0  0.0  0.0   12.2  8.3  63.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1

PRINT HYD           ID=3
*
*************************  ADD 1308 AND 1310   ***************************
*
ADD HYD              ID=4 HYD NO=1306.2 IDA=1 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4536)**************************
*
PRINT HYD           ID=4
*
******************************************************************************
*
*************************  ADD 1306.1 AND 1304   ***************************
*
ADD HYD              ID=1 HYD NO=1302.2 IDA=4 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3842)**************************
*
PRINT HYD           ID=1
*
******************************************************************************
*
*
```

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 174.91 m

```
* Main Channel Routing Section for Dent Drain
* Reference from 1:2000 floodplain mapping
*
COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.080   DIST=10    N=-0.060    DIST=24
                     N=0.080   DIST=31.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    2.0   178.0  10.0  177.0
                      14.0  176.5   16.0   176.0  17.0  175.0
                      18.0  175.0   19.0   176.0  21.0  176.5
                      24.0  177.0   28.0   177.5  31.0  178.0
                     RFN=0 PCODE=0

                        RATING CURVE FOR VALLEY SECTION   3611.100

                     WATER LEVEL  FLOW AREA   TOP WIDTH    FLOWRATE
                         m          Sq m          m          cms
                         175.000      0.0000       1.000      0.0000
                         175.077      0.0828       1.154      0.0073
                         175.154      0.1775       1.308      0.0232
                         175.231      0.2840       1.462      0.0463
                         175.308      0.4023       1.615      0.0761
                         175.385      0.5325       1.769      0.1129
                         175.462      0.6745       1.923      0.1567
                         175.538      0.8284       2.077      0.2078
                         175.615      0.9940       2.231      0.2665
                         175.692      1.1715       2.385      0.3330
                         175.769      1.3609       2.538      0.4077
                         175.846      1.5620       2.692      0.4908
                         175.923      1.7750       2.846      0.5827
                         176.000      1.9999       3.000      0.6837
                         176.077      2.2543       3.615      0.7536
                         176.154      2.5560       4.230      0.8503
                         176.231      2.9051       4.846      0.9734
                         176.308      3.3014       5.461      1.1233
                         176.385      3.7452       6.076      1.3009
                         176.461      4.2362       6.692      1.5077
                         176.538      4.7791       7.537      1.7166
                         176.615      5.4003       8.614      1.9418
                         176.692      6.1043       9.691      2.2171
                         176.769      6.8911      10.768      2.5435
                         176.846      7.7608      11.845      2.9230
                         176.923      8.7134      12.922      3.3581
                         177.000      9.7487      13.999      3.8512
                         177.077     10.8728      15.229      4.5887
                         177.154     12.0916      16.460      5.3900
                         177.231     13.4050      17.691      6.2611
                         177.308     14.8131      18.921      7.2074
                         177.385     16.3158      20.152      8.2335
                         177.461     17.9133      21.383      9.3436
                         177.538     19.6039      22.537     10.5444
                         177.615     21.3788      23.614     11.8383
                         177.692     23.2366      24.691     13.2252
                         177.769     25.1772      25.767     14.7079
                         177.846     27.2006      26.844     16.2891
                         177.923     29.3069      27.921     17.9714
                         178.000     31.4960      28.998     19.7576
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1200 m
                    SLOPE=0.001   RATING CURVE=4  NSECT=5  PCODE=0
*
* Main Channel Routing Section for catchment 1302
* Dominant Main Channel would not be municipal drain
* Off channel section assumed for main channel
* Significant depression storage in this catchment
*
*------------------------  SUB-WATERSHED 1302  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1301 and 1302
*
*************** CALCULATE RUNOFF FOR BASIN No.1302 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1302 DA=0.696 SQKM L=1200 m  W=870 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   1.2  24.4  3.5 15.3   36.2  0.5  15.9
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 3611 AND 1302   ****************************
*
ADD HYD              ID=5 HYD NO=1301.1 IDA=3 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1139)**************************
*
PRINT HYD           ID=5
*
*************************  ADD 1301.1 AND 1302   ****************************
*
* Confluence of Dent Drain with main Maple Creek
*
ADD HYD              ID=4 HYD NO=2207.1 IDA=5 IDB=6
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2207.1 AND 1206   ****************************
*
ADD HYD              ID=6 HYD NO=2206.1 IDA=4 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4079)**************************
*
PRINT HYD           ID=6
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  772.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m            cms
                         175.00       54.83      126.07          1.00
                         175.02       56.82      127.69          5.00
                         175.06       62.61      132.33         10.00
                         175.12       71.34      139.02         15.00
                         175.19       82.06      146.82         20.00
                         175.41      116.32      169.36         35.00
                         175.47      126.17      175.30         40.00
                         175.53      136.98      185.13         45.00
                         175.59      148.10      197.24         50.00
                         175.65      159.38      208.80         55.00
                         175.70      170.17      219.28         60.00
                         175.80      193.69      240.56         70.00
                         175.90      218.28      260.95         80.00
                         176.22      324.88      508.51        110.00
*
*
************************  ROUTE CHANNEL No. 3207 ****************************
*
* Route 2207.1 outflow through channel 3207.
*
ROUTE CHANNEL       ID=4  HYD NO=3207  INFLOW=6  LENGTH=800 m
                    SLOPE=0.00033  RATING CURVE=4  NSECT=5  PCODE=1
*
*
* Main Channel Routing Section for catchment 1206
* Dominant Main Channel would not be municipal drain
* Assume off channel section for main channel section in this catchment.
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
*COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
*                     I    II    III   IV     V    XII   XIII  XIV
*                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
*                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
*                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
*                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 3207.1 AND 1206   ****************************
*
*ADD HYD              ID=4 HYD NO=2206.1 IDA=3 IDB=5
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1955)**************************
*
PRINT HYD           ID=4
*
*  Existing Canal Road Culvet without Cut for additional relief
*
ROUTE RESERVOIR      ID=6 HYD NO=620 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.90
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.91       0.0           0.0
                        174.93       2.00          8.315
                        174.99       4.00          9.770
                        175.10       6.00         12.504
                        175.24       8.00         16.834
                        175.43      10.00         25.279
                        175.85      12.00         56.991
                        176.07      13.00         81.208
                        176.32      14.00        115.766
                        177.39      15.00        327.029
                        177.46      16.00        342.687
                        177.59      33.00        371.766
                        177.67      48.00        389.661
PLOT HYD             IDA=6 IDB=4
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  110.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m            cms
                         175.00       49.32      280.11          1.00
                         175.01       50.98      282.63          5.00
                         175.03       55.94      290.05         10.00
                         175.06       63.74      301.34         15.00
                         175.09       74.19      315.83         20.00
                         175.20      117.62      370.03         35.00
                         175.26      133.39      387.85         40.00
                         175.30      148.44      404.12         45.00
                         175.34      164.45      420.72         50.00
                         175.37      180.68      436.93         55.00
                         175.41      197.24      452.86         60.00
                         175.49      234.04      486.40         70.00
                         175.57      274.51      499.63         80.00
                         175.92      456.51      530.71        110.00
*
************************  ROUTE CHANNEL No. 3206.1 ****************************
*
* Route 2206.1 outflow through channel 3206.1
```

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 *
 ROUTE CHANNEL       ID=5  HYD NO=3209  INFLOW=4  LENGTH=500 m
                     SLOPE=0.00033 RATING CURVE=1  NSECT=5 PCODE=1
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
 *
 * Main Channel Routing Section for catchment 1201
 * Dominant Main Channel would not be municipal drain
 * Assume off channel section for main channel section in this catchment.
 *
 *------------------------  SUB-WATERSHED 1201  ----------------------------
 *
 *   DESCRIPTION:  - Headwaters subwatershed
 *                 - Catchment information from Philips Dunnville MDP
 *                 - Catchment 1201
 *                 - FTB set to 3 given the swampy natural of this watershed
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1201 *************************
 *
 COMPUTE FLOWRATE    ID=1 NHD=1201 DA=0.413 SQKM L=700 m  W=1940 m
                      I    II    III   IV     V    XII   XIII  XIV
                     6.7   0.0  35.7  25.6  32.0   0.0  0.0   0.0
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1

                           OUTFLOW HYDROGRAPH SUMMARY
                           ==========================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
```

HYDROGRAPH NUMBER	UPSTREAM DRAINAGE AREA-Sq.km.	VOLUME mm	PEAK DISCHARGE cms	TIME TO PEAK HRS.
1227	1.1160	135.29	2.262	52.312
3228	1.1160	134.81	2.253	52.812
1229	1.0950	148.44	1.957	53.312
1225	1.2200	107.92	2.489	49.980
5229	1.0950	147.01	1.942	54.145
2229	2.3150	126.41	3.868	52.312
2231	3.4310	129.14	6.116	52.646
1228	0.4230	121.94	0.929	49.314
2232	3.8540	128.35	6.855	52.312
1224	0.8280	144.16	2.566	49.813
2233	4.6820	131.15	9.035	51.146
1221	0.4510	184.56	1.384	50.813
1220	1.2150	129.32	3.110	49.480
2221	5.1330	135.84	10.414	51.146
2218	6.3480	134.59	13.260	50.480
3218	6.3480	134.59	13.260	50.480
1611	0.6290	204.40	1.895	49.980
1610	1.0060	273.03	12.402	46.148
3611	0.6290	204.40	1.895	49.980
1601	1.6350	246.63	13.481	46.148
2219	7.9830	157.54	19.335	47.148
1218	0.1940	247.52	0.761	50.980
2217	8.1770	159.67	19.784	47.148
1216	0.2800	240.67	1.573	48.314
2216	8.4570	162.36	21.168	47.148
1209	1.4490	250.24	6.661	48.814
2209	9.9060	175.21	26.764	47.148
3209	9.9060	175.21	26.764	47.148
6209	9.9060	174.75	14.060	56.311
1208	0.2510	227.94	0.738	51.979
2208	10.1570	176.51	27.186	47.148
1308	4.6390	92.46	9.620	48.814
1304	1.9680	194.95	6.038	50.980
621	1.9680	153.92	2.187	62.975
1310	1.7590	93.95	2.811	50.480
1306	6.3980	92.87	11.947	49.147
1302	8.3660	116.88	17.285	49.813
3611	8.3660	116.88	17.285	49.813
1302	0.6960	161.92	1.600	52.979
1301	9.0620	120.34	18.423	49.980
2207	19.2190	150.03	42.749	49.647
1206	1.4510	213.75	4.397	51.979
2206	20.6700	154.50	46.329	49.980
3207	20.6700	154.50	46.329	49.980
620	20.6700	100.49	14.151	63.808
3209	20.6700	154.50	46.329#	49.980

```
                   ----------------------------------------------------
                   Note: * Storage/outflow table exceeded
                         # Rating curve exceeded
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 *************************
 *
 ****************************************************************************
 *
 * Catchments 1202, 1203,1204 and 1205 combined from Phillips study.
 *
 ****************************************************************************
 *
 * Main Channel Routing Section for Drain
 * Reference Municipal drain report
 *
 COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                      MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                      N=0.080   DIST=10    N=-0.060    DIST=24
                      N=0.080   DIST=31.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  178.0    2.0  178.0  10.0  177.0
                       14.0  176.5   16.0  176.0  17.0  175.0
                       18.0  175.0   19.0  176.0  21.0  176.5
                       24.0  177.0   28.0  177.5  31.0  178.0
                      RFN=0 PCODE=1
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 *************************
 *
 COMPUTE FLOWRATE    ID=2 NHD=1205 DA=1.362 SQKM L=3400 m  W=1315 m
                      I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.6  8.4   1.8  0.9  65.1  7.1   13.1
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: KO=3.0  TLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1
 *
 *************************  ADD 3206.1 AND 1201  ****************************
 *
 ADD HYD              ID=4 HYD NO=2201.1 IDA=1 IDB=5
 *
 *************************  ADD 2201.1 AND 1205  ****************************
 *
 ADD HYD              ID=5 HYD NO=2201.1 IDA=4 IDB=2
 *
 *************HEC-RAS FLOW CHANGE LOCATION (ID:256)*************************
 *
 PRINT HYD           ID=5
 *
 ****************************************************************************
 FINISH
```

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 174.91 m

```
              OUTFLOW HYDROGRAPH SUMMARY
              ==========================

       MAPLE WATERSHED MODEL
       EVENT FILE : REGIONAL STORM
       July 18, 1995

             UPSTREAM                 PEAK     TIME TO
HYDROGRAPH   DRAINAGE     VOLUME    DISCHARGE    PEAK
  NUMBER    AREA-Sq.km.     mm         cms       HRS.
-------------------------------------------------------
   1201       0.4130     216.05       1.070    53.145
   1205       1.3620      66.50       0.977    61.975
   2201      21.0830     155.71      47.195    49.980
   2201      22.4450     150.29      47.415    49.980
-------------------------------------------------------
Note: * Storage/outflow table exceeded
      # Rating curve exceeded


         WATERSHED RESPONSE VOLUMES (  mm   )
         =====================================

    RAIN/SNOWMELT= 285.000           OVERLAND=  152.628
       SUBSURFACE=   1.300        GROUNDWATER=   36.169
           SS NET=   9.772             GW NET=  120.891
      EVAPORATION=   0.000        SUBLIMATION=    0.000

    DRAINAGE AREA IN RUNOFF COMPUTATIONS=   22.445 km^2
```

GAWSER Model Output:

Fringe6 Conditions

Simulation Results for 175.74 m Boundary Condition

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 175.74 m

```
                  GAWSER V6.9.20 - Released - Feb. 18, 2020
                  =========================================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
                   =======================================

   Input file 1=MREG10MI.evt
   Input file 2=BC_REG.wat
   Output file =48hBCREG.1st
*
*
START               KUNITS=2  TOTAL DRAINAGE AREA:  TDA=20.3 SQ KM
                    BASEFLOW AT OUTLET:  QBSS=0.0  QBGW=0..5  CMS
                    PRINT OPTIONS:  ECHO=1 output=1 plots=1 RCS=1 SUBW=1
                          PLOT CUTOFF TIME =80 HRS  SUM=0  FREE=0
                    PARAMETER ADJUSTMENT FACTORS:  FDS=1.00  FKEFF=0.30
                      FCS=0.35 FD=0.35 FSAV=1.0  FKO=1.0  FKSS=1.0  FKMF=1
                    INITIAL SOIL/SNOW WATER CONTENT FACTORS:
                      FIMCI=1.00  FIMCII=1.00  FIWE=1.0
                    GLOBAL RAINFALL SCALING FACTOR: GFRF=1.00
                    SIMULATION CONTROLS: TTI=0.1666 IDEL=4 HOURS=80
                    SUBWATERSHED INITAL BASEFLOWS IN CMS -999
*
*MAPLE CREEK WATERSHED MODEL
*WATERSHED FILE
*CREATED JUNE 15,1995 BY D. BOYD
*REVISED SEPTEMBER 20, 2021 BY I.DZEPAROSKI
* ==========================================================================
*
**************************** ENTER SOILS DATA FOR **************************
*
**************************************************************************
* REFERENCED FROM THE GRAND RIVER HYDROLOGY STUDY
**************************************************************************
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ---------------------------------------------------------------
**** Go to event file to get rain and runoff
*
CHANGE INPUT FILE
*
*    Rating Curve for Typical off channel (Flat slopes)
*
COMPUTE RATING CURVE ID=6 VS NO=1.2 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.6 M  CHNSLP=0.001 FLSLP=0.001
                    N=0.35  DIST=39.15  N=-0.15  DIST=40.85
                    N=0.35  DIST=80.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.6   39.15 100.2   39.75 100.0
                    40.25  100.0   40.85 100.2   80.00 100.6
                     RFN=0   RCODE=1
*
*    Rating Curve for Typical off channel (Steep slopes)
*
COMPUTE RATING CURVE ID=5 VS NO=1.1 NO SEG=3 MIN  ELEV=100 m
                    MAX ELEV=100.8 M  CHNSLP=0.010 FLSLP=0.010
                    N=0.35  DIST=24.45  N=-0.15  DIST=25.55
                    N=0.35  DIST=50.00
                     DIST   ELEV    DIST  ELEV    DIST  ELEV
                     0.00  100.8   24.45 100.3   24.75 100.0
                    25.25  100.0   25.55 100.3   50.00 100.8
                     RFN=0   RCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1227.1  NO SEG=3  MIN ELEV=98.1 m
                    MAX ELEV=101.0  m CHNSLP=0.000086 FLSLP=0.000172
                    N=0.070   DIST=100.0   N=-0.050    DIST=105.7
                    N=0.070   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST    ELEV
                       0.0  101.0  100.0   100.0 101.95   98.1
                    103.75   98.1  105.7   100.0  200.0  101.0
                    RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1227  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1227 **************************
*
* Calculate runoff hydrograph for basin 1227.
* Note revised drainage area based on the LiDAR 2017 DEM
*
COMPUTE FLOWRATE    ID=1 NHD=1227 DA=1.116 SQKM    L=2700 m  W=1425 m
                                   ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   10.1   0.8   0.0   73.8  1.9  10.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*

*************** CALCULATE ROUTING SECTION OF 1227 ***************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=3228  NO SEG=3  MIN ELEV=98.3 m
                     MAX ELEV=101.0  m  CHNSLP=0.00118 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.060    DIST=105.2
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  102.0   98.3
                     103.20   98.3  105.2   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*
************************  ROUTE CHANNEL No. 3228 ****************************
*
*
ROUTE CHANNEL       ID=2  HYD NO=3228  INFLOW=1  LENGTH=1010 m
                    SLOPE=0.00118  RATING CURVE=3  NSECT=2  PCODE=1
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1229  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1229 **************************
*
* Calculate runoff hydrograph for basin 1229.
*
COMPUTE FLOWRATE    ID=1 NHD=1229 DA=1.095 SQKM    L=1000 m  W=1200 m
                                   ZONE PROPORTIONS
                       I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.9    6.0   1.6   50.0  23.2  3.0  12.3
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 **************************
*
* Calculate Main Channel Rating curve for basin 1225
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
                     N=0.040   DIST=200.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  101.0  100.0   100.0 101.8   98.2
                     103.8   98.2  105.6   100.0 106.0  100.0
                     200.0   101.0
                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1225  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1225 **************************
*
* Calculate runoff hydrograph for basin 1225.
*
COMPUTE FLOWRATE    ID=4 NHD=1225 DA=1.220 SQKM    L=1600 m  W=1235 m
                                   ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0    0.0   0.0  58.8  5.2  33.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Route 1229 outflow through channel 5229.
*
ROUTE CHANNEL       ID=3  HYD NO=5229  INFLOW=1  LENGTH=1550 m
                    SLOPE=0.0010   RATING CURVE=1  NSECT=2  PCODE=1
*
**************************  ADD 5229 AND 1225  ******************************
*
ADD HYD              ID=1 HYD NO=2229 IDA=4 IDB=3
*
*
**************************  ADD 2229 AND 3228  ******************************
*
ADD HYD              ID=3 HYD NO=2231 IDA=2 IDB=1
```

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 175.74 m

```
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=101.0  m  CHNSLP=0.00135 FLSLP=0.003
                     N=0.070   DIST=100    N=-0.055    DIST=106
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0 102.25   98.5
                     103.75   98.5  106.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1228  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1228 **************************
*
* Calculate runoff hydrograph for basin 1228.
*
COMPUTE FLOWRATE    ID=1 NHD=1228 DA=0.423 SQKM    L=1600 m  W=980 m
                                     ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0   0.0   0.0   0.0   74.5  4.4  18.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FTB=3.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*
*************************  ADD 1228 AND 2230  ******************************
*
ADD HYD              ID=2 HYD NO=2232 IDA=1 IDB=3
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:3413)*************************
*
PRINT HYD           ID=2
*

*************** CALCULATE ROUTING SECTION OF 1224  **************************
* Information referenced from Philips section 1227, main channel section
* from field investigation D. Boyd and slope from municipal drain reports
*
COMPUTE RATING CURVE ID=3  VS NO=1223  NO SEG=3  MIN ELEV=98.2 m
                     MAX ELEV=101.0  m  CHNSLP=0.0003 FLSLP=0.0006
                     N=0.070   DIST=100.0    N=-0.050    DIST=105
                     N=0.070   DIST=200.0
                       DIST   ELEV   DIST   ELEV   DIST    ELEV
                        0.0  101.0  100.0   100.0  101.9   98.2
                     103.10   98.2  105.0   100.0  200.0  101.0
                     RFN=0 PCODE=1
*

*------------------------  SUB-WATERSHED 1224  ------------------------------
*
*   DESCRIPTION:  - Headwater subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1224 **************************
*
* Calculate runoff hydrograph for basin 1224.
*
COMPUTE FLOWRATE    ID=1 NHD=1224 DA=0.828 SQKM L=2700 m  W=930 m
                                     ZONE PROPORTIONS
                     I    II    III    IV     V   XII   XIII  XIV
                    3.0   2.1   0.0    1.1   0.0  85.9  5.3  3.7
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 1224 AND 2232  ******************************
*
ADD HYD              ID=4 HYD NO=2233 IDA=1 IDB=2
*
**************HEC-RAS FLOW CHANGE LOCATION (ID:2586.51)**********************
*
PRINT HYD           ID=4
*
* Calculate Main Channel Rating curve for basin 1225 and 1229
* Information referenced from Philips section 1229. Main channel
* dimensions from field visit H. Benemeer and D. Boyd channel slope
* from municipal drain reports
*
*COMPUTE RATING CURVE ID=1  VS NO=1225  NO SEG=3  MIN ELEV=98.2 m
*                     MAX ELEV=101.0  m  CHNSLP=0.001   FLSLP=0.002
*                     N=0.040   DIST=100.0   N=-0.060    DIST=105.6
*                     N=0.040   DIST=200.0
*                       DIST   ELEV   DIST   ELEV   DIST   ELEV
*                        0.0  101.0  100.0   100.0 101.8   98.2
*                     103.8   98.2  105.6   100.0 106.0  100.0
*                     200.0   101.0
*                     RFN=0 PCODE=1
*
*
*------------------------  SUB-WATERSHED 1221  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1221
*                 - Off channel section also used for main channel
*                   no obvious main channel section for this catchment.
*                 - Note intermediate catchment, length and wide based on
*                   smaller catchments contributing laterally to stream.
*************** CALCULATE RUNOFF FOR BASIN No.1221 **************************
*
* Calculate runoff hydrograph for basin 1221.
*
COMPUTE FLOWRATE    ID=1 NHD=1221 DA=0.451 SQKM  L=600 m  W=970 m
                                     ZONE PROPORTIONS
                     I     II    III   IV     V    XII   XIII  XIV
                    3.0    1.1   39.0   2.0  3.7  40.3   4.9  6.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
* Calculate Channel Routing Rating curve for main channel catchment 1220
* Invert data from Dunnville MDP Pat Warren Drain Profile
* Channel data from 1:2000 Meridian floodplain mapping
*
COMPUTE RATING CURVE ID=1  VS NO=1228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=4.0    N=-0.050    DIST=7.0
                     N=0.050   DIST=11.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  178.0    4.0   176.0   4.5  175.5
                        6.5  175.5    7.0   176.0  11.0  178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1220  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*************** CALCULATE RUNOFF FOR BASIN No.1220 **************************
*
* Calculate runoff hydrograph for basin 1220.
*
COMPUTE FLOWRATE    ID=2 NHD=1220 DA=1.215 SQKM    L=2300 m  W=850 m
                                     ZONE PROPORTIONS
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  19.5   3.7  5.8  13.9  10.4   42.9
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:13837)************************
*
PRINT HYD           ID=2
*
*************************  ADD 1221 AND 3231  ******************************
*
ADD HYD              ID=3 HYD NO=2221.1 IDA=1 IDB=4
*
*************************  ADD 2221.1 AND 1220  ****************************
*
ADD HYD              ID=5 HYD NO=2218.2 IDA=3 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:12741)************************
*
PRINT HYD           ID=5
*
*************************  ADD 1221 AND 3231  ******************************
*
* Calculate Channel Routing Rating curve for reach d/s of flow node 2219.1
*
COMPUTE RATING CURVE ID=3  VS NO=3228.1  NO SEG=3  MIN ELEV=175.5 m
                     MAX ELEV=177.5  m  CHNSLP=0.0007   FLSLP=0.0014
                     N=0.050   DIST=76.0    N=-0.060    DIST=82
                     N=0.050   DIST=188.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  177.5   60.0   177.0  74.0  176.5
                        76.  176.0   78.0   175.5  81.0  175.5
                        82.  176.0   84.0   176.5 142.0  177.0
                       188.  177.5   RFN=0 PCODE=1
*
************************  ROUTE CHANNEL No. 5229 ****************************
*
* Route hydrograph to confluence with Dunnville Branch
*
ROUTE CHANNEL       ID=6  HYD NO=3218.1  INFLOW=5  LENGTH=400 m
                    SLOPE=0.0007 RATING CURVE=3  NSECT=2  PCODE=1
*
*************** CALCULATE RUNOFF FOR BASIN No.1611 **************************
*
* Calculate runoff hydrograph for basin 1611.
* Typical rural road cross section of ditch.
*
COMPUTE RATING CURVE ID=1  VS NO=1611.1  NO SEG=3  MIN ELEV=99.3 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.030   DIST=11.1    N=-0.030    DIST=13.4
                     N=0.030   DIST=23.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  100.5   10.0  100.0   11.1   99.3
                       12.3   99.3   13.4  100.0   23.0   100.5
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=1 NHD=1611 DA=0.629 SQKM    L=2000 m  W=1525 m
                                     ZONE PROPORTIONS
                      I     II    III   IV     V    XII   XIII  XIV
                     3.0   0.0   42.4  21.4  13.2   2.1  0.4   17.4
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.13  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
PRINT HYD           ID=1
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
READ SOIL PARAMETERS  NZONE=8
                          I   II    III   IV    V    XII   XIII  XIV
                    DS=   2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF= 0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=   0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=    0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=  0   200   200   200   200   250   250   250
                    HI=   0   0.01  100   100   100   200   200   200
                    SMCI= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
```

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```
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
**** Go to event file to get rain and runoff
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1610 **************************
*
* Note Basin 1610 represents Dunnville urban settlment
* Percentage impervious esitmates impervious level was assessed based on
* the aerial photo and impervious levels calculated for the similar type of
* residential development
* Standard Urban Rating Curve for basin mainchannel (flat slopes)
* Referenced from Laurel Creek Study. Slopes adjusted to local Topograph
*
COMPUTE RATING CURVE ID=4  VS NO=0.5  NO SEG=1  MIN ELEV=0.0 m
                     MAX ELEV=0.05 m  CHNSLP=0.002  FLSLP=0.002
                     N=-0.013  DIST=100.00
                     DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   1.0    0.01   0.0    99.99   0.0
                     100.0   1.0
                     RFN=0 PCODE=1
*
* Calculate Main Channel Routing Curve for Catchment 1610
*
COMPUTE RATING CURVE ID=1  VS NO=3610  NO SEG=3  MIN ELEV=176.5 m
                     MAX ELEV=178.4  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.045   DIST=64.0    N=-0.050    DIST=66
                     N=0.050   DIST=70.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.4   20.0   178.0  62.0  177.5
                       64.  177.0   65.0   176.5  66.0  176.5
                       70.  178.0
                     RFN=0 PCODE=1
*
COMPUTE FLOWRATE    ID=2 NHD=1610 DA=1.006 SQKM    L=1990 m  W=44.444 m
                                      ZONE PROPORTIONS
                     I     II    III    IV     V    XII   XIII  XIV
                    55.0   0.0   25.0   19.0   3.0   0.0   0.0   0.0
                    RATING CURVES IDC=1  IDOC=4  QRMC=0.90  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.25 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1040 m
                    SLOPE=0.0010 RATING CURVE=1  NSECT=5 PCODE=1
*
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1889)**************************
*
PRINT HYD           ID=4
*************************  ADD 3611 AND 1610  ******************************
*
* Add routed hydrograph with Urban Dunnville portion.
*
ADD HYD              ID=5 HYD NO=1601.1 IDA=4 IDB=2
*
*************************  ADD 1601.1 AND 1219.1   *************************
*
* Add Urban Dunnville portion with upstream headwaters areas
*
ADD HYD              ID=4 HYD NO=2219.1 IDA=6 IDB=5
*
*
*
*   .====1====.====2====.====3====.====4====.====5====.====6====.====7====.===
*  Soil types for the Lower Grand subwatersheds:
*  Soil parameters were calculated based on the information contained in the
*  Hydrological Response Unit Shapefile
*
READ SOIL PARAMETERS  NZONE=8
                         I   II    III   IV    V    XII   XIII  XIV
                    DS=    2   40.0  5.0   8.0  15.0   5.0   8.0  15.0
                    KEFF=  0   0.2   1.8   3.8   6.4  15.0  25.0  75.0
                    CS=    0   0.2   1.4   2.9   4.8  11.2  19.0  56.0
                    D=     0   0.2   0.2   0.4   0.6   1.5   2.5   7.5
                    SAV=   0   200   200   200   200   250   250   250
                    HI=    0   0.01  100   100   100   200   200   200
                    SMCI=  0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCI=  0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPI= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTI= 0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    HII=   0  0.01   250   250   250   400   400   600
                    SMCII= 0  0.56  0.56  0.56  0.56  0.40  0.40  0.40
                    IMCII= 0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    FCAPII=0  0.46  0.46  0.46  0.46  0.10  0.10  0.10
                    WILTII=0  0.27  0.27  0.27  0.27  0.04  0.04  0.04
                    X=     0    1     1     1     0     0     0     0
                    FATR=  1    1     1     1     1     1     1     1
* ------------------------------------------------------------------
*
* Main Channel Routing Section for catchment 1218
* No dominent main channel use off channel for main channel
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1218  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1218
*
*************** CALCULATE RUNOFF FOR BASIN No.1218 **************************
*
* Calculate runoff hydrograph for basin 1218.
*
COMPUTE FLOWRATE    ID=2 NHD=1218 DA=0.194 SQKM    L=900 m  W=585 m
                                      ZONE PROPORTIONS
                     I    II    III     IV    V    XII   XIII  XIV
                    3.0   0.0  75.4   10.4   11.2   0.0  0.0   0.0
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*************************  ADD 1601.1 AND 1219.1   *************************
*
ADD HYD              ID=6 HYD NO=2217.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11584)*************************
*
PRINT HYD           ID=6
*
*
* Main Channel Routing Section for catchment 1216
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Sections Estimated from field survey
*
COMPUTE RATING CURVE ID=1  VS NO=1216.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.5  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.050   DIST=30    N=-0.045    DIST=33.9
                     N=0.050   DIST=53.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.5   30.0   100.0  31.2   98.5
                       32.7   98.5   33.9   100.0  53.0  101.5
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1216  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1216
*
*************** CALCULATE RUNOFF FOR BASIN No.1216 **************************
*
* Calculate runoff hydrograph for basin 1216.
* Intermediate Catchment
* Combined Philip Catchments 1216 and 1217
*
COMPUTE FLOWRATE    ID=2 NHD=1216 DA=0.280 SQKM    L=900 m  W=690 m
                                      ZONE PROPORTIONS
                     I    II    III    IV    V   XII    XIII  XIV
                    3.0  0.0  59.4   15.2  10.1 11.0   1.2   0.1
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0 FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2218.1 AND 1216   ***************************
*
ADD HYD              ID=4 HYD NO=2216.1 IDA=2 IDB=6
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:11547)*************************
*
PRINT HYD           ID=4
*
*
* Main Channel Routing Section for catchment 1209
* Dominant Main Channel would be farms ditchs in this catchment not
* Maple Creek Main Channel
* Section Estimated in the field by D. Boyd and H Benemeer.
*
COMPUTE RATING CURVE ID=1  VS NO=1209.1  NO SEG=3  MIN ELEV=98.8 m
                     MAX ELEV=100.3  m  CHNSLP=0.004   FLSLP=0.08
                     N=0.050   DIST=20    N=-0.040    DIST=22
                     N=0.050   DIST=42.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0   100.0  20.7   98.8
                       21.3   98.8   22.0   100.0  42.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1209  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1209
*
*************** CALCULATE RUNOFF FOR BASIN No.1209 **************************
*
* Calculate runoff hydrograph for basin 1209.
* Intermediate Catchment
*
*
COMPUTE FLOWRATE    ID=2 NHD=1209 DA=1.449 SQKM L=1500 m  W=1095 m
                                      ZONE PROPORTIONS
                     I    II    III    IV     V    XII   XIII  XIV
                    3.0   0.0   64.5  13.5  18.0  0.7   0.3   0.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.3  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2216.1 AND 1209   ***************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:10797)*************************
*
ADD HYD              ID=5 HYD NO=2209.1 IDA=2 IDB=4
*
PRINT HYD            ID=5
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION: 1995.000
                          WATER        FLOW         TOP          FLOWS
                          LEVEL        AREA        WIDTH         RATE
                            m          Sq m          m            cms
                          175.01       10.47       10.17          1.00
                          175.15       12.13       13.53          5.00
```

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 175.74 m

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                        175.39       15.90       19.08         10.00
                        175.58       20.09       25.96         15.00
                        175.73       24.87       34.77         20.00
                        176.04       38.50       51.98         35.00
                        176.12       42.91       55.90         40.00
                        176.19       47.37       59.57         45.00
                        176.24       50.08       61.75         50.00
                        176.30       54.08       64.79         55.00
                        176.36       58.01       67.64         60.00
                        176.48       66.03       73.11         70.00
                        176.59       75.04       91.70         80.00
                        176.94      119.08      159.13        110.00
*
************************  ROUTE CHANNEL No. 2209.1 ***************************
*
* Route 2209.1 outflow through channel 3209.1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:6081)***************************
*
ROUTE CHANNEL       ID=4  HYD NO=3209  INFLOW=5  LENGTH=2200 m
                    SLOPE=0.00033 RATING CURVE=4  NSECT=5 PCODE=1
*
PRINT HYD           ID=4
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3
*
ROUTE RESERVOIR      ID=5 HYD NO=6209 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.8
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.85      0.00           0.00
                        175.78      1.30           0.539
                        175.94      4.00           2.987
                        176.18      6.00           8.700
                        176.52      8.00          23.227
                        176.97     10.00          49.222
                        177.32     12.00          70.879
                        177.45     13.00          78.923
                        177.47     14.00          80.160
                        177.48     14.69          80.779
                        177.49     16.00          81.398
                        177.61     20.00          88.823
                        177.68     30.00          93.155
*
* Main Channel Routing Section for catchment 1208
* Dominant Main Channel would be road ditchs in this catchment not
* Maple Creek Main Channel
*
*------------------------  SUB-WATERSHED 1208  ------------------------------
*
*   DESCRIPTION:  - Intermediate subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1208 and 1210
*                 - FKO of 1.75 used to reflect rural residential development
*************** CALCULATE RUNOFF FOR BASIN No.1208 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1208 DA=0.251 SQKM L=500.0 m  W=2005 m
                     I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.0  48.4  17.7  30.7  0.0  0.0   0.2
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.2  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=1.75  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 5209.1 AND 1208   ***************************
*
ADD HYD              ID=6 HYD NO=2208.1 IDA=2 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5648)***************************
*
PRINT HYD           ID=6
*
******************************************************************************
* Confluence with the Dent Drain
******************************************************************************
*
******************************************************************************
* Dent Drain Modelling
******************************************************************************
*
* Main Channel Routing Section for catchment 1308
* Dominant Main Channel would be municipal drain
* Sections measured in field by D. Boyd slopes from Municipal drain files.
*
COMPUTE RATING CURVE ID=1  VS NO=1308.1  NO SEG=3  MIN ELEV=175.1 m
                     MAX ELEV=178.0  m  CHNSLP=0.00025   FLSLP=0.0005
                     N=0.080   DIST=20    N=-0.060    DIST=27
                     N=0.080   DIST=47.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0  100.0  22.0   97.0
                      25.0   97.0   27.0  100.0  47.0  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1308  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*************** CALCULATE RUNOFF FOR BASIN No.1308 ***************************
*
COMPUTE FLOWRATE    ID=1 NHD=1308 DA=4.639 SQKM L=4700 m  W=1040 m
                     I    II    III   IV     V    XII   XIII  XIV
                    5.5  0.8  0.0  0.0   0.0   34.4   5.8   53.5
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND:FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:5305)***************************
*
PRINT HYD           ID=1
*
* Main Channel Routing Section for catchment 1304
* Dominant Main Channel would be municipal drain
* Section estimated from field inspection D. Boyd, H. Benemeer and from
* 1:2000 mapping
* Slope of drain referenced from Dunnville MDP.
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=175.75 m
                     MAX ELEV=178.0  m  CHNSLP=0.0005   FLSLP=0.001
                     N=0.080   DIST=4    N=-0.055    DIST=13.1
                     N=0.080   DIST=17.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0   178.0   2.0   177.5   4.0  177.0
                       7.3  175.75   9.8  175.75  13.1  177.0
                      17.0   178.0
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1304  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*
*
*************** CALCULATE RUNOFF FOR BASIN No.1304 ***************************
*
COMPUTE FLOWRATE    ID=2 NHD=1304 DA=1.968 SQKM L=2800 m  W=1075 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.8  31.4  14.2  15.9  20.0  6.5   8.2
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
******************************************************************************
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3365)***************************
*
PRINT HYD           ID=2
*
*
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
* Routing section or route reservoir needed at this location!!!!! use ouput as
* ID use ID=5 as output
*  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
*
*  RESERVOIR TO ESTIMATE PONDING ELEVATION UPSTREAM OF HWY3-Structure #20
*
ROUTE RESERVOIR      ID=5 HYD NO=621 INFLOW=2 PCODE=1 OPTION=4
                     ILEVEL=175.71
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        175.71      0.00           0.000
                        176.38      0.30           0.079
                        176.62      0.70           0.199
                        176.98      1.50           1.506
                        177.18      2.00           7.654
                        178.59      5.00         109.582
                        178.61      6.50         111.054
*
* Main Channel Routing Section for catchment 1310
* Dominant Main Channel would be municipal drain
* Slope of drain referenced from municipal drain reports
*
COMPUTE RATING CURVE ID=1  VS NO=1304.1  NO SEG=3  MIN ELEV=98.5 m
                     MAX ELEV=100.3  m  CHNSLP=0.00072   FLSLP=0.0014
                     N=0.080   DIST=20    N=-0.060    DIST=24.9
                     N=0.080   DIST=44.9
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  100.3   20.0  100.0   21.8   98.5
                      23.1   98.5   24.9  100.0   44.9  100.3
                     RFN=0 PCODE=1
*
*------------------------  SUB-WATERSHED 1310  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - FTB set to 3 given the swampy natural of this watershed
*
*************** CALCULATE RUNOFF FOR BASIN No.1310 ***************************
*
COMPUTE FLOWRATE    ID=3 NHD=1310 DA=1.759 SQKM L=2800 m  W=1030 m
                     I    II    III   IV     V    XII   XIII  XIV
                    4.5   14.7  0.0  0.0  0.0   12.2  8.3  63.0
                    RATING CURVES IDC=1  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1

PRINT HYD           ID=3
*
*************************  ADD 1308 AND 1310   ***************************
*
ADD HYD              ID=4 HYD NO=1306.2 IDA=1 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4536)***************************
*
PRINT HYD           ID=4
*
******************************************************************************
*
*************************  ADD 1306.1 AND 1304   ***************************
*
ADD HYD              ID=1 HYD NO=1302.2 IDA=4 IDB=2
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:3842)***************************
*
PRINT HYD           ID=1
*
******************************************************************************
*
*
```

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 175.74 m

```
* Main Channel Routing Section for Dent Drain
* Reference from 1:2000 floodplain mapping
*
COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                     MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                     N=0.080   DIST=10    N=-0.060    DIST=24
                     N=0.080   DIST=31.0
                      DIST   ELEV   DIST   ELEV   DIST   ELEV
                       0.0  178.0    2.0   178.0  10.0  177.0
                      14.0  176.5   16.0   176.0  17.0  175.0
                      18.0  175.0   19.0   176.0  21.0  176.5
                      24.0  177.0   28.0   177.5  31.0  178.0
                     RFN=0 PCODE=0

                        RATING CURVE FOR VALLEY SECTION   3611.100

                     WATER LEVEL  FLOW AREA   TOP WIDTH    FLOWRATE
                         m          Sq m          m          cms
                         175.000      0.0000       1.000      0.0000
                         175.077      0.0828       1.154      0.0073
                         175.154      0.1775       1.308      0.0232
                         175.231      0.2840       1.462      0.0463
                         175.308      0.4023       1.615      0.0761
                         175.385      0.5325       1.769      0.1129
                         175.462      0.6745       1.923      0.1567
                         175.538      0.8284       2.077      0.2078
                         175.615      0.9940       2.231      0.2665
                         175.692      1.1715       2.385      0.3330
                         175.769      1.3609       2.538      0.4077
                         175.846      1.5620       2.692      0.4908
                         175.923      1.7750       2.846      0.5827
                         176.000      1.9999       3.000      0.6837
                         176.077      2.2543       3.615      0.7536
                         176.154      2.5560       4.230      0.8503
                         176.231      2.9051       4.846      0.9734
                         176.308      3.3014       5.461      1.1233
                         176.385      3.7452       6.076      1.3009
                         176.461      4.2362       6.692      1.5077
                         176.538      4.7791       7.537      1.7166
                         176.615      5.4003       8.614      1.9418
                         176.692      6.1043       9.691      2.2171
                         176.769      6.8911      10.768      2.5435
                         176.846      7.7608      11.845      2.9230
                         176.923      8.7134      12.922      3.3581
                         177.000      9.7487      13.999      3.8512
                         177.077     10.8728      15.229      4.5887
                         177.154     12.0916      16.460      5.3900
                         177.231     13.4050      17.691      6.2611
                         177.308     14.8131      18.921      7.2074
                         177.385     16.3158      20.152      8.2335
                         177.461     17.9133      21.383      9.3436
                         177.538     19.6039      22.537     10.5444
                         177.615     21.3788      23.614     11.8383
                         177.692     23.2366      24.691     13.2252
                         177.769     25.1772      25.767     14.7079
                         177.846     27.2006      26.844     16.2891
                         177.923     29.3069      27.921     17.9714
                         178.000     31.4960      28.998     19.7576
*
************************  ROUTE CHANNEL No. 3611 ****************************
*
*
* Route 2611 outflow through channel 3611.
*
ROUTE CHANNEL       ID=4  HYD NO=3611  INFLOW=1  LENGTH=1200 m
                    SLOPE=0.001   RATING CURVE=4  NSECT=5  PCODE=0
*
* Main Channel Routing Section for catchment 1302
* Dominant Main Channel would not be municipal drain
* Off channel section assumed for main channel
* Significant depression storage in this catchment
*
*------------------------  SUB-WATERSHED 1302  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1301 and 1302
*
*************** CALCULATE RUNOFF FOR BASIN No.1302 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1302 DA=0.696 SQKM L=1200 m  W=870 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   1.2  24.4  3.5 15.3   36.2  0.5  15.9
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 3611 AND 1302   ****************************
*
ADD HYD              ID=5 HYD NO=1301.1 IDA=3 IDB=4
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1139)**************************
*
PRINT HYD           ID=5
*
*************************  ADD 1301.1 AND 1302   ****************************
*
* Confluence of Dent Drain with main Maple Creek
*
ADD HYD              ID=4 HYD NO=2207.1 IDA=5 IDB=6
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
                     I    II    III   IV     V    XII   XIII  XIV
                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 2207.1 AND 1206   ****************************
*
ADD HYD              ID=6 HYD NO=2206.1 IDA=4 IDB=3
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:4079)**************************
*
PRINT HYD           ID=6
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  772.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m            cms
                         175.00       54.83      126.07          1.00
                         175.02       56.82      127.69          5.00
                         175.06       62.61      132.33         10.00
                         175.12       71.34      139.02         15.00
                         175.19       82.06      146.82         20.00
                         175.41      116.32      169.36         35.00
                         175.47      126.17      175.30         40.00
                         175.53      136.98      185.13         45.00
                         175.59      148.10      197.24         50.00
                         175.65      159.38      208.80         55.00
                         175.70      170.17      219.28         60.00
                         175.80      193.69      240.56         70.00
                         175.90      218.28      260.95         80.00
                         176.22      324.88      508.51        110.00
*
*
************************  ROUTE CHANNEL No. 3207 ****************************
*
* Route 2207.1 outflow through channel 3207.
*
ROUTE CHANNEL       ID=4  HYD NO=3207  INFLOW=6  LENGTH=800 m
                    SLOPE=0.00033  RATING CURVE=4  NSECT=5  PCODE=1
*
*
* Main Channel Routing Section for catchment 1206
* Dominant Main Channel would not be municipal drain
* Assume off channel section for main channel section in this catchment.
*
*------------------------  SUB-WATERSHED 1206  ------------------------------
*
*   DESCRIPTION:  - Headwaters subwatershed
*                 - Catchment information from Philips Dunnville MDP
*                 - Combined catchments 1206 and 1207
*
*************** CALCULATE RUNOFF FOR BASIN No.1206 **************************
*
*COMPUTE FLOWRATE    ID=3 NHD=1206 DA=1.451 SQKM L=800 m  W=1140 m
*                     I    II    III   IV     V    XII   XIII  XIV
*                    3.0   0.0  49.7  14.5  13.5   13.3  4.3   1.7
*                    RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
*                    MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
*                    KSS=5 hr  KGW=384 hr  PCODE=1
*
*************************  ADD 3207.1 AND 1206   ****************************
*
*ADD HYD              ID=4 HYD NO=2206.1 IDA=3 IDB=5
*
*************HEC-RAS FLOW CHANGE LOCATION (ID:1955)**************************
*
PRINT HYD           ID=4
*
*  Existing Canal Road Culvet without Cut for additional relief
*
ROUTE RESERVOIR      ID=6 HYD NO=620 INFLOW=4 PCODE=1 OPTION=4
                     ILEVEL=173.90
                      ELEVATION    OUTFLOW        STORAGE
                         (M)        (CMS)         (HA*M)
                        173.91        0.0          0.000
                        175.78       2.00         50.754
                        175.91       4.00         63.596
                        176.13       6.00         89.166
                        176.43       8.00        133.853
                        176.82      10.00        206.110
                        177.30      12.00        306.898
                        177.45      13.00        340.540
                        177.47      14.00        344.924
                        177.48      15.00        347.161
                        177.49      16.00        349.398
                        177.61      33.00        376.240
                        177.68      48.00        391.898
PLOT HYD             IDA=6 IDB=4
*
STORE RATING CURVE  ID=4 RATING CURVE FOR VALLEY SECTION:  110.000
                         WATER        FLOW         TOP          FLOWS
                         LEVEL        AREA        WIDTH         RATE
                           m          Sq m          m            cms
                         175.00       49.32      280.11          1.00
                         175.01       50.98      282.63          5.00
                         175.03       55.94      290.05         10.00
                         175.06       63.74      301.34         15.00
                         175.09       74.19      315.83         20.00
                         175.20      117.62      370.03         35.00
                         175.26      133.39      387.85         40.00
                         175.30      148.44      404.12         45.00
                         175.34      164.45      420.72         50.00
                         175.37      180.68      436.93         55.00
                         175.41      197.24      452.86         60.00
                         175.49      234.04      486.40         70.00
                         175.57      274.51      499.63         80.00
                         175.92      456.51      530.71        110.00
*
************************  ROUTE CHANNEL No. 3206.1 ****************************
*
* Route 2206.1 outflow through channel 3206.1
```

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 175.74 m

```
 *
 ROUTE CHANNEL       ID=5  HYD NO=3209  INFLOW=4  LENGTH=500 m
                     SLOPE=0.00033 RATING CURVE=1  NSECT=5 PCODE=1
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    46.329 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    45.171 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
   ** WARNING ** RATING TABLE EXCEEDED Q=    47.487 VS=  1304.100 TIME=   0.000
A(NPS,ID)=     3.568
 *
 * Main Channel Routing Section for catchment 1201
 * Dominant Main Channel would not be municipal drain
 * Assume off channel section for main channel section in this catchment.
 *
 *------------------------  SUB-WATERSHED 1201  ----------------------------
 *
 *   DESCRIPTION:  - Headwaters subwatershed
 *                 - Catchment information from Philips Dunnville MDP
 *                 - Catchment 1201
 *                 - FTB set to 3 given the swampy natural of this watershed
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1201 *************************
 *
 COMPUTE FLOWRATE    ID=1 NHD=1201 DA=0.413 SQKM L=700 m  W=1940 m
                      I    II    III   IV     V    XII   XIII  XIV
                     6.7   0.0  35.7  25.6  32.0   0.0  0.0   0.0
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: FKO=2.0  FTLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1

                           OUTFLOW HYDROGRAPH SUMMARY
                           ==========================

                   MAPLE WATERSHED MODEL
                   EVENT FILE : REGIONAL STORM
                   July 18, 1995
```

HYDROGRAPH NUMBER	UPSTREAM DRAINAGE AREA-Sq.km.	VOLUME mm	PEAK DISCHARGE cms	TIME TO PEAK HRS.
1227	1.1160	135.29	2.262	52.312
3228	1.1160	134.81	2.253	52.812
1229	1.0950	148.44	1.957	53.312
1225	1.2200	107.92	2.489	49.980
5229	1.0950	147.01	1.942	54.145
2229	2.3150	126.41	3.868	52.312
2231	3.4310	129.14	6.116	52.646
1228	0.4230	121.94	0.929	49.314
2232	3.8540	128.35	6.855	52.312
1224	0.8280	144.16	2.566	49.813
2233	4.6820	131.15	9.035	51.146
1221	0.4510	184.56	1.384	50.813
1220	1.2150	129.32	3.110	49.480
2221	5.1330	135.84	10.414	51.146
2218	6.3480	134.59	13.260	50.480
3218	6.3480	134.59	13.260	50.480
1611	0.6290	204.40	1.895	49.980
1610	1.0060	273.03	12.402	46.148
3611	0.6290	204.40	1.895	49.980
1601	1.6350	246.63	13.481	46.148
2219	7.9830	157.54	19.335	47.148
1218	0.1940	247.52	0.761	50.980
2217	8.1770	159.67	19.784	47.148
1216	0.2800	240.67	1.573	48.314
2216	8.4570	162.36	21.168	47.148
1209	1.4490	250.24	6.661	48.814
2209	9.9060	175.21	26.764	47.148
3209	9.9060	175.21	26.764	47.148
6209	9.9060	151.01	11.024	58.810
1208	0.2510	227.94	0.738	51.979
2208	10.1570	176.51	27.186	47.148
1308	4.6390	92.46	9.620	48.814
1304	1.9680	194.95	6.038	50.980
621	1.9680	153.92	2.187	62.975
1310	1.7590	93.95	2.811	50.480
1306	6.3980	92.87	11.947	49.147
1302	8.3660	116.88	17.285	49.813
3611	8.3660	116.88	17.285	49.813
1302	0.6960	161.92	1.600	52.979
1301	9.0620	120.34	18.423	49.980
2207	19.2190	150.03	42.749	49.647
1206	1.4510	213.75	4.397	51.979
2206	20.6700	154.50	46.329	49.980
3207	20.6700	154.50	46.329	49.980
620	20.6700	58.85	10.134	67.806
3209	20.6700	154.50	46.329#	49.980

```
                 ----------------------------------------------------
                 Note: * Storage/outflow table exceeded
                       # Rating curve exceeded
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 *************************
 *
 ****************************************************************************
 *
 * Catchments 1202, 1203,1204 and 1205 combined from Phillips study.
 *
 ****************************************************************************
 *
 * Main Channel Routing Section for Drain
 * Reference Municipal drain report
 *
 COMPUTE RATING CURVE ID=4  VS NO=3611.1  NO SEG=3  MIN ELEV=175.00 m
                      MAX ELEV=178.0  m  CHNSLP=0.001   FLSLP=0.002
                      N=0.080   DIST=10    N=-0.060    DIST=24
                      N=0.080   DIST=31.0
                       DIST   ELEV   DIST   ELEV   DIST   ELEV
                        0.0  178.0    2.0  178.0  10.0  177.0
                       14.0  176.5   16.0  176.0  17.0  175.0
                       18.0  175.0   19.0  176.0  21.0  176.5
                       24.0  177.0   28.0  177.5  31.0  178.0
                      RFN=0 PCODE=1
 *
 *************** CALCULATE RUNOFF FOR BASIN No.1205 *************************
 *
 COMPUTE FLOWRATE    ID=2 NHD=1205 DA=1.362 SQKM L=3400 m  W=1315 m
                      I    II    III   IV     V    XII   XIII  XIV
                     3.0  0.6  8.4   1.8  0.9  65.1  7.1   13.1
                     RATING CURVES IDC=6  IDOC=6  QRMC=0.1  QROC=0.05
                     MODEL=2 AND CONSTANTS OVERLAND: KO=3.0  TLO=0.0 HR
                     KSS=5 hr  KGW=384 hr  PCODE=1
 *
 *************************  ADD 3206.1 AND 1201  ****************************
 *
 ADD HYD              ID=4 HYD NO=2201.1 IDA=1 IDB=5
 *
 *************************  ADD 2201.1 AND 1205  ****************************
 *
 ADD HYD              ID=5 HYD NO=2201.1 IDA=4 IDB=2
 *
 *************HEC-RAS FLOW CHANGE LOCATION (ID:256)*************************
 *
 PRINT HYD           ID=5
 *
 ****************************************************************************
 FINISH
```

GAWSER Model Fringe6 Conditions - Regional Storm – Boundary Condition 175.74 m

```
              OUTFLOW HYDROGRAPH SUMMARY
              ==========================

       MAPLE WATERSHED MODEL
       EVENT FILE : REGIONAL STORM
       July 18, 1995

             UPSTREAM                 PEAK     TIME TO
HYDROGRAPH   DRAINAGE     VOLUME    DISCHARGE    PEAK
  NUMBER    AREA-Sq.km.     mm         cms       HRS.
-------------------------------------------------------
   1201       0.4130     216.05       1.070    53.145
   1205       1.3620      66.50       0.977    61.975
   2201      21.0830     155.71      47.195    49.980
   2201      22.4450     150.29      47.415    49.980
-------------------------------------------------------
Note: * Storage/outflow table exceeded
      # Rating curve exceeded


         WATERSHED RESPONSE VOLUMES (  mm   )
         =====================================

    RAIN/SNOWMELT= 285.000           OVERLAND=  152.628
       SUBSURFACE=   1.300        GROUNDWATER=   36.169
           SS NET=   9.772             GW NET=  120.891
      EVAPORATION=   0.000        SUBLIMATION=    0.000

    DRAINAGE AREA IN RUNOFF COMPUTATIONS=   22.445 km^2
```

Appendix C

HEC-RAS Model Results

HEC-RAS Model Output:

Baseline Conditions

Simulation Results for 174.5 m Boundary Condition

HEC-RAS Plan: Baseline_BC_174.50

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-5	Reach-1	3365	Q2	0.30	175.82	176.58	176.04	176.58	0.000284	0.16	1.83	3.79	0.07
RIVER-5	Reach-1	3365	Q5	0.67	175.82	176.88	176.15	176.89	0.000282	0.20	5.77	62.84	0.08
RIVER-5	Reach-1	3365	Q25	1.26	175.82	177.09	176.27	177.09	0.000060	0.10	45.88	362.63	0.04
RIVER-5	Reach-1	3365	Q100	1.80	175.82	177.21	176.35	177.21	0.000020	0.06	98.54	487.95	0.02
RIVER-5	Reach-1	3365	Qreg	3.95	175.82	177.47	176.58	177.47	0.000008	0.05	247.89	645.05	0.01
RIVER-5	Reach-1	3365	Q48hr	6.04	175.82	177.76	176.96	177.76	0.000003	0.04	457.09	748.61	0.01
RIVER-5	Reach-1	2275	Q2	0.30	175.75	176.48	175.95	176.48	0.000313	0.17	1.71	3.42	0.08
RIVER-5	Reach-1	2275	Q5	0.67	175.75	176.77	176.05	176.77	0.000427	0.24	2.79	4.17	0.09
RIVER-5	Reach-1	2275	Q25	1.26	175.75	177.04	176.16	177.04	0.000558	0.31	4.49	18.23	0.11
RIVER-5	Reach-1	2275	Q100	1.80	175.75	177.19	176.25	177.19	0.000384	0.28	16.31	142.13	0.09
RIVER-5	Reach-1	2275	Qreg	3.95	175.75	177.47	176.49	177.47	0.000090	0.16	93.53	466.31	0.05
RIVER-5	Reach-1	2275	Q48hr	6.04	175.75	177.76	176.68	177.76	0.000014	0.08	267.35	644.93	0.02
RIVER-5	Reach-1	1732	Q2	0.30	175.82	176.36		176.37	0.002562	0.43	0.69	4.05	0.20
RIVER-5	Reach-1	1732	Q5	0.67	175.82	176.59		176.62	0.003386	0.64	1.05	5.24	0.25
RIVER-5	Reach-1	1732	Q25	1.26	175.82	176.78		176.83	0.005413	0.95	1.32	6.17	0.32
RIVER-5	Reach-1	1732	Q100	1.80	175.82	176.96		177.02	0.005954	1.13	1.59	7.12	0.35
RIVER-5	Reach-1	1732	Qreg	3.95	175.82	177.17		177.39	0.015498	2.06	1.92	37.75	0.58
RIVER-5	Reach-1	1732	Q48hr	6.04	175.82	177.27		177.71	0.028589	2.94	2.06	54.61	0.80
RIVER-5	Reach-1	1690.5		Culvert									
RIVER-5	Reach-1	1649	Q2	0.30	175.88	176.57	176.15	176.58	0.001160	0.34	0.87	6.31	0.14
RIVER-5	Reach-1	1649	Q5	0.67	175.88	176.84	176.27	176.86	0.001711	0.53	1.27	7.76	0.18
RIVER-5	Reach-1	1649	Q25	1.26	175.88	177.07	176.41	177.10	0.002711	0.78	1.62	82.39	0.24
RIVER-5	Reach-1	1649	Q100	1.80	175.88	177.19	176.52	177.24	0.003905	1.00	1.80	192.50	0.29
RIVER-5	Reach-1	1649	Qreg	3.95	175.88	177.45	176.88	177.62	0.009759	1.81	2.19	330.80	0.48
RIVER-5	Reach-1	1649	Q48hr	6.04	175.88	177.54	177.17	177.88	0.018762	2.61	2.32	346.47	0.67
RIVER-5	Reach-1	1233	Q2	0.30	175.85	176.33		176.34	0.003480	0.35	0.85	2.94	0.21
RIVER-5	Reach-1	1233	Q5	0.67	175.85	176.66		176.66	0.001312	0.30	2.34	7.07	0.14
RIVER-5	Reach-1	1233	Q25	1.26	175.85	176.94		176.95	0.000602	0.24	5.26	14.92	0.10
RIVER-5	Reach-1	1233	Q100	1.80	175.85	177.07		177.08	0.000509	0.24	9.00	64.69	0.09
RIVER-5	Reach-1	1233	Qreg	3.95	175.85	177.53		177.53	0.000010	0.04	104.22	337.42	0.01
RIVER-5	Reach-1	1233	Q48hr	6.04	175.85	177.71		177.71	0.000006	0.03	169.88	384.52	0.01
RIVER-5	Reach-1	673	Q2	0.30	175.45	176.27		176.27	0.000143	0.10	2.81	5.40	0.05
RIVER-5	Reach-1	673	Q5	0.67	175.45	176.60		176.60	0.000164	0.14	4.71	6.11	0.05
RIVER-5	Reach-1	673	Q25	1.26	175.45	176.88		176.88	0.000254	0.19	6.58	7.65	0.07
RIVER-5	Reach-1	673	Q100	1.80	175.45	176.99		176.99	0.000446	0.24	7.58	9.95	0.09
RIVER-5	Reach-1	673	Qreg	3.95	175.45	177.52		177.53	0.000026	0.08	67.09	247.84	0.02
RIVER-5	Reach-1	673	Q48hr	6.04	175.45	177.70		177.71	0.000014	0.06	119.82	327.47	0.02
RIVER-4	Reach-1	5305	Q2	0.26	175.17	176.19	175.34	176.19	0.000061	0.07	4.28	8.79	0.03
RIVER-4	Reach-1	5305	Q5	0.72	175.17	176.53	175.46	176.53	0.000101	0.11	8.91	18.74	0.04
RIVER-4	Reach-1	5305	Q25	1.51	175.17	176.80	175.61	176.80	0.000120	0.13	24.27	152.87	0.04
RIVER-4	Reach-1	5305	Q100	2.63	175.17	176.97	175.76	176.98	0.000071	0.10	64.06	270.38	0.03
RIVER-4	Reach-1	5305	Qreg	6.51	175.17	177.53	176.07	177.53	0.000010	0.05	278.32	558.55	0.01
RIVER-4	Reach-1	5305	Q48hr	9.62	175.17	177.71	176.23	177.71	0.000009	0.05	388.24	665.27	0.01
RIVER-4	Reach-1	4959	Q2	0.26	175.06	176.19		176.19	0.000031	0.05	5.97	11.58	0.02
RIVER-4	Reach-1	4959	Q5	0.72	175.06	176.53		176.53	0.000063	0.09	10.99	20.15	0.03
RIVER-4	Reach-1	4959	Q25	1.51	175.06	176.79		176.79	0.000075	0.10	28.74	170.65	0.03
RIVER-4	Reach-1	4959	Q100	2.63	175.06	176.97		176.97	0.000050	0.09	69.69	288.74	0.03
RIVER-4	Reach-1	4959	Qreg	6.51	175.06	177.53		177.53	0.000007	0.04	368.50	788.20	0.01
RIVER-4	Reach-1	4959	Q48hr	9.62	175.06	177.71		177.71	0.000006	0.04	522.93	931.27	0.01
RIVER-4	Reach-1	4536	Q2	0.31	175.31	176.18		176.18	0.000173	0.10	3.80	8.55	0.04
RIVER-4	Reach-1	4536	Q5	0.84	175.31	176.51		176.51	0.000228	0.13	7.38	14.11	0.05
RIVER-4	Reach-1	4536	Q25	1.81	175.31	176.78		176.78	0.000216	0.15	27.06	243.75	0.05
RIVER-4	Reach-1	4536	Q100	3.16	175.31	176.96		176.96	0.000066	0.09	89.53	412.59	0.03
RIVER-4	Reach-1	4536	Qreg	8.04	175.31	177.52		177.52	0.000006	0.03	444.73	903.74	0.01
RIVER-4	Reach-1	4536	Q48hr	11.95	175.31	177.70		177.70	0.000006	0.03	620.72	1009.98	0.01
RIVER-4	Reach-2	3842	Q2	0.59	175.54	175.98		175.99	0.006465	0.49	1.21	4.19	0.29
RIVER-4	Reach-2	3842	Q5	1.48	175.54	176.31		176.33	0.003357	0.53	2.90	7.84	0.23
RIVER-4	Reach-2	3842	Q25	2.97	175.54	176.66		176.66	0.001065	0.37	9.39	40.46	0.13
RIVER-4	Reach-2	3842	Q100	4.77	175.54	176.94		176.94	0.000098	0.13	52.37	325.56	0.04
RIVER-4	Reach-2	3842	Qreg	11.60	175.54	177.52		177.52	0.000003	0.03	427.59	892.45	0.01
RIVER-4	Reach-2	3842	Q48hr	17.29	175.54	177.70		177.70	0.000002	0.03	594.23	951.73	0.01
RIVER-4	Reach-2	3440	Q2	0.59	174.86	175.79		175.80	0.000694	0.24	2.43	4.21	0.10
RIVER-4	Reach-2	3440	Q5	1.48	174.86	176.18		176.18	0.000613	0.28	5.62	12.35	0.10
RIVER-4	Reach-2	3440	Q25	2.97	174.86	176.61		176.61	0.000306	0.24	11.82	17.64	0.07
RIVER-4	Reach-2	3440	Q100	4.77	174.86	176.93		176.93	0.000138	0.18	34.25	185.96	0.05
RIVER-4	Reach-2	3440	Qreg	11.60	174.86	177.52		177.52	0.000004	0.04	352.05	731.17	0.01
RIVER-4	Reach-2	3440	Q48hr	17.29	174.86	177.70		177.70	0.000004	0.04	488.92	785.71	0.01
RIVER-4	Reach-2	3128	Q2	0.59	174.79	175.74		175.74	0.000436	0.20	2.94	4.89	0.08
RIVER-4	Reach-2	3128	Q5	1.48	174.79	176.12		176.12	0.000628	0.29	5.01	6.05	0.10
RIVER-4	Reach-2	3128	Q25	2.97	174.79	176.56		176.57	0.000721	0.37	7.94	7.33	0.11
RIVER-4	Reach-2	3128	Q100	4.77	174.79	176.90		176.90	0.000822	0.44	11.87	41.15	0.12

HEC-RAS Plan: Baseline_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-4	Reach-2	3128	Qreg	11.60	174.79	177.52		177.52	0.000006	0.05	331.62	873.60	0.01
RIVER-4	Reach-2	3128	Q48hr	17.29	174.79	177.70		177.70	0.000004	0.04	497.39	956.06	0.01
RIVER-4	Reach-2	2805	Q2	0.59	174.82	175.69		175.69	0.000761	0.20	2.90	7.23	0.10
RIVER-4	Reach-2	2805	Q5	1.48	174.82	176.06		176.07	0.000570	0.26	5.76	7.88	0.10
RIVER-4	Reach-2	2805	Q25	2.97	174.82	176.50		176.51	0.000489	0.30	10.36	17.96	0.09
RIVER-4	Reach-2	2805	Q100	4.77	174.82	176.85		176.86	0.000338	0.29	17.69	23.79	0.08
RIVER-4	Reach-2	2805	Qreg	11.60	174.82	177.52		177.52	0.000017	0.08	204.70	526.74	0.02
RIVER-4	Reach-2	2805	Q48hr	17.29	174.82	177.70		177.70	0.000012	0.07	306.24	590.24	0.02
RIVER-4	Reach-2	1709	Q2	0.59	174.55	175.33		175.34	0.001520	0.34	1.75	3.14	0.14
RIVER-4	Reach-2	1709	Q5	1.48	174.55	175.74		175.75	0.001874	0.47	3.12	3.63	0.16
RIVER-4	Reach-2	1709	Q25	2.97	174.55	176.19		176.21	0.002244	0.61	4.88	4.21	0.18
RIVER-4	Reach-2	1709	Q100	4.77	174.55	176.58		176.61	0.002571	0.72	6.66	4.89	0.20
RIVER-4	Reach-2	1709	Qreg	11.60	174.55	177.50		177.51	0.000352	0.32	50.20	160.46	0.08
RIVER-4	Reach-2	1709	Q48hr	17.29	174.55	177.69		177.69	0.000205	0.26	90.46	270.91	0.06
RIVER-4	Reach-2	1139	Q2	0.64	174.23	175.16		175.17	0.000700	0.25	2.53	4.14	0.10
RIVER-4	Reach-2	1139	Q5	1.58	174.23	175.48		175.49	0.001255	0.40	3.95	4.87	0.14
RIVER-4	Reach-2	1139	Q25	3.16	174.23	175.86		175.88	0.001620	0.52	6.02	5.89	0.17
RIVER-4	Reach-2	1139	Q100	5.03	174.23	176.23		176.25	0.001718	0.60	8.36	6.92	0.17
RIVER-4	Reach-2	1139	Qreg	12.35	174.23	177.40		177.41	0.000906	0.57	28.69	118.55	0.14
RIVER-4	Reach-2	1139	Q48hr	18.42	174.23	177.64		177.65	0.000378	0.40	74.71	260.33	0.09
RIVER-4	Reach-2	1021	Q2	0.64	174.45	175.12	174.72	175.13	0.001269	0.41	1.54	4.88	0.17
RIVER-4	Reach-2	1021	Q5	1.58	174.45	175.40	174.87	175.43	0.002155	0.70	2.26	5.37	0.24
RIVER-4	Reach-2	1021	Q25	3.16	174.45	175.75	175.06	175.80	0.002813	1.00	3.16	6.04	0.29
RIVER-4	Reach-2	1021	Q100	5.03	174.45	176.08	175.26	176.16	0.003194	1.25	4.03	39.25	0.32
RIVER-4	Reach-2	1021	Qreg	12.35	174.45	177.17	175.85	177.33	0.003258	1.80	6.95	156.98	0.35
RIVER-4	Reach-2	1021	Q48hr	18.42	174.45	177.21	176.25	177.56	0.006850	2.64	7.22	160.08	0.51
RIVER-4	Reach-2	975		Culvert									
RIVER-4	Reach-2	929	Q2	0.64	174.12	174.98		174.99	0.000967	0.38	1.66	9.23	0.15
RIVER-4	Reach-2	929	Q5	1.58	174.12	175.13		175.16	0.002956	0.77	2.05	9.85	0.28
RIVER-4	Reach-2	929	Q25	3.16	174.12	175.39		175.46	0.004631	1.16	2.71	11.85	0.36
RIVER-4	Reach-2	929	Q100	5.03	174.12	175.62		175.74	0.006019	1.52	3.31	13.52	0.43
RIVER-4	Reach-2	929	Qreg	12.35	174.12	176.22		176.54	0.010106	2.54	4.86	21.37	0.59
RIVER-4	Reach-2	929	Q48hr	18.42	174.12	176.29		176.97	0.019909	3.65	5.04	21.70	0.84
RIVER-4	Reach-2	485	Q2	0.64	173.89	174.97	174.09	174.97	0.000044	0.09	6.81	8.05	0.03
RIVER-4	Reach-2	485	Q5	1.58	173.89	175.08	174.18	175.08	0.000189	0.20	7.71	8.31	0.07
RIVER-4	Reach-2	485	Q25	3.16	173.89	175.28	174.30	175.29	0.000423	0.33	9.45	8.84	0.10
RIVER-4	Reach-2	485	Q100	5.03	173.89	175.47	174.41	175.48	0.000679	0.45	11.11	9.33	0.13
RIVER-4	Reach-2	485	Qreg	12.35	173.89	176.13	174.72	176.14	0.000732	0.62	25.47	47.07	0.15
RIVER-4	Reach-2	485	Q48hr	18.42	173.89	176.46	174.93	176.47	0.000396	0.51	58.03	106.67	0.11
RIVER-3	Reach-1	1889	Q2	0.12	176.35	176.48	176.48	176.51	0.045040	0.75	0.16	2.06	0.88
RIVER-3	Reach-1	1889	Q5	0.25	176.35	176.66	176.52	176.67	0.003391	0.39	0.63	3.23	0.28
RIVER-3	Reach-1	1889	Q25	0.43	176.35	177.23	176.57	177.23	0.000054	0.11	5.35	26.28	0.04
RIVER-3	Reach-1	1889	Q100	0.61	176.35	177.15	176.61	177.15	0.000190	0.18	3.83	14.26	0.08
RIVER-3	Reach-1	1889	Qreg	1.25	176.35	177.26	176.72	177.26	0.000339	0.28	6.18	30.35	0.11
RIVER-3	Reach-1	1889	Q48hr	1.90	176.35	177.84	176.80	177.84	0.000006	0.05	49.60	97.50	0.02
RIVER-3	Reach-1	1443	Q2	0.12	175.71	176.27	175.85	176.27	0.000103	0.09	1.26	3.81	0.05
RIVER-3	Reach-1	1443	Q5	0.25	175.71	176.65		176.65	0.000038	0.08	3.06	5.54	0.03
RIVER-3	Reach-1	1443	Q25	0.43	175.71	177.22		177.22	0.000008	0.05	13.13	77.16	0.02
RIVER-3	Reach-1	1443	Q100	0.61	175.71	177.14		177.14	0.000027	0.09	8.59	42.89	0.03
RIVER-3	Reach-1	1443	Qreg	1.25	175.71	177.24		177.24	0.000053	0.13	14.55	80.58	0.04
RIVER-3	Reach-1	1443	Q48hr	1.90	175.71	177.84		177.84	0.000001	0.03	85.89	141.84	0.01
RIVER-3	Reach-1	1255	Q2	0.12	175.45	176.26		176.26	0.000036	0.07	1.72	3.53	0.03
RIVER-3	Reach-1	1255	Q5	0.25	175.45	176.65		176.65	0.000027	0.07	3.34	4.95	0.03
RIVER-3	Reach-1	1255	Q25	0.43	175.45	177.22		177.22	0.000003	0.04	20.45	101.93	0.01
RIVER-3	Reach-1	1255	Q100	0.61	175.45	177.14		177.14	0.000011	0.06	14.53	50.23	0.02
RIVER-3	Reach-1	1255	Qreg	1.25	175.45	177.24		177.24	0.000023	0.10	22.19	105.48	0.03
RIVER-3	Reach-1	1255	Q48hr	1.90	175.45	177.84		177.84	0.000001	0.03	102.28	149.35	0.01
RIVER-3	Reach-1	1186	Q2	0.12	174.90	176.26	175.07	176.26	0.000006	0.05	2.47	3.96	0.01
RIVER-3	Reach-1	1186	Q5	0.25	174.90	176.65	175.13	176.65	0.000010	0.07	3.28	5.70	0.02
RIVER-3	Reach-1	1186	Q25	0.43	174.90	177.22	175.19	177.22	0.000011	0.10	4.49	72.70	0.02
RIVER-3	Reach-1	1186	Q100	0.61	174.90	177.14	175.25	177.14	0.000025	0.14	4.32	64.72	0.03
RIVER-3	Reach-1	1186	Qreg	1.25	174.90	177.24	175.40	177.24	0.000092	0.28	4.52	73.14	0.06
RIVER-3	Reach-1	1186	Q48hr	1.90	174.90	177.84	175.52	177.84	0.000010	0.06	47.41	133.00	0.02
RIVER-3	Reach-1	1168		Culvert									
RIVER-3	Reach-1	1150	Q2	0.12	175.72	176.26	175.86	176.26	0.000202	0.14	0.83	2.25	0.07
RIVER-3	Reach-1	1150	Q5	0.25	175.72	176.65	175.91	176.65	0.000095	0.15	1.64	3.89	0.05
RIVER-3	Reach-1	1150	Q25	0.43	175.72	177.22	175.98	177.22	0.000048	0.15	2.85	60.68	0.04
RIVER-3	Reach-1	1150	Q100	0.61	175.72	177.14	176.03	177.14	0.000116	0.23	2.67	52.87	0.06
RIVER-3	Reach-1	1150	Qreg	1.25	175.72	177.22	176.18	177.23	0.000398	0.44	2.85	60.46	0.12
RIVER-3	Reach-1	1150	Q48hr	1.90	175.72	177.84	176.30	177.84	0.000010	0.06	49.41	144.70	0.02

HEC-RAS Plan: Baseline_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-3	Reach-1	782	Q2	0.12	175.29	176.26	175.38	176.26	0.000002	0.02	5.42	8.24	0.01
RIVER-3	Reach-1	782	Q5	0.25	175.29	176.65	175.42	176.65	0.000002	0.03	10.31	26.67	0.01
RIVER-3	Reach-1	782	Q25	0.43	175.29	177.22	175.45	177.22	0.000000	0.01	54.37	124.98	0.00
RIVER-3	Reach-1	782	Q100	0.61	175.29	177.14	175.49	177.14	0.000001	0.02	44.35	111.78	0.01
RIVER-3	Reach-1	782	Qreg	1.25	175.29	177.22	175.57	177.22	0.000002	0.04	54.63	125.33	0.01
RIVER-3	Reach-1	782	Q48hr	1.90	175.29	177.84	175.63	177.84	0.000000	0.02	156.15	194.80	0.00
RIVER-3	Reach-1	465	Q2	0.12	175.02	176.26	175.14	176.26	0.000001	0.02	9.93	43.06	0.01
RIVER-3	Reach-1	465	Q5	0.25	175.02	176.65	175.18	176.65	0.000000	0.01	41.99	113.52	0.00
RIVER-3	Reach-1	465	Q25	0.43	175.02	177.22	175.23	177.22	0.000000	0.00	134.08	214.55	0.00
RIVER-3	Reach-1	465	Q100	0.61	175.02	177.14	175.27	177.14	0.000000	0.01	117.24	185.15	0.00
RIVER-3	Reach-1	465	Qreg	1.25	175.02	177.22	175.38	177.22	0.000000	0.01	134.51	215.53	0.00
RIVER-3	Reach-1	465	Q48hr	1.90	175.02	177.84	175.48	177.84	0.000000	0.01	320.77	364.70	0.00
RIVER-3	Reach-1	280	Q2	0.12	174.83	176.26	174.94	176.26	0.000000	0.00	35.47	71.74	0.00
RIVER-3	Reach-1	280	Q5	0.25	174.83	176.65	174.99	176.65	0.000000	0.00	67.87	99.89	0.00
RIVER-3	Reach-1	280	Q25	0.43	174.83	177.22	175.06	177.22	0.000000	0.00	155.46	237.62	0.00
RIVER-3	Reach-1	280	Q100	0.61	174.83	177.14	175.10	177.14	0.000000	0.01	136.41	210.46	0.00
RIVER-3	Reach-1	280	Qreg	1.25	174.83	177.22	175.26	177.22	0.000000	0.01	155.93	237.98	0.00
RIVER-3	Reach-1	280	Q48hr	1.90	174.83	177.84	175.35	177.84	0.000000	0.01	341.84	344.35	0.00
RIVER-2	Reach-1	3413	Q2	0.15	175.69	176.31	175.82	176.31	0.000119	0.08	1.88	4.74	0.04
RIVER-2	Reach-1	3413	Q5	0.51	175.69	176.74	175.92	176.74	0.000095	0.10	6.77	43.50	0.04
RIVER-2	Reach-1	3413	Q25	1.10	175.69	177.27	176.03	177.27	0.000003	0.02	55.67	118.78	0.01
RIVER-2	Reach-1	3413	Q100	1.70	175.69	177.27	176.11	177.27	0.000006	0.04	56.03	119.06	0.01
RIVER-2	Reach-1	3413	Qreg	4.37	175.69	177.74	176.36	177.74	0.000003	0.03	173.38	346.95	0.01
RIVER-2	Reach-1	3413	Q48hr	6.85	175.69	178.15	176.53	178.15	0.000000	0.01	682.75	916.06	0.00
RIVER-2	Reach-1	3308	Q2	0.15	175.79	176.30	175.98	176.31	0.000618	0.19	0.80	4.30	0.10
RIVER-2	Reach-1	3308	Q5	0.51	175.79	176.73	176.09	176.73	0.000620	0.31	1.65	60.74	0.11
RIVER-2	Reach-1	3308	Q25	1.10	175.79	177.26	176.22	177.27	0.000554	0.40	2.71	329.23	0.11
RIVER-2	Reach-1	3308	Q100	1.70	175.79	177.25	176.33	177.27	0.001372	0.63	2.69	321.13	0.17
RIVER-2	Reach-1	3308	Qreg	4.37	175.79	177.65	176.69	177.73	0.003761	1.25	3.50	843.51	0.30
RIVER-2	Reach-1	3308	Q48hr	6.85	175.79	178.00	176.97	178.13	0.005061	1.64	4.19	966.52	0.36
RIVER-2	Reach-1	3270.5		Culvert									
RIVER-2	Reach-1	3233	Q2	0.15	175.74	176.30	175.95	176.30	0.001248	0.23	0.68	2.93	0.12
RIVER-2	Reach-1	3233	Q5	0.51	175.74	176.72	176.10	176.73	0.000995	0.34	1.51	27.94	0.12
RIVER-2	Reach-1	3233	Q25	1.10	175.74	177.24	176.27	177.25	0.000810	0.43	2.55	85.47	0.12
RIVER-2	Reach-1	3233	Q100	1.70	175.74	177.20	176.38	177.23	0.002150	0.69	2.48	79.03	0.20
RIVER-2	Reach-1	3233	Qreg	4.37	175.74	177.35	176.75	177.48	0.009715	1.57	2.77	111.43	0.43
RIVER-2	Reach-1	3233	Q48hr	6.85	175.74	177.75	177.03	177.94	0.010323	1.92	3.57	395.89	0.46
RIVER-2	Reach-1	3063	Q2	0.15	175.71	176.29	175.85	176.29	0.000141	0.09	1.80	4.89	0.04
RIVER-2	Reach-1	3063	Q5	0.51	175.71	176.71	175.95	176.71	0.000140	0.12	4.33	7.18	0.05
RIVER-2	Reach-1	3063	Q25	1.10	175.71	177.24	176.05	177.24	0.000043	0.08	17.64	74.50	0.03
RIVER-2	Reach-1	3063	Q100	1.70	175.71	177.20	176.13	177.20	0.000143	0.15	14.92	61.97	0.05
RIVER-2	Reach-1	3063	Qreg	4.37	175.71	177.38	176.36	177.38	0.000218	0.21	29.66	92.86	0.07
RIVER-2	Reach-1	3063	Q48hr	6.85	175.71	177.84	176.53	177.84	0.000002	0.03	305.24	527.20	0.01
RIVER-2	Reach-1	2586.51	Q2	0.19	175.47	176.28	175.65	176.28	0.000067	0.07	2.64	5.42	0.03
RIVER-2	Reach-1	2586.51	Q5	0.65	175.47	176.69	175.77	176.69	0.000122	0.12	5.23	7.04	0.05
RIVER-2	Reach-1	2586.51	Q25	1.43	175.47	177.23	175.90	177.23	0.000037	0.10	23.20	101.96	0.03
RIVER-2	Reach-1	2586.51	Q100	2.22	175.47	177.18	175.99	177.18	0.000127	0.18	18.56	75.38	0.05
RIVER-2	Reach-1	2586.51	Qreg	5.79	175.47	177.35	176.28	177.35	0.000253	0.27	39.47	179.03	0.07
RIVER-2	Reach-1	2586.51	Q48hr	9.03	175.47	177.84	176.46	177.84	0.000006	0.05	265.60	506.88	0.01
RIVER-2	Reach-1	1837	Q2	0.19	175.09	176.27		176.27	0.000016	0.04	4.20	5.42	0.02
RIVER-2	Reach-1	1837	Q5	0.65	175.09	176.67		176.67	0.000056	0.10	6.61	6.51	0.03
RIVER-2	Reach-1	1837	Q25	1.43	175.09	177.23		177.23	0.000044	0.10	21.08	124.95	0.03
RIVER-2	Reach-1	1837	Q100	2.22	175.09	177.15		177.15	0.000156	0.19	14.69	47.47	0.05
RIVER-2	Reach-1	1837	Qreg	5.79	175.09	177.26		177.27	0.000563	0.37	26.08	162.64	0.10
RIVER-2	Reach-1	1837	Q48hr	9.03	175.09	177.84		177.84	0.000010	0.06	218.73	442.82	0.01
RIVER-2	Reach-1	999	Q2	0.19	175.01	176.27		176.27	0.000008	0.03	5.75	7.02	0.01
RIVER-2	Reach-1	999	Q5	0.65	175.01	176.66		176.66	0.000031	0.07	9.31	17.96	0.02
RIVER-2	Reach-1	999	Q25	1.43	175.01	177.22		177.22	0.000003	0.03	80.62	287.63	0.01
RIVER-2	Reach-1	999	Q100	2.22	175.01	177.14		177.14	0.000015	0.06	59.29	229.03	0.02
RIVER-2	Reach-1	999	Qreg	5.79	175.01	177.23		177.23	0.000049	0.11	83.32	294.42	0.03
RIVER-2	Reach-1	999	Q48hr	9.03	175.01	177.84		177.84	0.000003	0.04	288.26	345.00	0.01
RIVER-1	Reach-1	13837	Q2	0.14	175.83	176.28	175.89	176.28	0.000085	0.08	1.91	5.43	0.04
RIVER-1	Reach-1	13837	Q5	0.32	175.83	176.68	175.94	176.68	0.000038	0.07	4.50	7.54	0.03
RIVER-1	Reach-1	13837	Q25	0.61	175.83	177.30	175.99	177.30	0.000005	0.04	25.71	80.69	0.01
RIVER-1	Reach-1	13837	Q100	0.94	175.83	177.31	176.04	177.31	0.000011	0.06	27.17	85.84	0.02
RIVER-1	Reach-1	13837	Qreg	2.12	175.83	177.73	176.16	177.73	0.000005	0.05	78.28	165.01	0.01
RIVER-1	Reach-1	13837	Q48hr	3.11	175.83	177.84	176.25	177.84	0.000006	0.05	120.43	266.43	0.01
RIVER-1	Reach-1	13777	Q2	0.14	175.68	176.28	175.80	176.28	0.000294	0.20	0.71	5.17	0.08
RIVER-1	Reach-1	13777	Q5	0.32	175.68	176.68	175.88	176.68	0.000261	0.27	1.19	6.98	0.09
RIVER-1	Reach-1	13777	Q25	0.61	175.68	177.29	175.98	177.30	0.000193	0.32	1.93	72.34	0.08

HEC-RAS Plan: Baseline_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-1	13777	Q100	0.94	175.68	177.30	176.08	177.31	0.000451	0.49	1.94	76.93	0.12
RIVER-1	Reach-1	13777	Qreg	2.12	175.68	177.72	176.37	177.73	0.001391	0.32	10.85	198.85	0.16
RIVER-1	Reach-1	13777	Q48hr	3.11	175.68	177.84	176.57	177.84	0.000348	0.19	29.36	200.01	0.09
RIVER-1	Reach-1	13745.5		Culvert									
RIVER-1	Reach-1	13714	Q2	0.14	175.87	176.27	175.99	176.27	0.001185	0.31	0.47	3.36	0.16
RIVER-1	Reach-1	13714	Q5	0.32	175.87	176.66	176.07	176.67	0.000570	0.34	0.94	48.24	0.12
RIVER-1	Reach-1	13714	Q25	0.61	175.87	177.22	176.18	177.23	0.000350	0.38	1.61	112.45	0.10
RIVER-1	Reach-1	13714	Q100	0.94	175.87	177.13	176.28	177.15	0.001050	0.63	1.50	80.63	0.18
RIVER-1	Reach-1	13714	Qreg	2.12	175.87	177.18	176.56	177.28	0.004618	1.35	1.57	92.58	0.38
RIVER-1	Reach-1	13714	Q48hr	3.11	175.87	177.84	176.75	177.84	0.000918	0.20	31.67	409.10	0.13
RIVER-1	Reach-1	13387	Q2	0.14	174.94	176.27		176.27	0.000005	0.03	4.60	5.11	0.01
RIVER-1	Reach-1	13387	Q5	0.32	174.94	176.66		176.66	0.000008	0.05	7.87	29.85	0.01
RIVER-1	Reach-1	13387	Q25	0.61	174.94	177.22		177.22	0.000000	0.01	166.42	483.97	0.00
RIVER-1	Reach-1	13387	Q100	0.94	174.94	177.14		177.14	0.000001	0.02	127.22	443.92	0.00
RIVER-1	Reach-1	13387	Qreg	2.12	174.94	177.23		177.23	0.000002	0.03	169.68	484.84	0.01
RIVER-1	Reach-1	13387	Q48hr	3.11	174.94	177.84		177.84	0.000000	0.01	540.64	689.10	0.00
RIVER-1	Reach-1	13099	Q2	0.14	174.88	176.27		176.27	0.000005	0.03	4.56	6.45	0.01
RIVER-1	Reach-1	13099	Q5	0.32	174.88	176.66		176.66	0.000008	0.04	8.58	16.49	0.01
RIVER-1	Reach-1	13099	Q25	0.61	174.88	177.22		177.22	0.000001	0.02	92.98	388.58	0.00
RIVER-1	Reach-1	13099	Q100	0.94	174.88	177.14		177.14	0.000003	0.04	63.77	318.24	0.01
RIVER-1	Reach-1	13099	Qreg	2.12	174.88	177.23		177.23	0.000007	0.06	95.48	394.06	0.01
RIVER-1	Reach-1	13099	Q48hr	3.11	174.88	177.84		177.84	0.000000	0.01	443.00	693.50	0.00
RIVER-1	Reach-2	12741	Q2	0.37	174.77	176.27	174.94	176.27	0.000002	0.04	15.24	40.81	0.01
RIVER-1	Reach-2	12741	Q5	1.07	174.77	176.66	175.08	176.66	0.000003	0.05	49.11	189.68	0.01
RIVER-1	Reach-2	12741	Q25	2.22	174.77	177.22	175.23	177.22	0.000000	0.02	250.02	426.04	0.01
RIVER-1	Reach-2	12741	Q100	3.41	174.77	177.14	175.34	177.14	0.000001	0.04	214.52	421.48	0.01
RIVER-1	Reach-2	12741	Qreg	8.56	174.77	177.23	175.69	177.23	0.000005	0.09	252.53	426.23	0.02
RIVER-1	Reach-2	12741	Q48hr	13.26	174.77	177.84	176.03	177.84	0.000001	0.05	523.02	452.47	0.01
RIVER-1	Reach-2	12664	Q2	0.37	174.88	176.27	175.09	176.27	0.000020	0.13	2.82	19.07	0.04
RIVER-1	Reach-2	12664	Q5	1.07	174.88	176.66	175.25	176.66	0.000069	0.29	3.66	81.89	0.07
RIVER-1	Reach-2	12664	Q25	2.22	174.88	177.22	175.43	177.22	0.000001	0.02	220.13	418.43	0.01
RIVER-1	Reach-2	12664	Q100	3.41	174.88	177.14	175.59	177.14	0.000002	0.04	185.36	412.51	0.01
RIVER-1	Reach-2	12664	Qreg	8.56	174.88	177.23	176.12	177.23	0.000008	0.09	222.55	418.90	0.02
RIVER-1	Reach-2	12664	Q48hr	13.26	174.88	177.84	176.52	177.84	0.000002	0.05	487.34	450.44	0.01
RIVER-1	Reach-2	12647.5		Culvert									
RIVER-1	Reach-2	12631	Q2	0.37	174.84	176.26	175.06	176.27	0.000019	0.13	2.88	26.49	0.04
RIVER-1	Reach-2	12631	Q5	1.07	174.84	176.65	175.21	176.65	0.000067	0.29	3.70	79.99	0.07
RIVER-1	Reach-2	12631	Q25	2.22	174.84	177.22	175.40	177.22	0.000000	0.01	276.77	384.77	0.00
RIVER-1	Reach-2	12631	Q100	3.41	174.84	177.14	175.56	177.14	0.000001	0.02	245.21	375.89	0.01
RIVER-1	Reach-2	12631	Qreg	8.56	174.84	177.23	176.09	177.23	0.000003	0.05	279.05	387.04	0.01
RIVER-1	Reach-2	12631	Q48hr	13.26	174.84	177.84	176.49	177.84	0.000001	0.03	536.32	439.93	0.01
RIVER-1	Reach-2	12252	Q2	0.37	174.63	176.26	174.86	176.26	0.000002	0.03	17.71	64.81	0.01
RIVER-1	Reach-2	12252	Q5	1.07	174.63	176.65	174.99	176.65	0.000002	0.04	59.88	157.48	0.01
RIVER-1	Reach-2	12252	Q25	2.22	174.63	177.22	175.14	177.22	0.000000	0.03	186.78	274.75	0.01
RIVER-1	Reach-2	12252	Q100	3.41	174.63	177.14	175.25	177.14	0.000002	0.05	163.83	271.87	0.01
RIVER-1	Reach-2	12252	Qreg	8.56	174.63	177.23	175.61	177.23	0.000007	0.10	188.23	274.88	0.02
RIVER-1	Reach-2	12252	Q48hr	13.26	174.63	177.84	175.86	177.84	0.000002	0.06	451.63	389.79	0.01
RIVER-1	Reach-2	11903	Q2	0.37	174.61	176.26		176.26	0.000002	0.03	17.59	61.96	0.01
RIVER-1	Reach-2	11903	Q5	1.07	174.61	176.65		176.65	0.000002	0.04	48.06	90.78	0.01
RIVER-1	Reach-2	11903	Q25	2.22	174.61	177.22		177.22	0.000001	0.04	117.52	204.58	0.01
RIVER-1	Reach-2	11903	Q100	3.41	174.61	177.14		177.14	0.000003	0.07	103.44	131.14	0.01
RIVER-1	Reach-2	11903	Qreg	8.56	174.61	177.23		177.23	0.000014	0.15	118.33	205.96	0.03
RIVER-1	Reach-2	11903	Q48hr	13.26	174.61	177.84		177.84	0.000005	0.10	296.09	331.30	0.02
RIVER-1	Reach-3	11584	Q2	3.92	174.50	176.20	175.20	176.25	0.000756	0.96	4.10	16.68	0.24
RIVER-1	Reach-3	11584	Q5	6.51	174.50	176.58	175.45	176.64	0.000799	1.13	9.54	62.52	0.25
RIVER-1	Reach-3	11584	Q25	10.30	174.50	177.22	175.76	177.22	0.000115	0.23	90.34	327.00	0.08
RIVER-1	Reach-3	11584	Q100	13.49	174.50	177.13	176.00	177.13	0.000389	0.40	64.86	253.51	0.15
RIVER-1	Reach-3	11584	Qreg	14.62	174.50	177.22	176.08	177.22	0.000232	0.33	90.33	326.98	0.11
RIVER-1	Reach-3	11584	Q48hr	19.78	174.50	177.84	176.81	177.84	0.000005	0.07	621.22	995.83	0.02
RIVER-1	Reach-3	11565.5		Culvert									
RIVER-1	Reach-3	11547	Q2	3.94	174.71	176.10	175.39	176.17	0.001472	1.16	3.38	55.20	0.32
RIVER-1	Reach-3	11547	Q5	6.55	174.71	176.52	175.63	176.63	0.001656	1.48	4.43	102.12	0.35
RIVER-1	Reach-3	11547	Q25	10.38	174.71	177.22	175.96	177.22	0.000201	0.34	78.28	316.23	0.11
RIVER-1	Reach-3	11547	Q100	13.62	174.71	176.79	176.19	177.13	0.004337	2.63	5.96	161.53	0.59
RIVER-1	Reach-3	11547	Qreg	15.59	174.71	177.22	177.05	177.22	0.000467	0.51	77.50	315.40	0.17
RIVER-1	Reach-3	11547	Q48hr	21.17	174.71	177.84	177.07	177.84	0.000007	0.09	554.08	981.33	0.02
RIVER-1	Reach-3	11400	Q2	3.94	174.54	176.10	175.21	176.11	0.000435	0.49	10.24	42.35	0.16
RIVER-1	Reach-3	11400	Q5	6.55	174.54	176.57	175.39	176.57	0.000093	0.29	46.76	128.38	0.08
RIVER-1	Reach-3	11400	Q25	10.38	174.54	177.22	175.60	177.22	0.000013	0.14	157.98	220.40	0.03

HEC-RAS Plan: Baseline_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	11400	Q100	13.62	174.54	176.95	175.76	176.95	0.000057	0.27	106.61	172.55	0.06
RIVER-1	Reach-3	11400	Qreg	15.59	174.54	177.21	175.85	177.21	0.000029	0.21	157.06	219.49	0.05
RIVER-1	Reach-3	11400	Q48hr	21.17	174.54	177.84	176.23	177.84	0.000008	0.13	352.69	441.87	0.02
RIVER-1	Reach-3	11263	Q2	3.94	174.55	176.09	175.17	176.09	0.000374	0.45	12.14	41.59	0.15
RIVER-1	Reach-3	11263	Q5	6.55	174.55	176.56	175.35	176.56	0.000095	0.29	42.19	114.87	0.08
RIVER-1	Reach-3	11263	Q25	10.38	174.55	177.22	175.56	177.22	0.000013	0.14	154.19	206.43	0.03
RIVER-1	Reach-3	11263	Q100	13.62	174.55	176.95	175.71	176.95	0.000066	0.29	101.85	184.21	0.07
RIVER-1	Reach-3	11263	Qreg	15.59	174.55	177.21	175.79	177.21	0.000030	0.21	153.20	206.17	0.05
RIVER-1	Reach-3	11263	Q48hr	21.17	174.55	177.84	176.14	177.84	0.000009	0.14	313.72	361.82	0.03
RIVER-1	Reach-3	11179	Q2	3.94	174.52	176.08	175.20	176.09	0.000329	0.42	13.26	40.64	0.14
RIVER-1	Reach-3	11179	Q5	6.55	174.52	176.56	175.38	176.56	0.000085	0.28	45.08	113.87	0.08
RIVER-1	Reach-3	11179	Q25	10.38	174.52	177.22	175.61	177.22	0.000013	0.14	151.36	190.42	0.03
RIVER-1	Reach-3	11179	Q100	13.62	174.52	176.95	175.78	176.95	0.000060	0.28	102.42	167.20	0.07
RIVER-1	Reach-3	11179	Qreg	15.59	174.52	177.21	175.87	177.21	0.000029	0.21	150.36	190.18	0.05
RIVER-1	Reach-3	11179	Q48hr	21.17	174.52	177.84	176.10	177.84	0.000009	0.14	324.41	391.21	0.03
RIVER-1	Reach-3	10988	Q2	3.94	174.48	176.07	175.00	176.07	0.000121	0.31	21.35	58.00	0.09
RIVER-1	Reach-3	10988	Q5	6.55	174.48	176.56	175.17	176.56	0.000036	0.21	67.57	131.93	0.05
RIVER-1	Reach-3	10988	Q25	10.38	174.48	177.22	175.39	177.22	0.000005	0.10	266.53	459.42	0.02
RIVER-1	Reach-3	10988	Q100	13.62	174.48	176.94	175.52	176.95	0.000030	0.22	157.52	357.76	0.05
RIVER-1	Reach-3	10988	Qreg	15.59	174.48	177.21	175.59	177.21	0.000012	0.15	263.93	458.08	0.03
RIVER-1	Reach-3	10988	Q48hr	21.17	174.48	177.84	175.86	177.84	0.000003	0.08	583.99	555.34	0.02
RIVER-1	Reach-3	10842	Q2	3.94	174.53	176.00	175.20	176.05	0.001140	1.04	3.77	21.18	0.28
RIVER-1	Reach-3	10842	Q5	6.55	174.53	176.47	175.44	176.54	0.001034	1.21	7.18	97.09	0.28
RIVER-1	Reach-3	10842	Q25	10.38	174.53	177.22	175.75	177.22	0.000027	0.24	138.24	471.92	0.05
RIVER-1	Reach-3	10842	Q100	13.62	174.53	176.93	175.97	176.94	0.000318	0.78	65.24	367.50	0.16
RIVER-1	Reach-3	10842	Qreg	15.59	174.53	177.21	176.73	177.21	0.000063	0.37	136.25	471.07	0.07
RIVER-1	Reach-3	10842	Q48hr	21.17	174.53	177.84	176.83	177.84	0.000009	0.10	406.49	526.34	0.02
RIVER-1	Reach-3	10819.5		Culvert									
RIVER-1	Reach-3	10797	Q2	4.00	174.57	175.84	175.21	175.91	0.001760	1.20	3.34	34.74	0.34
RIVER-1	Reach-3	10797	Q5	6.68	174.57	176.19	175.46	176.31	0.002125	1.56	4.29	68.90	0.39
RIVER-1	Reach-3	10797	Q25	10.66	174.57	176.50	175.77	176.72	0.002983	2.08	5.13	72.32	0.48
RIVER-1	Reach-3	10797	Q100	14.07	174.57	176.55	176.01	176.92	0.004750	2.67	5.27	73.08	0.61
RIVER-1	Reach-3	10797	Qreg	19.29	174.57	176.40	176.34	177.21	0.011680	3.97	4.86	71.28	0.94
RIVER-1	Reach-3	10797	Q48hr	26.76	174.57	176.75	176.75	177.84	0.012393	4.60	5.81	97.51	1.00
RIVER-1	Reach-3	10695	Q2	4.00	174.30	175.84	174.96	175.85	0.000553	0.53	7.55	9.03	0.18
RIVER-1	Reach-3	10695	Q5	6.68	174.30	176.22	175.15	176.23	0.000416	0.58	14.63	29.57	0.16
RIVER-1	Reach-3	10695	Q25	10.66	174.30	176.58	175.36	176.59	0.000302	0.58	27.70	42.17	0.14
RIVER-1	Reach-3	10695	Q100	14.07	174.30	176.69	175.53	176.71	0.000372	0.67	33.45	65.06	0.16
RIVER-1	Reach-3	10695	Qreg	19.29	174.30	176.73	175.73	176.76	0.000634	0.89	35.99	79.85	0.21
RIVER-1	Reach-3	10695	Q48hr	26.76	174.30	176.78	176.05	176.82	0.001025	1.15	40.19	87.92	0.27
RIVER-1	Reach-3	10279	Q2	4.00	174.24	175.80	174.78	175.80	0.000247	0.41	10.40	18.44	0.12
RIVER-1	Reach-3	10279	Q5	6.68	174.24	176.19	174.93	176.20	0.000160	0.40	26.29	52.88	0.10
RIVER-1	Reach-3	10279	Q25	10.66	174.24	176.57	175.11	176.57	0.000111	0.38	56.28	165.23	0.09
RIVER-1	Reach-3	10279	Q100	14.07	174.24	176.68	175.24	176.68	0.000122	0.42	77.75	220.08	0.09
RIVER-1	Reach-3	10279	Qreg	19.29	174.24	176.70	175.43	176.71	0.000203	0.54	83.37	227.69	0.12
RIVER-1	Reach-3	10279	Q48hr	26.76	174.24	176.74	175.64	176.75	0.000328	0.69	91.84	246.03	0.15
RIVER-1	Reach-3	10045	Q2	4.00	174.19	175.78	174.82	175.79	0.000181	0.33	16.86	47.08	0.11
RIVER-1	Reach-3	10045	Q5	6.68	174.19	176.19	175.01	176.19	0.000080	0.28	42.32	87.23	0.07
RIVER-1	Reach-3	10045	Q25	10.66	174.19	176.56	175.21	176.56	0.000041	0.23	105.35	278.56	0.06
RIVER-1	Reach-3	10045	Q100	14.07	174.19	176.67	175.36	176.68	0.000049	0.26	137.60	302.63	0.06
RIVER-1	Reach-3	10045	Qreg	19.29	174.19	176.70	175.52	176.70	0.000080	0.34	144.74	305.39	0.08
RIVER-1	Reach-3	10045	Q48hr	26.76	174.19	176.73	175.71	176.74	0.000130	0.44	154.97	315.95	0.10
RIVER-1	Reach-3	9967	Q2	4.00	174.24	175.70	175.00	175.77	0.001631	1.21	3.30	40.38	0.33
RIVER-1	Reach-3	9967	Q5	6.68	174.24	176.04	175.26	176.17	0.002137	1.62	4.14	69.88	0.40
RIVER-1	Reach-3	9967	Q25	10.66	174.24	176.27	175.60	176.54	0.003534	2.26	4.71	176.70	0.52
RIVER-1	Reach-3	9967	Q100	14.07	174.24	175.92	175.85	176.60	0.012036	3.65	3.85	51.85	0.93
RIVER-1	Reach-3	9967	Qreg	19.29	174.24	176.65	176.65	176.69	0.004286	1.36	42.05	343.07	0.48
RIVER-1	Reach-3	9967	Q48hr	26.76	174.24	176.67	176.67	176.72	0.005164	1.52	51.49	362.39	0.53
RIVER-1	Reach-3	9948.5		Culvert									
RIVER-1	Reach-3	9929	Q2	4.00	174.29	175.60	175.00	175.69	0.002029	1.30	3.07	35.09	0.37
RIVER-1	Reach-3	9929	Q5	6.68	174.29	175.82	175.27	175.99	0.003313	1.85	3.61	59.79	0.49
RIVER-1	Reach-3	9929	Q25	10.66	174.29	175.80	175.59	176.26	0.008829	3.00	3.56	56.81	0.79
RIVER-1	Reach-3	9929	Q100	14.07	174.29	175.85	175.85	176.60	0.013759	3.83	3.68	64.45	1.00
RIVER-1	Reach-3	9929	Qreg	19.29	174.29	176.63	176.63	176.68	0.004260	1.40	43.95	386.20	0.48
RIVER-1	Reach-3	9929	Q48hr	26.76	174.29	176.66	176.66	176.71	0.005259	1.58	53.18	402.40	0.54
RIVER-1	Reach-3	9829	Q2	4.00	173.99	175.63	174.57	175.63	0.000157	0.34	21.41	65.81	0.10
RIVER-1	Reach-3	9829	Q5	6.68	173.99	175.90	174.75	175.90	0.000105	0.32	41.39	83.17	0.08
RIVER-1	Reach-3	9829	Q25	10.66	173.99	176.01	174.98	176.02	0.000160	0.41	51.35	91.03	0.10
RIVER-1	Reach-3	9829	Q100	14.07	173.99	176.06	175.14	176.07	0.000220	0.49	56.26	96.85	0.12
RIVER-1	Reach-3	9829	Qreg	19.29	173.99	176.28	175.57	176.28	0.000199	0.51	81.61	156.98	0.12

HEC-RAS Plan: Baseline_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	9829	Q48hr	26.76	173.99	176.60	175.66	176.60	0.000099	0.40	187.77	472.63	0.08
RIVER-1	Reach-3	9462	Q2	4.00	173.97	175.61	174.49	175.61	0.000191	0.29	18.07	39.87	0.08
RIVER-1	Reach-3	9462	Q5	6.68	173.97	175.88	174.67	175.89	0.000140	0.28	34.08	68.00	0.07
RIVER-1	Reach-3	9462	Q25	10.66	173.97	175.99	174.87	175.99	0.000211	0.36	41.76	75.64	0.09
RIVER-1	Reach-3	9462	Q100	14.07	173.97	176.03	175.03	176.04	0.000301	0.44	45.18	82.43	0.11
RIVER-1	Reach-3	9462	Qreg	19.29	173.97	176.25	175.32	176.26	0.000234	0.42	67.29	129.15	0.09
RIVER-1	Reach-3	9462	Q48hr	26.76	173.97	176.59	175.52	176.59	0.000098	0.30	166.70	423.90	0.06
RIVER-1	Reach-3	8698	Q2	4.00	173.92	175.61	174.37	175.61	0.000024	0.10	46.97	79.13	0.03
RIVER-1	Reach-3	8698	Q5	6.68	173.92	175.88	174.51	175.88	0.000021	0.10	69.89	95.48	0.03
RIVER-1	Reach-3	8698	Q25	10.66	173.92	175.98	174.68	175.98	0.000037	0.14	80.80	121.15	0.04
RIVER-1	Reach-3	8698	Q100	14.07	173.92	176.02	174.81	176.02	0.000056	0.18	85.90	139.04	0.04
RIVER-1	Reach-3	8698	Qreg	19.29	173.92	176.24	175.14	176.24	0.000050	0.18	126.31	228.25	0.04
RIVER-1	Reach-3	8698	Q48hr	26.76	173.92	176.58	175.21	176.58	0.000038	0.18	228.25	356.37	0.04
RIVER-1	Reach-3	8570	Q2	4.00	173.97	175.60	174.37	175.60	0.000027	0.09	40.38	54.62	0.03
RIVER-1	Reach-3	8570	Q5	6.68	173.97	175.87	174.51	175.88	0.000029	0.11	59.43	92.00	0.03
RIVER-1	Reach-3	8570	Q25	10.66	173.97	175.98	174.77	175.98	0.000053	0.16	70.14	124.30	0.04
RIVER-1	Reach-3	8570	Q100	14.07	173.97	176.01	174.85	176.02	0.000082	0.20	75.02	142.64	0.05
RIVER-1	Reach-3	8570	Qreg	19.29	173.97	176.24	174.96	176.24	0.000079	0.21	123.73	292.90	0.05
RIVER-1	Reach-3	8570	Q48hr	26.76	173.97	176.58	175.04	176.58	0.000031	0.15	251.10	450.78	0.04
RIVER-1	Reach-3	8486	Q2	4.00	173.91	175.55	174.56	175.59	0.001546	0.99	4.06	41.23	0.25
RIVER-1	Reach-3	8486	Q5	6.68	173.91	175.75	174.82	175.86	0.002894	1.46	4.58	59.03	0.35
RIVER-1	Reach-3	8486	Q25	10.66	173.91	175.61	175.15	175.94	0.009610	2.53	4.22	45.81	0.62
RIVER-1	Reach-3	8486	Q100	14.07	173.91	175.93	175.92	175.99	0.012616	1.36	14.45	84.18	0.58
RIVER-1	Reach-3	8486	Qreg	19.29	173.91	176.22	175.96	176.22	0.000542	0.37	84.05	426.25	0.13
RIVER-1	Reach-3	8486	Q48hr	26.76	173.91	176.58	176.01	176.58	0.000042	0.13	282.13	649.31	0.04
RIVER-1	Reach-3	8467		Culvert									
RIVER-1	Reach-3	8450	Q2	4.00	173.76	175.10		175.12	0.000915	0.65	7.55	21.44	0.18
RIVER-1	Reach-3	8450	Q5	6.68	173.76	175.29		175.31	0.001254	0.83	9.94	35.21	0.22
RIVER-1	Reach-3	8450	Q25	10.66	173.76	175.54		175.57	0.001329	0.95	13.93	45.97	0.23
RIVER-1	Reach-3	8450	Q100	14.07	173.76	175.77		175.80	0.001049	0.92	19.83	68.03	0.21
RIVER-1	Reach-3	8450	Qreg	19.29	173.76	176.22		176.22	0.000127	0.20	135.35	536.56	0.06
RIVER-1	Reach-3	8450	Q48hr	26.76	173.76	176.58		176.58	0.000020	0.10	356.81	722.07	0.03
RIVER-1	Reach-3	8435	Q2	4.00	173.77	175.10		175.10	0.000097	0.23	19.25	30.90	0.08
RIVER-1	Reach-3	8435	Q5	6.68	173.77	175.28		175.29	0.000122	0.29	28.27	63.45	0.09
RIVER-1	Reach-3	8435	Q25	10.66	173.77	175.54		175.54	0.000100	0.30	47.85	89.28	0.08
RIVER-1	Reach-3	8435	Q100	14.07	173.77	175.78		175.78	0.000066	0.27	73.90	129.13	0.07
RIVER-1	Reach-3	8435	Qreg	19.29	173.77	176.22		176.22	0.000021	0.18	209.18	580.05	0.04
RIVER-1	Reach-3	8435	Q48hr	26.76	173.77	176.58		176.58	0.000008	0.12	483.61	930.37	0.02
RIVER-1	Reach-3	7960	Q2	4.00	173.83	175.10	174.22	175.10	0.000009	0.07	65.50	116.74	0.02
RIVER-1	Reach-3	7960	Q5	6.68	173.83	175.28	174.34	175.28	0.000011	0.09	87.79	127.08	0.03
RIVER-1	Reach-3	7960	Q25	10.66	173.83	175.54	174.49	175.54	0.000011	0.10	123.06	153.69	0.03
RIVER-1	Reach-3	7960	Q100	14.07	173.83	175.78	174.53	175.78	0.000009	0.10	162.14	177.30	0.03
RIVER-1	Reach-3	7960	Qreg	19.29	173.83	176.22	174.58	176.22	0.000005	0.09	325.53	687.51	0.02
RIVER-1	Reach-3	7960	Q48hr	26.76	173.83	176.58	174.63	176.58	0.000003	0.07	640.96	1107.20	0.02
RIVER-1	Reach-3	7886	Q2	4.00	173.71	175.10	174.41	175.10	0.000020	0.13	41.54	92.38	0.04
RIVER-1	Reach-3	7886	Q5	6.68	173.71	175.28	174.50	175.28	0.000025	0.16	53.25	108.27	0.04
RIVER-1	Reach-3	7886	Q25	10.66	173.71	175.54	174.56	175.54	0.000027	0.10	85.46	160.91	0.04
RIVER-1	Reach-3	7886	Q100	14.07	173.71	175.78	174.60	175.78	0.000018	0.10	126.06	182.69	0.03
RIVER-1	Reach-3	7886	Qreg	19.29	173.71	176.22	174.65	176.22	0.000007	0.08	316.12	793.05	0.02
RIVER-1	Reach-3	7886	Q48hr	26.76	173.71	176.58	174.70	176.58	0.000003	0.06	665.36	1147.53	0.02
RIVER-1	Reach-3	7871		Culvert									
RIVER-1	Reach-3	7857	Q2	4.00	173.71	175.10	174.29	175.10	0.000035	0.17	33.76	91.07	0.05
RIVER-1	Reach-3	7857	Q5	6.68	173.71	175.28	174.59	175.28	0.000043	0.21	45.15	104.71	0.05
RIVER-1	Reach-3	7857	Q25	10.66	173.71	175.54	174.68	175.54	0.000041	0.13	73.23	134.21	0.05
RIVER-1	Reach-3	7857	Q100	14.07	173.71	175.78	174.72	175.78	0.000027	0.13	108.41	167.52	0.04
RIVER-1	Reach-3	7857	Qreg	19.29	173.71	176.22	174.79	176.22	0.000009	0.09	288.92	705.64	0.02
RIVER-1	Reach-3	7857	Q48hr	26.76	173.71	176.57	174.84	176.57	0.000004	0.07	625.63	1168.41	0.02
RIVER-1	Reach-3	7750	Q2	4.00	173.90	175.10	174.21	175.10	0.000046	0.15	30.90	64.58	0.05
RIVER-1	Reach-3	7750	Q5	6.68	173.90	175.28	174.31	175.28	0.000052	0.19	43.76	76.45	0.06
RIVER-1	Reach-3	7750	Q25	10.66	173.90	175.53	174.43	175.54	0.000047	0.20	64.83	88.85	0.06
RIVER-1	Reach-3	7750	Q100	14.07	173.90	175.77	174.54	175.77	0.000036	0.20	91.04	166.79	0.05
RIVER-1	Reach-3	7750	Qreg	19.29	173.90	176.22	174.64	176.22	0.000010	0.13	320.56	898.19	0.03
RIVER-1	Reach-3	7750	Q48hr	26.76	173.90	176.57	174.75	176.57	0.000003	0.08	719.36	1270.72	0.02
RIVER-1	Reach-3	7395	Q2	4.00	173.93	175.09	174.19	175.09	0.000053	0.18	27.79	56.61	0.06
RIVER-1	Reach-3	7395	Q5	6.68	173.93	175.27	174.28	175.28	0.000062	0.22	39.36	69.74	0.06
RIVER-1	Reach-3	7395	Q25	10.66	173.93	175.53	174.40	175.53	0.000060	0.24	61.97	123.82	0.06
RIVER-1	Reach-3	7395	Q100	14.07	173.93	175.77	174.49	175.77	0.000042	0.23	105.89	258.67	0.06
RIVER-1	Reach-3	7395	Qreg	19.29	173.93	176.22	174.67	176.22	0.000008	0.12	346.83	959.42	0.03
RIVER-1	Reach-3	7395	Q48hr	26.76	173.93	176.57	174.81	176.57	0.000003	0.07	785.62	1384.10	0.01

HEC-RAS Plan: Baseline_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	7126	Q2	4.00	173.89	175.09	174.16	175.09	0.000015	0.10	51.90	93.51	0.03
RIVER-1	Reach-3	7126	Q5	6.68	173.89	175.27	174.25	175.27	0.000019	0.12	70.00	105.94	0.04
RIVER-1	Reach-3	7126	Q25	10.66	173.89	175.53	174.37	175.53	0.000019	0.14	100.66	137.29	0.04
RIVER-1	Reach-3	7126	Q100	14.07	173.89	175.77	174.47	175.77	0.000016	0.14	141.21	209.89	0.03
RIVER-1	Reach-3	7126	Qreg	19.29	173.89	176.22	174.53	176.22	0.000007	0.11	328.20	765.59	0.02
RIVER-1	Reach-3	7126	Q48hr	26.76	173.89	176.57	174.66	176.57	0.000003	0.08	699.10	1218.84	0.02
RIVER-1	Reach-3	6956	Q2	4.00	173.96	175.09	174.27	175.09	0.000032	0.14	35.62	62.53	0.04
RIVER-1	Reach-3	6956	Q5	6.68	173.96	175.27	174.38	175.27	0.000039	0.17	47.35	67.02	0.05
RIVER-1	Reach-3	6956	Q25	10.66	173.96	175.53	174.58	175.53	0.000040	0.20	67.06	107.21	0.05
RIVER-1	Reach-3	6956	Q100	14.07	173.96	175.77	174.66	175.77	0.000034	0.20	104.36	197.68	0.05
RIVER-1	Reach-3	6956	Qreg	19.29	173.96	176.22	174.72	176.22	0.000011	0.13	287.70	741.84	0.03
RIVER-1	Reach-3	6956	Q48hr	26.76	173.96	176.57	174.78	176.57	0.000004	0.09	653.57	1254.21	0.02
RIVER-1	Reach-3	6846	Q2	4.00	173.97	175.07	174.61	175.09	0.000498	0.56	8.89	62.79	0.18
RIVER-1	Reach-3	6846	Q5	6.68	173.97	175.25	174.73	175.27	0.000652	0.72	11.67	68.00	0.21
RIVER-1	Reach-3	6846	Q25	10.66	173.97	175.52	174.86	175.52	0.000463	0.39	30.92	99.19	0.16
RIVER-1	Reach-3	6846	Q100	14.07	173.97	175.76	174.95	175.77	0.000191	0.31	67.82	227.52	0.11
RIVER-1	Reach-3	6846	Qreg	19.29	173.97	176.22	175.07	176.22	0.000021	0.13	232.55	560.64	0.04
RIVER-1	Reach-3	6846	Q48hr	26.76	173.97	176.57	175.40	176.57	0.000006	0.09	563.61	1224.64	0.02
RIVER-1	Reach-3	6830		Culvert									
RIVER-1	Reach-3	6811	Q2	4.00	173.95	175.07	174.55	175.08	0.000333	0.46	10.34	68.95	0.15
RIVER-1	Reach-3	6811	Q5	6.68	173.95	175.25	174.66	175.26	0.000451	0.60	13.28	79.98	0.17
RIVER-1	Reach-3	6811	Q25	10.66	173.95	175.51	174.78	175.52	0.000319	0.30	35.41	106.82	0.13
RIVER-1	Reach-3	6811	Q100	14.07	173.95	175.76	174.86	175.76	0.000142	0.26	75.57	234.41	0.09
RIVER-1	Reach-3	6811	Qreg	19.29	173.95	176.22	174.97	176.22	0.000018	0.12	250.01	588.59	0.04
RIVER-1	Reach-3	6811	Q48hr	26.76	173.95	176.57	175.11	176.57	0.000005	0.08	560.56	1164.81	0.02
RIVER-1	Reach-3	6719	Q2	4.00	173.89	175.08	174.20	175.08	0.000013	0.09	52.16	82.77	0.03
RIVER-1	Reach-3	6719	Q5	6.68	173.89	175.25	174.29	175.25	0.000018	0.11	67.46	91.98	0.03
RIVER-1	Reach-3	6719	Q25	10.66	173.89	175.52	174.48	175.52	0.000018	0.13	97.81	126.80	0.04
RIVER-1	Reach-3	6719	Q100	14.07	173.89	175.76	174.53	175.76	0.000016	0.14	137.91	210.06	0.03
RIVER-1	Reach-3	6719	Qreg	19.29	173.89	176.22	174.57	176.22	0.000007	0.11	293.91	458.52	0.02
RIVER-1	Reach-3	6719	Q48hr	26.76	173.89	176.57	174.63	176.57	0.000004	0.09	506.26	833.79	0.02
RIVER-1	Reach-3	6081	Q2	4.00	173.53	175.07		175.07	0.000050	0.19	27.66	58.33	0.06
RIVER-1	Reach-3	6081	Q5	6.68	173.53	175.24		175.25	0.000062	0.23	38.46	65.86	0.06
RIVER-1	Reach-3	6081	Q25	10.66	173.53	175.51		175.51	0.000057	0.25	57.68	82.22	0.06
RIVER-1	Reach-3	6081	Q100	14.07	173.53	175.76		175.76	0.000045	0.24	86.34	159.93	0.06
RIVER-1	Reach-3	6081	Qreg	19.29	173.53	176.21		176.21	0.000019	0.19	200.27	372.26	0.04
RIVER-1	Reach-3	6081	Q48hr	26.76	173.53	176.57		176.57	0.000009	0.14	384.52	675.31	0.03
RIVER-1	Reach-3	5744	Q2	4.00	173.55	175.02		175.06	0.000693	0.79	5.05	30.13	0.22
RIVER-1	Reach-3	5744	Q5	6.68	173.55	175.15		175.22	0.001447	1.21	5.51	36.58	0.32
RIVER-1	Reach-3	5744	Q25	10.66	173.55	175.33		175.48	0.002515	1.73	6.18	49.01	0.43
RIVER-1	Reach-3	5744	Q100	14.07	173.55	175.51		175.73	0.003104	2.05	6.88	66.77	0.48
RIVER-1	Reach-3	5744	Qreg	19.29	173.55	176.20		176.21	0.000182	0.61	81.83	341.18	0.12
RIVER-1	Reach-3	5744	Q48hr	26.76	173.55	176.57		176.57	0.000050	0.35	181.22	577.82	0.07
RIVER-1	Reach-3	5696		Culvert									
RIVER-1	Reach-3	5648	Q2	3.56	173.72	175.09		175.11	0.000400	0.59	7.68	62.07	0.17
RIVER-1	Reach-3	5648	Q5	5.92	173.72	175.23		175.25	0.000649	0.81	9.61	71.13	0.21
RIVER-1	Reach-3	5648	Q25	10.67	173.72	175.32		175.38	0.001520	1.28	11.29	82.40	0.33
RIVER-1	Reach-3	5648	Q100	14.08	173.72	175.48		175.54	0.001520	1.37	16.06	100.33	0.34
RIVER-1	Reach-3	5648	Qreg	19.14	173.72	176.14		176.14	0.000142	0.52	87.04	352.66	0.11
RIVER-1	Reach-3	5648	Q48hr	27.19	173.72	176.47		176.47	0.000051	0.34	196.09	667.14	0.07
RIVER-1	Reach-3	5335	Q2	3.56	173.66	175.09		175.09	0.000070	0.17	27.16	76.93	0.06
RIVER-1	Reach-3	5335	Q5	5.92	173.66	175.22		175.23	0.000075	0.20	38.79	90.74	0.07
RIVER-1	Reach-3	5335	Q25	10.67	173.66	175.31		175.32	0.000140	0.29	47.19	94.65	0.09
RIVER-1	Reach-3	5335	Q100	14.08	173.66	175.48		175.49	0.000109	0.28	65.25	131.18	0.08
RIVER-1	Reach-3	5335	Qreg	19.14	173.66	176.14		176.14	0.000012	0.13	225.12	352.47	0.03
RIVER-1	Reach-3	5335	Q48hr	27.19	173.66	176.47		176.47	0.000008	0.11	366.94	605.53	0.03
RIVER-1	Reach-3	5080	Q2	3.56	173.70	175.08		175.08	0.000010	0.08	57.30	129.38	0.03
RIVER-1	Reach-3	5080	Q5	5.92	173.70	175.22		175.22	0.000016	0.11	77.50	161.61	0.03
RIVER-1	Reach-3	5080	Q25	10.67	173.70	175.31		175.31	0.000034	0.17	92.39	172.51	0.05
RIVER-1	Reach-3	5080	Q100	14.08	173.70	175.48		175.48	0.000026	0.17	123.54	194.36	0.04
RIVER-1	Reach-3	5080	Qreg	19.14	173.70	176.14		176.14	0.000005	0.09	312.78	484.84	0.02
RIVER-1	Reach-3	5080	Q48hr	27.19	173.70	176.47		176.47	0.000004	0.09	540.10	901.92	0.02
RIVER-1	Reach-3	4910	Q2	3.56	173.72	175.08		175.08	0.000020	0.12	51.98	125.31	0.04
RIVER-1	Reach-3	4910	Q5	5.92	173.72	175.22		175.22	0.000024	0.14	70.45	145.70	0.04
RIVER-1	Reach-3	4910	Q25	10.67	173.72	175.31		175.31	0.000050	0.21	83.67	162.47	0.06
RIVER-1	Reach-3	4910	Q100	14.08	173.72	175.48		175.48	0.000039	0.20	119.13	262.05	0.05
RIVER-1	Reach-3	4910	Qreg	19.14	173.72	176.14		176.14	0.000003	0.07	559.26	1256.90	0.02
RIVER-1	Reach-3	4910	Q48hr	27.19	173.72	176.47		176.47	0.000002	0.06	1042.48	1629.87	0.01
RIVER-1	Reach-3	4720	Q2	3.56	173.73	175.02	174.41	175.07	0.001434	1.02	3.90	166.66	0.31
RIVER-1	Reach-3	4720	Q5	5.92	173.73	175.09	174.62	175.20	0.002958	1.52	4.97	188.24	0.44

HEC-RAS Plan: Baseline_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	4720	Q25	10.67	173.73	175.28	175.23	175.29	0.003792	0.74	24.59	225.97	0.41
RIVER-1	Reach-3	4720	Q100	14.08	173.73	175.47	175.25	175.47	0.000288	0.28	81.63	410.78	0.12
RIVER-1	Reach-3	4720	Qreg	19.14	173.73	176.14	175.27	176.14	0.000002	0.04	721.94	1349.56	0.01
RIVER-1	Reach-3	4720	Q48hr	27.19	173.73	176.47	175.30	176.47	0.000001	0.03	1199.61	1531.94	0.01
RIVER-1	Reach-3	4702.5		Culvert									
RIVER-1	Reach-3	4686	Q2	3.56	173.56	174.93		174.98	0.001382	1.01	3.75	138.29	0.30
RIVER-1	Reach-3	4686	Q5	5.92	173.56	174.99	174.50	175.11	0.002911	1.52	5.07	153.44	0.44
RIVER-1	Reach-3	4686	Q25	10.67	173.56	175.28		175.28	0.001626	0.47	35.47	297.90	0.26
RIVER-1	Reach-3	4686	Q100	14.08	173.56	175.47		175.47	0.000145	0.19	115.31	573.63	0.08
RIVER-1	Reach-3	4686	Qreg	19.14	173.56	176.14		176.14	0.000002	0.03	824.11	1363.76	0.01
RIVER-1	Reach-3	4686	Q48hr	27.19	173.56	176.47		176.47	0.000001	0.03	1305.95	1559.12	0.01
RIVER-1	Reach-3	4489	Q2	3.56	173.77	174.96		174.96	0.000010	0.07	70.60	146.81	0.02
RIVER-1	Reach-3	4489	Q5	5.92	173.77	175.07		175.07	0.000016	0.09	87.12	165.96	0.03
RIVER-1	Reach-3	4489	Q25	10.67	173.77	175.28		175.28	0.000018	0.11	133.39	354.58	0.03
RIVER-1	Reach-3	4489	Q100	14.08	173.77	175.47		175.47	0.000012	0.09	243.16	740.23	0.03
RIVER-1	Reach-3	4489	Qreg	19.14	173.77	176.14		176.14	0.000001	0.03	920.78	1202.74	0.01
RIVER-1	Reach-3	4489	Q48hr	27.19	173.77	176.47		176.47	0.000001	0.03	1341.89	1349.53	0.01
RIVER-1	Reach-3	4334	Q2	3.56	173.92	174.96		174.96	0.000004	0.04	110.13	222.76	0.01
RIVER-1	Reach-3	4334	Q5	5.92	173.92	175.07		175.07	0.000006	0.06	135.04	250.17	0.02
RIVER-1	Reach-3	4334	Q25	10.67	173.92	175.27		175.27	0.000007	0.07	190.25	280.50	0.02
RIVER-1	Reach-3	4334	Q100	14.08	173.92	175.47		175.47	0.000006	0.07	262.72	554.54	0.02
RIVER-1	Reach-3	4334	Qreg	19.14	173.92	176.14		176.14	0.000001	0.03	934.89	1268.16	0.01
RIVER-1	Reach-3	4334	Q48hr	27.19	173.92	176.47		176.47	0.000001	0.03	1363.03	1322.01	0.01
RIVER-1	Reach-4	4079	Q2	3.74	173.70	174.96		174.96	0.000074	0.21	27.59	86.83	0.07
RIVER-1	Reach-4	4079	Q5	6.42	173.70	175.06		175.07	0.000105	0.26	38.12	119.70	0.08
RIVER-1	Reach-4	4079	Q25	11.14	173.70	175.27		175.27	0.000078	0.26	68.61	177.64	0.07
RIVER-1	Reach-4	4079	Q100	14.84	173.70	175.46		175.46	0.000044	0.21	119.26	377.12	0.06
RIVER-1	Reach-4	4079	Qreg	28.85	173.70	176.14		176.14	0.000004	0.09	614.68	1045.64	0.02
RIVER-1	Reach-4	4079	Q48hr	42.75	173.70	176.47		176.47	0.000003	0.07	975.63	1136.89	0.01
RIVER-1	Reach-4	3829	Q2	3.74	173.70	174.96	174.18	174.96	0.000043	0.15	34.23	100.26	0.05
RIVER-1	Reach-4	3829	Q5	6.42	173.70	175.06	174.30	175.06	0.000066	0.20	45.87	123.20	0.06
RIVER-1	Reach-4	3829	Q25	11.14	173.70	175.27	174.49	175.27	0.000056	0.21	82.93	256.82	0.06
RIVER-1	Reach-4	3829	Q100	14.84	173.70	175.46	174.60	175.46	0.000030	0.17	147.56	405.19	0.05
RIVER-1	Reach-4	3829	Qreg	28.85	173.70	176.14	174.76	176.14	0.000004	0.08	586.90	976.38	0.02
RIVER-1	Reach-4	3829	Q48hr	42.75	173.70	176.47	174.83	176.47	0.000003	0.07	932.91	1091.33	0.02
RIVER-1	Reach-4	3520	Q2	3.74	173.71	174.95	174.18	174.95	0.000081	0.12	52.10	102.77	0.04
RIVER-1	Reach-4	3520	Q5	6.42	173.71	175.05	174.30	175.05	0.000146	0.17	62.81	110.55	0.05
RIVER-1	Reach-4	3520	Q25	11.14	173.71	175.26	174.40	175.26	0.000188	0.22	89.07	168.68	0.06
RIVER-1	Reach-4	3520	Q100	14.84	173.71	175.46	174.43	175.46	0.000143	0.21	149.91	447.59	0.06
RIVER-1	Reach-4	3520	Qreg	28.85	173.71	176.14	174.55	176.14	0.000028	0.12	621.62	901.51	0.03
RIVER-1	Reach-4	3520	Q48hr	42.75	173.71	176.46	174.64	176.46	0.000020	0.11	932.75	989.56	0.02
RIVER-1	Reach-4	3215	Q2	3.74	173.69	174.95	174.14	174.95	0.000058	0.10	73.51	225.07	0.03
RIVER-1	Reach-4	3215	Q5	6.42	173.69	175.04	174.23	175.04	0.000090	0.14	96.25	258.46	0.04
RIVER-1	Reach-4	3215	Q25	11.14	173.69	175.25	174.38	175.25	0.000081	0.15	165.57	393.87	0.04
RIVER-1	Reach-4	3215	Q100	14.84	173.69	175.45	174.48	175.45	0.000053	0.13	260.49	564.81	0.04
RIVER-1	Reach-4	3215	Qreg	28.85	173.69	176.13	174.66	176.13	0.000012	0.08	820.92	904.90	0.02
RIVER-1	Reach-4	3215	Q48hr	42.75	173.69	176.46	174.75	176.46	0.000010	0.08	1123.41	937.71	0.02
RIVER-1	Reach-4	2884	Q2	3.74	173.66	174.94	174.12	174.94	0.000040	0.09	69.29	135.30	0.03
RIVER-1	Reach-4	2884	Q5	6.42	173.66	175.03	174.20	175.03	0.000081	0.13	82.56	157.68	0.04
RIVER-1	Reach-4	2884	Q25	11.14	173.66	175.24	174.28	175.24	0.000098	0.16	125.46	240.91	0.05
RIVER-1	Reach-4	2884	Q100	14.84	173.66	175.44	174.32	175.44	0.000076	0.16	183.64	344.09	0.04
RIVER-1	Reach-4	2884	Qreg	28.85	173.66	176.13	174.49	176.13	0.000024	0.11	599.29	717.64	0.03
RIVER-1	Reach-4	2884	Q48hr	42.75	173.66	176.46	174.59	176.46	0.000019	0.11	842.59	769.16	0.02
RIVER-1	Reach-4	2287	Q2	3.74	173.63	174.93		174.93	0.000037	0.08	104.12	317.35	0.03
RIVER-1	Reach-4	2287	Q5	6.42	173.63	175.02		175.02	0.000071	0.11	133.50	371.88	0.04
RIVER-1	Reach-4	2287	Q25	11.14	173.63	175.23		175.23	0.000055	0.11	214.10	404.68	0.03
RIVER-1	Reach-4	2287	Q100	14.84	173.63	175.43		175.43	0.000035	0.10	304.21	468.71	0.03
RIVER-1	Reach-4	2287	Qreg	28.85	173.63	176.13		176.13	0.000013	0.08	746.69	716.15	0.02
RIVER-1	Reach-4	2287	Q48hr	42.75	173.63	176.46		176.46	0.000012	0.09	989.12	762.21	0.02
RIVER-1	Reach-4	1955	Q2	3.76	173.60	174.93		174.93	0.000038	0.08	87.18	213.76	0.03
RIVER-1	Reach-4	1955	Q5	6.44	173.60	175.01		175.01	0.000070	0.11	105.42	233.63	0.04
RIVER-1	Reach-4	1955	Q25	11.16	173.60	175.22		175.22	0.000084	0.14	170.96	407.99	0.04
RIVER-1	Reach-4	1955	Q100	14.87	173.60	175.43		175.43	0.000054	0.13	267.77	520.34	0.03
RIVER-1	Reach-4	1955	Qreg	31.39	173.60	176.13		176.13	0.000018	0.10	687.02	639.73	0.02
RIVER-1	Reach-4	1955	Q48hr	46.33	173.60	176.46		176.46	0.000017	0.10	907.64	710.67	0.02
RIVER-1	Reach-4	1602	Q2	3.76	173.19	174.92		174.92	0.000066	0.13	51.28	84.84	0.04
RIVER-1	Reach-4	1602	Q5	6.44	173.19	175.00		175.00	0.000145	0.20	57.70	90.59	0.06
RIVER-1	Reach-4	1602	Q25	11.16	173.19	175.20		175.20	0.000219	0.27	79.34	121.69	0.07
RIVER-1	Reach-4	1602	Q100	14.87	173.19	175.41		175.41	0.000206	0.29	112.73	184.81	0.07
RIVER-1	Reach-4	1602	Qreg	31.39	173.19	176.12		176.12	0.000093	0.24	295.77	345.71	0.05
RIVER-1	Reach-4	1602	Q48hr	46.33	173.19	176.45		176.45	0.000085	0.25	429.18	453.65	0.05

HEC-RAS Plan: Baseline_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	1586	Q2	3.76	173.13	174.90	173.87	174.96	0.002888	1.12	3.35	8.00	0.27
RIVER-1	Reach-4	1586	Q5	6.44	173.13	175.43	174.19	175.54	0.003518	1.48	4.37	10.42	0.31
RIVER-1	Reach-4	1586	Q25	11.16	173.13	177.11	174.66	177.22	0.001698	1.48	7.55	490.15	0.24
RIVER-1	Reach-4	1586	Q100	14.87	173.13	177.28	174.98	177.46	0.002619	1.89	7.88	494.30	0.30
RIVER-1	Reach-4	1586	Qreg	31.39	173.13	177.87	177.57	177.87	0.000532	0.35	220.24	494.30	0.10
RIVER-1	Reach-4	1586	Q48hr	46.33	173.13	177.65	177.60	177.68	0.008306	1.22	114.43	494.30	0.38
RIVER-1	Reach-4	1550		Culvert									
RIVER-1	Reach-4	1514	Q2	3.76	173.32	174.71		174.81	0.001616	1.43	2.63	34.51	0.39
RIVER-1	Reach-4	1514	Q5	6.44	173.32	174.97		175.19	0.002667	2.06	3.13	55.47	0.51
RIVER-1	Reach-4	1514	Q25	11.16	173.32	175.51		175.88	0.003132	2.69	4.15	90.73	0.58
RIVER-1	Reach-4	1514	Q100	14.87	173.32	175.32	175.16	176.10	0.007538	3.93	3.79	80.20	0.89
RIVER-1	Reach-4	1514	Qreg	31.39	173.32	176.34	176.34	177.87	0.008397	5.47	5.74	232.24	1.00
RIVER-1	Reach-4	1514	Q48hr	46.33	173.32	177.64	177.64	177.68	0.002697	1.50	100.78	465.20	0.44
RIVER-1	Reach-4	1336	Q2	3.76	173.33	174.77		174.78	0.000046	0.18	39.43	112.99	0.06
RIVER-1	Reach-4	1336	Q5	6.44	173.33	175.12		175.12	0.000021	0.15	84.91	148.69	0.04
RIVER-1	Reach-4	1336	Q25	11.16	173.33	175.76		175.76	0.000006	0.10	215.44	255.22	0.02
RIVER-1	Reach-4	1336	Q100	14.87	173.33	175.86		175.86	0.000008	0.13	241.48	270.21	0.03
RIVER-1	Reach-4	1336	Qreg	31.39	173.33	177.16	174.67	177.16	0.000002	0.09	697.06	401.80	0.02
RIVER-1	Reach-4	1336	Q48hr	46.33	173.33	177.36	174.76	177.36	0.000003	0.12	779.58	401.80	0.02
RIVER-1	Reach-4	1282	Q2	3.76	173.36	174.76	173.85	174.77	0.000268	0.54	6.97	35.66	0.15
RIVER-1	Reach-4	1282	Q5	6.44	173.36	175.09	174.01	175.12	0.000364	0.73	8.78	53.70	0.19
RIVER-1	Reach-4	1282	Q25	11.16	173.36	175.72	174.24	175.76	0.000361	0.91	12.24	104.89	0.20
RIVER-1	Reach-4	1282	Q100	14.87	173.36	175.79	174.39	175.86	0.000580	1.18	12.61	107.07	0.25
RIVER-1	Reach-4	1282	Qreg	31.39	173.36	177.01	174.98	177.14	0.000620	1.62	19.36	277.43	0.28
RIVER-1	Reach-4	1282	Q48hr	46.33	173.36	177.05	175.42	177.34	0.001303	2.37	19.57	283.52	0.40
RIVER-1	Reach-4	1229		Culvert									
RIVER-1	Reach-4	1176	Q2	3.76	173.32	174.75		174.76	0.000244	0.52	7.17	131.61	0.15
RIVER-1	Reach-4	1176	Q5	6.44	173.32	175.08		175.10	0.000341	0.72	8.96	175.30	0.18
RIVER-1	Reach-4	1176	Q25	11.16	173.32	175.65		175.69	0.000374	0.92	12.11	217.61	0.20
RIVER-1	Reach-4	1176	Q100	14.87	173.32	175.66		175.74	0.000653	1.22	12.17	218.10	0.26
RIVER-1	Reach-4	1176	Qreg	31.39	173.32	176.27		176.48	0.001294	2.02	15.52	261.69	0.38
RIVER-1	Reach-4	1176	Q48hr	46.33	173.32	175.44	175.37	176.35	0.008964	4.22	10.97	204.05	0.95
RIVER-1	Reach-4	1003	Q2	3.76	173.39	174.75		174.75	0.000010	0.07	76.54	248.76	0.02
RIVER-1	Reach-4	1003	Q5	6.44	173.39	175.09		175.09	0.000003	0.05	187.29	418.56	0.01
RIVER-1	Reach-4	1003	Q25	11.16	173.39	175.67		175.67	0.000001	0.03	515.77	660.64	0.01
RIVER-1	Reach-4	1003	Q100	14.87	173.39	175.70		175.70	0.000001	0.03	533.91	666.92	0.01
RIVER-1	Reach-4	1003	Qreg	31.39	173.39	176.37		176.37	0.000001	0.03	1012.75	724.70	0.01
RIVER-1	Reach-4	1003	Q48hr	46.33	173.39	175.89		175.89	0.000006	0.08	668.90	702.66	0.02
RIVER-1	Reach-4	946	Q2	3.76	173.40	174.75		174.75	0.000007	0.08	107.28	381.83	0.02
RIVER-1	Reach-4	946	Q5	6.44	173.40	175.09		175.09	0.000002	0.05	252.55	467.88	0.01
RIVER-1	Reach-4	946	Q25	11.16	173.40	175.67		175.67	0.000001	0.03	570.28	599.27	0.01
RIVER-1	Reach-4	946	Q100	14.87	173.40	175.70		175.70	0.000001	0.04	586.69	600.55	0.01
RIVER-1	Reach-4	946	Qreg	31.39	173.40	176.37		176.37	0.000001	0.05	995.24	606.65	0.01
RIVER-1	Reach-4	946	Q48hr	46.33	173.40	175.89		175.89	0.000005	0.11	704.62	604.65	0.02
RIVER-1	Reach-4	884	Q2	3.76	173.40	174.75		174.75	0.000008	0.09	111.04	327.12	0.03
RIVER-1	Reach-4	884	Q5	6.44	173.40	175.09		175.09	0.000003	0.07	235.25	404.27	0.02
RIVER-1	Reach-4	884	Q25	11.16	173.40	175.67		175.67	0.000001	0.05	511.62	490.31	0.01
RIVER-1	Reach-4	884	Q100	14.87	173.40	175.70		175.70	0.000002	0.06	525.02	491.04	0.01
RIVER-1	Reach-4	884	Qreg	31.39	173.40	176.37		176.37	0.000002	0.07	860.08	498.39	0.01
RIVER-1	Reach-4	884	Q48hr	46.33	173.40	175.89		175.89	0.000010	0.15	621.32	495.38	0.03
RIVER-1	Reach-4	685	Q2	3.76	173.42	174.75		174.75	0.000011	0.09	92.93	278.65	0.03
RIVER-1	Reach-4	685	Q5	6.44	173.42	175.09		175.09	0.000004	0.07	193.25	327.21	0.02
RIVER-1	Reach-4	685	Q25	11.16	173.42	175.67		175.67	0.000002	0.05	400.67	369.65	0.01
RIVER-1	Reach-4	685	Q100	14.87	173.42	175.70		175.70	0.000002	0.07	410.76	370.85	0.02
RIVER-1	Reach-4	685	Qreg	31.39	173.42	176.37		176.37	0.000002	0.08	671.93	407.14	0.02
RIVER-1	Reach-4	685	Q48hr	46.33	173.42	175.89		175.89	0.000015	0.18	483.18	375.74	0.04
RIVER-1	Reach-4	522	Q2	3.76	173.44	174.70	174.16	174.75	0.001280	1.00	3.74	136.09	0.32
RIVER-1	Reach-4	522	Q5	6.44	173.44	174.99	174.36	175.08	0.001601	1.33	4.84	217.18	0.37
RIVER-1	Reach-4	522	Q25	11.16	173.44	175.52	174.66	175.66	0.001516	1.63	6.84	366.62	0.39
RIVER-1	Reach-4	522	Q100	14.87	173.44	175.39	174.86	175.67	0.003455	2.34	6.35	364.06	0.58
RIVER-1	Reach-4	522	Qreg	31.39	173.44	176.37	175.74	176.37	0.000041	0.22	282.76	372.71	0.06
RIVER-1	Reach-4	522	Q48hr	46.33	173.44	175.85	175.78	175.89	0.003158	1.35	89.58	371.05	0.49
RIVER-1	Reach-4	499		Culvert									
RIVER-1	Reach-4	476	Q2	3.76	173.22	174.50		174.55	0.001248	0.98	3.82	19.57	0.31
RIVER-1	Reach-4	476	Q5	6.44	173.22	174.49		174.64	0.003777	1.70	3.79	18.97	0.54
RIVER-1	Reach-4	476	Q25	11.16	173.22	174.44	174.44	174.93	0.013403	3.10	3.60	16.68	1.01
RIVER-1	Reach-4	476	Q100	14.87	173.22	174.65	174.65	175.24	0.012554	3.41	4.37	56.76	1.01
RIVER-1	Reach-4	476	Qreg	31.39	173.22	175.39	175.39	176.37	0.010691	4.38	7.17	324.59	1.01
RIVER-1	Reach-4	476	Q48hr	46.33	173.22	175.80	175.80	175.89	0.005617	1.95	69.37	366.31	0.66

HEC-RAS Plan: Baseline_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	256	Q2	3.64	173.43	174.51	173.92	174.51	0.000083	0.17	36.90	153.05	0.07
RIVER-1	Reach-4	256	Q5	6.19	173.43	174.53	174.12	174.53	0.000197	0.26	39.80	157.13	0.11
RIVER-1	Reach-4	256	Q25	10.20	173.43	174.57	174.24	174.58	0.000364	0.37	46.31	166.82	0.16
RIVER-1	Reach-4	256	Q100	14.39	173.43	174.61	174.33	174.62	0.000486	0.45	53.94	180.04	0.18
RIVER-1	Reach-4	256	Qreg	32.35	173.43	174.80	174.48	174.81	0.000617	0.61	93.11	232.90	0.22
RIVER-1	Reach-4	256	Q48hr	47.42	173.43	174.91	174.55	174.92	0.000691	0.70	118.21	241.75	0.23
RIVER-1	Reach-4	1	Q2	3.64	173.97	174.50	174.17	174.50	0.000236	0.26	20.46	104.27	0.12
RIVER-1	Reach-4	1	Q5	6.19	173.97	174.50	174.23	174.51	0.000685	0.44	20.46	104.27	0.21
RIVER-1	Reach-4	1	Q25	10.20	173.97	174.50	174.32	174.52	0.001859	0.73	20.46	104.27	0.34
RIVER-1	Reach-4	1	Q100	14.39	173.97	174.50	174.39	174.54	0.003697	1.03	20.46	104.27	0.49
RIVER-1	Reach-4	1	Qreg	32.35	173.97	174.57	174.57	174.69	0.009402	1.80	28.64	135.15	0.79
RIVER-1	Reach-4	1	Q48hr	47.42	173.97	174.65	174.65	174.79	0.009809	2.02	39.73	145.62	0.83

HEC-RAS Model Output:

Baseline Conditions

Simulation Results for 174.91 m Boundary Condition

HEC-RAS Plan: Baseline_BC_174.91

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-5	Reach-1	3365	Q2	0.30	175.82	176.58	176.04	176.58	0.000284	0.16	1.83	3.79	0.07
RIVER-5	Reach-1	3365	Q5	0.67	175.82	176.88	176.15	176.89	0.000282	0.20	5.77	62.84	0.08
RIVER-5	Reach-1	3365	Q25	1.26	175.82	177.09	176.27	177.09	0.000060	0.10	45.88	362.63	0.04
RIVER-5	Reach-1	3365	Q100	1.80	175.82	177.21	176.35	177.21	0.000020	0.06	98.54	487.95	0.02
RIVER-5	Reach-1	3365	Qreg	3.95	175.82	177.47	176.58	177.47	0.000008	0.05	247.89	645.05	0.01
RIVER-5	Reach-1	3365	Q48hr	6.04	175.82	177.76	176.96	177.76	0.000003	0.04	457.09	748.61	0.01
RIVER-5	Reach-1	2275	Q2	0.30	175.75	176.48	175.95	176.48	0.000313	0.17	1.71	3.42	0.08
RIVER-5	Reach-1	2275	Q5	0.67	175.75	176.77	176.05	176.77	0.000427	0.24	2.79	4.17	0.09
RIVER-5	Reach-1	2275	Q25	1.26	175.75	177.04	176.16	177.04	0.000558	0.31	4.49	18.23	0.11
RIVER-5	Reach-1	2275	Q100	1.80	175.75	177.19	176.25	177.19	0.000384	0.28	16.31	142.13	0.09
RIVER-5	Reach-1	2275	Qreg	3.95	175.75	177.47	176.49	177.47	0.000090	0.16	93.53	466.31	0.05
RIVER-5	Reach-1	2275	Q48hr	6.04	175.75	177.76	176.68	177.76	0.000014	0.08	267.35	644.93	0.02
RIVER-5	Reach-1	1732	Q2	0.30	175.82	176.36		176.37	0.002562	0.43	0.69	4.05	0.20
RIVER-5	Reach-1	1732	Q5	0.67	175.82	176.59		176.62	0.003386	0.64	1.05	5.24	0.25
RIVER-5	Reach-1	1732	Q25	1.26	175.82	176.78		176.83	0.005413	0.95	1.32	6.17	0.32
RIVER-5	Reach-1	1732	Q100	1.80	175.82	176.96		177.02	0.005954	1.13	1.59	7.12	0.35
RIVER-5	Reach-1	1732	Qreg	3.95	175.82	177.17		177.39	0.015498	2.06	1.92	37.75	0.58
RIVER-5	Reach-1	1732	Q48hr	6.04	175.82	177.27		177.71	0.028589	2.94	2.06	54.61	0.80
RIVER-5	Reach-1	1690.5		Culvert									
RIVER-5	Reach-1	1649	Q2	0.30	175.88	176.57	176.15	176.58	0.001160	0.34	0.87	6.31	0.14
RIVER-5	Reach-1	1649	Q5	0.67	175.88	176.84	176.27	176.86	0.001711	0.53	1.27	7.76	0.18
RIVER-5	Reach-1	1649	Q25	1.26	175.88	177.07	176.41	177.10	0.002711	0.78	1.62	82.39	0.24
RIVER-5	Reach-1	1649	Q100	1.80	175.88	177.19	176.52	177.24	0.003905	1.00	1.80	192.50	0.29
RIVER-5	Reach-1	1649	Qreg	3.95	175.88	177.45	176.88	177.62	0.009759	1.81	2.19	330.80	0.48
RIVER-5	Reach-1	1649	Q48hr	6.04	175.88	177.54	177.17	177.88	0.018762	2.61	2.32	346.47	0.67
RIVER-5	Reach-1	1233	Q2	0.30	175.85	176.33		176.34	0.003480	0.35	0.85	2.94	0.21
RIVER-5	Reach-1	1233	Q5	0.67	175.85	176.66		176.66	0.001312	0.30	2.34	7.07	0.14
RIVER-5	Reach-1	1233	Q25	1.26	175.85	176.94		176.95	0.000602	0.24	5.26	14.92	0.10
RIVER-5	Reach-1	1233	Q100	1.80	175.85	177.07		177.08	0.000509	0.24	9.00	64.69	0.09
RIVER-5	Reach-1	1233	Qreg	3.95	175.85	177.53		177.53	0.000010	0.04	104.22	337.42	0.01
RIVER-5	Reach-1	1233	Q48hr	6.04	175.85	177.71		177.71	0.000006	0.03	169.88	384.52	0.01
RIVER-5	Reach-1	673	Q2	0.30	175.45	176.27		176.27	0.000143	0.10	2.81	5.40	0.05
RIVER-5	Reach-1	673	Q5	0.67	175.45	176.60		176.60	0.000164	0.14	4.71	6.11	0.05
RIVER-5	Reach-1	673	Q25	1.26	175.45	176.88		176.88	0.000254	0.19	6.58	7.65	0.07
RIVER-5	Reach-1	673	Q100	1.80	175.45	176.99		176.99	0.000446	0.24	7.58	9.95	0.09
RIVER-5	Reach-1	673	Qreg	3.95	175.45	177.52		177.53	0.000026	0.08	67.09	247.84	0.02
RIVER-5	Reach-1	673	Q48hr	6.04	175.45	177.70		177.71	0.000014	0.06	119.82	327.47	0.02
RIVER-4	Reach-1	5305	Q2	0.26	175.17	176.19	175.34	176.19	0.000061	0.07	4.28	8.79	0.03
RIVER-4	Reach-1	5305	Q5	0.72	175.17	176.53	175.46	176.53	0.000101	0.11	8.91	18.74	0.04
RIVER-4	Reach-1	5305	Q25	1.51	175.17	176.80	175.61	176.80	0.000120	0.13	24.27	152.87	0.04
RIVER-4	Reach-1	5305	Q100	2.63	175.17	176.97	175.76	176.98	0.000071	0.10	64.06	270.38	0.03
RIVER-4	Reach-1	5305	Qreg	6.51	175.17	177.53	176.07	177.53	0.000010	0.05	278.32	558.55	0.01
RIVER-4	Reach-1	5305	Q48hr	9.62	175.17	177.71	176.23	177.71	0.000009	0.05	388.24	665.27	0.01
RIVER-4	Reach-1	4959	Q2	0.26	175.06	176.19		176.19	0.000031	0.05	5.97	11.58	0.02
RIVER-4	Reach-1	4959	Q5	0.72	175.06	176.53		176.53	0.000063	0.09	10.99	20.15	0.03
RIVER-4	Reach-1	4959	Q25	1.51	175.06	176.79		176.79	0.000075	0.10	28.74	170.65	0.03
RIVER-4	Reach-1	4959	Q100	2.63	175.06	176.97		176.97	0.000050	0.09	69.69	288.74	0.03
RIVER-4	Reach-1	4959	Qreg	6.51	175.06	177.53		177.53	0.000007	0.04	368.50	788.20	0.01
RIVER-4	Reach-1	4959	Q48hr	9.62	175.06	177.71		177.71	0.000006	0.04	522.93	931.27	0.01
RIVER-4	Reach-1	4536	Q2	0.31	175.31	176.18		176.18	0.000173	0.10	3.80	8.55	0.04
RIVER-4	Reach-1	4536	Q5	0.84	175.31	176.51		176.51	0.000228	0.13	7.38	14.11	0.05
RIVER-4	Reach-1	4536	Q25	1.81	175.31	176.78		176.78	0.000216	0.15	27.06	243.75	0.05
RIVER-4	Reach-1	4536	Q100	3.16	175.31	176.96		176.96	0.000066	0.09	89.53	412.59	0.03
RIVER-4	Reach-1	4536	Qreg	8.04	175.31	177.52		177.52	0.000006	0.03	444.73	903.74	0.01
RIVER-4	Reach-1	4536	Q48hr	11.95	175.31	177.70		177.70	0.000006	0.03	620.72	1009.98	0.01
RIVER-4	Reach-2	3842	Q2	0.59	175.54	175.98		175.99	0.006465	0.49	1.21	4.19	0.29
RIVER-4	Reach-2	3842	Q5	1.48	175.54	176.31		176.33	0.003357	0.53	2.90	7.84	0.23
RIVER-4	Reach-2	3842	Q25	2.97	175.54	176.66		176.66	0.001065	0.37	9.39	40.46	0.13
RIVER-4	Reach-2	3842	Q100	4.77	175.54	176.94		176.94	0.000098	0.13	52.37	325.56	0.04
RIVER-4	Reach-2	3842	Qreg	11.60	175.54	177.52		177.52	0.000003	0.03	427.59	892.45	0.01
RIVER-4	Reach-2	3842	Q48hr	17.29	175.54	177.70		177.70	0.000002	0.03	594.23	951.73	0.01
RIVER-4	Reach-2	3440	Q2	0.59	174.86	175.79		175.80	0.000694	0.24	2.43	4.21	0.10
RIVER-4	Reach-2	3440	Q5	1.48	174.86	176.18		176.18	0.000613	0.28	5.62	12.35	0.10
RIVER-4	Reach-2	3440	Q25	2.97	174.86	176.61		176.61	0.000306	0.24	11.82	17.64	0.07
RIVER-4	Reach-2	3440	Q100	4.77	174.86	176.93		176.93	0.000138	0.18	34.25	185.96	0.05
RIVER-4	Reach-2	3440	Qreg	11.60	174.86	177.52		177.52	0.000004	0.04	352.05	731.17	0.01
RIVER-4	Reach-2	3440	Q48hr	17.29	174.86	177.70		177.70	0.000004	0.04	488.92	785.71	0.01
RIVER-4	Reach-2	3128	Q2	0.59	174.79	175.74		175.74	0.000436	0.20	2.94	4.89	0.08
RIVER-4	Reach-2	3128	Q5	1.48	174.79	176.12		176.12	0.000628	0.29	5.01	6.05	0.10
RIVER-4	Reach-2	3128	Q25	2.97	174.79	176.56		176.57	0.000721	0.37	7.94	7.33	0.11
RIVER-4	Reach-2	3128	Q100	4.77	174.79	176.90		176.90	0.000822	0.44	11.87	41.15	0.12

HEC-RAS Plan: Baseline_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-4	Reach-2	3128	Qreg	11.60	174.79	177.52		177.52	0.000006	0.05	331.62	873.60	0.01
RIVER-4	Reach-2	3128	Q48hr	17.29	174.79	177.70		177.70	0.000004	0.04	497.39	956.06	0.01
RIVER-4	Reach-2	2805	Q2	0.59	174.82	175.69		175.69	0.000761	0.20	2.90	7.23	0.10
RIVER-4	Reach-2	2805	Q5	1.48	174.82	176.06		176.07	0.000570	0.26	5.76	7.88	0.10
RIVER-4	Reach-2	2805	Q25	2.97	174.82	176.50		176.51	0.000489	0.30	10.36	17.96	0.09
RIVER-4	Reach-2	2805	Q100	4.77	174.82	176.85		176.86	0.000338	0.29	17.69	23.79	0.08
RIVER-4	Reach-2	2805	Qreg	11.60	174.82	177.52		177.52	0.000017	0.08	204.70	526.74	0.02
RIVER-4	Reach-2	2805	Q48hr	17.29	174.82	177.70		177.70	0.000012	0.07	306.24	590.24	0.02
RIVER-4	Reach-2	1709	Q2	0.59	174.55	175.33		175.34	0.001520	0.34	1.75	3.14	0.14
RIVER-4	Reach-2	1709	Q5	1.48	174.55	175.74		175.75	0.001874	0.47	3.12	3.63	0.16
RIVER-4	Reach-2	1709	Q25	2.97	174.55	176.19		176.21	0.002244	0.61	4.88	4.21	0.18
RIVER-4	Reach-2	1709	Q100	4.77	174.55	176.58		176.61	0.002571	0.72	6.66	4.89	0.20
RIVER-4	Reach-2	1709	Qreg	11.60	174.55	177.50		177.51	0.000352	0.32	50.20	160.46	0.08
RIVER-4	Reach-2	1709	Q48hr	17.29	174.55	177.69		177.69	0.000205	0.26	90.46	270.91	0.06
RIVER-4	Reach-2	1139	Q2	0.64	174.23	175.16		175.17	0.000700	0.25	2.53	4.14	0.10
RIVER-4	Reach-2	1139	Q5	1.58	174.23	175.48		175.49	0.001255	0.40	3.95	4.87	0.14
RIVER-4	Reach-2	1139	Q25	3.16	174.23	175.86		175.88	0.001620	0.52	6.02	5.89	0.17
RIVER-4	Reach-2	1139	Q100	5.03	174.23	176.23		176.25	0.001718	0.60	8.36	6.92	0.17
RIVER-4	Reach-2	1139	Qreg	12.35	174.23	177.40		177.41	0.000906	0.57	28.69	118.55	0.14
RIVER-4	Reach-2	1139	Q48hr	18.42	174.23	177.64		177.65	0.000378	0.40	74.71	260.33	0.09
RIVER-4	Reach-2	1021	Q2	0.64	174.45	175.12	174.72	175.13	0.001269	0.41	1.54	4.88	0.17
RIVER-4	Reach-2	1021	Q5	1.58	174.45	175.40	174.87	175.43	0.002155	0.70	2.26	5.37	0.24
RIVER-4	Reach-2	1021	Q25	3.16	174.45	175.75	175.06	175.80	0.002813	1.00	3.16	6.04	0.29
RIVER-4	Reach-2	1021	Q100	5.03	174.45	176.08	175.26	176.16	0.003194	1.25	4.03	39.25	0.32
RIVER-4	Reach-2	1021	Qreg	12.35	174.45	177.17	175.85	177.33	0.003258	1.80	6.95	156.98	0.35
RIVER-4	Reach-2	1021	Q48hr	18.42	174.45	177.21	176.25	177.56	0.006850	2.64	7.22	160.08	0.51
RIVER-4	Reach-2	975		Culvert									
RIVER-4	Reach-2	929	Q2	0.64	174.12	174.98		174.99	0.000967	0.38	1.66	9.23	0.15
RIVER-4	Reach-2	929	Q5	1.58	174.12	175.13		175.16	0.002956	0.77	2.05	9.85	0.28
RIVER-4	Reach-2	929	Q25	3.16	174.12	175.39		175.46	0.004631	1.16	2.71	11.85	0.36
RIVER-4	Reach-2	929	Q100	5.03	174.12	175.62		175.74	0.006019	1.52	3.31	13.52	0.43
RIVER-4	Reach-2	929	Qreg	12.35	174.12	176.22		176.54	0.010106	2.54	4.86	21.37	0.59
RIVER-4	Reach-2	929	Q48hr	18.42	174.12	176.29		176.97	0.019909	3.65	5.04	21.70	0.84
RIVER-4	Reach-2	485	Q2	0.64	173.89	174.97	174.09	174.97	0.000044	0.09	6.81	8.05	0.03
RIVER-4	Reach-2	485	Q5	1.58	173.89	175.08	174.18	175.08	0.000189	0.20	7.71	8.31	0.07
RIVER-4	Reach-2	485	Q25	3.16	173.89	175.28	174.30	175.29	0.000423	0.33	9.45	8.84	0.10
RIVER-4	Reach-2	485	Q100	5.03	173.89	175.47	174.41	175.48	0.000679	0.45	11.11	9.33	0.13
RIVER-4	Reach-2	485	Qreg	12.35	173.89	176.13	174.72	176.14	0.000732	0.62	25.47	47.07	0.15
RIVER-4	Reach-2	485	Q48hr	18.42	173.89	176.46	174.93	176.47	0.000396	0.51	58.03	106.67	0.11
RIVER-3	Reach-1	1889	Q2	0.12	176.35	176.48	176.48	176.51	0.045040	0.75	0.16	2.06	0.88
RIVER-3	Reach-1	1889	Q5	0.25	176.35	176.66	176.52	176.67	0.003391	0.39	0.63	3.23	0.28
RIVER-3	Reach-1	1889	Q25	0.43	176.35	177.23	176.57	177.23	0.000054	0.11	5.35	26.28	0.04
RIVER-3	Reach-1	1889	Q100	0.61	176.35	177.15	176.61	177.15	0.000190	0.18	3.83	14.26	0.08
RIVER-3	Reach-1	1889	Qreg	1.25	176.35	177.26	176.72	177.26	0.000339	0.28	6.18	30.35	0.11
RIVER-3	Reach-1	1889	Q48hr	1.90	176.35	177.84	176.80	177.84	0.000006	0.05	49.60	97.50	0.02
RIVER-3	Reach-1	1443	Q2	0.12	175.71	176.27	175.85	176.27	0.000103	0.09	1.26	3.81	0.05
RIVER-3	Reach-1	1443	Q5	0.25	175.71	176.65		176.65	0.000038	0.08	3.06	5.54	0.03
RIVER-3	Reach-1	1443	Q25	0.43	175.71	177.22		177.22	0.000008	0.05	13.13	77.16	0.02
RIVER-3	Reach-1	1443	Q100	0.61	175.71	177.14		177.14	0.000027	0.09	8.59	42.89	0.03
RIVER-3	Reach-1	1443	Qreg	1.25	175.71	177.24		177.24	0.000053	0.13	14.55	80.58	0.04
RIVER-3	Reach-1	1443	Q48hr	1.90	175.71	177.84		177.84	0.000001	0.03	85.89	141.84	0.01
RIVER-3	Reach-1	1255	Q2	0.12	175.45	176.26		176.26	0.000036	0.07	1.72	3.53	0.03
RIVER-3	Reach-1	1255	Q5	0.25	175.45	176.65		176.65	0.000027	0.07	3.34	4.95	0.03
RIVER-3	Reach-1	1255	Q25	0.43	175.45	177.22		177.22	0.000003	0.04	20.45	101.93	0.01
RIVER-3	Reach-1	1255	Q100	0.61	175.45	177.14		177.14	0.000011	0.06	14.53	50.23	0.02
RIVER-3	Reach-1	1255	Qreg	1.25	175.45	177.24		177.24	0.000023	0.10	22.19	105.48	0.03
RIVER-3	Reach-1	1255	Q48hr	1.90	175.45	177.84		177.84	0.000001	0.03	102.28	149.35	0.01
RIVER-3	Reach-1	1186	Q2	0.12	174.90	176.26	175.07	176.26	0.000006	0.05	2.47	3.96	0.01
RIVER-3	Reach-1	1186	Q5	0.25	174.90	176.65	175.13	176.65	0.000010	0.07	3.28	5.70	0.02
RIVER-3	Reach-1	1186	Q25	0.43	174.90	177.22	175.19	177.22	0.000011	0.10	4.49	72.70	0.02
RIVER-3	Reach-1	1186	Q100	0.61	174.90	177.14	175.25	177.14	0.000025	0.14	4.32	64.72	0.03
RIVER-3	Reach-1	1186	Qreg	1.25	174.90	177.24	175.40	177.24	0.000092	0.28	4.52	73.14	0.06
RIVER-3	Reach-1	1186	Q48hr	1.90	174.90	177.84	175.52	177.84	0.000010	0.06	47.41	133.00	0.02
RIVER-3	Reach-1	1168		Culvert									
RIVER-3	Reach-1	1150	Q2	0.12	175.72	176.26	175.86	176.26	0.000202	0.14	0.83	2.25	0.07
RIVER-3	Reach-1	1150	Q5	0.25	175.72	176.65	175.91	176.65	0.000095	0.15	1.64	3.89	0.05
RIVER-3	Reach-1	1150	Q25	0.43	175.72	177.22	175.98	177.22	0.000048	0.15	2.85	60.68	0.04
RIVER-3	Reach-1	1150	Q100	0.61	175.72	177.14	176.03	177.14	0.000116	0.23	2.67	52.87	0.06
RIVER-3	Reach-1	1150	Qreg	1.25	175.72	177.22	176.18	177.23	0.000398	0.44	2.85	60.46	0.12
RIVER-3	Reach-1	1150	Q48hr	1.90	175.72	177.84	176.30	177.84	0.000010	0.06	49.41	144.70	0.02

HEC-RAS Plan: Baseline_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-3	Reach-1	782	Q2	0.12	175.29	176.26	175.38	176.26	0.000002	0.02	5.42	8.24	0.01
RIVER-3	Reach-1	782	Q5	0.25	175.29	176.65	175.42	176.65	0.000002	0.03	10.31	26.67	0.01
RIVER-3	Reach-1	782	Q25	0.43	175.29	177.22	175.45	177.22	0.000000	0.01	54.37	124.98	0.00
RIVER-3	Reach-1	782	Q100	0.61	175.29	177.14	175.49	177.14	0.000001	0.02	44.35	111.78	0.01
RIVER-3	Reach-1	782	Qreg	1.25	175.29	177.22	175.57	177.22	0.000002	0.04	54.63	125.33	0.01
RIVER-3	Reach-1	782	Q48hr	1.90	175.29	177.84	175.63	177.84	0.000000	0.02	156.15	194.80	0.00
RIVER-3	Reach-1	465	Q2	0.12	175.02	176.26	175.14	176.26	0.000001	0.02	9.93	43.06	0.01
RIVER-3	Reach-1	465	Q5	0.25	175.02	176.65	175.18	176.65	0.000000	0.01	41.99	113.52	0.00
RIVER-3	Reach-1	465	Q25	0.43	175.02	177.22	175.23	177.22	0.000000	0.00	134.08	214.55	0.00
RIVER-3	Reach-1	465	Q100	0.61	175.02	177.14	175.27	177.14	0.000000	0.01	117.24	185.15	0.00
RIVER-3	Reach-1	465	Qreg	1.25	175.02	177.22	175.38	177.22	0.000000	0.01	134.51	215.53	0.00
RIVER-3	Reach-1	465	Q48hr	1.90	175.02	177.84	175.48	177.84	0.000000	0.01	320.77	364.70	0.00
RIVER-3	Reach-1	280	Q2	0.12	174.83	176.26	174.94	176.26	0.000000	0.00	35.47	71.74	0.00
RIVER-3	Reach-1	280	Q5	0.25	174.83	176.65	174.99	176.65	0.000000	0.00	67.87	99.89	0.00
RIVER-3	Reach-1	280	Q25	0.43	174.83	177.22	175.06	177.22	0.000000	0.00	155.46	237.62	0.00
RIVER-3	Reach-1	280	Q100	0.61	174.83	177.14	175.10	177.14	0.000000	0.01	136.41	210.46	0.00
RIVER-3	Reach-1	280	Qreg	1.25	174.83	177.22	175.26	177.22	0.000000	0.01	155.93	237.98	0.00
RIVER-3	Reach-1	280	Q48hr	1.90	174.83	177.84	175.35	177.84	0.000000	0.01	341.84	344.35	0.00
RIVER-2	Reach-1	3413	Q2	0.15	175.69	176.31	175.82	176.31	0.000119	0.08	1.88	4.74	0.04
RIVER-2	Reach-1	3413	Q5	0.51	175.69	176.74	175.92	176.74	0.000095	0.10	6.77	43.50	0.04
RIVER-2	Reach-1	3413	Q25	1.10	175.69	177.27	176.03	177.27	0.000003	0.02	55.67	118.78	0.01
RIVER-2	Reach-1	3413	Q100	1.70	175.69	177.27	176.11	177.27	0.000006	0.04	56.03	119.06	0.01
RIVER-2	Reach-1	3413	Qreg	4.37	175.69	177.74	176.36	177.74	0.000003	0.03	173.38	346.95	0.01
RIVER-2	Reach-1	3413	Q48hr	6.85	175.69	178.15	176.53	178.15	0.000000	0.01	682.75	916.06	0.00
RIVER-2	Reach-1	3308	Q2	0.15	175.79	176.30	175.98	176.31	0.000618	0.19	0.80	4.30	0.10
RIVER-2	Reach-1	3308	Q5	0.51	175.79	176.73	176.09	176.73	0.000620	0.31	1.65	60.74	0.11
RIVER-2	Reach-1	3308	Q25	1.10	175.79	177.26	176.22	177.27	0.000554	0.40	2.71	329.23	0.11
RIVER-2	Reach-1	3308	Q100	1.70	175.79	177.25	176.33	177.27	0.001372	0.63	2.69	321.13	0.17
RIVER-2	Reach-1	3308	Qreg	4.37	175.79	177.65	176.69	177.73	0.003761	1.25	3.50	843.51	0.30
RIVER-2	Reach-1	3308	Q48hr	6.85	175.79	178.00	176.97	178.13	0.005061	1.64	4.19	966.52	0.36
RIVER-2	Reach-1	3270.5		Culvert									
RIVER-2	Reach-1	3233	Q2	0.15	175.74	176.30	175.95	176.30	0.001248	0.23	0.68	2.93	0.12
RIVER-2	Reach-1	3233	Q5	0.51	175.74	176.72	176.10	176.73	0.000995	0.34	1.51	27.94	0.12
RIVER-2	Reach-1	3233	Q25	1.10	175.74	177.24	176.27	177.25	0.000810	0.43	2.55	85.47	0.12
RIVER-2	Reach-1	3233	Q100	1.70	175.74	177.20	176.38	177.23	0.002150	0.69	2.48	79.03	0.20
RIVER-2	Reach-1	3233	Qreg	4.37	175.74	177.35	176.75	177.48	0.009715	1.57	2.77	111.43	0.43
RIVER-2	Reach-1	3233	Q48hr	6.85	175.74	177.75	177.03	177.94	0.010323	1.92	3.57	395.89	0.46
RIVER-2	Reach-1	3063	Q2	0.15	175.71	176.29	175.85	176.29	0.000141	0.09	1.80	4.89	0.04
RIVER-2	Reach-1	3063	Q5	0.51	175.71	176.71	175.95	176.71	0.000140	0.12	4.33	7.18	0.05
RIVER-2	Reach-1	3063	Q25	1.10	175.71	177.24	176.05	177.24	0.000043	0.08	17.64	74.50	0.03
RIVER-2	Reach-1	3063	Q100	1.70	175.71	177.20	176.13	177.20	0.000143	0.15	14.92	61.97	0.05
RIVER-2	Reach-1	3063	Qreg	4.37	175.71	177.38	176.36	177.38	0.000218	0.21	29.66	92.86	0.07
RIVER-2	Reach-1	3063	Q48hr	6.85	175.71	177.84	176.53	177.84	0.000002	0.03	305.24	527.20	0.01
RIVER-2	Reach-1	2586.51	Q2	0.19	175.47	176.28	175.65	176.28	0.000067	0.07	2.64	5.42	0.03
RIVER-2	Reach-1	2586.51	Q5	0.65	175.47	176.69	175.77	176.69	0.000122	0.12	5.23	7.04	0.05
RIVER-2	Reach-1	2586.51	Q25	1.43	175.47	177.23	175.90	177.23	0.000037	0.10	23.20	101.96	0.03
RIVER-2	Reach-1	2586.51	Q100	2.22	175.47	177.18	175.99	177.18	0.000127	0.18	18.56	75.38	0.05
RIVER-2	Reach-1	2586.51	Qreg	5.79	175.47	177.35	176.28	177.35	0.000253	0.27	39.47	179.03	0.07
RIVER-2	Reach-1	2586.51	Q48hr	9.03	175.47	177.84	176.46	177.84	0.000006	0.05	265.60	506.88	0.01
RIVER-2	Reach-1	1837	Q2	0.19	175.09	176.27		176.27	0.000016	0.04	4.20	5.42	0.02
RIVER-2	Reach-1	1837	Q5	0.65	175.09	176.67		176.67	0.000056	0.10	6.61	6.51	0.03
RIVER-2	Reach-1	1837	Q25	1.43	175.09	177.23		177.23	0.000044	0.10	21.08	124.95	0.03
RIVER-2	Reach-1	1837	Q100	2.22	175.09	177.15		177.15	0.000156	0.19	14.69	47.47	0.05
RIVER-2	Reach-1	1837	Qreg	5.79	175.09	177.26		177.27	0.000563	0.37	26.08	162.64	0.10
RIVER-2	Reach-1	1837	Q48hr	9.03	175.09	177.84		177.84	0.000010	0.06	218.73	442.82	0.01
RIVER-2	Reach-1	999	Q2	0.19	175.01	176.27		176.27	0.000008	0.03	5.75	7.02	0.01
RIVER-2	Reach-1	999	Q5	0.65	175.01	176.66		176.66	0.000031	0.07	9.31	17.96	0.02
RIVER-2	Reach-1	999	Q25	1.43	175.01	177.22		177.22	0.000003	0.03	80.62	287.63	0.01
RIVER-2	Reach-1	999	Q100	2.22	175.01	177.14		177.14	0.000015	0.06	59.29	229.03	0.02
RIVER-2	Reach-1	999	Qreg	5.79	175.01	177.23		177.23	0.000049	0.11	83.32	294.42	0.03
RIVER-2	Reach-1	999	Q48hr	9.03	175.01	177.84		177.84	0.000003	0.04	288.26	345.00	0.01
RIVER-1	Reach-1	13837	Q2	0.14	175.83	176.28	175.89	176.28	0.000085	0.08	1.91	5.43	0.04
RIVER-1	Reach-1	13837	Q5	0.32	175.83	176.68	175.94	176.68	0.000038	0.07	4.50	7.54	0.03
RIVER-1	Reach-1	13837	Q25	0.61	175.83	177.30	175.99	177.30	0.000005	0.04	25.71	80.69	0.01
RIVER-1	Reach-1	13837	Q100	0.94	175.83	177.31	176.04	177.31	0.000011	0.06	27.17	85.84	0.02
RIVER-1	Reach-1	13837	Qreg	2.12	175.83	177.73	176.16	177.73	0.000005	0.05	78.28	165.01	0.01
RIVER-1	Reach-1	13837	Q48hr	3.11	175.83	177.84	176.25	177.84	0.000006	0.05	120.43	266.43	0.01
RIVER-1	Reach-1	13777	Q2	0.14	175.68	176.28	175.80	176.28	0.000294	0.20	0.71	5.17	0.08
RIVER-1	Reach-1	13777	Q5	0.32	175.68	176.68	175.88	176.68	0.000261	0.27	1.19	6.98	0.09
RIVER-1	Reach-1	13777	Q25	0.61	175.68	177.29	175.98	177.30	0.000193	0.32	1.93	72.34	0.08

HEC-RAS Plan: Baseline_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-1	13777	Q100	0.94	175.68	177.30	176.08	177.31	0.000451	0.49	1.94	76.93	0.12
RIVER-1	Reach-1	13777	Qreg	2.12	175.68	177.72	176.37	177.73	0.001391	0.32	10.85	198.85	0.16
RIVER-1	Reach-1	13777	Q48hr	3.11	175.68	177.84	176.57	177.84	0.000348	0.19	29.36	200.01	0.09
RIVER-1	Reach-1	13745.5		Culvert									
RIVER-1	Reach-1	13714	Q2	0.14	175.87	176.27	175.99	176.27	0.001185	0.31	0.47	3.36	0.16
RIVER-1	Reach-1	13714	Q5	0.32	175.87	176.66	176.07	176.67	0.000570	0.34	0.94	48.24	0.12
RIVER-1	Reach-1	13714	Q25	0.61	175.87	177.22	176.18	177.23	0.000350	0.38	1.61	112.45	0.10
RIVER-1	Reach-1	13714	Q100	0.94	175.87	177.13	176.28	177.15	0.001050	0.63	1.50	80.63	0.18
RIVER-1	Reach-1	13714	Qreg	2.12	175.87	177.18	176.56	177.28	0.004618	1.35	1.57	92.58	0.38
RIVER-1	Reach-1	13714	Q48hr	3.11	175.87	177.84	176.75	177.84	0.000918	0.20	31.67	409.10	0.13
RIVER-1	Reach-1	13387	Q2	0.14	174.94	176.27		176.27	0.000005	0.03	4.60	5.11	0.01
RIVER-1	Reach-1	13387	Q5	0.32	174.94	176.66		176.66	0.000008	0.05	7.87	29.85	0.01
RIVER-1	Reach-1	13387	Q25	0.61	174.94	177.22		177.22	0.000000	0.01	166.42	483.97	0.00
RIVER-1	Reach-1	13387	Q100	0.94	174.94	177.14		177.14	0.000001	0.02	127.22	443.92	0.00
RIVER-1	Reach-1	13387	Qreg	2.12	174.94	177.23		177.23	0.000002	0.03	169.68	484.84	0.01
RIVER-1	Reach-1	13387	Q48hr	3.11	174.94	177.84		177.84	0.000000	0.01	540.64	689.10	0.00
RIVER-1	Reach-1	13099	Q2	0.14	174.88	176.27		176.27	0.000005	0.03	4.56	6.45	0.01
RIVER-1	Reach-1	13099	Q5	0.32	174.88	176.66		176.66	0.000008	0.04	8.58	16.49	0.01
RIVER-1	Reach-1	13099	Q25	0.61	174.88	177.22		177.22	0.000001	0.02	92.98	388.58	0.00
RIVER-1	Reach-1	13099	Q100	0.94	174.88	177.14		177.14	0.000003	0.04	63.77	318.24	0.01
RIVER-1	Reach-1	13099	Qreg	2.12	174.88	177.23		177.23	0.000007	0.06	95.48	394.06	0.01
RIVER-1	Reach-1	13099	Q48hr	3.11	174.88	177.84		177.84	0.000000	0.01	443.00	693.50	0.00
RIVER-1	Reach-2	12741	Q2	0.37	174.77	176.27	174.94	176.27	0.000002	0.04	15.24	40.81	0.01
RIVER-1	Reach-2	12741	Q5	1.07	174.77	176.66	175.08	176.66	0.000003	0.05	49.11	189.68	0.01
RIVER-1	Reach-2	12741	Q25	2.22	174.77	177.22	175.23	177.22	0.000000	0.02	250.02	426.04	0.01
RIVER-1	Reach-2	12741	Q100	3.41	174.77	177.14	175.34	177.14	0.000001	0.04	214.52	421.48	0.01
RIVER-1	Reach-2	12741	Qreg	8.56	174.77	177.23	175.69	177.23	0.000005	0.09	252.53	426.23	0.02
RIVER-1	Reach-2	12741	Q48hr	13.26	174.77	177.84	176.03	177.84	0.000001	0.05	523.02	452.47	0.01
RIVER-1	Reach-2	12664	Q2	0.37	174.88	176.27	175.09	176.27	0.000020	0.13	2.82	19.07	0.04
RIVER-1	Reach-2	12664	Q5	1.07	174.88	176.66	175.25	176.66	0.000069	0.29	3.66	81.89	0.07
RIVER-1	Reach-2	12664	Q25	2.22	174.88	177.22	175.43	177.22	0.000001	0.02	220.13	418.43	0.01
RIVER-1	Reach-2	12664	Q100	3.41	174.88	177.14	175.59	177.14	0.000002	0.04	185.36	412.51	0.01
RIVER-1	Reach-2	12664	Qreg	8.56	174.88	177.23	176.12	177.23	0.000008	0.09	222.55	418.90	0.02
RIVER-1	Reach-2	12664	Q48hr	13.26	174.88	177.84	176.52	177.84	0.000002	0.05	487.34	450.44	0.01
RIVER-1	Reach-2	12647.5		Culvert									
RIVER-1	Reach-2	12631	Q2	0.37	174.84	176.26	175.06	176.27	0.000019	0.13	2.88	26.49	0.04
RIVER-1	Reach-2	12631	Q5	1.07	174.84	176.65	175.21	176.65	0.000067	0.29	3.70	79.99	0.07
RIVER-1	Reach-2	12631	Q25	2.22	174.84	177.22	175.40	177.22	0.000000	0.01	276.77	384.77	0.00
RIVER-1	Reach-2	12631	Q100	3.41	174.84	177.14	175.56	177.14	0.000001	0.02	245.21	375.89	0.01
RIVER-1	Reach-2	12631	Qreg	8.56	174.84	177.23	176.09	177.23	0.000003	0.05	279.05	387.04	0.01
RIVER-1	Reach-2	12631	Q48hr	13.26	174.84	177.84	176.49	177.84	0.000001	0.03	536.32	439.93	0.01
RIVER-1	Reach-2	12252	Q2	0.37	174.63	176.26	174.86	176.26	0.000002	0.03	17.71	64.81	0.01
RIVER-1	Reach-2	12252	Q5	1.07	174.63	176.65	174.99	176.65	0.000002	0.04	59.88	157.48	0.01
RIVER-1	Reach-2	12252	Q25	2.22	174.63	177.22	175.14	177.22	0.000000	0.03	186.78	274.75	0.01
RIVER-1	Reach-2	12252	Q100	3.41	174.63	177.14	175.25	177.14	0.000002	0.05	163.83	271.87	0.01
RIVER-1	Reach-2	12252	Qreg	8.56	174.63	177.23	175.61	177.23	0.000007	0.10	188.23	274.88	0.02
RIVER-1	Reach-2	12252	Q48hr	13.26	174.63	177.84	175.86	177.84	0.000002	0.06	451.63	389.79	0.01
RIVER-1	Reach-2	11903	Q2	0.37	174.61	176.26		176.26	0.000002	0.03	17.59	61.96	0.01
RIVER-1	Reach-2	11903	Q5	1.07	174.61	176.65		176.65	0.000002	0.04	48.06	90.78	0.01
RIVER-1	Reach-2	11903	Q25	2.22	174.61	177.22		177.22	0.000001	0.04	117.52	204.58	0.01
RIVER-1	Reach-2	11903	Q100	3.41	174.61	177.14		177.14	0.000003	0.07	103.44	131.14	0.01
RIVER-1	Reach-2	11903	Qreg	8.56	174.61	177.23		177.23	0.000014	0.15	118.33	205.96	0.03
RIVER-1	Reach-2	11903	Q48hr	13.26	174.61	177.84		177.84	0.000005	0.10	296.09	331.30	0.02
RIVER-1	Reach-3	11584	Q2	3.92	174.50	176.20	175.20	176.25	0.000756	0.96	4.10	16.68	0.24
RIVER-1	Reach-3	11584	Q5	6.51	174.50	176.58	175.45	176.64	0.000799	1.13	9.54	62.52	0.25
RIVER-1	Reach-3	11584	Q25	10.30	174.50	177.22	175.76	177.22	0.000115	0.23	90.34	327.00	0.08
RIVER-1	Reach-3	11584	Q100	13.49	174.50	177.13	176.00	177.13	0.000389	0.40	64.86	253.51	0.15
RIVER-1	Reach-3	11584	Qreg	14.62	174.50	177.22	176.08	177.22	0.000232	0.33	90.33	326.98	0.11
RIVER-1	Reach-3	11584	Q48hr	19.78	174.50	177.84	176.81	177.84	0.000005	0.07	621.22	995.83	0.02
RIVER-1	Reach-3	11565.5		Culvert									
RIVER-1	Reach-3	11547	Q2	3.94	174.71	176.10	175.39	176.17	0.001472	1.16	3.38	55.20	0.32
RIVER-1	Reach-3	11547	Q5	6.55	174.71	176.52	175.63	176.63	0.001656	1.48	4.43	102.12	0.35
RIVER-1	Reach-3	11547	Q25	10.38	174.71	177.22	175.96	177.22	0.000201	0.34	78.28	316.23	0.11
RIVER-1	Reach-3	11547	Q100	13.62	174.71	176.79	176.19	177.13	0.004337	2.63	5.96	161.53	0.59
RIVER-1	Reach-3	11547	Qreg	15.59	174.71	177.22	177.05	177.22	0.000467	0.51	77.50	315.40	0.17
RIVER-1	Reach-3	11547	Q48hr	21.17	174.71	177.84	177.07	177.84	0.000007	0.09	554.08	981.33	0.02
RIVER-1	Reach-3	11400	Q2	3.94	174.54	176.10	175.21	176.11	0.000435	0.49	10.24	42.35	0.16
RIVER-1	Reach-3	11400	Q5	6.55	174.54	176.57	175.39	176.57	0.000093	0.29	46.76	128.38	0.08
RIVER-1	Reach-3	11400	Q25	10.38	174.54	177.22	175.60	177.22	0.000013	0.14	157.98	220.40	0.03

HEC-RAS Plan: Baseline_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	11400	Q100	13.62	174.54	176.95	175.76	176.95	0.000057	0.27	106.61	172.55	0.06
RIVER-1	Reach-3	11400	Qreg	15.59	174.54	177.21	175.85	177.21	0.000029	0.21	157.06	219.49	0.05
RIVER-1	Reach-3	11400	Q48hr	21.17	174.54	177.84	176.23	177.84	0.000008	0.13	352.69	441.87	0.02
RIVER-1	Reach-3	11263	Q2	3.94	174.55	176.09	175.17	176.09	0.000374	0.45	12.14	41.59	0.15
RIVER-1	Reach-3	11263	Q5	6.55	174.55	176.56	175.35	176.56	0.000095	0.29	42.19	114.87	0.08
RIVER-1	Reach-3	11263	Q25	10.38	174.55	177.22	175.56	177.22	0.000013	0.14	154.19	206.43	0.03
RIVER-1	Reach-3	11263	Q100	13.62	174.55	176.95	175.71	176.95	0.000066	0.29	101.85	184.21	0.07
RIVER-1	Reach-3	11263	Qreg	15.59	174.55	177.21	175.79	177.21	0.000030	0.21	153.20	206.17	0.05
RIVER-1	Reach-3	11263	Q48hr	21.17	174.55	177.84	176.14	177.84	0.000009	0.14	313.72	361.82	0.03
RIVER-1	Reach-3	11179	Q2	3.94	174.52	176.08	175.20	176.09	0.000329	0.42	13.26	40.64	0.14
RIVER-1	Reach-3	11179	Q5	6.55	174.52	176.56	175.38	176.56	0.000085	0.28	45.08	113.87	0.08
RIVER-1	Reach-3	11179	Q25	10.38	174.52	177.22	175.61	177.22	0.000013	0.14	151.36	190.42	0.03
RIVER-1	Reach-3	11179	Q100	13.62	174.52	176.95	175.78	176.95	0.000060	0.28	102.42	167.20	0.07
RIVER-1	Reach-3	11179	Qreg	15.59	174.52	177.21	175.87	177.21	0.000029	0.21	150.36	190.18	0.05
RIVER-1	Reach-3	11179	Q48hr	21.17	174.52	177.84	176.10	177.84	0.000009	0.14	324.41	391.21	0.03
RIVER-1	Reach-3	10988	Q2	3.94	174.48	176.07	175.00	176.07	0.000121	0.31	21.35	58.00	0.09
RIVER-1	Reach-3	10988	Q5	6.55	174.48	176.56	175.17	176.56	0.000036	0.21	67.57	131.93	0.05
RIVER-1	Reach-3	10988	Q25	10.38	174.48	177.22	175.39	177.22	0.000005	0.10	266.53	459.42	0.02
RIVER-1	Reach-3	10988	Q100	13.62	174.48	176.94	175.52	176.95	0.000030	0.22	157.52	357.76	0.05
RIVER-1	Reach-3	10988	Qreg	15.59	174.48	177.21	175.59	177.21	0.000012	0.15	263.93	458.08	0.03
RIVER-1	Reach-3	10988	Q48hr	21.17	174.48	177.84	175.86	177.84	0.000003	0.08	583.99	555.34	0.02
RIVER-1	Reach-3	10842	Q2	3.94	174.53	176.00	175.20	176.05	0.001140	1.04	3.77	21.18	0.28
RIVER-1	Reach-3	10842	Q5	6.55	174.53	176.47	175.44	176.54	0.001034	1.21	7.18	97.09	0.28
RIVER-1	Reach-3	10842	Q25	10.38	174.53	177.22	175.75	177.22	0.000027	0.24	138.24	471.92	0.05
RIVER-1	Reach-3	10842	Q100	13.62	174.53	176.93	175.97	176.94	0.000318	0.78	65.24	367.50	0.16
RIVER-1	Reach-3	10842	Qreg	15.59	174.53	177.21	176.73	177.21	0.000063	0.37	136.25	471.07	0.07
RIVER-1	Reach-3	10842	Q48hr	21.17	174.53	177.84	176.83	177.84	0.000009	0.10	406.49	526.34	0.02
RIVER-1	Reach-3	10819.5		Culvert									
RIVER-1	Reach-3	10797	Q2	4.00	174.57	175.84	175.21	175.91	0.001760	1.20	3.34	34.74	0.34
RIVER-1	Reach-3	10797	Q5	6.68	174.57	176.19	175.46	176.31	0.002125	1.56	4.29	68.90	0.39
RIVER-1	Reach-3	10797	Q25	10.66	174.57	176.50	175.77	176.72	0.002983	2.08	5.13	72.32	0.48
RIVER-1	Reach-3	10797	Q100	14.07	174.57	176.55	176.01	176.92	0.004750	2.67	5.27	73.08	0.61
RIVER-1	Reach-3	10797	Qreg	19.29	174.57	176.40	176.34	177.21	0.011680	3.97	4.86	71.28	0.94
RIVER-1	Reach-3	10797	Q48hr	26.76	174.57	176.75	176.75	177.84	0.012393	4.60	5.81	97.51	1.00
RIVER-1	Reach-3	10695	Q2	4.00	174.30	175.84	174.96	175.85	0.000553	0.53	7.55	9.03	0.18
RIVER-1	Reach-3	10695	Q5	6.68	174.30	176.22	175.15	176.23	0.000416	0.58	14.63	29.57	0.16
RIVER-1	Reach-3	10695	Q25	10.66	174.30	176.58	175.36	176.59	0.000302	0.58	27.70	42.17	0.14
RIVER-1	Reach-3	10695	Q100	14.07	174.30	176.69	175.53	176.71	0.000372	0.67	33.45	65.06	0.16
RIVER-1	Reach-3	10695	Qreg	19.29	174.30	176.73	175.73	176.76	0.000634	0.89	35.99	79.85	0.21
RIVER-1	Reach-3	10695	Q48hr	26.76	174.30	176.78	176.05	176.82	0.001025	1.15	40.19	87.92	0.27
RIVER-1	Reach-3	10279	Q2	4.00	174.24	175.80	174.78	175.80	0.000247	0.41	10.40	18.44	0.12
RIVER-1	Reach-3	10279	Q5	6.68	174.24	176.19	174.93	176.20	0.000160	0.40	26.29	52.88	0.10
RIVER-1	Reach-3	10279	Q25	10.66	174.24	176.57	175.11	176.57	0.000111	0.38	56.28	165.23	0.09
RIVER-1	Reach-3	10279	Q100	14.07	174.24	176.68	175.24	176.68	0.000122	0.42	77.75	220.08	0.09
RIVER-1	Reach-3	10279	Qreg	19.29	174.24	176.70	175.43	176.71	0.000203	0.54	83.37	227.69	0.12
RIVER-1	Reach-3	10279	Q48hr	26.76	174.24	176.74	175.64	176.75	0.000328	0.69	91.84	246.03	0.15
RIVER-1	Reach-3	10045	Q2	4.00	174.19	175.78	174.82	175.79	0.000181	0.33	16.86	47.08	0.11
RIVER-1	Reach-3	10045	Q5	6.68	174.19	176.19	175.01	176.19	0.000080	0.28	42.32	87.23	0.07
RIVER-1	Reach-3	10045	Q25	10.66	174.19	176.56	175.21	176.56	0.000041	0.23	105.35	278.56	0.06
RIVER-1	Reach-3	10045	Q100	14.07	174.19	176.67	175.36	176.68	0.000049	0.26	137.60	302.63	0.06
RIVER-1	Reach-3	10045	Qreg	19.29	174.19	176.70	175.52	176.70	0.000080	0.34	144.74	305.39	0.08
RIVER-1	Reach-3	10045	Q48hr	26.76	174.19	176.73	175.71	176.74	0.000130	0.44	154.97	315.95	0.10
RIVER-1	Reach-3	9967	Q2	4.00	174.24	175.70	175.00	175.77	0.001631	1.21	3.30	40.38	0.33
RIVER-1	Reach-3	9967	Q5	6.68	174.24	176.04	175.26	176.17	0.002137	1.62	4.14	69.88	0.40
RIVER-1	Reach-3	9967	Q25	10.66	174.24	176.27	175.60	176.54	0.003534	2.26	4.71	176.70	0.52
RIVER-1	Reach-3	9967	Q100	14.07	174.24	175.92	175.85	176.60	0.012036	3.65	3.85	51.85	0.93
RIVER-1	Reach-3	9967	Qreg	19.29	174.24	176.65	176.65	176.69	0.004286	1.36	42.05	343.07	0.48
RIVER-1	Reach-3	9967	Q48hr	26.76	174.24	176.67	176.67	176.72	0.005164	1.52	51.49	362.39	0.53
RIVER-1	Reach-3	9948.5		Culvert									
RIVER-1	Reach-3	9929	Q2	4.00	174.29	175.60	175.00	175.69	0.002029	1.30	3.07	35.09	0.37
RIVER-1	Reach-3	9929	Q5	6.68	174.29	175.82	175.27	175.99	0.003313	1.85	3.61	59.79	0.49
RIVER-1	Reach-3	9929	Q25	10.66	174.29	175.80	175.59	176.26	0.008829	3.00	3.56	56.81	0.79
RIVER-1	Reach-3	9929	Q100	14.07	174.29	175.85	175.85	176.60	0.013759	3.83	3.68	64.45	1.00
RIVER-1	Reach-3	9929	Qreg	19.29	174.29	176.63	176.63	176.68	0.004260	1.40	43.95	386.20	0.48
RIVER-1	Reach-3	9929	Q48hr	26.76	174.29	176.66	176.66	176.71	0.005259	1.58	53.18	402.40	0.54
RIVER-1	Reach-3	9829	Q2	4.00	173.99	175.63	174.57	175.63	0.000157	0.34	21.41	65.81	0.10
RIVER-1	Reach-3	9829	Q5	6.68	173.99	175.90	174.75	175.90	0.000105	0.32	41.39	83.17	0.08
RIVER-1	Reach-3	9829	Q25	10.66	173.99	176.01	174.98	176.02	0.000160	0.41	51.35	91.03	0.10
RIVER-1	Reach-3	9829	Q100	14.07	173.99	176.06	175.14	176.07	0.000220	0.49	56.26	96.85	0.12
RIVER-1	Reach-3	9829	Qreg	19.29	173.99	176.28	175.57	176.28	0.000199	0.51	81.61	156.98	0.12

HEC-RAS Plan: Baseline_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	9829	Q48hr	26.76	173.99	176.60	175.66	176.60	0.000099	0.40	187.77	472.63	0.08
RIVER-1	Reach-3	9462	Q2	4.00	173.97	175.61	174.49	175.61	0.000191	0.29	18.07	39.87	0.08
RIVER-1	Reach-3	9462	Q5	6.68	173.97	175.88	174.67	175.89	0.000140	0.28	34.08	68.00	0.07
RIVER-1	Reach-3	9462	Q25	10.66	173.97	175.99	174.87	175.99	0.000211	0.36	41.76	75.64	0.09
RIVER-1	Reach-3	9462	Q100	14.07	173.97	176.03	175.03	176.04	0.000301	0.44	45.18	82.43	0.11
RIVER-1	Reach-3	9462	Qreg	19.29	173.97	176.25	175.32	176.26	0.000234	0.42	67.29	129.15	0.09
RIVER-1	Reach-3	9462	Q48hr	26.76	173.97	176.59	175.52	176.59	0.000098	0.30	166.70	423.90	0.06
RIVER-1	Reach-3	8698	Q2	4.00	173.92	175.61	174.37	175.61	0.000024	0.10	46.97	79.13	0.03
RIVER-1	Reach-3	8698	Q5	6.68	173.92	175.88	174.51	175.88	0.000021	0.10	69.89	95.48	0.03
RIVER-1	Reach-3	8698	Q25	10.66	173.92	175.98	174.68	175.98	0.000037	0.14	80.80	121.15	0.04
RIVER-1	Reach-3	8698	Q100	14.07	173.92	176.02	174.81	176.02	0.000056	0.18	85.90	139.04	0.04
RIVER-1	Reach-3	8698	Qreg	19.29	173.92	176.24	175.14	176.24	0.000050	0.18	126.31	228.25	0.04
RIVER-1	Reach-3	8698	Q48hr	26.76	173.92	176.58	175.21	176.58	0.000038	0.18	228.25	356.37	0.04
RIVER-1	Reach-3	8570	Q2	4.00	173.97	175.60	174.37	175.60	0.000027	0.09	40.38	54.62	0.03
RIVER-1	Reach-3	8570	Q5	6.68	173.97	175.87	174.51	175.88	0.000029	0.11	59.43	92.00	0.03
RIVER-1	Reach-3	8570	Q25	10.66	173.97	175.98	174.77	175.98	0.000053	0.16	70.14	124.30	0.04
RIVER-1	Reach-3	8570	Q100	14.07	173.97	176.01	174.85	176.02	0.000082	0.20	75.02	142.64	0.05
RIVER-1	Reach-3	8570	Qreg	19.29	173.97	176.24	174.96	176.24	0.000079	0.21	123.73	292.90	0.05
RIVER-1	Reach-3	8570	Q48hr	26.76	173.97	176.58	175.04	176.58	0.000031	0.15	251.10	450.78	0.04
RIVER-1	Reach-3	8486	Q2	4.00	173.91	175.55	174.56	175.59	0.001546	0.99	4.06	41.23	0.25
RIVER-1	Reach-3	8486	Q5	6.68	173.91	175.75	174.82	175.86	0.002894	1.46	4.58	59.03	0.35
RIVER-1	Reach-3	8486	Q25	10.66	173.91	175.61	175.15	175.94	0.009610	2.53	4.22	45.81	0.62
RIVER-1	Reach-3	8486	Q100	14.07	173.91	175.93	175.92	175.99	0.012616	1.36	14.45	84.18	0.58
RIVER-1	Reach-3	8486	Qreg	19.29	173.91	176.22	175.96	176.22	0.000542	0.37	84.05	426.25	0.13
RIVER-1	Reach-3	8486	Q48hr	26.76	173.91	176.58	176.01	176.58	0.000042	0.13	282.13	649.31	0.04
RIVER-1	Reach-3	8467		Culvert									
RIVER-1	Reach-3	8450	Q2	4.00	173.76	175.10		175.12	0.000915	0.65	7.55	21.44	0.18
RIVER-1	Reach-3	8450	Q5	6.68	173.76	175.29		175.31	0.001254	0.83	9.94	35.21	0.22
RIVER-1	Reach-3	8450	Q25	10.66	173.76	175.54		175.57	0.001329	0.95	13.93	45.97	0.23
RIVER-1	Reach-3	8450	Q100	14.07	173.76	175.77		175.80	0.001049	0.92	19.83	68.03	0.21
RIVER-1	Reach-3	8450	Qreg	19.29	173.76	176.22		176.22	0.000127	0.20	135.35	536.56	0.06
RIVER-1	Reach-3	8450	Q48hr	26.76	173.76	176.58		176.58	0.000020	0.10	356.81	722.07	0.03
RIVER-1	Reach-3	8435	Q2	4.00	173.77	175.10		175.10	0.000097	0.23	19.25	30.90	0.08
RIVER-1	Reach-3	8435	Q5	6.68	173.77	175.28		175.29	0.000122	0.29	28.27	63.45	0.09
RIVER-1	Reach-3	8435	Q25	10.66	173.77	175.54		175.54	0.000100	0.30	47.85	89.28	0.08
RIVER-1	Reach-3	8435	Q100	14.07	173.77	175.78		175.78	0.000066	0.27	73.90	129.13	0.07
RIVER-1	Reach-3	8435	Qreg	19.29	173.77	176.22		176.22	0.000021	0.18	209.18	580.05	0.04
RIVER-1	Reach-3	8435	Q48hr	26.76	173.77	176.58		176.58	0.000008	0.12	483.61	930.37	0.02
RIVER-1	Reach-3	7960	Q2	4.00	173.83	175.10	174.22	175.10	0.000009	0.07	65.50	116.74	0.02
RIVER-1	Reach-3	7960	Q5	6.68	173.83	175.28	174.34	175.28	0.000011	0.09	87.79	127.08	0.03
RIVER-1	Reach-3	7960	Q25	10.66	173.83	175.54	174.49	175.54	0.000011	0.10	123.06	153.69	0.03
RIVER-1	Reach-3	7960	Q100	14.07	173.83	175.78	174.53	175.78	0.000009	0.10	162.14	177.30	0.03
RIVER-1	Reach-3	7960	Qreg	19.29	173.83	176.22	174.58	176.22	0.000005	0.09	325.53	687.51	0.02
RIVER-1	Reach-3	7960	Q48hr	26.76	173.83	176.58	174.63	176.58	0.000003	0.07	640.96	1107.20	0.02
RIVER-1	Reach-3	7886	Q2	4.00	173.71	175.10	174.41	175.10	0.000020	0.13	41.54	92.38	0.04
RIVER-1	Reach-3	7886	Q5	6.68	173.71	175.28	174.50	175.28	0.000025	0.16	53.25	108.27	0.04
RIVER-1	Reach-3	7886	Q25	10.66	173.71	175.54	174.56	175.54	0.000027	0.10	85.46	160.91	0.04
RIVER-1	Reach-3	7886	Q100	14.07	173.71	175.78	174.60	175.78	0.000018	0.10	126.06	182.69	0.03
RIVER-1	Reach-3	7886	Qreg	19.29	173.71	176.22	174.65	176.22	0.000007	0.08	316.12	793.05	0.02
RIVER-1	Reach-3	7886	Q48hr	26.76	173.71	176.58	174.70	176.58	0.000003	0.06	665.36	1147.53	0.02
RIVER-1	Reach-3	7871		Culvert									
RIVER-1	Reach-3	7857	Q2	4.00	173.71	175.10	174.29	175.10	0.000035	0.17	33.76	91.07	0.05
RIVER-1	Reach-3	7857	Q5	6.68	173.71	175.28	174.59	175.28	0.000043	0.21	45.15	104.71	0.05
RIVER-1	Reach-3	7857	Q25	10.66	173.71	175.54	174.68	175.54	0.000041	0.13	73.23	134.21	0.05
RIVER-1	Reach-3	7857	Q100	14.07	173.71	175.78	174.72	175.78	0.000027	0.13	108.41	167.52	0.04
RIVER-1	Reach-3	7857	Qreg	19.29	173.71	176.22	174.79	176.22	0.000009	0.09	288.92	705.64	0.02
RIVER-1	Reach-3	7857	Q48hr	26.76	173.71	176.57	174.84	176.57	0.000004	0.07	625.63	1168.41	0.02
RIVER-1	Reach-3	7750	Q2	4.00	173.90	175.10	174.21	175.10	0.000046	0.15	30.90	64.58	0.05
RIVER-1	Reach-3	7750	Q5	6.68	173.90	175.28	174.31	175.28	0.000052	0.19	43.76	76.45	0.06
RIVER-1	Reach-3	7750	Q25	10.66	173.90	175.53	174.43	175.54	0.000047	0.20	64.83	88.85	0.06
RIVER-1	Reach-3	7750	Q100	14.07	173.90	175.77	174.54	175.77	0.000036	0.20	91.04	166.79	0.05
RIVER-1	Reach-3	7750	Qreg	19.29	173.90	176.22	174.64	176.22	0.000010	0.13	320.56	898.19	0.03
RIVER-1	Reach-3	7750	Q48hr	26.76	173.90	176.57	174.75	176.57	0.000003	0.08	719.36	1270.72	0.02
RIVER-1	Reach-3	7395	Q2	4.00	173.93	175.09	174.19	175.09	0.000053	0.18	27.79	56.61	0.06
RIVER-1	Reach-3	7395	Q5	6.68	173.93	175.27	174.28	175.28	0.000062	0.22	39.36	69.74	0.06
RIVER-1	Reach-3	7395	Q25	10.66	173.93	175.53	174.40	175.53	0.000060	0.24	61.97	123.82	0.06
RIVER-1	Reach-3	7395	Q100	14.07	173.93	175.77	174.49	175.77	0.000042	0.23	105.89	258.67	0.06
RIVER-1	Reach-3	7395	Qreg	19.29	173.93	176.22	174.67	176.22	0.000008	0.12	346.83	959.42	0.03
RIVER-1	Reach-3	7395	Q48hr	26.76	173.93	176.57	174.81	176.57	0.000003	0.07	785.62	1384.10	0.01

HEC-RAS Plan: Baseline_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	7126	Q2	4.00	173.89	175.09	174.16	175.09	0.000015	0.10	51.90	93.51	0.03
RIVER-1	Reach-3	7126	Q5	6.68	173.89	175.27	174.25	175.27	0.000019	0.12	70.00	105.94	0.04
RIVER-1	Reach-3	7126	Q25	10.66	173.89	175.53	174.37	175.53	0.000019	0.14	100.66	137.29	0.04
RIVER-1	Reach-3	7126	Q100	14.07	173.89	175.77	174.47	175.77	0.000016	0.14	141.21	209.89	0.03
RIVER-1	Reach-3	7126	Qreg	19.29	173.89	176.22	174.53	176.22	0.000007	0.11	328.20	765.59	0.02
RIVER-1	Reach-3	7126	Q48hr	26.76	173.89	176.57	174.66	176.57	0.000003	0.08	699.10	1218.84	0.02
RIVER-1	Reach-3	6956	Q2	4.00	173.96	175.09	174.27	175.09	0.000032	0.14	35.62	62.53	0.04
RIVER-1	Reach-3	6956	Q5	6.68	173.96	175.27	174.38	175.27	0.000039	0.17	47.35	67.02	0.05
RIVER-1	Reach-3	6956	Q25	10.66	173.96	175.53	174.58	175.53	0.000040	0.20	67.06	107.21	0.05
RIVER-1	Reach-3	6956	Q100	14.07	173.96	175.77	174.66	175.77	0.000034	0.20	104.36	197.68	0.05
RIVER-1	Reach-3	6956	Qreg	19.29	173.96	176.22	174.72	176.22	0.000011	0.13	287.70	741.84	0.03
RIVER-1	Reach-3	6956	Q48hr	26.76	173.96	176.57	174.78	176.57	0.000004	0.09	653.57	1254.21	0.02
RIVER-1	Reach-3	6846	Q2	4.00	173.97	175.07	174.61	175.09	0.000498	0.56	8.89	62.79	0.18
RIVER-1	Reach-3	6846	Q5	6.68	173.97	175.25	174.73	175.27	0.000652	0.72	11.67	68.00	0.21
RIVER-1	Reach-3	6846	Q25	10.66	173.97	175.52	174.86	175.52	0.000463	0.39	30.92	99.19	0.16
RIVER-1	Reach-3	6846	Q100	14.07	173.97	175.76	174.95	175.77	0.000191	0.31	67.82	227.52	0.11
RIVER-1	Reach-3	6846	Qreg	19.29	173.97	176.22	175.07	176.22	0.000021	0.13	232.55	560.64	0.04
RIVER-1	Reach-3	6846	Q48hr	26.76	173.97	176.57	175.40	176.57	0.000006	0.09	563.61	1224.64	0.02
RIVER-1	Reach-3	6830		Culvert									
RIVER-1	Reach-3	6811	Q2	4.00	173.95	175.07	174.55	175.08	0.000333	0.46	10.34	68.95	0.15
RIVER-1	Reach-3	6811	Q5	6.68	173.95	175.25	174.66	175.26	0.000451	0.60	13.28	79.98	0.17
RIVER-1	Reach-3	6811	Q25	10.66	173.95	175.51	174.78	175.52	0.000319	0.30	35.41	106.82	0.13
RIVER-1	Reach-3	6811	Q100	14.07	173.95	175.76	174.86	175.76	0.000142	0.26	75.57	234.41	0.09
RIVER-1	Reach-3	6811	Qreg	19.29	173.95	176.22	174.97	176.22	0.000018	0.12	250.01	588.59	0.04
RIVER-1	Reach-3	6811	Q48hr	26.76	173.95	176.57	175.11	176.57	0.000005	0.08	560.56	1164.81	0.02
RIVER-1	Reach-3	6719	Q2	4.00	173.89	175.08	174.20	175.08	0.000013	0.09	52.16	82.77	0.03
RIVER-1	Reach-3	6719	Q5	6.68	173.89	175.25	174.29	175.25	0.000018	0.11	67.46	91.98	0.03
RIVER-1	Reach-3	6719	Q25	10.66	173.89	175.52	174.48	175.52	0.000018	0.13	97.81	126.80	0.04
RIVER-1	Reach-3	6719	Q100	14.07	173.89	175.76	174.53	175.76	0.000016	0.14	137.91	210.06	0.03
RIVER-1	Reach-3	6719	Qreg	19.29	173.89	176.22	174.57	176.22	0.000007	0.11	293.91	458.52	0.02
RIVER-1	Reach-3	6719	Q48hr	26.76	173.89	176.57	174.63	176.57	0.000004	0.09	506.26	833.79	0.02
RIVER-1	Reach-3	6081	Q2	4.00	173.53	175.07		175.07	0.000050	0.19	27.66	58.33	0.06
RIVER-1	Reach-3	6081	Q5	6.68	173.53	175.24		175.25	0.000062	0.23	38.46	65.86	0.06
RIVER-1	Reach-3	6081	Q25	10.66	173.53	175.51		175.51	0.000057	0.25	57.68	82.22	0.06
RIVER-1	Reach-3	6081	Q100	14.07	173.53	175.76		175.76	0.000045	0.24	86.34	159.93	0.06
RIVER-1	Reach-3	6081	Qreg	19.29	173.53	176.21		176.21	0.000019	0.19	200.27	372.26	0.04
RIVER-1	Reach-3	6081	Q48hr	26.76	173.53	176.57		176.57	0.000009	0.14	384.52	675.31	0.03
RIVER-1	Reach-3	5744	Q2	4.00	173.55	175.02		175.06	0.000693	0.79	5.05	30.13	0.22
RIVER-1	Reach-3	5744	Q5	6.68	173.55	175.15		175.22	0.001447	1.21	5.51	36.58	0.32
RIVER-1	Reach-3	5744	Q25	10.66	173.55	175.33		175.48	0.002515	1.73	6.18	49.01	0.43
RIVER-1	Reach-3	5744	Q100	14.07	173.55	175.51		175.73	0.003104	2.05	6.88	66.77	0.48
RIVER-1	Reach-3	5744	Qreg	19.29	173.55	176.20		176.21	0.000182	0.61	81.83	341.18	0.12
RIVER-1	Reach-3	5744	Q48hr	26.76	173.55	176.57		176.57	0.000050	0.35	181.22	577.82	0.07
RIVER-1	Reach-3	5696		Culvert									
RIVER-1	Reach-3	5648	Q2	3.56	173.72	175.09		175.11	0.000400	0.59	7.68	62.07	0.17
RIVER-1	Reach-3	5648	Q5	5.92	173.72	175.23		175.25	0.000649	0.81	9.61	71.13	0.21
RIVER-1	Reach-3	5648	Q25	10.67	173.72	175.32		175.38	0.001520	1.28	11.29	82.40	0.33
RIVER-1	Reach-3	5648	Q100	14.08	173.72	175.48		175.54	0.001520	1.37	16.06	100.33	0.34
RIVER-1	Reach-3	5648	Qreg	19.14	173.72	176.14		176.14	0.000142	0.52	87.04	352.66	0.11
RIVER-1	Reach-3	5648	Q48hr	27.19	173.72	176.47		176.47	0.000051	0.34	196.09	667.14	0.07
RIVER-1	Reach-3	5335	Q2	3.56	173.66	175.09		175.09	0.000070	0.17	27.16	76.93	0.06
RIVER-1	Reach-3	5335	Q5	5.92	173.66	175.22		175.23	0.000075	0.20	38.79	90.74	0.07
RIVER-1	Reach-3	5335	Q25	10.67	173.66	175.31		175.32	0.000140	0.29	47.19	94.65	0.09
RIVER-1	Reach-3	5335	Q100	14.08	173.66	175.48		175.49	0.000109	0.28	65.25	131.18	0.08
RIVER-1	Reach-3	5335	Qreg	19.14	173.66	176.14		176.14	0.000012	0.13	225.12	352.47	0.03
RIVER-1	Reach-3	5335	Q48hr	27.19	173.66	176.47		176.47	0.000008	0.11	366.94	605.53	0.03
RIVER-1	Reach-3	5080	Q2	3.56	173.70	175.08		175.08	0.000010	0.08	57.30	129.38	0.03
RIVER-1	Reach-3	5080	Q5	5.92	173.70	175.22		175.22	0.000016	0.11	77.50	161.61	0.03
RIVER-1	Reach-3	5080	Q25	10.67	173.70	175.31		175.31	0.000034	0.17	92.39	172.51	0.05
RIVER-1	Reach-3	5080	Q100	14.08	173.70	175.48		175.48	0.000026	0.17	123.54	194.36	0.04
RIVER-1	Reach-3	5080	Qreg	19.14	173.70	176.14		176.14	0.000005	0.09	312.78	484.84	0.02
RIVER-1	Reach-3	5080	Q48hr	27.19	173.70	176.47		176.47	0.000004	0.09	540.10	901.92	0.02
RIVER-1	Reach-3	4910	Q2	3.56	173.72	175.08		175.08	0.000020	0.12	51.98	125.31	0.04
RIVER-1	Reach-3	4910	Q5	5.92	173.72	175.22		175.22	0.000024	0.14	70.45	145.70	0.04
RIVER-1	Reach-3	4910	Q25	10.67	173.72	175.31		175.31	0.000050	0.21	83.67	162.47	0.06
RIVER-1	Reach-3	4910	Q100	14.08	173.72	175.48		175.48	0.000039	0.20	119.13	262.05	0.05
RIVER-1	Reach-3	4910	Qreg	19.14	173.72	176.14		176.14	0.000003	0.07	559.26	1256.90	0.02
RIVER-1	Reach-3	4910	Q48hr	27.19	173.72	176.47		176.47	0.000002	0.06	1042.48	1629.87	0.01
RIVER-1	Reach-3	4720	Q2	3.56	173.73	175.02	174.41	175.07	0.001434	1.02	3.90	166.66	0.31
RIVER-1	Reach-3	4720	Q5	5.92	173.73	175.09	174.62	175.20	0.002958	1.52	4.97	188.24	0.44

HEC-RAS Plan: Baseline_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	4720	Q25	10.67	173.73	175.28	175.23	175.29	0.003792	0.74	24.59	225.97	0.41
RIVER-1	Reach-3	4720	Q100	14.08	173.73	175.47	175.25	175.47	0.000288	0.28	81.63	410.78	0.12
RIVER-1	Reach-3	4720	Qreg	19.14	173.73	176.14	175.27	176.14	0.000002	0.04	721.94	1349.56	0.01
RIVER-1	Reach-3	4720	Q48hr	27.19	173.73	176.47	175.30	176.47	0.000001	0.03	1199.61	1531.94	0.01
RIVER-1	Reach-3	4702.5		Culvert									
RIVER-1	Reach-3	4686	Q2	3.56	173.56	174.93		174.98	0.001382	1.01	3.75	138.29	0.30
RIVER-1	Reach-3	4686	Q5	5.92	173.56	174.99	174.50	175.11	0.002911	1.52	5.07	153.44	0.44
RIVER-1	Reach-3	4686	Q25	10.67	173.56	175.28		175.28	0.001626	0.47	35.47	297.90	0.26
RIVER-1	Reach-3	4686	Q100	14.08	173.56	175.47		175.47	0.000145	0.19	115.31	573.63	0.08
RIVER-1	Reach-3	4686	Qreg	19.14	173.56	176.14		176.14	0.000002	0.03	824.11	1363.76	0.01
RIVER-1	Reach-3	4686	Q48hr	27.19	173.56	176.47		176.47	0.000001	0.03	1305.95	1559.12	0.01
RIVER-1	Reach-3	4489	Q2	3.56	173.77	174.96		174.96	0.000010	0.07	70.60	146.81	0.02
RIVER-1	Reach-3	4489	Q5	5.92	173.77	175.07		175.07	0.000016	0.09	87.12	165.96	0.03
RIVER-1	Reach-3	4489	Q25	10.67	173.77	175.28		175.28	0.000018	0.11	133.39	354.58	0.03
RIVER-1	Reach-3	4489	Q100	14.08	173.77	175.47		175.47	0.000012	0.09	243.16	740.23	0.03
RIVER-1	Reach-3	4489	Qreg	19.14	173.77	176.14		176.14	0.000001	0.03	920.78	1202.74	0.01
RIVER-1	Reach-3	4489	Q48hr	27.19	173.77	176.47		176.47	0.000001	0.03	1341.89	1349.53	0.01
RIVER-1	Reach-3	4334	Q2	3.56	173.92	174.96		174.96	0.000004	0.04	110.13	222.76	0.01
RIVER-1	Reach-3	4334	Q5	5.92	173.92	175.07		175.07	0.000006	0.06	135.04	250.17	0.02
RIVER-1	Reach-3	4334	Q25	10.67	173.92	175.27		175.27	0.000007	0.07	190.25	280.50	0.02
RIVER-1	Reach-3	4334	Q100	14.08	173.92	175.47		175.47	0.000006	0.07	262.72	554.54	0.02
RIVER-1	Reach-3	4334	Qreg	19.14	173.92	176.14		176.14	0.000001	0.03	934.89	1268.16	0.01
RIVER-1	Reach-3	4334	Q48hr	27.19	173.92	176.47		176.47	0.000001	0.03	1363.03	1322.01	0.01
RIVER-1	Reach-4	4079	Q2	3.74	173.70	174.96		174.96	0.000074	0.21	27.59	86.83	0.07
RIVER-1	Reach-4	4079	Q5	6.42	173.70	175.06		175.07	0.000105	0.26	38.12	119.70	0.08
RIVER-1	Reach-4	4079	Q25	11.14	173.70	175.27		175.27	0.000078	0.26	68.61	177.64	0.07
RIVER-1	Reach-4	4079	Q100	14.84	173.70	175.46		175.46	0.000044	0.21	119.26	377.12	0.06
RIVER-1	Reach-4	4079	Qreg	28.85	173.70	176.14		176.14	0.000004	0.09	614.68	1045.64	0.02
RIVER-1	Reach-4	4079	Q48hr	42.75	173.70	176.47		176.47	0.000003	0.07	975.63	1136.89	0.01
RIVER-1	Reach-4	3829	Q2	3.74	173.70	174.96	174.18	174.96	0.000043	0.15	34.23	100.26	0.05
RIVER-1	Reach-4	3829	Q5	6.42	173.70	175.06	174.30	175.06	0.000066	0.20	45.87	123.20	0.06
RIVER-1	Reach-4	3829	Q25	11.14	173.70	175.27	174.49	175.27	0.000056	0.21	82.93	256.82	0.06
RIVER-1	Reach-4	3829	Q100	14.84	173.70	175.46	174.60	175.46	0.000030	0.17	147.56	405.19	0.05
RIVER-1	Reach-4	3829	Qreg	28.85	173.70	176.14	174.76	176.14	0.000004	0.08	586.90	976.38	0.02
RIVER-1	Reach-4	3829	Q48hr	42.75	173.70	176.47	174.83	176.47	0.000003	0.07	932.91	1091.33	0.02
RIVER-1	Reach-4	3520	Q2	3.74	173.71	174.95	174.18	174.95	0.000081	0.12	52.10	102.77	0.04
RIVER-1	Reach-4	3520	Q5	6.42	173.71	175.05	174.30	175.05	0.000146	0.17	62.81	110.55	0.05
RIVER-1	Reach-4	3520	Q25	11.14	173.71	175.26	174.40	175.26	0.000188	0.22	89.07	168.68	0.06
RIVER-1	Reach-4	3520	Q100	14.84	173.71	175.46	174.43	175.46	0.000143	0.21	149.91	447.59	0.06
RIVER-1	Reach-4	3520	Qreg	28.85	173.71	176.14	174.55	176.14	0.000028	0.12	621.62	901.51	0.03
RIVER-1	Reach-4	3520	Q48hr	42.75	173.71	176.46	174.64	176.46	0.000020	0.11	932.75	989.56	0.02
RIVER-1	Reach-4	3215	Q2	3.74	173.69	174.95	174.14	174.95	0.000058	0.10	73.51	225.07	0.03
RIVER-1	Reach-4	3215	Q5	6.42	173.69	175.04	174.23	175.04	0.000090	0.14	96.25	258.46	0.04
RIVER-1	Reach-4	3215	Q25	11.14	173.69	175.25	174.38	175.25	0.000081	0.15	165.57	393.87	0.04
RIVER-1	Reach-4	3215	Q100	14.84	173.69	175.45	174.48	175.45	0.000053	0.13	260.49	564.81	0.04
RIVER-1	Reach-4	3215	Qreg	28.85	173.69	176.13	174.66	176.13	0.000012	0.08	820.92	904.90	0.02
RIVER-1	Reach-4	3215	Q48hr	42.75	173.69	176.46	174.75	176.46	0.000010	0.08	1123.41	937.71	0.02
RIVER-1	Reach-4	2884	Q2	3.74	173.66	174.94	174.12	174.94	0.000040	0.09	69.29	135.30	0.03
RIVER-1	Reach-4	2884	Q5	6.42	173.66	175.03	174.20	175.03	0.000081	0.13	82.56	157.68	0.04
RIVER-1	Reach-4	2884	Q25	11.14	173.66	175.24	174.28	175.24	0.000098	0.16	125.46	240.91	0.05
RIVER-1	Reach-4	2884	Q100	14.84	173.66	175.44	174.32	175.44	0.000076	0.16	183.64	344.09	0.04
RIVER-1	Reach-4	2884	Qreg	28.85	173.66	176.13	174.49	176.13	0.000024	0.11	599.29	717.64	0.03
RIVER-1	Reach-4	2884	Q48hr	42.75	173.66	176.46	174.59	176.46	0.000019	0.11	842.59	769.16	0.02
RIVER-1	Reach-4	2287	Q2	3.74	173.63	174.93		174.93	0.000037	0.08	104.12	317.35	0.03
RIVER-1	Reach-4	2287	Q5	6.42	173.63	175.02		175.02	0.000071	0.11	133.50	371.88	0.04
RIVER-1	Reach-4	2287	Q25	11.14	173.63	175.23		175.23	0.000055	0.11	214.10	404.68	0.03
RIVER-1	Reach-4	2287	Q100	14.84	173.63	175.43		175.43	0.000035	0.10	304.21	468.71	0.03
RIVER-1	Reach-4	2287	Qreg	28.85	173.63	176.13		176.13	0.000013	0.08	746.69	716.15	0.02
RIVER-1	Reach-4	2287	Q48hr	42.75	173.63	176.46		176.46	0.000012	0.09	989.12	762.21	0.02
RIVER-1	Reach-4	1955	Q2	3.76	173.60	174.93		174.93	0.000038	0.08	87.18	213.76	0.03
RIVER-1	Reach-4	1955	Q5	6.44	173.60	175.01		175.01	0.000070	0.11	105.42	233.63	0.04
RIVER-1	Reach-4	1955	Q25	11.16	173.60	175.22		175.22	0.000084	0.14	170.96	407.99	0.04
RIVER-1	Reach-4	1955	Q100	14.87	173.60	175.43		175.43	0.000054	0.13	267.77	520.34	0.03
RIVER-1	Reach-4	1955	Qreg	31.39	173.60	176.13		176.13	0.000018	0.10	687.02	639.73	0.02
RIVER-1	Reach-4	1955	Q48hr	46.33	173.60	176.46		176.46	0.000017	0.10	907.64	710.67	0.02
RIVER-1	Reach-4	1602	Q2	3.76	173.19	174.92		174.92	0.000066	0.13	51.28	84.84	0.04
RIVER-1	Reach-4	1602	Q5	6.44	173.19	175.00		175.00	0.000145	0.20	57.70	90.59	0.06
RIVER-1	Reach-4	1602	Q25	11.16	173.19	175.20		175.20	0.000219	0.27	79.34	121.69	0.07
RIVER-1	Reach-4	1602	Q100	14.87	173.19	175.41		175.41	0.000206	0.29	112.73	184.81	0.07
RIVER-1	Reach-4	1602	Qreg	31.39	173.19	176.12		176.12	0.000093	0.24	295.77	345.71	0.05
RIVER-1	Reach-4	1602	Q48hr	46.33	173.19	176.45		176.45	0.000085	0.25	429.18	453.65	0.05

HEC-RAS Plan: Baseline_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	1586	Q2	3.76	173.13	175.13	173.87	175.18	0.001904	0.99	3.80	8.91	0.22
RIVER-1	Reach-4	1586	Q5	6.44	173.13	175.63	174.19	175.73	0.002656	1.36	4.75	11.70	0.27
RIVER-1	Reach-4	1586	Q25	11.16	173.13	177.11	174.66	177.22	0.001702	1.48	7.55	490.06	0.24
RIVER-1	Reach-4	1586	Q100	14.87	173.13	177.28	174.98	177.46	0.002619	1.89	7.88	494.30	0.30
RIVER-1	Reach-4	1586	Qreg	31.39	173.13	177.87	177.57	177.87	0.000532	0.35	220.24	494.30	0.10
RIVER-1	Reach-4	1586	Q48hr	46.33	173.13	177.65	177.60	177.68	0.008306	1.22	114.43	494.30	0.38
RIVER-1	Reach-4	1550		Culvert									
RIVER-1	Reach-4	1514	Q2	3.76	173.32	174.99		175.06	0.000875	1.19	3.16	57.28	0.29
RIVER-1	Reach-4	1514	Q5	6.44	173.32	175.16		175.33	0.001864	1.85	3.48	74.22	0.44
RIVER-1	Reach-4	1514	Q25	11.16	173.32	175.50		175.87	0.003146	2.69	4.14	90.50	0.58
RIVER-1	Reach-4	1514	Q100	14.87	173.32	175.32	175.16	176.10	0.007538	3.93	3.79	80.20	0.89
RIVER-1	Reach-4	1514	Qreg	31.39	173.32	176.34	176.34	177.87	0.008397	5.47	5.74	232.24	1.00
RIVER-1	Reach-4	1514	Q48hr	46.33	173.32	177.64	177.64	177.68	0.002697	1.50	100.78	465.20	0.44
RIVER-1	Reach-4	1336	Q2	3.76	173.33	175.04		175.04	0.000010	0.10	73.28	140.50	0.03
RIVER-1	Reach-4	1336	Q5	6.44	173.33	175.28		175.28	0.000011	0.11	109.86	166.97	0.03
RIVER-1	Reach-4	1336	Q25	11.16	173.33	175.76		175.76	0.000006	0.10	214.88	254.93	0.02
RIVER-1	Reach-4	1336	Q100	14.87	173.33	175.86		175.86	0.000008	0.13	241.48	270.21	0.03
RIVER-1	Reach-4	1336	Qreg	31.39	173.33	177.16	174.67	177.16	0.000002	0.09	697.06	401.80	0.02
RIVER-1	Reach-4	1336	Q48hr	46.33	173.33	177.36	174.76	177.36	0.000003	0.12	779.66	401.80	0.02
RIVER-1	Reach-4	1282	Q2	3.76	173.36	175.03	173.85	175.04	0.000141	0.44	8.45	50.97	0.11
RIVER-1	Reach-4	1282	Q5	6.44	173.36	175.25	174.01	175.28	0.000262	0.66	9.69	61.49	0.16
RIVER-1	Reach-4	1282	Q25	11.16	173.36	175.71	174.24	175.76	0.000362	0.91	12.23	104.76	0.20
RIVER-1	Reach-4	1282	Q100	14.87	173.36	175.79	174.39	175.86	0.000580	1.18	12.61	107.07	0.25
RIVER-1	Reach-4	1282	Qreg	31.39	173.36	177.01	174.98	177.14	0.000620	1.62	19.36	277.43	0.28
RIVER-1	Reach-4	1282	Q48hr	46.33	173.36	177.05	175.42	177.34	0.001303	2.37	19.57	283.54	0.40
RIVER-1	Reach-4	1229		Culvert									
RIVER-1	Reach-4	1176	Q2	3.76	173.32	175.02		175.03	0.000129	0.43	8.66	169.95	0.11
RIVER-1	Reach-4	1176	Q5	6.44	173.32	175.24		175.26	0.000248	0.65	9.86	190.66	0.16
RIVER-1	Reach-4	1176	Q25	11.16	173.32	175.65		175.69	0.000375	0.92	12.10	217.43	0.20
RIVER-1	Reach-4	1176	Q100	14.87	173.32	175.66		175.74	0.000653	1.22	12.17	218.10	0.26
RIVER-1	Reach-4	1176	Qreg	31.39	173.32	176.27		176.48	0.001294	2.02	15.52	261.69	0.38
RIVER-1	Reach-4	1176	Q48hr	46.33	173.32	175.44	175.37	176.35	0.008965	4.22	10.97	204.04	0.95
RIVER-1	Reach-4	1003	Q2	3.76	173.39	175.03		175.03	0.000002	0.03	162.88	383.18	0.01
RIVER-1	Reach-4	1003	Q5	6.44	173.39	175.25		175.25	0.000001	0.03	262.06	509.98	0.01
RIVER-1	Reach-4	1003	Q25	11.16	173.39	175.67		175.67	0.000001	0.03	514.34	660.39	0.01
RIVER-1	Reach-4	1003	Q100	14.87	173.39	175.70		175.70	0.000001	0.03	533.91	666.92	0.01
RIVER-1	Reach-4	1003	Qreg	31.39	173.39	176.37		176.37	0.000001	0.03	1012.75	724.70	0.01
RIVER-1	Reach-4	1003	Q48hr	46.33	173.39	175.89		175.89	0.000006	0.08	668.88	702.66	0.02
RIVER-1	Reach-4	946	Q2	3.76	173.40	175.03		175.03	0.000001	0.03	224.40	456.86	0.01
RIVER-1	Reach-4	946	Q5	6.44	173.40	175.25		175.25	0.000001	0.04	332.44	522.94	0.01
RIVER-1	Reach-4	946	Q25	11.16	173.40	175.67		175.67	0.000001	0.03	568.97	599.16	0.01
RIVER-1	Reach-4	946	Q100	14.87	173.40	175.70		175.70	0.000001	0.04	586.69	600.55	0.01
RIVER-1	Reach-4	946	Qreg	31.39	173.40	176.37		176.37	0.000001	0.05	995.24	606.65	0.01
RIVER-1	Reach-4	946	Q48hr	46.33	173.40	175.89		175.89	0.000005	0.11	704.60	604.65	0.02
RIVER-1	Reach-4	884	Q2	3.76	173.40	175.03		175.03	0.000002	0.05	211.02	392.37	0.01
RIVER-1	Reach-4	884	Q5	6.44	173.40	175.25		175.25	0.000002	0.05	307.11	479.62	0.01
RIVER-1	Reach-4	884	Q25	11.16	173.40	175.67		175.67	0.000001	0.05	510.56	490.26	0.01
RIVER-1	Reach-4	884	Q100	14.87	173.40	175.70		175.70	0.000002	0.06	525.02	491.04	0.01
RIVER-1	Reach-4	884	Qreg	31.39	173.40	176.37		176.37	0.000002	0.07	860.08	498.39	0.01
RIVER-1	Reach-4	884	Q48hr	46.33	173.40	175.89		175.89	0.000010	0.15	621.30	495.38	0.03
RIVER-1	Reach-4	685	Q2	3.76	173.42	175.03		175.03	0.000002	0.04	173.83	314.41	0.01
RIVER-1	Reach-4	685	Q5	6.44	173.42	175.25		175.25	0.000002	0.05	248.20	352.56	0.01
RIVER-1	Reach-4	685	Q25	11.16	173.42	175.67		175.67	0.000002	0.05	399.86	369.55	0.01
RIVER-1	Reach-4	685	Q100	14.87	173.42	175.70		175.70	0.000002	0.07	410.76	370.85	0.02
RIVER-1	Reach-4	685	Qreg	31.39	173.42	176.37		176.37	0.000002	0.08	671.93	407.14	0.02
RIVER-1	Reach-4	685	Q48hr	46.33	173.42	175.89		175.89	0.000015	0.18	483.16	375.74	0.04
RIVER-1	Reach-4	522	Q2	3.76	173.44	174.99	174.16	175.02	0.000537	0.77	4.86	218.73	0.22
RIVER-1	Reach-4	522	Q5	6.44	173.44	175.17	174.36	175.24	0.001022	1.16	5.54	287.79	0.31
RIVER-1	Reach-4	522	Q25	11.16	173.44	175.52	174.66	175.65	0.001524	1.63	6.83	366.57	0.39
RIVER-1	Reach-4	522	Q100	14.87	173.44	175.39	174.86	175.67	0.003455	2.34	6.35	364.06	0.58
RIVER-1	Reach-4	522	Qreg	31.39	173.44	176.37	175.74	176.37	0.000041	0.22	282.76	372.71	0.06
RIVER-1	Reach-4	522	Q48hr	46.33	173.44	175.85	175.78	175.89	0.003158	1.35	89.58	371.05	0.49
RIVER-1	Reach-4	499		Culvert									
RIVER-1	Reach-4	476	Q2	3.76	173.22	174.90		174.92	0.000417	0.71	5.31	168.82	0.19
RIVER-1	Reach-4	476	Q5	6.44	173.22	174.88		174.95	0.001295	1.23	5.22	156.42	0.33
RIVER-1	Reach-4	476	Q25	11.16	173.22	174.79		175.05	0.004804	2.28	4.90	111.75	0.64
RIVER-1	Reach-4	476	Q100	14.87	173.22	174.65	174.65	175.24	0.012554	3.41	4.37	56.76	1.01
RIVER-1	Reach-4	476	Qreg	31.39	173.22	175.39	175.39	176.37	0.010691	4.38	7.17	324.59	1.01
RIVER-1	Reach-4	476	Q48hr	46.33	173.22	175.80	175.80	175.89	0.005617	1.95	69.37	366.31	0.66

HEC-RAS Plan: Baseline_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	256	Q2	3.64	173.43	174.91	173.92	174.91	0.000004	0.05	119.41	242.01	0.02
RIVER-1	Reach-4	256	Q5	6.19	173.43	174.91	174.12	174.91	0.000011	0.09	119.64	242.06	0.03
RIVER-1	Reach-4	256	Q25	10.20	173.43	174.91	174.24	174.91	0.000031	0.15	120.22	242.19	0.05
RIVER-1	Reach-4	256	Q100	14.39	173.43	174.92	174.33	174.92	0.000059	0.21	121.14	242.39	0.07
RIVER-1	Reach-4	256	Qreg	32.35	173.43	174.95	174.48	174.95	0.000257	0.44	128.12	244.95	0.14
RIVER-1	Reach-4	256	Q48hr	47.42	173.43	174.98	174.55	174.99	0.000455	0.60	137.24	252.42	0.19
RIVER-1	Reach-4	1	Q2	3.64	173.97	174.91	174.17	174.91	0.000009	0.08	82.54	183.31	0.03
RIVER-1	Reach-4	1	Q5	6.19	173.97	174.91	174.23	174.91	0.000026	0.13	82.54	183.31	0.05
RIVER-1	Reach-4	1	Q25	10.20	173.97	174.91	174.32	174.91	0.000070	0.22	82.54	183.31	0.07
RIVER-1	Reach-4	1	Q100	14.39	173.97	174.91	174.39	174.91	0.000139	0.31	82.54	183.31	0.10
RIVER-1	Reach-4	1	Qreg	32.35	173.97	174.91	174.57	174.92	0.000701	0.69	82.54	183.31	0.24
RIVER-1	Reach-4	1	Q48hr	47.42	173.97	174.91	174.65	174.94	0.001506	1.01	82.54	183.31	0.35

HEC-RAS Model Output:

Baseline Conditions

Simulation Results for 175.74 m Boundary Condition

HEC-RAS Plan: Baseline_BC_175.74

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-5	Reach-1	3365	Q2	0.30	175.82	176.58	176.04	176.58	0.000284	0.16	1.83	3.79	0.07
RIVER-5	Reach-1	3365	Q5	0.67	175.82	176.88	176.15	176.89	0.000282	0.20	5.77	62.85	0.08
RIVER-5	Reach-1	3365	Q25	1.26	175.82	177.09	176.27	177.09	0.000060	0.10	45.88	362.63	0.04
RIVER-5	Reach-1	3365	Q100	1.80	175.82	177.21	176.35	177.21	0.000020	0.06	98.44	487.70	0.02
RIVER-5	Reach-1	3365	Qreg	3.95	175.82	177.47	176.58	177.47	0.000008	0.05	247.83	644.96	0.01
RIVER-5	Reach-1	3365	Q48hr	6.04	175.82	177.76	176.96	177.76	0.000003	0.04	457.09	748.61	0.01
RIVER-5	Reach-1	2275	Q2	0.30	175.75	176.48	175.95	176.48	0.000313	0.17	1.71	3.42	0.08
RIVER-5	Reach-1	2275	Q5	0.67	175.75	176.77	176.05	176.77	0.000427	0.24	2.79	4.17	0.09
RIVER-5	Reach-1	2275	Q25	1.26	175.75	177.04	176.16	177.04	0.000558	0.31	4.49	18.23	0.11
RIVER-5	Reach-1	2275	Q100	1.80	175.75	177.19	176.25	177.19	0.000385	0.28	16.27	141.92	0.09
RIVER-5	Reach-1	2275	Qreg	3.95	175.75	177.47	176.49	177.47	0.000090	0.16	93.49	466.24	0.05
RIVER-5	Reach-1	2275	Q48hr	6.04	175.75	177.76	176.68	177.76	0.000014	0.08	267.35	644.93	0.02
RIVER-5	Reach-1	1732	Q2	0.30	175.82	176.36		176.37	0.002562	0.43	0.69	4.05	0.20
RIVER-5	Reach-1	1732	Q5	0.67	175.82	176.59		176.62	0.003386	0.64	1.05	5.24	0.25
RIVER-5	Reach-1	1732	Q25	1.26	175.82	176.78		176.83	0.005413	0.95	1.32	6.17	0.32
RIVER-5	Reach-1	1732	Q100	1.80	175.82	176.96		177.02	0.005954	1.13	1.59	7.12	0.35
RIVER-5	Reach-1	1732	Qreg	3.95	175.82	177.17		177.39	0.015498	2.06	1.92	37.75	0.58
RIVER-5	Reach-1	1732	Q48hr	6.04	175.82	177.27		177.71	0.028589	2.94	2.06	54.61	0.80
RIVER-5	Reach-1	1690.5		Culvert									
RIVER-5	Reach-1	1649	Q2	0.30	175.88	176.57	176.15	176.58	0.001160	0.34	0.87	6.31	0.14
RIVER-5	Reach-1	1649	Q5	0.67	175.88	176.84	176.27	176.86	0.001708	0.53	1.28	7.76	0.18
RIVER-5	Reach-1	1649	Q25	1.26	175.88	177.07	176.41	177.10	0.002715	0.78	1.62	82.09	0.24
RIVER-5	Reach-1	1649	Q100	1.80	175.88	177.19	176.52	177.24	0.003906	1.00	1.80	192.38	0.29
RIVER-5	Reach-1	1649	Qreg	3.95	175.88	177.47	176.88	177.63	0.009359	1.78	2.21	333.08	0.47
RIVER-5	Reach-1	1649	Q48hr	6.04	175.88	177.54	177.17	177.89	0.018561	2.60	2.33	348.18	0.67
RIVER-5	Reach-1	1233	Q2	0.30	175.85	176.33		176.34	0.003402	0.35	0.85	2.96	0.21
RIVER-5	Reach-1	1233	Q5	0.67	175.85	176.66		176.66	0.001279	0.30	2.37	7.12	0.14
RIVER-5	Reach-1	1233	Q25	1.26	175.85	176.94		176.95	0.000609	0.24	5.23	14.81	0.10
RIVER-5	Reach-1	1233	Q100	1.80	175.85	177.08		177.08	0.000493	0.23	9.21	67.66	0.09
RIVER-5	Reach-1	1233	Qreg	3.95	175.85	177.54		177.54	0.000008	0.04	110.02	346.79	0.01
RIVER-5	Reach-1	1233	Q48hr	6.04	175.85	177.71		177.71	0.000006	0.03	171.41	385.03	0.01
RIVER-5	Reach-1	673	Q2	0.30	175.45	176.27		176.27	0.000140	0.10	2.83	5.41	0.05
RIVER-5	Reach-1	673	Q5	0.67	175.45	176.60		176.60	0.000161	0.14	4.73	6.12	0.05
RIVER-5	Reach-1	673	Q25	1.26	175.45	176.88		176.88	0.000255	0.19	6.56	7.62	0.07
RIVER-5	Reach-1	673	Q100	1.80	175.45	176.99		177.00	0.000438	0.24	7.63	9.99	0.09
RIVER-5	Reach-1	673	Qreg	3.95	175.45	177.54		177.54	0.000022	0.07	71.47	257.80	0.02
RIVER-5	Reach-1	673	Q48hr	6.04	175.45	177.71		177.71	0.000013	0.06	121.15	328.82	0.02
RIVER-4	Reach-1	5305	Q2	0.26	175.17	176.20	175.34	176.20	0.000058	0.07	4.40	9.11	0.03
RIVER-4	Reach-1	5305	Q5	0.72	175.17	176.54	175.46	176.54	0.000098	0.11	9.04	18.94	0.03
RIVER-4	Reach-1	5305	Q25	1.51	175.17	176.81	175.61	176.81	0.000116	0.13	24.94	157.28	0.04
RIVER-4	Reach-1	5305	Q100	2.63	175.17	176.98	175.76	176.98	0.000066	0.10	66.35	271.87	0.03
RIVER-4	Reach-1	5305	Qreg	6.51	175.17	177.54	176.07	177.54	0.000009	0.05	287.98	564.62	0.01
RIVER-4	Reach-1	5305	Q48hr	9.62	175.17	177.71	176.23	177.71	0.000009	0.05	390.92	666.96	0.01
RIVER-4	Reach-1	4959	Q2	0.26	175.06	176.20		176.20	0.000030	0.05	6.12	11.78	0.02
RIVER-4	Reach-1	4959	Q5	0.72	175.06	176.53		176.53	0.000061	0.08	11.13	21.00	0.03
RIVER-4	Reach-1	4959	Q25	1.51	175.06	176.80		176.80	0.000072	0.10	29.54	173.67	0.03
RIVER-4	Reach-1	4959	Q100	2.63	175.06	176.98		176.98	0.000047	0.08	72.28	293.94	0.02
RIVER-4	Reach-1	4959	Qreg	6.51	175.06	177.54		177.54	0.000006	0.04	382.26	804.19	0.01
RIVER-4	Reach-1	4959	Q48hr	9.62	175.06	177.71		177.71	0.000006	0.04	526.69	934.78	0.01
RIVER-4	Reach-1	4536	Q2	0.31	175.31	176.19		176.19	0.000160	0.09	3.91	8.64	0.04
RIVER-4	Reach-1	4536	Q5	0.84	175.31	176.52		176.52	0.000221	0.13	7.48	14.27	0.05
RIVER-4	Reach-1	4536	Q25	1.81	175.31	176.78		176.78	0.000204	0.14	28.38	251.34	0.05
RIVER-4	Reach-1	4536	Q100	3.16	175.31	176.97		176.97	0.000060	0.08	93.47	418.36	0.03
RIVER-4	Reach-1	4536	Qreg	8.04	175.31	177.54		177.54	0.000006	0.03	460.65	928.93	0.01
RIVER-4	Reach-1	4536	Q48hr	11.95	175.31	177.71		177.71	0.000006	0.03	624.80	1010.66	0.01
RIVER-4	Reach-2	3842	Q2	0.59	175.54	176.02		176.03	0.004173	0.42	1.40	4.31	0.24
RIVER-4	Reach-2	3842	Q5	1.48	175.54	176.34		176.35	0.002909	0.50	3.08	8.47	0.21
RIVER-4	Reach-2	3842	Q25	2.97	175.54	176.67		176.68	0.000910	0.34	10.18	52.45	0.12
RIVER-4	Reach-2	3842	Q100	4.77	175.54	176.96		176.96	0.000083	0.12	56.28	340.84	0.04
RIVER-4	Reach-2	3842	Qreg	11.60	175.54	177.54		177.54	0.000003	0.03	443.23	898.95	0.01
RIVER-4	Reach-2	3842	Q48hr	17.29	175.54	177.71		177.71	0.000002	0.03	598.09	952.78	0.01
RIVER-4	Reach-2	3440	Q2	0.59	174.86	175.91		175.92	0.000403	0.20	2.96	4.56	0.08
RIVER-4	Reach-2	3440	Q5	1.48	174.86	176.24		176.24	0.000446	0.25	6.33	12.93	0.09
RIVER-4	Reach-2	3440	Q25	2.97	174.86	176.63		176.64	0.000279	0.23	12.25	21.30	0.07
RIVER-4	Reach-2	3440	Q100	4.77	174.86	176.95		176.95	0.000126	0.17	36.76	204.98	0.05
RIVER-4	Reach-2	3440	Qreg	11.60	174.86	177.54		177.54	0.000004	0.03	364.89	736.88	0.01
RIVER-4	Reach-2	3440	Q48hr	17.29	174.86	177.71		177.71	0.000004	0.03	492.11	786.45	0.01
RIVER-4	Reach-2	3128	Q2	0.59	174.79	175.89		175.89	0.000236	0.16	3.67	5.33	0.06
RIVER-4	Reach-2	3128	Q5	1.48	174.79	176.19		176.19	0.000500	0.27	5.44	6.25	0.09
RIVER-4	Reach-2	3128	Q25	2.97	174.79	176.59		176.59	0.000677	0.36	8.14	7.41	0.11
RIVER-4	Reach-2	3128	Q100	4.77	174.79	176.91		176.92	0.000769	0.43	12.64	52.85	0.12

HEC-RAS Plan: Baseline_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-4	Reach-2	3128	Qreg	11.60	174.79	177.54		177.54	0.000006	0.04	347.07	885.36	0.01
RIVER-4	Reach-2	3128	Q48hr	17.29	174.79	177.71		177.71	0.000004	0.04	501.26	957.07	0.01
RIVER-4	Reach-2	2805	Q2	0.59	174.82	175.86		175.86	0.000239	0.14	4.21	7.58	0.06
RIVER-4	Reach-2	2805	Q5	1.48	174.82	176.15		176.15	0.000408	0.23	6.43	8.01	0.08
RIVER-4	Reach-2	2805	Q25	2.97	174.82	176.54		176.54	0.000435	0.29	10.93	18.75	0.09
RIVER-4	Reach-2	2805	Q100	4.77	174.82	176.87		176.87	0.000315	0.28	18.16	24.06	0.08
RIVER-4	Reach-2	2805	Qreg	11.60	174.82	177.54		177.54	0.000015	0.07	214.10	534.06	0.02
RIVER-4	Reach-2	2805	Q48hr	17.29	174.82	177.71		177.71	0.000012	0.07	308.65	591.10	0.02
RIVER-4	Reach-2	1709	Q2	0.59	174.55	175.78		175.78	0.000264	0.18	3.27	3.68	0.06
RIVER-4	Reach-2	1709	Q5	1.48	174.55	175.94		175.94	0.001040	0.38	3.87	3.87	0.12
RIVER-4	Reach-2	1709	Q25	2.97	174.55	176.26		176.27	0.001907	0.57	5.18	4.31	0.17
RIVER-4	Reach-2	1709	Q100	4.77	174.55	176.62		176.65	0.002379	0.69	6.87	4.99	0.19
RIVER-4	Reach-2	1709	Qreg	11.60	174.55	177.52		177.52	0.000299	0.29	53.46	167.37	0.07
RIVER-4	Reach-2	1709	Q48hr	17.29	174.55	177.69		177.70	0.000198	0.25	91.66	271.94	0.06
RIVER-4	Reach-2	1139	Q2	0.64	174.23	175.75		175.75	0.000089	0.12	5.39	5.59	0.04
RIVER-4	Reach-2	1139	Q5	1.58	174.23	175.83		175.83	0.000449	0.27	5.80	5.79	0.09
RIVER-4	Reach-2	1139	Q25	3.16	174.23	176.02		176.03	0.001102	0.45	6.96	6.32	0.14
RIVER-4	Reach-2	1139	Q100	5.03	174.23	176.32		176.34	0.001415	0.56	9.00	7.17	0.16
RIVER-4	Reach-2	1139	Qreg	12.35	174.23	177.44		177.45	0.000725	0.52	33.78	140.71	0.12
RIVER-4	Reach-2	1139	Q48hr	18.42	174.23	177.65		177.65	0.000358	0.39	76.42	262.70	0.09
RIVER-4	Reach-2	1021	Q2	0.64	174.45	175.75	174.72	175.75	0.000115	0.20	3.16	6.04	0.06
RIVER-4	Reach-2	1021	Q5	1.58	174.45	175.80	174.87	175.81	0.000617	0.48	3.29	8.30	0.14
RIVER-4	Reach-2	1021	Q25	3.16	174.45	175.94	175.06	175.98	0.001734	0.86	3.66	22.41	0.23
RIVER-4	Reach-2	1021	Q100	5.03	174.45	176.20	175.26	176.26	0.002516	1.16	4.33	44.68	0.29
RIVER-4	Reach-2	1021	Qreg	12.35	174.45	177.22	175.85	177.38	0.003036	1.76	7.29	160.55	0.34
RIVER-4	Reach-2	1021	Q48hr	18.42	174.45	177.23	176.25	177.57	0.006715	2.62	7.32	160.74	0.51
RIVER-4	Reach-2	975		Culvert									
RIVER-4	Reach-2	929	Q2	0.64	174.12	175.74		175.74	0.000071	0.18	3.63	14.47	0.05
RIVER-4	Reach-2	929	Q5	1.58	174.12	175.76		175.77	0.000419	0.43	3.68	14.65	0.12
RIVER-4	Reach-2	929	Q25	3.16	174.12	175.80		175.84	0.001513	0.83	3.79	15.11	0.22
RIVER-4	Reach-2	929	Q100	5.03	174.12	175.93		176.01	0.002895	1.22	4.13	17.11	0.31
RIVER-4	Reach-2	929	Qreg	12.35	174.12	176.40		176.67	0.007346	2.31	5.35	22.40	0.51
RIVER-4	Reach-2	929	Q48hr	18.42	174.12	176.58		177.09	0.012365	3.17	5.82	41.28	0.68
RIVER-4	Reach-2	485	Q2	0.64	173.89	175.74	174.09	175.74	0.000006	0.05	13.96	12.28	0.01
RIVER-4	Reach-2	485	Q5	1.58	173.89	175.75	174.18	175.75	0.000034	0.11	14.12	13.56	0.03
RIVER-4	Reach-2	485	Q25	3.16	173.89	175.78	174.30	175.78	0.000127	0.22	14.48	16.00	0.06
RIVER-4	Reach-2	485	Q100	5.03	173.89	175.89	174.41	175.89	0.000243	0.32	16.69	23.68	0.08
RIVER-4	Reach-2	485	Qreg	12.35	173.89	176.47	174.72	176.47	0.000171	0.34	58.99	107.15	0.07
RIVER-4	Reach-2	485	Q48hr	18.42	173.89	176.81	174.93	176.81	0.000053	0.21	145.51	191.30	0.04
RIVER-3	Reach-1	1889	Q2	0.12	176.35	176.48	176.48	176.51	0.045040	0.75	0.16	2.06	0.88
RIVER-3	Reach-1	1889	Q5	0.25	176.35	176.67	176.52	176.68	0.002933	0.37	0.67	3.29	0.26
RIVER-3	Reach-1	1889	Q25	0.43	176.35	177.23	176.57	177.23	0.000051	0.10	5.50	27.12	0.04
RIVER-3	Reach-1	1889	Q100	0.61	176.35	177.15	176.61	177.15	0.000189	0.18	3.84	14.28	0.08
RIVER-3	Reach-1	1889	Qreg	1.25	176.35	177.26	176.72	177.26	0.000339	0.28	6.18	30.35	0.11
RIVER-3	Reach-1	1889	Q48hr	1.90	176.35	177.84	176.80	177.84	0.000006	0.05	49.60	97.50	0.02
RIVER-3	Reach-1	1443	Q2	0.12	175.71	176.32	175.85	176.32	0.000066	0.08	1.48	4.07	0.04
RIVER-3	Reach-1	1443	Q5	0.25	175.71	176.66		176.66	0.000036	0.08	3.12	5.58	0.03
RIVER-3	Reach-1	1443	Q25	0.43	175.71	177.23		177.23	0.000007	0.05	13.59	77.70	0.02
RIVER-3	Reach-1	1443	Q100	0.61	175.71	177.14		177.14	0.000027	0.09	8.60	42.99	0.03
RIVER-3	Reach-1	1443	Qreg	1.25	175.71	177.24		177.24	0.000053	0.13	14.55	80.58	0.04
RIVER-3	Reach-1	1443	Q48hr	1.90	175.71	177.84		177.84	0.000001	0.03	85.89	141.84	0.01
RIVER-3	Reach-1	1255	Q2	0.12	175.45	176.32		176.32	0.000026	0.06	1.93	3.72	0.03
RIVER-3	Reach-1	1255	Q5	0.25	175.45	176.66		176.66	0.000026	0.07	3.39	5.01	0.03
RIVER-3	Reach-1	1255	Q25	0.43	175.45	177.23		177.23	0.000003	0.03	21.07	102.92	0.01
RIVER-3	Reach-1	1255	Q100	0.61	175.45	177.14		177.14	0.000011	0.06	14.54	50.25	0.02
RIVER-3	Reach-1	1255	Qreg	1.25	175.45	177.24		177.24	0.000023	0.10	22.19	105.48	0.03
RIVER-3	Reach-1	1255	Q48hr	1.90	175.45	177.84		177.84	0.000001	0.03	102.28	149.35	0.01
RIVER-3	Reach-1	1186	Q2	0.12	174.90	176.32	175.07	176.32	0.000005	0.05	2.59	4.05	0.01
RIVER-3	Reach-1	1186	Q5	0.25	174.90	176.66	175.13	176.66	0.000010	0.07	3.31	5.79	0.02
RIVER-3	Reach-1	1186	Q25	0.43	174.90	177.23	175.19	177.23	0.000011	0.10	4.51	72.91	0.02
RIVER-3	Reach-1	1186	Q100	0.61	174.90	177.14	175.25	177.14	0.000025	0.14	4.32	64.76	0.03
RIVER-3	Reach-1	1186	Qreg	1.25	174.90	177.24	175.40	177.24	0.000092	0.28	4.52	73.14	0.06
RIVER-3	Reach-1	1186	Q48hr	1.90	174.90	177.84	175.52	177.84	0.000010	0.06	47.41	133.00	0.02
RIVER-3	Reach-1	1168		Culvert									
RIVER-3	Reach-1	1150	Q2	0.12	175.72	176.32	175.86	176.32	0.000136	0.12	0.95	2.72	0.06
RIVER-3	Reach-1	1150	Q5	0.25	175.72	176.66	175.91	176.66	0.000091	0.15	1.67	3.92	0.05
RIVER-3	Reach-1	1150	Q25	0.43	175.72	177.23	175.98	177.23	0.000047	0.15	2.86	61.49	0.04
RIVER-3	Reach-1	1150	Q100	0.61	175.72	177.14	176.03	177.14	0.000116	0.23	2.67	52.89	0.06
RIVER-3	Reach-1	1150	Qreg	1.25	175.72	177.22	176.18	177.23	0.000398	0.44	2.85	60.46	0.12
RIVER-3	Reach-1	1150	Q48hr	1.90	175.72	177.84	176.30	177.84	0.000010	0.06	49.41	144.70	0.02

HEC-RAS Plan: Baseline_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-3	Reach-1	782	Q2	0.12	175.29	176.32	175.38	176.32	0.000002	0.02	5.90	8.43	0.01
RIVER-3	Reach-1	782	Q5	0.25	175.29	176.66	175.42	176.66	0.000002	0.03	10.61	27.21	0.01
RIVER-3	Reach-1	782	Q25	0.43	175.29	177.23	175.45	177.23	0.000000	0.01	55.13	126.01	0.00
RIVER-3	Reach-1	782	Q100	0.61	175.29	177.14	175.49	177.14	0.000001	0.02	44.38	111.83	0.01
RIVER-3	Reach-1	782	Qreg	1.25	175.29	177.22	175.57	177.22	0.000002	0.04	54.63	125.33	0.01
RIVER-3	Reach-1	782	Q48hr	1.90	175.29	177.84	175.63	177.84	0.000000	0.02	156.15	194.80	0.00
RIVER-3	Reach-1	465	Q2	0.12	175.02	176.32	175.14	176.32	0.000001	0.01	12.62	52.75	0.00
RIVER-3	Reach-1	465	Q5	0.25	175.02	176.66	175.18	176.66	0.000000	0.01	43.25	114.81	0.00
RIVER-3	Reach-1	465	Q25	0.43	175.02	177.23	175.23	177.23	0.000000	0.00	135.38	217.51	0.00
RIVER-3	Reach-1	465	Q100	0.61	175.02	177.14	175.27	177.14	0.000000	0.01	117.30	185.18	0.00
RIVER-3	Reach-1	465	Qreg	1.25	175.02	177.22	175.38	177.22	0.000000	0.01	134.51	215.53	0.00
RIVER-3	Reach-1	465	Q48hr	1.90	175.02	177.84	175.48	177.84	0.000000	0.01	320.77	364.70	0.00
RIVER-3	Reach-1	280	Q2	0.12	174.83	176.32	174.94	176.32	0.000000	0.00	39.60	72.40	0.00
RIVER-3	Reach-1	280	Q5	0.25	174.83	176.66	174.99	176.66	0.000000	0.00	68.98	99.99	0.00
RIVER-3	Reach-1	280	Q25	0.43	174.83	177.23	175.06	177.23	0.000000	0.00	156.89	238.69	0.00
RIVER-3	Reach-1	280	Q100	0.61	174.83	177.14	175.10	177.14	0.000000	0.01	136.48	210.52	0.00
RIVER-3	Reach-1	280	Qreg	1.25	174.83	177.22	175.26	177.22	0.000000	0.01	155.93	237.98	0.00
RIVER-3	Reach-1	280	Q48hr	1.90	174.83	177.84	175.35	177.84	0.000000	0.01	341.84	344.35	0.00
RIVER-2	Reach-1	3413	Q2	0.15	175.69	176.36	175.82	176.36	0.000088	0.07	2.09	4.97	0.04
RIVER-2	Reach-1	3413	Q5	0.51	175.69	176.75	175.92	176.75	0.000088	0.09	7.14	46.16	0.04
RIVER-2	Reach-1	3413	Q25	1.10	175.69	177.27	176.03	177.27	0.000003	0.02	56.27	119.24	0.01
RIVER-2	Reach-1	3413	Q100	1.70	175.69	177.27	176.11	177.27	0.000006	0.04	56.03	119.06	0.01
RIVER-2	Reach-1	3413	Qreg	4.37	175.69	177.74	176.36	177.74	0.000003	0.03	173.38	346.95	0.01
RIVER-2	Reach-1	3413	Q48hr	6.85	175.69	178.15	176.53	178.15	0.000000	0.01	682.75	916.06	0.00
RIVER-2	Reach-1	3308	Q2	0.15	175.79	176.35	175.98	176.35	0.000429	0.17	0.90	4.56	0.08
RIVER-2	Reach-1	3308	Q5	0.51	175.79	176.73	176.09	176.74	0.000598	0.30	1.67	62.65	0.11
RIVER-2	Reach-1	3308	Q25	1.10	175.79	177.26	176.22	177.27	0.000547	0.40	2.72	333.57	0.11
RIVER-2	Reach-1	3308	Q100	1.70	175.79	177.25	176.33	177.27	0.001372	0.63	2.69	321.13	0.17
RIVER-2	Reach-1	3308	Qreg	4.37	175.79	177.65	176.69	177.73	0.003761	1.25	3.50	843.51	0.30
RIVER-2	Reach-1	3308	Q48hr	6.85	175.79	178.00	176.97	178.13	0.005061	1.64	4.19	966.52	0.36
RIVER-2	Reach-1	3270.5		Culvert									
RIVER-2	Reach-1	3233	Q2	0.15	175.74	176.35	175.95	176.35	0.000866	0.20	0.77	4.43	0.10
RIVER-2	Reach-1	3233	Q5	0.51	175.74	176.73	176.10	176.73	0.000957	0.33	1.53	28.56	0.12
RIVER-2	Reach-1	3233	Q25	1.10	175.74	177.25	176.27	177.25	0.000800	0.43	2.56	86.68	0.12
RIVER-2	Reach-1	3233	Q100	1.70	175.74	177.20	176.38	177.23	0.002149	0.69	2.48	79.07	0.20
RIVER-2	Reach-1	3233	Qreg	4.37	175.74	177.35	176.75	177.48	0.009715	1.57	2.77	111.43	0.43
RIVER-2	Reach-1	3233	Q48hr	6.85	175.74	177.75	177.03	177.94	0.010323	1.92	3.57	395.89	0.46
RIVER-2	Reach-1	3063	Q2	0.15	175.71	176.34	175.85	176.34	0.000097	0.07	2.05	5.15	0.04
RIVER-2	Reach-1	3063	Q5	0.51	175.71	176.72	175.95	176.72	0.000135	0.12	4.39	7.24	0.05
RIVER-2	Reach-1	3063	Q25	1.10	175.71	177.24	176.05	177.25	0.000042	0.08	18.04	76.16	0.03
RIVER-2	Reach-1	3063	Q100	1.70	175.71	177.20	176.13	177.20	0.000143	0.15	14.93	62.03	0.05
RIVER-2	Reach-1	3063	Qreg	4.37	175.71	177.38	176.36	177.38	0.000218	0.21	29.66	92.86	0.07
RIVER-2	Reach-1	3063	Q48hr	6.85	175.71	177.84	176.53	177.84	0.000002	0.03	305.24	527.20	0.01
RIVER-2	Reach-1	2586.51	Q2	0.19	175.47	176.33	175.65	176.33	0.000050	0.06	2.94	5.64	0.03
RIVER-2	Reach-1	2586.51	Q5	0.65	175.47	176.70	175.77	176.70	0.000118	0.12	5.30	7.08	0.05
RIVER-2	Reach-1	2586.51	Q25	1.43	175.47	177.24	175.90	177.24	0.000035	0.10	23.76	104.42	0.03
RIVER-2	Reach-1	2586.51	Q100	2.22	175.47	177.18	175.99	177.18	0.000127	0.18	18.58	75.45	0.05
RIVER-2	Reach-1	2586.51	Qreg	5.79	175.47	177.35	176.28	177.35	0.000253	0.27	39.47	179.03	0.07
RIVER-2	Reach-1	2586.51	Q48hr	9.03	175.47	177.84	176.46	177.84	0.000006	0.05	265.60	506.88	0.01
RIVER-2	Reach-1	1837	Q2	0.19	175.09	176.33		176.33	0.000013	0.04	4.51	5.57	0.01
RIVER-2	Reach-1	1837	Q5	0.65	175.09	176.68		176.68	0.000054	0.10	6.68	6.54	0.03
RIVER-2	Reach-1	1837	Q25	1.43	175.09	177.23		177.23	0.000042	0.10	21.83	130.24	0.03
RIVER-2	Reach-1	1837	Q100	2.22	175.09	177.15		177.15	0.000155	0.19	14.70	47.60	0.05
RIVER-2	Reach-1	1837	Qreg	5.79	175.09	177.26		177.27	0.000563	0.37	26.08	162.64	0.10
RIVER-2	Reach-1	1837	Q48hr	9.03	175.09	177.84		177.84	0.000010	0.06	218.73	442.82	0.01
RIVER-2	Reach-1	999	Q2	0.19	175.01	176.32		176.32	0.000006	0.03	6.16	7.31	0.01
RIVER-2	Reach-1	999	Q5	0.65	175.01	176.67		176.67	0.000030	0.07	9.51	20.09	0.02
RIVER-2	Reach-1	999	Q25	1.43	175.01	177.23		177.23	0.000003	0.03	82.34	292.10	0.01
RIVER-2	Reach-1	999	Q100	2.22	175.01	177.14		177.14	0.000015	0.06	59.36	229.23	0.02
RIVER-2	Reach-1	999	Qreg	5.79	175.01	177.23		177.23	0.000049	0.11	83.32	294.42	0.03
RIVER-2	Reach-1	999	Q48hr	9.03	175.01	177.84		177.84	0.000003	0.04	288.26	345.00	0.01
RIVER-1	Reach-1	13837	Q2	0.14	175.83	176.34	175.89	176.34	0.000056	0.07	2.20	5.67	0.03
RIVER-1	Reach-1	13837	Q5	0.32	175.83	176.70	175.94	176.70	0.000036	0.07	4.58	7.59	0.03
RIVER-1	Reach-1	13837	Q25	0.61	175.83	177.30	175.99	177.30	0.000005	0.04	26.20	82.44	0.01
RIVER-1	Reach-1	13837	Q100	0.94	175.83	177.31	176.04	177.32	0.000011	0.06	27.20	85.94	0.02
RIVER-1	Reach-1	13837	Qreg	2.12	175.83	177.73	176.16	177.73	0.000005	0.05	78.28	165.01	0.01
RIVER-1	Reach-1	13837	Q48hr	3.11	175.83	177.84	176.25	177.84	0.000006	0.05	120.43	266.43	0.01
RIVER-1	Reach-1	13777	Q2	0.14	175.68	176.33	175.80	176.33	0.000220	0.18	0.77	5.38	0.07
RIVER-1	Reach-1	13777	Q5	0.32	175.68	176.69	175.88	176.69	0.000252	0.26	1.20	7.03	0.08
RIVER-1	Reach-1	13777	Q25	0.61	175.68	177.30	175.98	177.30	0.000191	0.32	1.93	75.42	0.08

HEC-RAS Plan: Baseline_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-1	13777	Q100	0.94	175.68	177.30	176.08	177.31	0.000451	0.49	1.94	76.96	0.12
RIVER-1	Reach-1	13777	Qreg	2.12	175.68	177.72	176.37	177.73	0.001391	0.32	10.85	198.85	0.16
RIVER-1	Reach-1	13777	Q48hr	3.11	175.68	177.84	176.57	177.84	0.000348	0.19	29.36	200.01	0.09
RIVER-1	Reach-1	13745.5		Culvert									
RIVER-1	Reach-1	13714	Q2	0.14	175.87	176.32	175.99	176.33	0.000754	0.27	0.54	4.48	0.13
RIVER-1	Reach-1	13714	Q5	0.32	175.87	176.67	176.07	176.68	0.000544	0.33	0.96	48.48	0.12
RIVER-1	Reach-1	13714	Q25	0.61	175.87	177.23	176.18	177.23	0.000345	0.38	1.62	115.34	0.10
RIVER-1	Reach-1	13714	Q100	0.94	175.87	177.13	176.28	177.15	0.001049	0.63	1.50	80.71	0.18
RIVER-1	Reach-1	13714	Qreg	2.12	175.87	177.18	176.56	177.28	0.004618	1.35	1.57	92.58	0.38
RIVER-1	Reach-1	13714	Q48hr	3.11	175.87	177.84	176.75	177.84	0.000918	0.20	31.67	409.10	0.13
RIVER-1	Reach-1	13387	Q2	0.14	174.94	176.32		176.32	0.000004	0.03	4.89	5.22	0.01
RIVER-1	Reach-1	13387	Q5	0.32	174.94	176.67		176.67	0.000008	0.05	8.23	37.20	0.01
RIVER-1	Reach-1	13387	Q25	0.61	174.94	177.23		177.23	0.000000	0.01	169.30	484.74	0.00
RIVER-1	Reach-1	13387	Q100	0.94	174.94	177.14		177.14	0.000001	0.02	127.37	444.13	0.00
RIVER-1	Reach-1	13387	Qreg	2.12	174.94	177.23		177.23	0.000002	0.03	169.68	484.84	0.01
RIVER-1	Reach-1	13387	Q48hr	3.11	174.94	177.84		177.84	0.000000	0.01	540.64	689.10	0.00
RIVER-1	Reach-1	13099	Q2	0.14	174.88	176.32		176.32	0.000005	0.03	4.94	7.07	0.01
RIVER-1	Reach-1	13099	Q5	0.32	174.88	176.67		176.67	0.000008	0.04	8.77	17.11	0.01
RIVER-1	Reach-1	13099	Q25	0.61	174.88	177.23		177.23	0.000001	0.02	95.31	393.68	0.00
RIVER-1	Reach-1	13099	Q100	0.94	174.88	177.14		177.14	0.000003	0.04	63.88	318.56	0.01
RIVER-1	Reach-1	13099	Qreg	2.12	174.88	177.23		177.23	0.000007	0.06	95.48	394.06	0.01
RIVER-1	Reach-1	13099	Q48hr	3.11	174.88	177.84		177.84	0.000000	0.01	443.00	693.50	0.00
RIVER-1	Reach-2	12741	Q2	0.37	174.77	176.32	174.94	176.32	0.000002	0.03	17.69	44.96	0.01
RIVER-1	Reach-2	12741	Q5	1.07	174.77	176.67	175.08	176.67	0.000002	0.05	51.24	201.63	0.01
RIVER-1	Reach-2	12741	Q25	2.22	174.77	177.23	175.23	177.23	0.000000	0.02	252.55	426.23	0.01
RIVER-1	Reach-2	12741	Q100	3.41	174.77	177.14	175.34	177.14	0.000001	0.04	214.66	421.52	0.01
RIVER-1	Reach-2	12741	Qreg	8.56	174.77	177.23	175.69	177.23	0.000005	0.09	252.53	426.23	0.02
RIVER-1	Reach-2	12741	Q48hr	13.26	174.77	177.84	176.03	177.84	0.000001	0.05	523.02	452.47	0.01
RIVER-1	Reach-2	12664	Q2	0.37	174.88	176.32	175.09	176.32	0.000017	0.13	2.94	33.79	0.03
RIVER-1	Reach-2	12664	Q5	1.07	174.88	176.67	175.25	176.67	0.000068	0.29	3.69	86.11	0.07
RIVER-1	Reach-2	12664	Q25	2.22	174.88	177.23	175.43	177.23	0.000001	0.02	222.62	418.92	0.01
RIVER-1	Reach-2	12664	Q100	3.41	174.88	177.14	175.59	177.14	0.000002	0.04	185.50	412.52	0.01
RIVER-1	Reach-2	12664	Qreg	8.56	174.88	177.23	176.12	177.23	0.000008	0.09	222.55	418.90	0.02
RIVER-1	Reach-2	12664	Q48hr	13.26	174.88	177.84	176.52	177.84	0.000002	0.05	487.34	450.44	0.01
RIVER-1	Reach-2	12647.5		Culvert									
RIVER-1	Reach-2	12631	Q2	0.37	174.84	176.32	175.06	176.32	0.000016	0.12	3.00	31.48	0.03
RIVER-1	Reach-2	12631	Q5	1.07	174.84	176.66	175.21	176.66	0.000066	0.29	3.73	80.49	0.07
RIVER-1	Reach-2	12631	Q25	2.22	174.84	177.23	175.40	177.23	0.000000	0.01	279.07	387.06	0.00
RIVER-1	Reach-2	12631	Q100	3.41	174.84	177.14	175.56	177.14	0.000001	0.02	245.34	375.89	0.01
RIVER-1	Reach-2	12631	Qreg	8.56	174.84	177.23	176.09	177.23	0.000003	0.05	279.05	387.04	0.01
RIVER-1	Reach-2	12631	Q48hr	13.26	174.84	177.84	176.49	177.84	0.000001	0.03	536.32	439.93	0.01
RIVER-1	Reach-2	12252	Q2	0.37	174.63	176.32	174.86	176.32	0.000002	0.03	21.74	79.87	0.01
RIVER-1	Reach-2	12252	Q5	1.07	174.63	176.66	174.99	176.66	0.000002	0.04	61.60	158.31	0.01
RIVER-1	Reach-2	12252	Q25	2.22	174.63	177.23	175.14	177.23	0.000000	0.03	188.41	274.90	0.01
RIVER-1	Reach-2	12252	Q100	3.41	174.63	177.14	175.25	177.14	0.000002	0.05	163.93	271.89	0.01
RIVER-1	Reach-2	12252	Qreg	8.56	174.63	177.23	175.61	177.23	0.000007	0.10	188.23	274.88	0.02
RIVER-1	Reach-2	12252	Q48hr	13.26	174.63	177.84	175.86	177.84	0.000002	0.06	451.63	389.79	0.01
RIVER-1	Reach-2	11903	Q2	0.37	174.61	176.32		176.32	0.000001	0.03	21.32	69.73	0.01
RIVER-1	Reach-2	11903	Q5	1.07	174.61	176.66		176.66	0.000002	0.04	49.05	91.34	0.01
RIVER-1	Reach-2	11903	Q25	2.22	174.61	177.23		177.23	0.000001	0.04	118.74	206.66	0.01
RIVER-1	Reach-2	11903	Q100	3.41	174.61	177.14		177.14	0.000003	0.07	103.48	131.18	0.01
RIVER-1	Reach-2	11903	Qreg	8.56	174.61	177.23		177.23	0.000014	0.15	118.33	205.96	0.03
RIVER-1	Reach-2	11903	Q48hr	13.26	174.61	177.84		177.84	0.000005	0.10	296.09	331.30	0.02
RIVER-1	Reach-3	11584	Q2	3.92	174.50	176.27	175.20	176.31	0.000667	0.92	4.28	18.46	0.23
RIVER-1	Reach-3	11584	Q5	6.51	174.50	176.60	175.45	176.65	0.000762	1.11	10.01	66.60	0.25
RIVER-1	Reach-3	11584	Q25	10.30	174.50	177.23	175.76	177.23	0.000109	0.23	92.34	332.97	0.08
RIVER-1	Reach-3	11584	Q100	13.49	174.50	177.13	176.00	177.14	0.000388	0.40	64.95	253.71	0.15
RIVER-1	Reach-3	11584	Qreg	14.62	174.50	177.22	176.08	177.22	0.000232	0.33	90.33	326.98	0.11
RIVER-1	Reach-3	11584	Q48hr	19.78	174.50	177.84	176.81	177.84	0.000005	0.07	621.22	995.83	0.02
RIVER-1	Reach-3	11565.5		Culvert									
RIVER-1	Reach-3	11547	Q2	3.94	174.71	176.17	175.39	176.24	0.001241	1.11	3.56	61.79	0.30
RIVER-1	Reach-3	11547	Q5	6.55	174.71	176.53	175.63	176.64	0.001622	1.47	4.46	105.01	0.35
RIVER-1	Reach-3	11547	Q25	10.38	174.71	177.22	175.96	177.23	0.000190	0.33	80.03	318.03	0.11
RIVER-1	Reach-3	11547	Q100	13.62	174.71	176.79	176.19	177.13	0.004327	2.62	5.98	161.64	0.59
RIVER-1	Reach-3	11547	Qreg	15.59	174.71	177.22	177.05	177.22	0.000467	0.51	77.50	315.40	0.17
RIVER-1	Reach-3	11547	Q48hr	21.17	174.71	177.84	177.07	177.84	0.000007	0.09	554.08	981.33	0.02
RIVER-1	Reach-3	11400	Q2	3.94	174.54	176.18	175.21	176.19	0.000284	0.41	14.16	55.38	0.13
RIVER-1	Reach-3	11400	Q5	6.55	174.54	176.58	175.39	176.58	0.000087	0.28	48.16	128.81	0.08
RIVER-1	Reach-3	11400	Q25	10.38	174.54	177.22	175.60	177.22	0.000012	0.14	159.19	221.58	0.03

HEC-RAS Plan: Baseline_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	11400	Q100	13.62	174.54	176.95	175.76	176.95	0.000057	0.27	106.73	172.64	0.06
RIVER-1	Reach-3	11400	Qreg	15.59	174.54	177.21	175.85	177.21	0.000029	0.21	157.06	219.49	0.05
RIVER-1	Reach-3	11400	Q48hr	21.17	174.54	177.84	176.23	177.84	0.000008	0.13	352.69	441.87	0.02
RIVER-1	Reach-3	11263	Q2	3.94	174.55	176.17	175.17	176.18	0.000235	0.37	15.83	45.64	0.12
RIVER-1	Reach-3	11263	Q5	6.55	174.55	176.57	175.35	176.58	0.000089	0.29	43.49	118.14	0.08
RIVER-1	Reach-3	11263	Q25	10.38	174.55	177.22	175.56	177.22	0.000013	0.14	155.33	206.80	0.03
RIVER-1	Reach-3	11263	Q100	13.62	174.55	176.95	175.71	176.95	0.000066	0.29	101.99	184.33	0.07
RIVER-1	Reach-3	11263	Qreg	15.59	174.55	177.21	175.79	177.21	0.000030	0.21	153.20	206.17	0.05
RIVER-1	Reach-3	11263	Q48hr	21.17	174.55	177.84	176.14	177.84	0.000009	0.14	313.72	361.82	0.03
RIVER-1	Reach-3	11179	Q2	3.94	174.52	176.17	175.20	176.17	0.000202	0.35	16.93	43.49	0.11
RIVER-1	Reach-3	11179	Q5	6.55	174.52	176.57	175.38	176.57	0.000081	0.28	46.37	118.37	0.07
RIVER-1	Reach-3	11179	Q25	10.38	174.52	177.22	175.61	177.22	0.000013	0.14	152.41	191.43	0.03
RIVER-1	Reach-3	11179	Q100	13.62	174.52	176.95	175.78	176.95	0.000059	0.27	102.55	167.24	0.07
RIVER-1	Reach-3	11179	Qreg	15.59	174.52	177.21	175.87	177.21	0.000029	0.21	150.36	190.18	0.05
RIVER-1	Reach-3	11179	Q48hr	21.17	174.52	177.84	176.10	177.84	0.000009	0.14	324.41	391.21	0.03
RIVER-1	Reach-3	10988	Q2	3.94	174.48	176.16	175.00	176.16	0.000079	0.26	27.13	69.02	0.07
RIVER-1	Reach-3	10988	Q5	6.55	174.48	176.57	175.17	176.57	0.000034	0.20	69.06	133.06	0.05
RIVER-1	Reach-3	10988	Q25	10.38	174.48	177.22	175.39	177.22	0.000005	0.10	269.08	466.13	0.02
RIVER-1	Reach-3	10988	Q100	13.62	174.48	176.95	175.52	176.95	0.000030	0.22	157.80	357.95	0.05
RIVER-1	Reach-3	10988	Qreg	15.59	174.48	177.21	175.59	177.21	0.000012	0.15	263.93	458.08	0.03
RIVER-1	Reach-3	10988	Q48hr	21.17	174.48	177.84	175.86	177.84	0.000003	0.08	583.99	555.34	0.02
RIVER-1	Reach-3	10842	Q2	3.94	174.53	176.10	175.20	176.15	0.000900	0.97	4.09	35.27	0.25
RIVER-1	Reach-3	10842	Q5	6.55	174.53	176.49	175.44	176.56	0.000996	1.19	7.41	98.32	0.28
RIVER-1	Reach-3	10842	Q25	10.38	174.53	177.22	175.75	177.22	0.000026	0.24	139.74	472.43	0.05
RIVER-1	Reach-3	10842	Q100	13.62	174.53	176.93	175.97	176.94	0.000316	0.77	65.46	367.80	0.16
RIVER-1	Reach-3	10842	Qreg	15.59	174.53	177.21	176.73	177.21	0.000063	0.37	136.25	471.07	0.07
RIVER-1	Reach-3	10842	Q48hr	21.17	174.53	177.84	176.83	177.84	0.000009	0.10	406.49	526.34	0.02
RIVER-1	Reach-3	10819.5		Culvert									
RIVER-1	Reach-3	10797	Q2	4.00	174.57	175.97	175.21	176.03	0.001247	1.08	3.70	47.74	0.29
RIVER-1	Reach-3	10797	Q5	6.68	174.57	176.21	175.46	176.33	0.002045	1.54	4.34	69.20	0.39
RIVER-1	Reach-3	10797	Q25	10.66	174.57	176.51	175.77	176.73	0.002946	2.07	5.15	72.40	0.48
RIVER-1	Reach-3	10797	Q100	14.07	174.57	176.55	176.01	176.92	0.004741	2.67	5.27	73.11	0.61
RIVER-1	Reach-3	10797	Qreg	19.29	174.57	176.40	176.34	177.21	0.011680	3.97	4.86	71.28	0.94
RIVER-1	Reach-3	10797	Q48hr	26.76	174.57	176.75	176.75	177.84	0.012393	4.60	5.81	97.51	1.00
RIVER-1	Reach-3	10695	Q2	4.00	174.30	175.98	174.96	175.99	0.000341	0.46	9.06	13.96	0.14
RIVER-1	Reach-3	10695	Q5	6.68	174.30	176.24	175.15	176.25	0.000388	0.57	15.20	30.16	0.16
RIVER-1	Reach-3	10695	Q25	10.66	174.30	176.59	175.36	176.60	0.000296	0.58	27.99	42.54	0.14
RIVER-1	Reach-3	10695	Q100	14.07	174.30	176.69	175.53	176.71	0.000371	0.67	33.53	65.81	0.16
RIVER-1	Reach-3	10695	Qreg	19.29	174.30	176.73	175.73	176.76	0.000634	0.89	35.99	79.85	0.21
RIVER-1	Reach-3	10695	Q48hr	26.76	174.30	177.00	176.05	177.02	0.000498	0.87	64.47	140.65	0.19
RIVER-1	Reach-3	10279	Q2	4.00	174.24	175.95	174.78	175.96	0.000145	0.34	15.06	39.17	0.09
RIVER-1	Reach-3	10279	Q5	6.68	174.24	176.21	174.93	176.22	0.000147	0.38	27.41	53.65	0.10
RIVER-1	Reach-3	10279	Q25	10.66	174.24	176.57	175.11	176.58	0.000108	0.38	57.52	169.69	0.09
RIVER-1	Reach-3	10279	Q100	14.07	174.24	176.68	175.24	176.68	0.000122	0.41	78.02	220.57	0.09
RIVER-1	Reach-3	10279	Qreg	19.29	174.24	176.70	175.43	176.71	0.000203	0.54	83.37	227.69	0.12
RIVER-1	Reach-3	10279	Q48hr	26.76	174.24	176.99	175.64	176.99	0.000104	0.42	165.67	316.86	0.09
RIVER-1	Reach-3	10045	Q2	4.00	174.19	175.95	174.82	175.95	0.000080	0.25	25.59	57.36	0.07
RIVER-1	Reach-3	10045	Q5	6.68	174.19	176.21	175.01	176.21	0.000073	0.27	44.25	91.85	0.07
RIVER-1	Reach-3	10045	Q25	10.66	174.19	176.57	175.21	176.57	0.000043	0.24	107.37	280.62	0.06
RIVER-1	Reach-3	10045	Q100	14.07	174.19	176.68	175.36	176.68	0.000048	0.26	137.98	302.78	0.06
RIVER-1	Reach-3	10045	Qreg	19.29	174.19	176.70	175.52	176.70	0.000080	0.34	144.74	305.39	0.08
RIVER-1	Reach-3	10045	Q48hr	26.76	174.19	176.99	175.71	176.99	0.000040	0.26	241.29	348.45	0.06
RIVER-1	Reach-3	9967	Q2	4.00	174.24	175.88	175.00	175.94	0.001060	1.07	3.75	47.66	0.28
RIVER-1	Reach-3	9967	Q5	6.68	174.24	176.07	175.26	176.20	0.002031	1.59	4.20	78.89	0.39
RIVER-1	Reach-3	9967	Q25	10.66	174.24	176.28	175.60	176.54	0.003471	2.25	4.73	183.80	0.52
RIVER-1	Reach-3	9967	Q100	14.07	174.24	175.94	175.85	176.61	0.011543	3.61	3.90	54.44	0.91
RIVER-1	Reach-3	9967	Qreg	19.29	174.24	176.65	176.65	176.69	0.004286	1.36	42.05	343.07	0.48
RIVER-1	Reach-3	9967	Q48hr	26.76	174.24	176.99	176.67	176.99	0.000142	0.31	211.54	656.01	0.09
RIVER-1	Reach-3	9948.5		Culvert									
RIVER-1	Reach-3	9929	Q2	4.00	174.29	175.81	175.00	175.88	0.001205	1.11	3.59	58.82	0.29
RIVER-1	Reach-3	9929	Q5	6.68	174.29	175.86	175.27	176.02	0.003055	1.81	3.69	65.74	0.47
RIVER-1	Reach-3	9929	Q25	10.66	174.29	175.89	175.59	176.30	0.007229	2.82	3.78	69.42	0.73
RIVER-1	Reach-3	9929	Q100	14.07	174.29	175.89	175.85	176.60	0.012512	3.72	3.78	69.63	0.96
RIVER-1	Reach-3	9929	Qreg	19.29	174.29	176.66	176.63	176.68	0.002718	1.14	53.30	402.56	0.39
RIVER-1	Reach-3	9929	Q48hr	26.76	174.29	176.98	176.66	176.98	0.000118	0.29	229.43	668.23	0.09
RIVER-1	Reach-3	9829	Q2	4.00	173.99	175.84	174.57	175.84	0.000050	0.21	36.78	80.90	0.06
RIVER-1	Reach-3	9829	Q5	6.68	173.99	175.93	174.75	175.93	0.000089	0.30	44.21	84.33	0.08
RIVER-1	Reach-3	9829	Q25	10.66	173.99	176.08	174.98	176.08	0.000117	0.36	57.87	99.24	0.09
RIVER-1	Reach-3	9829	Q100	14.07	173.99	176.23	175.14	176.23	0.000124	0.39	74.77	129.79	0.09
RIVER-1	Reach-3	9829	Qreg	19.29	173.99	176.66	175.57	176.66	0.000037	0.25	219.82	562.78	0.05

HEC-RAS Plan: Baseline_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	9829	Q48hr	26.76	173.99	176.98	175.66	176.98	0.000015	0.17	441.97	759.09	0.03
RIVER-1	Reach-3	9462	Q2	4.00	173.97	175.83		175.83	0.000065	0.19	30.79	66.17	0.05
RIVER-1	Reach-3	9462	Q5	6.68	173.97	175.92		175.92	0.000117	0.26	36.55	70.02	0.07
RIVER-1	Reach-3	9462	Q25	10.66	173.97	176.06		176.07	0.000151	0.32	47.79	86.95	0.07
RIVER-1	Reach-3	9462	Q100	14.07	173.97	176.21		176.22	0.000140	0.32	62.62	113.95	0.07
RIVER-1	Reach-3	9462	Qreg	19.29	173.97	176.66		176.66	0.000038	0.19	199.38	461.84	0.04
RIVER-1	Reach-3	9462	Q48hr	26.76	173.97	176.98		176.98	0.000013	0.12	363.14	552.76	0.02
RIVER-1	Reach-3	8698	Q2	4.00	173.92	175.83	174.37	175.83	0.000009	0.07	65.67	88.25	0.02
RIVER-1	Reach-3	8698	Q5	6.68	173.92	175.91	174.51	175.91	0.000019	0.10	73.47	100.66	0.02
RIVER-1	Reach-3	8698	Q25	10.66	173.92	176.06	174.68	176.06	0.000029	0.13	91.87	160.67	0.03
RIVER-1	Reach-3	8698	Q100	14.07	173.92	176.21	174.81	176.21	0.000029	0.14	121.17	235.09	0.03
RIVER-1	Reach-3	8698	Qreg	19.29	173.92	176.66	175.14	176.66	0.000013	0.10	289.71	546.52	0.02
RIVER-1	Reach-3	8698	Q48hr	26.76	173.92	176.98	175.21	176.98	0.000006	0.08	515.33	791.39	0.02
RIVER-1	Reach-3	8570	Q2	4.00	173.97	175.83		175.83	0.000012	0.07	55.55	82.93	0.02
RIVER-1	Reach-3	8570	Q5	6.68	173.97	175.91		175.91	0.000026	0.11	62.97	99.71	0.03
RIVER-1	Reach-3	8570	Q25	10.66	173.97	176.05		176.06	0.000043	0.15	81.39	174.00	0.04
RIVER-1	Reach-3	8570	Q100	14.07	173.97	176.20		176.20	0.000049	0.17	114.91	282.96	0.04
RIVER-1	Reach-3	8570	Qreg	19.29	173.97	176.66		176.66	0.000011	0.09	294.92	539.39	0.02
RIVER-1	Reach-3	8570	Q48hr	26.76	173.97	176.98		176.98	0.000006	0.08	506.67	767.80	0.02
RIVER-1	Reach-3	8486	Q2	4.00	173.91	175.83	174.58	175.83	0.000151	0.13	19.83	86.73	0.06
RIVER-1	Reach-3	8486	Q5	6.68	173.91	175.90	174.76	175.91	0.000263	0.19	26.91	97.79	0.08
RIVER-1	Reach-3	8486	Q25	10.66	173.91	176.05	174.93	176.05	0.000260	0.22	47.35	195.26	0.09
RIVER-1	Reach-3	8486	Q100	14.07	173.91	176.20	175.05	176.20	0.000139	0.19	94.63	426.59	0.06
RIVER-1	Reach-3	8486	Qreg	19.29	173.91	176.66	175.22	176.66	0.000010	0.07	371.12	747.92	0.02
RIVER-1	Reach-3	8486	Q48hr	26.76	173.91	176.98	175.40	176.98	0.000004	0.05	643.31	903.85	0.01
RIVER-1	Reach-3	8467		Culvert									
RIVER-1	Reach-3	8450	Q2	4.00	173.76	175.82		175.83	0.000101	0.13	23.32	92.30	0.05
RIVER-1	Reach-3	8450	Q5	6.68	173.76	175.90		175.91	0.000178	0.18	32.46	144.30	0.07
RIVER-1	Reach-3	8450	Q25	10.66	173.76	176.04		176.05	0.000169	0.20	59.92	261.33	0.07
RIVER-1	Reach-3	8450	Q100	14.07	173.76	176.20		176.20	0.000084	0.16	121.93	518.03	0.05
RIVER-1	Reach-3	8450	Qreg	19.29	173.76	176.65		176.65	0.000007	0.06	414.04	742.52	0.02
RIVER-1	Reach-3	8450	Q48hr	26.76	173.76	176.98		176.98	0.000003	0.05	681.04	921.62	0.01
RIVER-1	Reach-3	8435	Q2	4.00	173.77	175.82		175.82	0.000004	0.07	80.38	144.74	0.02
RIVER-1	Reach-3	8435	Q5	6.68	173.77	175.90		175.90	0.000009	0.11	93.07	189.93	0.03
RIVER-1	Reach-3	8435	Q25	10.66	173.77	176.04		176.04	0.000014	0.14	129.07	335.78	0.03
RIVER-1	Reach-3	8435	Q100	14.07	173.77	176.20		176.20	0.000013	0.14	195.45	530.65	0.03
RIVER-1	Reach-3	8435	Qreg	19.29	173.77	176.65		176.65	0.000003	0.07	558.26	965.72	0.02
RIVER-1	Reach-3	8435	Q48hr	26.76	173.77	176.98		176.98	0.000001	0.06	883.32	1027.90	0.01
RIVER-1	Reach-3	7960	Q2	4.00	173.83	175.82	174.22	175.82	0.000001	0.03	170.79	183.49	0.01
RIVER-1	Reach-3	7960	Q5	6.68	173.83	175.90	174.34	175.90	0.000001	0.04	186.19	216.80	0.01
RIVER-1	Reach-3	7960	Q25	10.66	173.83	176.04	174.49	176.04	0.000003	0.06	228.35	399.28	0.01
RIVER-1	Reach-3	7960	Q100	14.07	173.83	176.20	174.53	176.20	0.000003	0.07	308.87	669.92	0.02
RIVER-1	Reach-3	7960	Qreg	19.29	173.83	176.65	174.58	176.65	0.000001	0.05	732.74	1203.36	0.01
RIVER-1	Reach-3	7960	Q48hr	26.76	173.83	176.98	174.63	176.98	0.000001	0.04	1138.59	1278.67	0.01
RIVER-1	Reach-3	7886	Q2	4.00	173.71	175.82	174.41	175.82	0.000001	0.03	135.17	194.69	0.01
RIVER-1	Reach-3	7886	Q5	6.68	173.71	175.90	174.50	175.90	0.000003	0.04	152.04	252.06	0.01
RIVER-1	Reach-3	7886	Q25	10.66	173.71	176.04	174.56	176.04	0.000004	0.06	203.11	488.51	0.02
RIVER-1	Reach-3	7886	Q100	14.07	173.71	176.20	174.60	176.20	0.000004	0.06	297.34	745.74	0.02
RIVER-1	Reach-3	7886	Qreg	19.29	173.71	176.65	174.65	176.65	0.000001	0.04	758.41	1208.74	0.01
RIVER-1	Reach-3	7886	Q48hr	26.76	173.71	176.98	174.70	176.98	0.000001	0.03	1184.96	1394.36	0.01
RIVER-1	Reach-3	7871		Culvert									
RIVER-1	Reach-3	7857	Q2	4.00	173.71	175.82	174.29	175.82	0.000002	0.03	117.24	193.30	0.01
RIVER-1	Reach-3	7857	Q5	6.68	173.71	175.90	174.59	175.90	0.000004	0.05	134.77	259.24	0.02
RIVER-1	Reach-3	7857	Q25	10.66	173.71	176.04	174.68	176.04	0.000006	0.07	184.07	470.38	0.02
RIVER-1	Reach-3	7857	Q100	14.07	173.71	176.20	174.72	176.20	0.000005	0.07	272.60	674.39	0.02
RIVER-1	Reach-3	7857	Qreg	19.29	173.71	176.65	174.79	176.65	0.000001	0.04	721.61	1245.55	0.01
RIVER-1	Reach-3	7857	Q48hr	26.76	173.71	176.98	174.84	176.98	0.000001	0.04	1154.81	1423.96	0.01
RIVER-1	Reach-3	7750	Q2	4.00	173.90	175.82	174.21	175.82	0.000002	0.05	101.04	237.21	0.01
RIVER-1	Reach-3	7750	Q5	6.68	173.90	175.90	174.31	175.90	0.000006	0.08	123.44	332.97	0.02
RIVER-1	Reach-3	7750	Q25	10.66	173.90	176.04	174.43	176.04	0.000008	0.10	187.15	588.51	0.02
RIVER-1	Reach-3	7750	Q100	14.07	173.90	176.20	174.54	176.20	0.000006	0.10	299.68	874.73	0.02
RIVER-1	Reach-3	7750	Qreg	19.29	173.90	176.65	174.64	176.65	0.000001	0.05	820.70	1295.24	0.01
RIVER-1	Reach-3	7750	Q48hr	26.76	173.90	176.98	174.75	176.98	0.000001	0.04	1260.21	1428.79	0.01
RIVER-1	Reach-3	7395	Q2	4.00	173.93	175.82	174.19	175.82	0.000003	0.06	121.02	304.11	0.01
RIVER-1	Reach-3	7395	Q5	6.68	173.93	175.90	174.28	175.90	0.000005	0.08	148.11	401.38	0.02
RIVER-1	Reach-3	7395	Q25	10.66	173.93	176.04	174.40	176.04	0.000006	0.10	218.87	582.40	0.02
RIVER-1	Reach-3	7395	Q100	14.07	173.93	176.19	174.49	176.20	0.000005	0.09	325.36	887.07	0.02
RIVER-1	Reach-3	7395	Qreg	19.29	173.93	176.65	174.67	176.65	0.000001	0.04	896.32	1413.78	0.01
RIVER-1	Reach-3	7395	Q48hr	26.76	173.93	176.98	174.81	176.98	0.000000	0.04	1364.80	1497.68	0.01

HEC-RAS Plan: Baseline_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	7126	Q2	4.00	173.89	175.82	174.16	175.82	0.000001	0.04	153.54	239.07	0.01
RIVER-1	Reach-3	7126	Q5	6.68	173.89	175.90	174.25	175.90	0.000002	0.06	173.66	283.51	0.01
RIVER-1	Reach-3	7126	Q25	10.66	173.89	176.04	174.37	176.04	0.000004	0.07	221.76	434.55	0.02
RIVER-1	Reach-3	7126	Q100	14.07	173.89	176.19	174.47	176.19	0.000004	0.08	311.19	715.43	0.02
RIVER-1	Reach-3	7126	Qreg	19.29	173.89	176.65	174.53	176.65	0.000001	0.05	798.91	1287.80	0.01
RIVER-1	Reach-3	7126	Q48hr	26.76	173.89	176.98	174.66	176.98	0.000001	0.04	1270.04	1593.55	0.01
RIVER-1	Reach-3	6956	Q2	4.00	173.96	175.82	174.27	175.82	0.000002	0.05	117.22	256.21	0.01
RIVER-1	Reach-3	6956	Q5	6.68	173.96	175.90	174.38	175.90	0.000005	0.08	137.85	285.52	0.02
RIVER-1	Reach-3	6956	Q25	10.66	173.96	176.04	174.58	176.04	0.000007	0.10	185.71	416.60	0.02
RIVER-1	Reach-3	6956	Q100	14.07	173.96	176.19	174.66	176.19	0.000006	0.10	271.17	711.15	0.02
RIVER-1	Reach-3	6956	Qreg	19.29	173.96	176.65	174.72	176.65	0.000001	0.05	756.15	1324.53	0.01
RIVER-1	Reach-3	6956	Q48hr	26.76	173.96	176.98	174.78	176.98	0.000001	0.04	1225.52	1558.30	0.01
RIVER-1	Reach-3	6846	Q2	4.00	173.97	175.82	174.61	175.82	0.000010	0.07	82.57	259.03	0.02
RIVER-1	Reach-3	6846	Q5	6.68	173.97	175.90	174.73	175.90	0.000016	0.10	104.14	296.40	0.03
RIVER-1	Reach-3	6846	Q25	10.66	173.97	176.04	174.86	176.04	0.000016	0.11	150.14	366.03	0.03
RIVER-1	Reach-3	6846	Q100	14.07	173.97	176.19	174.95	176.19	0.000013	0.10	220.14	540.48	0.03
RIVER-1	Reach-3	6846	Qreg	19.29	173.97	176.65	175.07	176.65	0.000002	0.05	663.89	1291.79	0.01
RIVER-1	Reach-3	6846	Q48hr	26.76	173.97	176.98	175.40	176.98	0.000001	0.04	1134.26	1570.48	0.01
RIVER-1	Reach-3	6830		Culvert									
RIVER-1	Reach-3	6811	Q2	4.00	173.95	175.82	174.55	175.82	0.000008	0.06	91.12	278.77	0.02
RIVER-1	Reach-3	6811	Q5	6.68	173.95	175.90	174.66	175.90	0.000013	0.08	114.32	318.71	0.03
RIVER-1	Reach-3	6811	Q25	10.66	173.95	176.04	174.78	176.04	0.000014	0.10	165.24	400.01	0.03
RIVER-1	Reach-3	6811	Q100	14.07	173.95	176.19	174.86	176.19	0.000011	0.09	237.27	563.07	0.03
RIVER-1	Reach-3	6811	Qreg	19.29	173.95	176.65	174.97	176.65	0.000002	0.05	658.46	1276.78	0.01
RIVER-1	Reach-3	6811	Q48hr	26.76	173.95	176.98	175.11	176.98	0.000001	0.04	1118.63	1601.82	0.01
RIVER-1	Reach-3	6719	Q2	4.00	173.89	175.82	174.20	175.82	0.000001	0.04	151.87	246.06	0.01
RIVER-1	Reach-3	6719	Q5	6.68	173.89	175.90	174.29	175.90	0.000003	0.06	172.40	290.72	0.01
RIVER-1	Reach-3	6719	Q25	10.66	173.89	176.04	174.48	176.04	0.000004	0.08	219.61	378.00	0.02
RIVER-1	Reach-3	6719	Q100	14.07	173.89	176.19	174.53	176.19	0.000004	0.08	283.93	450.35	0.02
RIVER-1	Reach-3	6719	Qreg	19.29	173.89	176.65	174.57	176.65	0.000002	0.06	580.30	1023.83	0.01
RIVER-1	Reach-3	6719	Q48hr	26.76	173.89	176.98	174.63	176.98	0.000001	0.05	975.12	1433.77	0.01
RIVER-1	Reach-3	6081	Q2	4.00	173.53	175.82		175.82	0.000003	0.07	98.10	189.36	0.02
RIVER-1	Reach-3	6081	Q5	6.68	173.53	175.90		175.90	0.000007	0.10	113.11	202.05	0.02
RIVER-1	Reach-3	6081	Q25	10.66	173.53	176.04		176.04	0.000011	0.13	144.36	262.09	0.03
RIVER-1	Reach-3	6081	Q100	14.07	173.53	176.19		176.19	0.000011	0.14	192.58	359.47	0.03
RIVER-1	Reach-3	6081	Qreg	19.29	173.53	176.65		176.65	0.000003	0.08	443.49	797.21	0.02
RIVER-1	Reach-3	6081	Q48hr	26.76	173.53	176.98		176.98	0.000002	0.07	775.34	1319.41	0.01
RIVER-1	Reach-3	5744	Q2	4.00	173.55	175.81		175.82	0.000114	0.44	16.56	184.27	0.09
RIVER-1	Reach-3	5744	Q5	6.68	173.55	175.88		175.90	0.000200	0.59	26.13	221.23	0.13
RIVER-1	Reach-3	5744	Q25	10.66	173.55	176.03		176.04	0.000165	0.56	48.09	256.71	0.12
RIVER-1	Reach-3	5744	Q100	14.07	173.55	176.19		176.19	0.000103	0.46	78.11	329.62	0.09
RIVER-1	Reach-3	5744	Qreg	19.29	173.55	176.65		176.65	0.000017	0.21	211.55	657.52	0.04
RIVER-1	Reach-3	5744	Q48hr	26.76	173.55	176.98		176.98	0.000009	0.17	401.24	1052.55	0.03
RIVER-1	Reach-3	5696		Culvert									
RIVER-1	Reach-3	5648	Q2	3.56	173.72	175.74		175.74	0.000032	0.22	31.50	189.26	0.05
RIVER-1	Reach-3	5648	Q5	5.92	173.72	175.75		175.76	0.000082	0.35	32.84	190.89	0.08
RIVER-1	Reach-3	5648	Q25	10.67	173.72	175.78		175.79	0.000229	0.59	35.50	193.82	0.13
RIVER-1	Reach-3	5648	Q100	14.08	173.72	175.89		175.90	0.000243	0.64	47.48	208.22	0.14
RIVER-1	Reach-3	5648	Qreg	19.14	173.72	176.47		176.47	0.000025	0.24	198.57	675.91	0.05
RIVER-1	Reach-3	5648	Q48hr	27.19	173.72	176.81		176.81	0.000009	0.16	409.12	1070.99	0.03
RIVER-1	Reach-3	5335	Q2	3.56	173.66	175.74		175.74	0.000002	0.05	109.16	221.65	0.01
RIVER-1	Reach-3	5335	Q5	5.92	173.66	175.75		175.76	0.000006	0.07	112.17	225.03	0.02
RIVER-1	Reach-3	5335	Q25	10.67	173.66	175.78		175.78	0.000016	0.13	118.24	233.33	0.03
RIVER-1	Reach-3	5335	Q100	14.08	173.66	175.89		175.89	0.000018	0.14	147.45	275.33	0.04
RIVER-1	Reach-3	5335	Qreg	19.14	173.66	176.47		176.47	0.000004	0.08	370.17	611.30	0.02
RIVER-1	Reach-3	5335	Q48hr	27.19	173.66	176.81		176.81	0.000003	0.07	625.13	950.46	0.02
RIVER-1	Reach-3	5080	Q2	3.56	173.70	175.74		175.74	0.000001	0.03	177.76	220.92	0.01
RIVER-1	Reach-3	5080	Q5	5.92	173.70	175.75		175.75	0.000002	0.05	180.72	222.89	0.01
RIVER-1	Reach-3	5080	Q25	10.67	173.70	175.78		175.78	0.000005	0.08	186.62	227.08	0.02
RIVER-1	Reach-3	5080	Q100	14.08	173.70	175.89		175.89	0.000005	0.09	214.37	282.18	0.02
RIVER-1	Reach-3	5080	Qreg	19.14	173.70	176.47		176.47	0.000002	0.06	545.09	910.35	0.01
RIVER-1	Reach-3	5080	Q48hr	27.19	173.70	176.81		176.81	0.000001	0.05	982.51	1641.84	0.01
RIVER-1	Reach-3	4910	Q2	3.56	173.72	175.74		175.74	0.000001	0.03	207.36	474.66	0.01
RIVER-1	Reach-3	4910	Q5	5.92	173.72	175.75		175.75	0.000002	0.05	213.78	495.79	0.01
RIVER-1	Reach-3	4910	Q25	10.67	173.72	175.78		175.78	0.000006	0.09	227.29	544.84	0.02
RIVER-1	Reach-3	4910	Q100	14.08	173.72	175.89		175.89	0.000006	0.09	303.25	790.10	0.02
RIVER-1	Reach-3	4910	Qreg	19.14	173.72	176.47		176.47	0.000001	0.04	1051.59	1632.63	0.01
RIVER-1	Reach-3	4910	Q48hr	27.19	173.72	176.81		176.81	0.000000	0.03	1641.84	1841.49	0.01
RIVER-1	Reach-3	4720	Q2	3.56	173.73	175.74	174.41	175.74	0.000001	0.02	265.45	910.77	0.01
RIVER-1	Reach-3	4720	Q5	5.92	173.73	175.75	174.62	175.75	0.000003	0.04	277.50	926.86	0.01

HEC-RAS Plan: Baseline_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	4720	Q25	10.67	173.73	175.78	175.23	175.78	0.000007	0.06	301.58	961.77	0.02
RIVER-1	Reach-3	4720	Q100	14.08	173.73	175.89	175.25	175.89	0.000005	0.06	416.87	1114.61	0.02
RIVER-1	Reach-3	4720	Qreg	19.14	173.73	176.47	175.27	176.47	0.000001	0.02	1208.25	1533.93	0.01
RIVER-1	Reach-3	4720	Q48hr	27.19	173.73	176.81	175.30	176.81	0.000000	0.02	1748.79	1643.79	0.01
RIVER-1	Reach-3	4702.5		Culvert									
RIVER-1	Reach-3	4686	Q2	3.56	173.56	175.74		175.74	0.000001	0.02	337.66	1051.19	0.01
RIVER-1	Reach-3	4686	Q5	5.92	173.56	175.75		175.75	0.000002	0.03	351.49	1070.82	0.01
RIVER-1	Reach-3	4686	Q25	10.67	173.56	175.78		175.78	0.000004	0.04	379.27	1108.88	0.02
RIVER-1	Reach-3	4686	Q100	14.08	173.56	175.89		175.89	0.000003	0.04	509.43	1200.34	0.01
RIVER-1	Reach-3	4686	Qreg	19.14	173.56	176.47		176.47	0.000000	0.02	1315.15	1561.54	0.01
RIVER-1	Reach-3	4686	Q48hr	27.19	173.56	176.81		176.81	0.000000	0.02	1863.64	1660.21	0.00
RIVER-1	Reach-3	4489	Q2	3.56	173.77	175.74		175.74	0.000000	0.01	484.73	994.18	0.00
RIVER-1	Reach-3	4489	Q5	5.92	173.77	175.75		175.75	0.000000	0.02	497.70	1000.78	0.01
RIVER-1	Reach-3	4489	Q25	10.67	173.77	175.78		175.78	0.000001	0.03	523.23	1012.64	0.01
RIVER-1	Reach-3	4489	Q100	14.08	173.77	175.89		175.89	0.000001	0.03	640.32	1076.24	0.01
RIVER-1	Reach-3	4489	Qreg	19.14	173.77	176.47		176.47	0.000000	0.02	1349.88	1351.43	0.00
RIVER-1	Reach-3	4489	Q48hr	27.19	173.77	176.81		176.81	0.000000	0.02	1834.27	1466.02	0.00
RIVER-1	Reach-3	4334	Q2	3.56	173.92	175.74		175.74	0.000000	0.01	487.15	959.41	0.00
RIVER-1	Reach-3	4334	Q5	5.92	173.92	175.75		175.75	0.000000	0.02	499.66	968.18	0.00
RIVER-1	Reach-3	4334	Q25	10.67	173.92	175.78		175.78	0.000001	0.03	524.39	984.82	0.01
RIVER-1	Reach-3	4334	Q100	14.08	173.92	175.89		175.89	0.000001	0.03	640.10	1085.04	0.01
RIVER-1	Reach-3	4334	Qreg	19.14	173.92	176.47		176.47	0.000000	0.02	1370.88	1322.04	0.00
RIVER-1	Reach-3	4334	Q48hr	27.19	173.92	176.81		176.81	0.000000	0.02	1819.91	1325.75	0.00
RIVER-1	Reach-4	4079	Q2	3.74	173.70	175.74		175.74	0.000001	0.03	268.06	674.01	0.01
RIVER-1	Reach-4	4079	Q5	6.42	173.70	175.75		175.75	0.000001	0.04	276.90	691.27	0.01
RIVER-1	Reach-4	4079	Q25	11.14	173.70	175.78		175.78	0.000004	0.07	294.65	714.04	0.02
RIVER-1	Reach-4	4079	Q100	14.84	173.70	175.89		175.89	0.000004	0.07	381.78	842.00	0.02
RIVER-1	Reach-4	4079	Qreg	28.85	173.70	176.47		176.47	0.000001	0.05	982.52	1137.02	0.01
RIVER-1	Reach-4	4079	Q48hr	42.75	173.70	176.81		176.81	0.000001	0.05	1369.40	1141.45	0.01
RIVER-1	Reach-4	3829	Q2	3.74	173.70	175.74	174.18	175.74	0.000000	0.02	280.00	552.53	0.01
RIVER-1	Reach-4	3829	Q5	6.42	173.70	175.75	174.30	175.75	0.000001	0.04	287.23	574.33	0.01
RIVER-1	Reach-4	3829	Q25	11.14	173.70	175.78	174.49	175.78	0.000003	0.06	302.02	603.49	0.01
RIVER-1	Reach-4	3829	Q100	14.84	173.70	175.89	174.60	175.89	0.000003	0.07	376.38	725.24	0.02
RIVER-1	Reach-4	3829	Qreg	28.85	173.70	176.47	174.76	176.47	0.000001	0.05	939.59	1091.55	0.01
RIVER-1	Reach-4	3829	Q48hr	42.75	173.70	176.81	174.83	176.81	0.000001	0.05	1318.67	1149.66	0.01
RIVER-1	Reach-4	3520	Q2	3.74	173.71	175.74	174.18	175.74	0.000002	0.03	307.05	658.77	0.01
RIVER-1	Reach-4	3520	Q5	6.42	173.71	175.75	174.30	175.75	0.000006	0.05	315.55	670.75	0.01
RIVER-1	Reach-4	3520	Q25	11.14	173.71	175.78	174.40	175.78	0.000017	0.08	332.46	696.69	0.02
RIVER-1	Reach-4	3520	Q100	14.84	173.71	175.89	174.43	175.89	0.000020	0.09	415.36	770.23	0.02
RIVER-1	Reach-4	3520	Qreg	28.85	173.71	176.47	174.55	176.47	0.000009	0.08	939.13	991.28	0.02
RIVER-1	Reach-4	3520	Q48hr	42.75	173.71	176.81	174.64	176.81	0.000008	0.08	1288.17	1062.14	0.01
RIVER-1	Reach-4	3215	Q2	3.74	173.69	175.74	174.14	175.74	0.000001	0.02	474.81	857.12	0.00
RIVER-1	Reach-4	3215	Q5	6.42	173.69	175.75	174.23	175.75	0.000003	0.04	485.54	860.60	0.01
RIVER-1	Reach-4	3215	Q25	11.14	173.69	175.78	174.38	175.78	0.000008	0.06	506.22	861.95	0.01
RIVER-1	Reach-4	3215	Q100	14.84	173.69	175.89	174.48	175.89	0.000008	0.06	603.28	870.83	0.01
RIVER-1	Reach-4	3215	Qreg	28.85	173.69	176.47	174.66	176.47	0.000005	0.06	1130.23	940.75	0.01
RIVER-1	Reach-4	3215	Q48hr	42.75	173.69	176.81	174.75	176.81	0.000005	0.06	1454.47	968.65	0.01
RIVER-1	Reach-4	2884	Q2	3.74	173.66	175.74	174.12	175.74	0.000002	0.03	326.03	647.90	0.01
RIVER-1	Reach-4	2884	Q5	6.42	173.66	175.75	174.20	175.75	0.000005	0.05	333.98	653.90	0.01
RIVER-1	Reach-4	2884	Q25	11.14	173.66	175.78	174.28	175.78	0.000014	0.08	349.26	660.10	0.02
RIVER-1	Reach-4	2884	Q100	14.84	173.66	175.89	174.32	175.89	0.000017	0.09	425.98	700.84	0.02
RIVER-1	Reach-4	2884	Qreg	28.85	173.66	176.47	174.49	176.47	0.000009	0.08	848.84	769.84	0.02
RIVER-1	Reach-4	2884	Q48hr	42.75	173.66	176.81	174.59	176.81	0.000008	0.08	1125.13	884.16	0.02
RIVER-1	Reach-4	2287	Q2	3.74	173.63	175.74		175.74	0.000001	0.02	475.61	650.54	0.00
RIVER-1	Reach-4	2287	Q5	6.42	173.63	175.75		175.75	0.000002	0.03	483.31	657.16	0.01
RIVER-1	Reach-4	2287	Q25	11.14	173.63	175.77		175.77	0.000006	0.05	498.03	667.97	0.01
RIVER-1	Reach-4	2287	Q100	14.84	173.63	175.89		175.89	0.000008	0.06	574.14	699.02	0.01
RIVER-1	Reach-4	2287	Qreg	28.85	173.63	176.47		176.47	0.000005	0.06	996.48	763.80	0.01
RIVER-1	Reach-4	2287	Q48hr	42.75	173.63	176.81		176.81	0.000006	0.06	1260.25	786.75	0.01
RIVER-1	Reach-4	1955	Q2	3.76	173.60	175.74		175.74	0.000001	0.02	444.78	612.38	0.00
RIVER-1	Reach-4	1955	Q5	6.44	173.60	175.75		175.75	0.000003	0.03	451.92	613.26	0.01
RIVER-1	Reach-4	1955	Q25	11.16	173.60	175.77		175.77	0.000007	0.05	465.36	614.56	0.01
RIVER-1	Reach-4	1955	Q100	14.87	173.60	175.89		175.89	0.000009	0.06	534.24	620.85	0.01
RIVER-1	Reach-4	1955	Qreg	31.39	173.60	176.47		176.47	0.000008	0.07	914.91	712.43	0.01
RIVER-1	Reach-4	1955	Q48hr	46.33	173.60	176.81		176.81	0.000008	0.08	1169.69	802.35	0.02
RIVER-1	Reach-4	1602	Q2	3.76	173.19	175.74		175.74	0.000004	0.05	184.57	257.96	0.01
RIVER-1	Reach-4	1602	Q5	6.44	173.19	175.75		175.75	0.000012	0.08	187.41	259.88	0.02
RIVER-1	Reach-4	1602	Q25	11.16	173.19	175.77		175.77	0.000035	0.13	192.66	262.36	0.03
RIVER-1	Reach-4	1602	Q100	14.87	173.19	175.88		175.88	0.000042	0.15	222.53	275.47	0.03
RIVER-1	Reach-4	1602	Qreg	31.39	173.19	176.46		176.47	0.000038	0.17	435.59	460.60	0.03
RIVER-1	Reach-4	1602	Q48hr	46.33	173.19	176.80		176.80	0.000036	0.18	622.57	594.20	0.03

HEC-RAS Plan: Baseline_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	1586	Q2	3.76	173.13	175.90	173.87	175.92	0.000648	0.72	5.25	13.36	0.14
RIVER-1	Reach-4	1586	Q5	6.44	173.13	176.21	174.19	176.27	0.001329	1.10	5.85	19.61	0.20
RIVER-1	Reach-4	1586	Q25	11.16	173.13	177.22	174.66	177.33	0.001550	1.44	7.76	494.00	0.23
RIVER-1	Reach-4	1586	Q100	14.87	173.13	177.28	174.98	177.46	0.002618	1.89	7.88	494.30	0.30
RIVER-1	Reach-4	1586	Qreg	31.39	173.13	177.87	177.57	177.87	0.000532	0.35	220.24	494.30	0.10
RIVER-1	Reach-4	1586	Q48hr	46.33	173.13	177.65	177.60	177.68	0.008306	1.22	114.43	494.30	0.38
RIVER-1	Reach-4	1550		Culvert									
RIVER-1	Reach-4	1514	Q2	3.76	173.32	175.73		175.76	0.000258	0.82	4.57	106.11	0.17
RIVER-1	Reach-4	1514	Q5	6.44	173.32	175.70		175.81	0.000784	1.43	4.52	104.84	0.30
RIVER-1	Reach-4	1514	Q25	11.16	173.32	175.61		175.95	0.002683	2.57	4.35	98.81	0.54
RIVER-1	Reach-4	1514	Q100	14.87	173.32	175.44		176.14	0.006160	3.70	4.02	85.96	0.81
RIVER-1	Reach-4	1514	Qreg	31.39	173.32	176.34	176.34	177.87	0.008397	5.47	5.74	232.24	1.00
RIVER-1	Reach-4	1514	Q48hr	46.33	173.32	177.64	177.64	177.68	0.002697	1.50	100.78	465.20	0.44
RIVER-1	Reach-4	1336	Q2	3.76	173.33	175.75		175.75	0.000001	0.04	212.45	254.05	0.01
RIVER-1	Reach-4	1336	Q5	6.44	173.33	175.78		175.78	0.000002	0.06	218.30	256.66	0.01
RIVER-1	Reach-4	1336	Q25	11.16	173.33	175.85		175.85	0.000005	0.10	236.70	269.00	0.02
RIVER-1	Reach-4	1336	Q100	14.87	173.33	175.93		175.93	0.000007	0.12	258.84	275.49	0.03
RIVER-1	Reach-4	1336	Qreg	31.39	173.33	177.16	174.67	177.16	0.000002	0.09	697.06	401.80	0.02
RIVER-1	Reach-4	1336	Q48hr	46.33	173.33	177.36	174.76	177.36	0.000003	0.12	779.58	401.80	0.02
RIVER-1	Reach-4	1282	Q2	3.76	173.36	175.75	173.85	175.75	0.000039	0.30	12.41	106.63	0.06
RIVER-1	Reach-4	1282	Q5	6.44	173.36	175.76	174.01	175.77	0.000113	0.52	12.48	106.78	0.11
RIVER-1	Reach-4	1282	Q25	11.16	173.36	175.80	174.24	175.84	0.000319	0.88	12.71	107.27	0.18
RIVER-1	Reach-4	1282	Q100	14.87	173.36	175.85	174.39	175.92	0.000526	1.14	12.99	107.92	0.24
RIVER-1	Reach-4	1282	Qreg	31.39	173.36	177.01	174.98	177.14	0.000620	1.62	19.36	277.43	0.28
RIVER-1	Reach-4	1282	Q48hr	46.33	173.36	177.05	175.42	177.34	0.001303	2.37	19.57	283.52	0.40
RIVER-1	Reach-4	1229		Culvert									
RIVER-1	Reach-4	1176	Q2	3.76	173.32	175.74		175.74	0.000037	0.30	12.61	224.99	0.06
RIVER-1	Reach-4	1176	Q5	6.44	173.32	175.74		175.75	0.000109	0.51	12.59	224.78	0.11
RIVER-1	Reach-4	1176	Q25	11.16	173.32	175.73		175.77	0.000331	0.89	12.56	224.22	0.19
RIVER-1	Reach-4	1176	Q100	14.87	173.32	175.72		175.80	0.000594	1.19	12.52	223.59	0.25
RIVER-1	Reach-4	1176	Qreg	31.39	173.32	176.27		176.48	0.001294	2.02	15.52	261.69	0.38
RIVER-1	Reach-4	1176	Q48hr	46.33	173.32	175.44	175.37	176.35	0.008964	4.22	10.97	204.05	0.95
RIVER-1	Reach-4	1003	Q2	3.76	173.39	175.74		175.74	0.000000	0.01	563.47	680.14	0.00
RIVER-1	Reach-4	1003	Q5	6.44	173.39	175.74		175.74	0.000000	0.01	564.80	681.08	0.00
RIVER-1	Reach-4	1003	Q25	11.16	173.39	175.75		175.75	0.000001	0.02	569.63	684.40	0.01
RIVER-1	Reach-4	1003	Q100	14.87	173.39	175.76		175.76	0.000001	0.03	575.77	686.76	0.01
RIVER-1	Reach-4	1003	Qreg	31.39	173.39	176.37		176.37	0.000001	0.03	1012.77	724.70	0.01
RIVER-1	Reach-4	1003	Q48hr	46.33	173.39	175.89		175.89	0.000006	0.08	668.90	702.66	0.02
RIVER-1	Reach-4	946	Q2	3.76	173.40	175.74		175.74	0.000000	0.01	613.13	603.35	0.00
RIVER-1	Reach-4	946	Q5	6.44	173.40	175.74		175.74	0.000000	0.02	614.31	603.41	0.00
RIVER-1	Reach-4	946	Q25	11.16	173.40	175.75		175.75	0.000000	0.03	618.57	603.60	0.01
RIVER-1	Reach-4	946	Q100	14.87	173.40	175.76		175.76	0.000001	0.04	623.97	603.88	0.01
RIVER-1	Reach-4	946	Qreg	31.39	173.40	176.37		176.37	0.000001	0.05	995.25	606.65	0.01
RIVER-1	Reach-4	946	Q48hr	46.33	173.40	175.89		175.89	0.000005	0.11	704.62	604.65	0.02
RIVER-1	Reach-4	884	Q2	3.76	173.40	175.74		175.74	0.000000	0.01	546.67	492.39	0.00
RIVER-1	Reach-4	884	Q5	6.44	173.40	175.74		175.74	0.000000	0.03	547.62	492.44	0.01
RIVER-1	Reach-4	884	Q25	11.16	173.40	175.75		175.75	0.000001	0.04	551.08	492.63	0.01
RIVER-1	Reach-4	884	Q100	14.87	173.40	175.76		175.76	0.000001	0.06	555.49	493.14	0.01
RIVER-1	Reach-4	884	Qreg	31.39	173.40	176.37		176.37	0.000002	0.07	860.09	498.39	0.01
RIVER-1	Reach-4	884	Q48hr	46.33	173.40	175.89		175.89	0.000010	0.15	621.32	495.38	0.03
RIVER-1	Reach-4	685	Q2	3.76	173.42	175.74		175.74	0.000000	0.02	427.17	372.05	0.00
RIVER-1	Reach-4	685	Q5	6.44	173.42	175.74		175.74	0.000000	0.03	427.88	372.09	0.01
RIVER-1	Reach-4	685	Q25	11.16	173.42	175.75		175.75	0.000001	0.05	430.48	372.25	0.01
RIVER-1	Reach-4	685	Q100	14.87	173.42	175.76		175.76	0.000002	0.06	433.77	372.44	0.01
RIVER-1	Reach-4	685	Qreg	31.39	173.42	176.37		176.37	0.000002	0.08	671.94	407.14	0.02
RIVER-1	Reach-4	685	Q48hr	46.33	173.42	175.89		175.89	0.000015	0.18	483.18	375.74	0.04
RIVER-1	Reach-4	522	Q2	3.76	173.44	175.74	174.16	175.74	0.000104	0.22	47.97	370.41	0.09
RIVER-1	Reach-4	522	Q5	6.44	173.44	175.74	174.36	175.74	0.000312	0.38	47.58	370.41	0.15
RIVER-1	Reach-4	522	Q25	11.16	173.44	175.74	174.66	175.75	0.000983	0.68	46.58	370.39	0.26
RIVER-1	Reach-4	522	Q100	14.87	173.44	175.73	174.86	175.76	0.001897	0.93	44.84	370.37	0.37
RIVER-1	Reach-4	522	Qreg	31.39	173.44	176.37	175.74	176.37	0.000041	0.22	282.77	372.71	0.06
RIVER-1	Reach-4	522	Q48hr	46.33	173.44	175.85	175.78	175.89	0.003158	1.35	89.58	371.05	0.49
RIVER-1	Reach-4	499		Culvert									
RIVER-1	Reach-4	476	Q2	3.76	173.22	175.74		175.74	0.000085	0.23	48.06	364.93	0.08
RIVER-1	Reach-4	476	Q5	6.44	173.22	175.74		175.74	0.000255	0.40	47.56	364.90	0.14
RIVER-1	Reach-4	476	Q25	11.16	173.22	175.73		175.75	0.000815	0.71	46.04	364.80	0.25
RIVER-1	Reach-4	476	Q100	14.87	173.22	175.73		175.76	0.001609	0.99	43.58	364.68	0.35
RIVER-1	Reach-4	476	Qreg	31.39	173.22	175.39	175.39	176.37	0.010720	4.38	7.17	324.49	1.01
RIVER-1	Reach-4	476	Q48hr	46.33	173.22	175.80	175.80	175.89	0.005617	1.95	69.37	366.31	0.66

HEC-RAS Plan: Baseline_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	256	Q2	3.64	173.43	175.74	173.92	175.74	0.000000	0.02	385.75	339.31	0.00
RIVER-1	Reach-4	256	Q5	6.19	173.43	175.74	174.12	175.74	0.000000	0.03	385.76	339.31	0.01
RIVER-1	Reach-4	256	Q25	10.20	173.43	175.74	174.24	175.74	0.000001	0.05	385.80	339.31	0.01
RIVER-1	Reach-4	256	Q100	14.39	173.43	175.74	174.33	175.74	0.000002	0.06	385.84	339.31	0.02
RIVER-1	Reach-4	256	Qreg	32.35	173.43	175.74	174.48	175.74	0.000012	0.14	386.26	339.32	0.03
RIVER-1	Reach-4	256	Q48hr	47.42	173.43	175.74	174.55	175.74	0.000026	0.21	386.86	339.34	0.05
RIVER-1	Reach-4	1	Q2	3.64	173.97	175.74	174.17	175.74	0.000000	0.02	299.73	301.28	0.01
RIVER-1	Reach-4	1	Q5	6.19	173.97	175.74	174.23	175.74	0.000001	0.04	299.73	301.28	0.01
RIVER-1	Reach-4	1	Q25	10.20	173.97	175.74	174.32	175.74	0.000002	0.06	299.73	301.28	0.02
RIVER-1	Reach-4	1	Q100	14.39	173.97	175.74	174.39	175.74	0.000005	0.09	299.73	301.28	0.02
RIVER-1	Reach-4	1	Qreg	32.35	173.97	175.74	174.58	175.74	0.000023	0.19	299.73	301.28	0.05
RIVER-1	Reach-4	1	Q48hr	47.42	173.97	175.74	174.65	175.74	0.000049	0.28	299.73	301.28	0.07

HEC-RAS Model Output:

Fringe6 Conditions

Simulation Results for 174.5 m Boundary Condition

HEC-RAS Plan: Fringe6_BC_174.50

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-5	Reach-1	3365	Q2	0.30	175.82	176.58	176.04	176.58	0.000284	0.16	1.83	3.79	0.07
RIVER-5	Reach-1	3365	Q5	0.67	175.82	176.88	176.15	176.89	0.000282	0.20	5.77	62.84	0.08
RIVER-5	Reach-1	3365	Q25	1.26	175.82	177.09	176.27	177.09	0.000060	0.10	45.88	362.63	0.04
RIVER-5	Reach-1	3365	Q100	1.80	175.82	177.21	176.35	177.21	0.000020	0.06	98.54	487.95	0.02
RIVER-5	Reach-1	3365	Qreg	3.95	175.82	177.47	176.58	177.47	0.000008	0.05	247.89	645.05	0.01
RIVER-5	Reach-1	3365	Q48hr	6.04	175.82	177.76	176.96	177.76	0.000003	0.04	457.09	748.61	0.01
RIVER-5	Reach-1	2275	Q2	0.30	175.75	176.48	175.95	176.48	0.000313	0.17	1.71	3.42	0.08
RIVER-5	Reach-1	2275	Q5	0.67	175.75	176.77	176.05	176.77	0.000427	0.24	2.79	4.17	0.09
RIVER-5	Reach-1	2275	Q25	1.26	175.75	177.04	176.16	177.04	0.000558	0.31	4.49	18.23	0.11
RIVER-5	Reach-1	2275	Q100	1.80	175.75	177.19	176.25	177.19	0.000384	0.28	16.31	142.13	0.09
RIVER-5	Reach-1	2275	Qreg	3.95	175.75	177.47	176.49	177.47	0.000090	0.16	93.53	466.31	0.05
RIVER-5	Reach-1	2275	Q48hr	6.04	175.75	177.76	176.68	177.76	0.000014	0.08	267.35	644.93	0.02
RIVER-5	Reach-1	1732	Q2	0.30	175.82	176.36		176.37	0.002562	0.43	0.69	4.05	0.20
RIVER-5	Reach-1	1732	Q5	0.67	175.82	176.59		176.62	0.003386	0.64	1.05	5.24	0.25
RIVER-5	Reach-1	1732	Q25	1.26	175.82	176.78		176.83	0.005413	0.95	1.32	6.17	0.32
RIVER-5	Reach-1	1732	Q100	1.80	175.82	176.96		177.02	0.005954	1.13	1.59	7.12	0.35
RIVER-5	Reach-1	1732	Qreg	3.95	175.82	177.17		177.39	0.015498	2.06	1.92	37.75	0.58
RIVER-5	Reach-1	1732	Q48hr	6.04	175.82	177.27		177.71	0.028589	2.94	2.06	54.61	0.80
RIVER-5	Reach-1	1690.5		Culvert									
RIVER-5	Reach-1	1649	Q2	0.30	175.88	176.57	176.15	176.58	0.001160	0.34	0.87	6.31	0.14
RIVER-5	Reach-1	1649	Q5	0.67	175.88	176.84	176.27	176.86	0.001711	0.53	1.27	7.76	0.18
RIVER-5	Reach-1	1649	Q25	1.26	175.88	177.07	176.41	177.10	0.002711	0.78	1.62	82.39	0.24
RIVER-5	Reach-1	1649	Q100	1.80	175.88	177.19	176.52	177.24	0.003905	1.00	1.80	192.50	0.29
RIVER-5	Reach-1	1649	Qreg	3.95	175.88	177.45	176.88	177.62	0.009758	1.81	2.19	330.80	0.48
RIVER-5	Reach-1	1649	Q48hr	6.04	175.88	177.53	177.17	177.88	0.018901	2.61	2.31	344.69	0.67
RIVER-5	Reach-1	1233	Q2	0.30	175.85	176.33		176.34	0.003486	0.35	0.85	2.94	0.21
RIVER-5	Reach-1	1233	Q5	0.67	175.85	176.66		176.66	0.001312	0.30	2.34	7.07	0.14
RIVER-5	Reach-1	1233	Q25	1.26	175.85	176.94		176.95	0.000602	0.24	5.26	14.91	0.10
RIVER-5	Reach-1	1233	Q100	1.80	175.85	177.07		177.08	0.000510	0.24	8.99	64.66	0.09
RIVER-5	Reach-1	1233	Qreg	3.95	175.85	177.53		177.53	0.000010	0.04	104.22	337.43	0.01
RIVER-5	Reach-1	1233	Q48hr	6.04	175.85	177.70		177.70	0.000006	0.03	168.83	384.17	0.01
RIVER-5	Reach-1	673	Q2	0.30	175.45	176.27		176.27	0.000144	0.10	2.81	5.40	0.05
RIVER-5	Reach-1	673	Q5	0.67	175.45	176.60		176.60	0.000164	0.14	4.71	6.11	0.05
RIVER-5	Reach-1	673	Q25	1.26	175.45	176.88		176.88	0.000254	0.19	6.58	7.65	0.07
RIVER-5	Reach-1	673	Q100	1.80	175.45	176.99		176.99	0.000446	0.24	7.58	9.95	0.09
RIVER-5	Reach-1	673	Qreg	3.95	175.45	177.52		177.53	0.000026	0.08	67.10	247.86	0.02
RIVER-5	Reach-1	673	Q48hr	6.04	175.45	177.70		177.70	0.000014	0.06	118.92	326.56	0.02
RIVER-4	Reach-1	5305	Q2	0.26	175.17	176.19	175.34	176.19	0.000061	0.07	4.28	8.79	0.03
RIVER-4	Reach-1	5305	Q5	0.72	175.17	176.53	175.46	176.53	0.000101	0.11	8.91	18.74	0.04
RIVER-4	Reach-1	5305	Q25	1.51	175.17	176.80	175.61	176.80	0.000120	0.13	24.26	152.82	0.04
RIVER-4	Reach-1	5305	Q100	2.63	175.17	176.97	175.76	176.97	0.000071	0.10	64.04	270.36	0.03
RIVER-4	Reach-1	5305	Qreg	6.51	175.17	177.53	176.07	177.53	0.000010	0.05	278.33	558.56	0.01
RIVER-4	Reach-1	5305	Q48hr	9.62	175.17	177.70	176.23	177.70	0.000009	0.05	386.42	664.12	0.01
RIVER-4	Reach-1	4959	Q2	0.26	175.06	176.19		176.19	0.000031	0.05	5.97	11.58	0.02
RIVER-4	Reach-1	4959	Q5	0.72	175.06	176.53		176.53	0.000063	0.09	10.99	20.15	0.03
RIVER-4	Reach-1	4959	Q25	1.51	175.06	176.79		176.79	0.000075	0.10	28.73	170.60	0.03
RIVER-4	Reach-1	4959	Q100	2.63	175.06	176.97		176.97	0.000050	0.09	69.66	288.67	0.03
RIVER-4	Reach-1	4959	Qreg	6.51	175.06	177.53		177.53	0.000007	0.04	368.51	788.22	0.01
RIVER-4	Reach-1	4959	Q48hr	9.62	175.06	177.70		177.70	0.000006	0.04	520.38	928.90	0.01
RIVER-4	Reach-1	4536	Q2	0.31	175.31	176.18		176.18	0.000173	0.10	3.80	8.55	0.04
RIVER-4	Reach-1	4536	Q5	0.84	175.31	176.51		176.51	0.000228	0.13	7.38	14.11	0.05
RIVER-4	Reach-1	4536	Q25	1.81	175.31	176.78		176.78	0.000216	0.15	27.04	243.63	0.05
RIVER-4	Reach-1	4536	Q100	3.16	175.31	176.96		176.96	0.000066	0.09	89.49	412.53	0.03
RIVER-4	Reach-1	4536	Qreg	8.04	175.31	177.52		177.52	0.000006	0.03	444.74	903.77	0.01
RIVER-4	Reach-1	4536	Q48hr	11.95	175.31	177.70		177.70	0.000006	0.03	617.94	1009.52	0.01
RIVER-4	Reach-2	3842	Q2	0.59	175.54	175.98		175.99	0.006476	0.49	1.21	4.19	0.29
RIVER-4	Reach-2	3842	Q5	1.48	175.54	176.31		176.33	0.003357	0.53	2.90	7.84	0.23
RIVER-4	Reach-2	3842	Q25	2.97	175.54	176.66		176.66	0.001067	0.37	9.38	40.30	0.13
RIVER-4	Reach-2	3842	Q100	4.77	175.54	176.94		176.94	0.000098	0.13	52.33	325.38	0.04
RIVER-4	Reach-2	3842	Qreg	11.60	175.54	177.52		177.52	0.000003	0.03	427.60	892.46	0.01
RIVER-4	Reach-2	3842	Q48hr	17.29	175.54	177.70		177.70	0.000003	0.03	591.59	951.01	0.01
RIVER-4	Reach-2	3440	Q2	0.59	174.86	175.79		175.80	0.000696	0.24	2.43	4.21	0.10
RIVER-4	Reach-2	3440	Q5	1.48	174.86	176.18		176.18	0.000613	0.28	5.62	12.35	0.10
RIVER-4	Reach-2	3440	Q25	2.97	174.86	176.61		176.61	0.000306	0.24	11.81	17.62	0.07
RIVER-4	Reach-2	3440	Q100	4.77	174.86	176.93		176.93	0.000138	0.18	34.22	185.76	0.05
RIVER-4	Reach-2	3440	Qreg	11.60	174.86	177.52		177.52	0.000004	0.04	352.06	731.18	0.01
RIVER-4	Reach-2	3440	Q48hr	17.29	174.86	177.70		177.70	0.000004	0.04	486.74	785.19	0.01
RIVER-4	Reach-2	3128	Q2	0.59	174.79	175.74		175.74	0.000438	0.20	2.94	4.88	0.08
RIVER-4	Reach-2	3128	Q5	1.48	174.79	176.12		176.12	0.000628	0.29	5.01	6.05	0.10
RIVER-4	Reach-2	3128	Q25	2.97	174.79	176.56		176.57	0.000722	0.37	7.94	7.33	0.11
RIVER-4	Reach-2	3128	Q100	4.77	174.79	176.90		176.90	0.000823	0.44	11.86	41.01	0.13

HEC-RAS Plan: Fringe6_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-4	Reach-2	3128	Qreg	11.60	174.79	177.52		177.52	0.000006	0.05	331.63	873.61	0.01
RIVER-4	Reach-2	3128	Q48hr	17.29	174.79	177.70		177.70	0.000005	0.04	494.72	955.35	0.01
RIVER-4	Reach-2	2805	Q2	0.59	174.82	175.68		175.69	0.000767	0.20	2.89	7.22	0.10
RIVER-4	Reach-2	2805	Q5	1.48	174.82	176.06		176.07	0.000569	0.26	5.76	7.88	0.10
RIVER-4	Reach-2	2805	Q25	2.97	174.82	176.50		176.51	0.000490	0.30	10.35	17.94	0.09
RIVER-4	Reach-2	2805	Q100	4.77	174.82	176.85		176.85	0.000338	0.29	17.69	23.79	0.08
RIVER-4	Reach-2	2805	Qreg	11.60	174.82	177.52		177.52	0.000017	0.08	204.71	526.74	0.02
RIVER-4	Reach-2	2805	Q48hr	17.29	174.82	177.70		177.70	0.000012	0.07	304.58	589.64	0.02
RIVER-4	Reach-2	1709	Q2	0.59	174.55	175.33		175.33	0.001567	0.34	1.73	3.13	0.15
RIVER-4	Reach-2	1709	Q5	1.48	174.55	175.73		175.75	0.001885	0.47	3.11	3.63	0.16
RIVER-4	Reach-2	1709	Q25	2.97	174.55	176.19		176.20	0.002250	0.61	4.87	4.21	0.18
RIVER-4	Reach-2	1709	Q100	4.77	174.55	176.58		176.61	0.002574	0.72	6.66	4.89	0.20
RIVER-4	Reach-2	1709	Qreg	11.60	174.55	177.50		177.51	0.000351	0.32	50.20	160.46	0.08
RIVER-4	Reach-2	1709	Q48hr	17.29	174.55	177.69		177.69	0.000209	0.26	89.64	270.41	0.06
RIVER-4	Reach-2	1139	Q2	0.64	174.23	175.15		175.15	0.000752	0.26	2.47	4.11	0.11
RIVER-4	Reach-2	1139	Q5	1.58	174.23	175.47		175.48	0.001279	0.40	3.92	4.85	0.14
RIVER-4	Reach-2	1139	Q25	3.16	174.23	175.86		175.87	0.001632	0.53	6.00	5.89	0.17
RIVER-4	Reach-2	1139	Q100	5.03	174.23	176.23		176.25	0.001722	0.60	8.35	6.91	0.17
RIVER-4	Reach-2	1139	Qreg	12.35	174.23	177.40		177.41	0.000906	0.57	28.69	118.56	0.14
RIVER-4	Reach-2	1139	Q48hr	18.42	174.23	177.64		177.64	0.000392	0.41	73.52	258.65	0.09
RIVER-4	Reach-2	1021	Q2	0.64	174.45	175.10	174.72	175.11	0.001415	0.43	1.49	4.82	0.18
RIVER-4	Reach-2	1021	Q5	1.58	174.45	175.40	174.87	175.42	0.002215	0.70	2.24	5.36	0.24
RIVER-4	Reach-2	1021	Q25	3.16	174.45	175.74	175.06	175.80	0.002842	1.00	3.15	6.03	0.29
RIVER-4	Reach-2	1021	Q100	5.03	174.45	176.08	175.26	176.16	0.003205	1.25	4.02	39.18	0.32
RIVER-4	Reach-2	1021	Qreg	12.35	174.45	177.17	175.85	177.33	0.003258	1.80	6.95	156.98	0.35
RIVER-4	Reach-2	1021	Q48hr	18.42	174.45	177.20	176.25	177.56	0.006938	2.65	7.15	159.62	0.52
RIVER-4	Reach-2	975		Culvert									
RIVER-4	Reach-2	929	Q2	0.64	174.12	174.83		174.85	0.002372	0.50	1.27	8.63	0.23
RIVER-4	Reach-2	929	Q5	1.58	174.12	175.06		175.10	0.004096	0.85	1.86	9.53	0.32
RIVER-4	Reach-2	929	Q25	3.16	174.12	175.36		175.43	0.005034	1.19	2.64	11.68	0.38
RIVER-4	Reach-2	929	Q100	5.03	174.12	175.61		175.73	0.006169	1.53	3.29	13.45	0.43
RIVER-4	Reach-2	929	Qreg	12.35	174.12	176.22		176.54	0.010093	2.54	4.87	21.37	0.59
RIVER-4	Reach-2	929	Q48hr	18.42	174.12	176.30		176.97	0.019569	3.63	5.07	21.75	0.83
RIVER-4	Reach-2	485	Q2	0.64	173.89	174.81	174.09	174.81	0.000082	0.12	5.52	7.68	0.04
RIVER-4	Reach-2	485	Q5	1.58	173.89	174.99	174.18	174.99	0.000258	0.23	6.94	8.09	0.08
RIVER-4	Reach-2	485	Q25	3.16	173.89	175.25	174.30	175.25	0.000468	0.35	9.11	8.74	0.11
RIVER-4	Reach-2	485	Q100	5.03	173.89	175.45	174.41	175.46	0.000705	0.46	10.96	9.29	0.13
RIVER-4	Reach-2	485	Qreg	12.35	173.89	176.13	174.72	176.15	0.000728	0.62	25.55	47.24	0.15
RIVER-4	Reach-2	485	Q48hr	18.42	173.89	176.48	174.93	176.49	0.000367	0.49	59.94	107.63	0.11
RIVER-3	Reach-1	1889	Q2	0.12	176.35	176.48	176.48	176.51	0.045040	0.75	0.16	2.06	0.88
RIVER-3	Reach-1	1889	Q5	0.25	176.35	176.66	176.52	176.67	0.003312	0.38	0.64	3.24	0.28
RIVER-3	Reach-1	1889	Q25	0.43	176.35	177.23	176.57	177.23	0.000054	0.11	5.35	26.28	0.04
RIVER-3	Reach-1	1889	Q100	0.61	176.35	177.15	176.61	177.15	0.000190	0.18	3.83	14.26	0.08
RIVER-3	Reach-1	1889	Qreg	1.25	176.35	177.26	176.72	177.26	0.000339	0.28	6.18	30.35	0.11
RIVER-3	Reach-1	1889	Q48hr	1.90	176.35	177.84	176.80	177.84	0.000006	0.05	49.60	97.50	0.02
RIVER-3	Reach-1	1443	Q2	0.12	175.71	176.25	175.85	176.25	0.000116	0.10	1.21	3.74	0.05
RIVER-3	Reach-1	1443	Q5	0.25	175.71	176.65		176.65	0.000038	0.08	3.07	5.54	0.03
RIVER-3	Reach-1	1443	Q25	0.43	175.71	177.22		177.22	0.000008	0.05	13.13	77.16	0.02
RIVER-3	Reach-1	1443	Q100	0.61	175.71	177.14		177.14	0.000027	0.09	8.59	42.89	0.03
RIVER-3	Reach-1	1443	Qreg	1.25	175.71	177.24		177.24	0.000053	0.13	14.55	80.58	0.04
RIVER-3	Reach-1	1443	Q48hr	1.90	175.71	177.84		177.84	0.000001	0.03	85.89	141.84	0.01
RIVER-3	Reach-1	1255	Q2	0.12	175.45	176.25		176.25	0.000038	0.07	1.67	3.49	0.03
RIVER-3	Reach-1	1255	Q5	0.25	175.45	176.65		176.65	0.000027	0.07	3.35	4.96	0.03
RIVER-3	Reach-1	1255	Q25	0.43	175.45	177.22		177.22	0.000003	0.04	20.45	101.93	0.01
RIVER-3	Reach-1	1255	Q100	0.61	175.45	177.14		177.14	0.000011	0.06	14.53	50.23	0.02
RIVER-3	Reach-1	1255	Qreg	1.25	175.45	177.24		177.24	0.000023	0.10	22.19	105.48	0.03
RIVER-3	Reach-1	1255	Q48hr	1.90	175.45	177.84		177.84	0.000001	0.03	102.28	149.35	0.01
RIVER-3	Reach-1	1186	Q2	0.12	174.90	176.25	175.07	176.25	0.000006	0.05	2.44	3.94	0.01
RIVER-3	Reach-1	1186	Q5	0.25	174.90	176.65	175.13	176.65	0.000010	0.07	3.29	5.72	0.02
RIVER-3	Reach-1	1186	Q25	0.43	174.90	177.22	175.19	177.22	0.000011	0.10	4.49	72.70	0.02
RIVER-3	Reach-1	1186	Q100	0.61	174.90	177.14	175.25	177.14	0.000025	0.14	4.32	64.72	0.03
RIVER-3	Reach-1	1186	Qreg	1.25	174.90	177.24	175.40	177.24	0.000092	0.28	4.52	73.14	0.06
RIVER-3	Reach-1	1186	Q48hr	1.90	174.90	177.84	175.52	177.84	0.000010	0.06	47.41	133.00	0.02
RIVER-3	Reach-1	1168		Culvert									
RIVER-3	Reach-1	1150	Q2	0.12	175.72	176.25	175.86	176.25	0.000224	0.15	0.81	2.22	0.07
RIVER-3	Reach-1	1150	Q5	0.25	175.72	176.65	175.91	176.65	0.000094	0.15	1.65	3.90	0.05
RIVER-3	Reach-1	1150	Q25	0.43	175.72	177.22	175.98	177.22	0.000048	0.15	2.85	60.68	0.04
RIVER-3	Reach-1	1150	Q100	0.61	175.72	177.14	176.03	177.14	0.000116	0.23	2.67	52.87	0.06
RIVER-3	Reach-1	1150	Qreg	1.25	175.72	177.22	176.18	177.23	0.000398	0.44	2.85	60.46	0.12
RIVER-3	Reach-1	1150	Q48hr	1.90	175.72	177.84	176.30	177.84	0.000010	0.06	49.41	144.70	0.02

HEC-RAS Plan: Fringe6_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-3	Reach-1	782	Q2	0.12	175.29	176.25	175.38	176.25	0.000002	0.02	5.30	8.19	0.01
RIVER-3	Reach-1	782	Q5	0.25	175.29	176.65	175.42	176.65	0.000002	0.03	10.36	26.75	0.01
RIVER-3	Reach-1	782	Q25	0.43	175.29	177.22	175.45	177.22	0.000000	0.01	54.37	124.98	0.00
RIVER-3	Reach-1	782	Q100	0.61	175.29	177.14	175.49	177.14	0.000001	0.02	44.35	111.78	0.01
RIVER-3	Reach-1	782	Qreg	1.25	175.29	177.22	175.57	177.22	0.000002	0.04	54.63	125.33	0.01
RIVER-3	Reach-1	782	Q48hr	1.90	175.29	177.84	175.63	177.84	0.000000	0.02	156.15	194.80	0.00
RIVER-3	Reach-1	465	Q2	0.12	175.02	176.25	175.14	176.25	0.000001	0.02	9.33	41.42	0.01
RIVER-3	Reach-1	465	Q5	0.25	175.02	176.65	175.18	176.65	0.000000	0.01	42.19	113.72	0.00
RIVER-3	Reach-1	465	Q25	0.43	175.02	177.22	175.23	177.22	0.000000	0.00	134.08	214.55	0.00
RIVER-3	Reach-1	465	Q100	0.61	175.02	177.14	175.27	177.14	0.000000	0.01	117.24	185.15	0.00
RIVER-3	Reach-1	465	Qreg	1.25	175.02	177.22	175.38	177.22	0.000000	0.01	134.51	215.53	0.00
RIVER-3	Reach-1	465	Q48hr	1.90	175.02	177.84	175.48	177.84	0.000000	0.01	320.77	364.70	0.00
RIVER-3	Reach-1	280	Q2	0.12	174.83	176.25	174.94	176.25	0.000000	0.00	34.44	71.58	0.00
RIVER-3	Reach-1	280	Q5	0.25	174.83	176.65	174.99	176.65	0.000000	0.00	68.05	99.91	0.00
RIVER-3	Reach-1	280	Q25	0.43	174.83	177.22	175.06	177.22	0.000000	0.00	155.46	237.62	0.00
RIVER-3	Reach-1	280	Q100	0.61	174.83	177.14	175.10	177.14	0.000000	0.01	136.41	210.46	0.00
RIVER-3	Reach-1	280	Qreg	1.25	174.83	177.22	175.26	177.22	0.000000	0.01	155.93	237.98	0.00
RIVER-3	Reach-1	280	Q48hr	1.90	174.83	177.84	175.35	177.84	0.000000	0.01	341.84	344.35	0.00
RIVER-2	Reach-1	3413	Q2	0.15	175.69	176.30	175.82	176.30	0.000128	0.08	1.83	4.69	0.04
RIVER-2	Reach-1	3413	Q5	0.51	175.69	176.74	175.92	176.74	0.000094	0.10	6.83	43.83	0.04
RIVER-2	Reach-1	3413	Q25	1.10	175.69	177.27	176.03	177.27	0.000003	0.02	55.67	118.78	0.01
RIVER-2	Reach-1	3413	Q100	1.70	175.69	177.27	176.11	177.27	0.000006	0.04	56.03	119.06	0.01
RIVER-2	Reach-1	3413	Qreg	4.37	175.69	177.74	176.36	177.74	0.000003	0.03	173.38	346.95	0.01
RIVER-2	Reach-1	3413	Q48hr	6.85	175.69	178.15	176.53	178.15	0.000000	0.01	682.75	916.06	0.00
RIVER-2	Reach-1	3308	Q2	0.15	175.79	176.29	175.98	176.29	0.000678	0.20	0.78	4.24	0.10
RIVER-2	Reach-1	3308	Q5	0.51	175.79	176.73	176.09	176.73	0.000617	0.31	1.65	61.11	0.11
RIVER-2	Reach-1	3308	Q25	1.10	175.79	177.26	176.22	177.27	0.000554	0.40	2.71	329.23	0.11
RIVER-2	Reach-1	3308	Q100	1.70	175.79	177.25	176.33	177.27	0.001372	0.63	2.69	321.13	0.17
RIVER-2	Reach-1	3308	Qreg	4.37	175.79	177.65	176.69	177.73	0.003761	1.25	3.50	843.51	0.30
RIVER-2	Reach-1	3308	Q48hr	6.85	175.79	178.00	176.97	178.13	0.005061	1.64	4.19	966.52	0.36
RIVER-2	Reach-1	3270.5		Culvert									
RIVER-2	Reach-1	3233	Q2	0.15	175.74	176.29	175.95	176.29	0.001374	0.23	0.65	2.59	0.13
RIVER-2	Reach-1	3233	Q5	0.51	175.74	176.72	176.10	176.73	0.000989	0.34	1.51	28.03	0.12
RIVER-2	Reach-1	3233	Q25	1.10	175.74	177.24	176.27	177.25	0.000810	0.43	2.55	85.47	0.12
RIVER-2	Reach-1	3233	Q100	1.70	175.74	177.20	176.38	177.23	0.002150	0.69	2.48	79.03	0.20
RIVER-2	Reach-1	3233	Qreg	4.37	175.74	177.35	176.75	177.48	0.009715	1.57	2.77	111.43	0.43
RIVER-2	Reach-1	3233	Q48hr	6.85	175.74	177.75	177.03	177.94	0.010323	1.92	3.57	395.89	0.46
RIVER-2	Reach-1	3063	Q2	0.15	175.71	176.28	175.85	176.28	0.000155	0.09	1.74	4.83	0.05
RIVER-2	Reach-1	3063	Q5	0.51	175.71	176.71	175.95	176.71	0.000140	0.12	4.34	7.19	0.05
RIVER-2	Reach-1	3063	Q25	1.10	175.71	177.24	176.05	177.24	0.000043	0.08	17.64	74.50	0.03
RIVER-2	Reach-1	3063	Q100	1.70	175.71	177.20	176.13	177.20	0.000143	0.15	14.92	61.97	0.05
RIVER-2	Reach-1	3063	Qreg	4.37	175.71	177.38	176.36	177.38	0.000218	0.21	29.66	92.86	0.07
RIVER-2	Reach-1	3063	Q48hr	6.85	175.71	177.84	176.53	177.84	0.000002	0.03	305.24	527.20	0.01
RIVER-2	Reach-1	2586.51	Q2	0.19	175.47	176.26	175.65	176.26	0.000073	0.07	2.57	5.37	0.03
RIVER-2	Reach-1	2586.51	Q5	0.65	175.47	176.69	175.77	176.69	0.000122	0.12	5.24	7.05	0.05
RIVER-2	Reach-1	2586.51	Q25	1.43	175.47	177.23	175.90	177.23	0.000037	0.10	23.20	101.96	0.03
RIVER-2	Reach-1	2586.51	Q100	2.22	175.47	177.18	175.99	177.18	0.000127	0.18	18.56	75.38	0.05
RIVER-2	Reach-1	2586.51	Qreg	5.79	175.47	177.35	176.28	177.35	0.000253	0.27	39.47	179.03	0.07
RIVER-2	Reach-1	2586.51	Q48hr	9.03	175.47	177.84	176.46	177.84	0.000006	0.05	265.60	506.88	0.01
RIVER-2	Reach-1	1837	Q2	0.19	175.09	176.26		176.26	0.000016	0.04	4.13	5.39	0.02
RIVER-2	Reach-1	1837	Q5	0.65	175.09	176.68		176.68	0.000055	0.10	6.62	6.51	0.03
RIVER-2	Reach-1	1837	Q25	1.43	175.09	177.23		177.23	0.000044	0.10	21.08	124.95	0.03
RIVER-2	Reach-1	1837	Q100	2.22	175.09	177.15		177.15	0.000156	0.19	14.69	47.47	0.05
RIVER-2	Reach-1	1837	Qreg	5.79	175.09	177.26		177.27	0.000563	0.37	26.08	162.64	0.10
RIVER-2	Reach-1	1837	Q48hr	9.03	175.09	177.84		177.84	0.000010	0.06	218.73	442.82	0.01
RIVER-2	Reach-1	999	Q2	0.19	175.01	176.25		176.25	0.000008	0.03	5.66	6.96	0.01
RIVER-2	Reach-1	999	Q5	0.65	175.01	176.67		176.67	0.000031	0.07	9.34	18.30	0.02
RIVER-2	Reach-1	999	Q25	1.43	175.01	177.22		177.22	0.000003	0.03	80.62	287.63	0.01
RIVER-2	Reach-1	999	Q100	2.22	175.01	177.14		177.14	0.000015	0.06	59.29	229.03	0.02
RIVER-2	Reach-1	999	Qreg	5.79	175.01	177.23		177.23	0.000049	0.11	83.32	294.42	0.03
RIVER-2	Reach-1	999	Q48hr	9.03	175.01	177.84		177.84	0.000003	0.04	288.26	345.00	0.01
RIVER-1	Reach-1	13837	Q2	0.14	175.83	176.27	175.89	176.27	0.000095	0.08	1.84	5.37	0.04
RIVER-1	Reach-1	13837	Q5	0.32	175.83	176.69	175.94	176.69	0.000038	0.07	4.51	7.55	0.03
RIVER-1	Reach-1	13837	Q25	0.61	175.83	177.30	175.99	177.30	0.000005	0.04	25.71	80.69	0.01
RIVER-1	Reach-1	13837	Q100	0.94	175.83	177.31	176.04	177.31	0.000011	0.06	27.17	85.84	0.02
RIVER-1	Reach-1	13837	Qreg	2.12	175.83	177.73	176.16	177.73	0.000005	0.05	78.28	165.01	0.01
RIVER-1	Reach-1	13837	Q48hr	3.11	175.83	177.84	176.25	177.84	0.000006	0.05	120.43	266.43	0.01
RIVER-1	Reach-1	13777	Q2	0.14	175.68	176.27	175.80	176.27	0.000317	0.21	0.69	5.12	0.09
RIVER-1	Reach-1	13777	Q5	0.32	175.68	176.68	175.88	176.68	0.000259	0.27	1.19	6.99	0.09
RIVER-1	Reach-1	13777	Q25	0.61	175.68	177.29	175.98	177.30	0.000193	0.32	1.93	72.34	0.08

HEC-RAS Plan: Fringe6_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-1	13777	Q100	0.94	175.68	177.30	176.08	177.31	0.000451	0.49	1.94	76.93	0.12
RIVER-1	Reach-1	13777	Qreg	2.12	175.68	177.72	176.37	177.73	0.001391	0.32	10.85	198.85	0.16
RIVER-1	Reach-1	13777	Q48hr	3.11	175.68	177.84	176.57	177.84	0.000348	0.19	29.36	200.01	0.09
RIVER-1	Reach-1	13745.5		Culvert									
RIVER-1	Reach-1	13714	Q2	0.14	175.87	176.25	175.99	176.26	0.001341	0.32	0.45	3.32	0.17
RIVER-1	Reach-1	13714	Q5	0.32	175.87	176.66	176.07	176.67	0.000565	0.34	0.94	48.27	0.12
RIVER-1	Reach-1	13714	Q25	0.61	175.87	177.22	176.18	177.23	0.000350	0.38	1.61	112.45	0.10
RIVER-1	Reach-1	13714	Q100	0.94	175.87	177.13	176.28	177.15	0.001050	0.63	1.50	80.63	0.18
RIVER-1	Reach-1	13714	Qreg	2.12	175.87	177.18	176.56	177.28	0.004618	1.35	1.57	92.58	0.38
RIVER-1	Reach-1	13714	Q48hr	3.11	175.87	177.84	176.75	177.84	0.000918	0.20	31.67	409.10	0.13
RIVER-1	Reach-1	13387	Q2	0.14	174.94	176.25		176.25	0.000005	0.03	4.52	5.09	0.01
RIVER-1	Reach-1	13387	Q5	0.32	174.94	176.66		176.66	0.000008	0.05	7.92	30.99	0.01
RIVER-1	Reach-1	13387	Q25	0.61	174.94	177.22		177.22	0.000000	0.01	166.42	483.97	0.00
RIVER-1	Reach-1	13387	Q100	0.94	174.94	177.14		177.14	0.000001	0.02	127.22	443.92	0.00
RIVER-1	Reach-1	13387	Qreg	2.12	174.94	177.23		177.23	0.000002	0.03	169.68	484.84	0.01
RIVER-1	Reach-1	13387	Q48hr	3.11	174.94	177.84		177.84	0.000000	0.01	540.64	689.10	0.00
RIVER-1	Reach-1	13099	Q2	0.14	174.88	176.25		176.25	0.000006	0.03	4.47	6.30	0.01
RIVER-1	Reach-1	13099	Q5	0.32	174.88	176.66		176.66	0.000008	0.04	8.61	16.59	0.01
RIVER-1	Reach-1	13099	Q25	0.61	174.88	177.22		177.22	0.000001	0.02	92.98	388.58	0.00
RIVER-1	Reach-1	13099	Q100	0.94	174.88	177.14		177.14	0.000003	0.04	63.77	318.24	0.01
RIVER-1	Reach-1	13099	Qreg	2.12	174.88	177.23		177.23	0.000007	0.06	95.48	394.06	0.01
RIVER-1	Reach-1	13099	Q48hr	3.11	174.88	177.84		177.84	0.000000	0.01	443.00	693.50	0.00
RIVER-1	Reach-2	12741	Q2	0.37	174.77	176.25	174.94	176.25	0.000002	0.04	14.68	39.31	0.01
RIVER-1	Reach-2	12741	Q5	1.07	174.77	176.66	175.08	176.66	0.000003	0.05	49.43	191.52	0.01
RIVER-1	Reach-2	12741	Q25	2.22	174.77	177.22	175.23	177.22	0.000000	0.02	250.02	426.04	0.01
RIVER-1	Reach-2	12741	Q100	3.41	174.77	177.14	175.34	177.14	0.000001	0.04	214.52	421.48	0.01
RIVER-1	Reach-2	12741	Qreg	8.56	174.77	177.23	175.69	177.23	0.000005	0.09	252.53	426.23	0.02
RIVER-1	Reach-2	12741	Q48hr	13.26	174.77	177.84	176.03	177.84	0.000001	0.05	523.02	452.47	0.01
RIVER-1	Reach-2	12664	Q2	0.37	174.88	176.25	175.09	176.25	0.000021	0.13	2.79	15.14	0.04
RIVER-1	Reach-2	12664	Q5	1.07	174.88	176.66	175.25	176.66	0.000069	0.29	3.67	82.10	0.07
RIVER-1	Reach-2	12664	Q25	2.22	174.88	177.22	175.43	177.22	0.000001	0.02	220.13	418.43	0.01
RIVER-1	Reach-2	12664	Q100	3.41	174.88	177.14	175.59	177.14	0.000002	0.04	185.36	412.51	0.01
RIVER-1	Reach-2	12664	Qreg	8.56	174.88	177.23	176.12	177.23	0.000008	0.09	222.55	418.90	0.02
RIVER-1	Reach-2	12664	Q48hr	13.26	174.88	177.84	176.52	177.84	0.000002	0.05	487.34	450.44	0.01
RIVER-1	Reach-2	12647.5		Culvert									
RIVER-1	Reach-2	12631	Q2	0.37	174.84	176.25	175.06	176.25	0.000019	0.13	2.85	23.84	0.04
RIVER-1	Reach-2	12631	Q5	1.07	174.84	176.65	175.21	176.65	0.000067	0.29	3.71	80.07	0.07
RIVER-1	Reach-2	12631	Q25	2.22	174.84	177.22	175.40	177.22	0.000000	0.01	276.77	384.77	0.00
RIVER-1	Reach-2	12631	Q100	3.41	174.84	177.14	175.56	177.14	0.000001	0.02	245.21	375.89	0.01
RIVER-1	Reach-2	12631	Qreg	8.56	174.84	177.23	176.09	177.23	0.000003	0.05	279.05	387.04	0.01
RIVER-1	Reach-2	12631	Q48hr	13.26	174.84	177.84	176.49	177.84	0.000001	0.03	536.32	439.93	0.01
RIVER-1	Reach-2	12252	Q2	0.37	174.63	176.25	174.86	176.25	0.000003	0.04	16.80	63.37	0.01
RIVER-1	Reach-2	12252	Q5	1.07	174.63	176.65	174.99	176.65	0.000002	0.04	60.15	157.61	0.01
RIVER-1	Reach-2	12252	Q25	2.22	174.63	177.22	175.14	177.22	0.000000	0.03	186.78	274.75	0.01
RIVER-1	Reach-2	12252	Q100	3.41	174.63	177.14	175.25	177.14	0.000002	0.05	163.83	271.87	0.01
RIVER-1	Reach-2	12252	Qreg	8.56	174.63	177.23	175.61	177.23	0.000007	0.10	188.23	274.88	0.02
RIVER-1	Reach-2	12252	Q48hr	13.26	174.63	177.84	175.86	177.84	0.000002	0.06	451.63	389.79	0.01
RIVER-1	Reach-2	11903	Q2	0.37	174.61	176.25		176.25	0.000002	0.03	16.72	59.90	0.01
RIVER-1	Reach-2	11903	Q5	1.07	174.61	176.65		176.65	0.000002	0.04	48.21	90.87	0.01
RIVER-1	Reach-2	11903	Q25	2.22	174.61	177.22		177.22	0.000001	0.04	117.52	204.58	0.01
RIVER-1	Reach-2	11903	Q100	3.41	174.61	177.14		177.14	0.000003	0.07	103.44	131.14	0.01
RIVER-1	Reach-2	11903	Qreg	8.56	174.61	177.23		177.23	0.000014	0.15	118.33	205.96	0.03
RIVER-1	Reach-2	11903	Q48hr	13.26	174.61	177.84		177.84	0.000005	0.10	296.09	331.30	0.02
RIVER-1	Reach-3	11584	Q2	3.92	174.50	176.19	175.20	176.24	0.000780	0.97	4.06	16.56	0.24
RIVER-1	Reach-3	11584	Q5	6.51	174.50	176.58	175.45	176.64	0.000793	1.12	9.61	63.25	0.25
RIVER-1	Reach-3	11584	Q25	10.30	174.50	177.22	175.76	177.22	0.000115	0.23	90.34	327.00	0.08
RIVER-1	Reach-3	11584	Q100	13.49	174.50	177.13	176.00	177.13	0.000389	0.40	64.86	253.51	0.15
RIVER-1	Reach-3	11584	Qreg	14.62	174.50	177.22	176.08	177.22	0.000232	0.33	90.33	326.98	0.11
RIVER-1	Reach-3	11584	Q48hr	19.78	174.50	177.84	176.81	177.84	0.000005	0.07	621.22	995.83	0.02
RIVER-1	Reach-3	11565.5		Culvert									
RIVER-1	Reach-3	11547	Q2	3.94	174.71	176.09	175.39	176.16	0.001541	1.18	3.34	53.25	0.33
RIVER-1	Reach-3	11547	Q5	6.55	174.71	176.52	175.63	176.64	0.001651	1.48	4.43	102.52	0.35
RIVER-1	Reach-3	11547	Q25	10.38	174.71	177.22	175.96	177.22	0.000201	0.34	78.28	316.23	0.11
RIVER-1	Reach-3	11547	Q100	13.62	174.71	176.79	176.19	177.13	0.004337	2.63	5.96	161.53	0.59
RIVER-1	Reach-3	11547	Qreg	15.59	174.71	177.22	177.05	177.22	0.000467	0.51	77.50	315.40	0.17
RIVER-1	Reach-3	11547	Q48hr	21.17	174.71	177.84	177.07	177.84	0.000007	0.09	554.08	981.33	0.02
RIVER-1	Reach-3	11400	Q2	3.94	174.54	176.08	175.21	176.09	0.000480	0.50	9.45	35.29	0.16
RIVER-1	Reach-3	11400	Q5	6.55	174.54	176.57	175.39	176.57	0.000092	0.29	46.96	128.44	0.08
RIVER-1	Reach-3	11400	Q25	10.38	174.54	177.22	175.60	177.22	0.000013	0.14	157.98	220.40	0.03

HEC-RAS Plan: Fringe6_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	11400	Q100	13.62	174.54	176.95	175.76	176.95	0.000057	0.27	106.61	172.55	0.06
RIVER-1	Reach-3	11400	Qreg	15.59	174.54	177.21	175.85	177.21	0.000029	0.21	157.06	219.49	0.05
RIVER-1	Reach-3	11400	Q48hr	21.17	174.54	177.84	176.23	177.84	0.000008	0.13	352.69	441.87	0.02
RIVER-1	Reach-3	11263	Q2	3.94	174.55	176.06	175.17	176.07	0.000412	0.46	11.25	37.79	0.15
RIVER-1	Reach-3	11263	Q5	6.55	174.55	176.56	175.35	176.57	0.000094	0.29	42.37	115.34	0.08
RIVER-1	Reach-3	11263	Q25	10.38	174.55	177.22	175.56	177.22	0.000013	0.14	154.19	206.43	0.03
RIVER-1	Reach-3	11263	Q100	13.62	174.55	176.95	175.71	176.95	0.000066	0.29	101.85	184.21	0.07
RIVER-1	Reach-3	11263	Qreg	15.59	174.55	177.21	175.79	177.21	0.000030	0.21	153.20	206.17	0.05
RIVER-1	Reach-3	11263	Q48hr	21.17	174.55	177.84	176.14	177.84	0.000009	0.14	313.72	361.82	0.03
RIVER-1	Reach-3	11179	Q2	3.94	174.52	176.05	175.20	176.06	0.000377	0.44	12.32	39.60	0.15
RIVER-1	Reach-3	11179	Q5	6.55	174.52	176.56	175.38	176.56	0.000085	0.28	45.25	114.50	0.08
RIVER-1	Reach-3	11179	Q25	10.38	174.52	177.22	175.61	177.22	0.000013	0.14	151.36	190.42	0.03
RIVER-1	Reach-3	11179	Q100	13.62	174.52	176.95	175.78	176.95	0.000060	0.28	102.42	167.20	0.07
RIVER-1	Reach-3	11179	Qreg	15.59	174.52	177.21	175.87	177.21	0.000029	0.21	150.36	190.18	0.05
RIVER-1	Reach-3	11179	Q48hr	21.17	174.52	177.84	176.10	177.84	0.000009	0.14	324.41	391.21	0.03
RIVER-1	Reach-3	10988	Q2	3.94	174.48	176.05	175.00	176.05	0.000135	0.32	19.99	53.73	0.09
RIVER-1	Reach-3	10988	Q5	6.55	174.48	176.56	175.17	176.56	0.000035	0.21	67.77	132.08	0.05
RIVER-1	Reach-3	10988	Q25	10.38	174.48	177.22	175.39	177.22	0.000005	0.10	266.53	459.42	0.02
RIVER-1	Reach-3	10988	Q100	13.62	174.48	176.94	175.52	176.95	0.000030	0.22	157.52	357.76	0.05
RIVER-1	Reach-3	10988	Qreg	15.59	174.48	177.21	175.59	177.21	0.000012	0.15	263.93	458.08	0.03
RIVER-1	Reach-3	10988	Q48hr	21.17	174.48	177.84	175.86	177.84	0.000003	0.08	583.99	555.34	0.02
RIVER-1	Reach-3	10842	Q2	3.94	174.53	175.97	175.20	176.03	0.001220	1.07	3.69	15.65	0.29
RIVER-1	Reach-3	10842	Q5	6.55	174.53	176.48	175.44	176.55	0.001028	1.21	7.21	97.20	0.28
RIVER-1	Reach-3	10842	Q25	10.38	174.53	177.22	175.75	177.22	0.000027	0.24	138.24	471.92	0.05
RIVER-1	Reach-3	10842	Q100	13.62	174.53	176.93	175.97	176.94	0.000318	0.78	65.24	367.50	0.16
RIVER-1	Reach-3	10842	Qreg	15.59	174.53	177.21	176.73	177.21	0.000063	0.37	136.25	471.07	0.07
RIVER-1	Reach-3	10842	Q48hr	21.17	174.53	177.84	176.83	177.84	0.000009	0.10	406.49	526.34	0.02
RIVER-1	Reach-3	10819.5		Culvert									
RIVER-1	Reach-3	10797	Q2	4.00	174.57	175.80	175.21	175.88	0.001970	1.24	3.23	33.61	0.36
RIVER-1	Reach-3	10797	Q5	6.68	174.57	176.19	175.46	176.32	0.002114	1.55	4.30	68.95	0.39
RIVER-1	Reach-3	10797	Q25	10.66	174.57	176.50	175.77	176.72	0.002983	2.08	5.13	72.32	0.48
RIVER-1	Reach-3	10797	Q100	14.07	174.57	176.55	176.01	176.92	0.004750	2.67	5.27	73.08	0.61
RIVER-1	Reach-3	10797	Qreg	19.29	174.57	176.40	176.34	177.21	0.011680	3.97	4.86	71.28	0.94
RIVER-1	Reach-3	10797	Q48hr	26.76	174.57	176.75	176.75	177.84	0.012393	4.60	5.81	97.51	1.00
RIVER-1	Reach-3	10695	Q2	4.00	174.30	175.79	174.96	175.81	0.000650	0.56	7.17	8.25	0.19
RIVER-1	Reach-3	10695	Q5	6.68	174.30	176.22	175.15	176.24	0.000411	0.58	14.71	29.66	0.16
RIVER-1	Reach-3	10695	Q25	10.66	174.30	176.58	175.36	176.59	0.000302	0.58	27.70	42.17	0.14
RIVER-1	Reach-3	10695	Q100	14.07	174.30	176.69	175.53	176.71	0.000372	0.67	33.45	65.06	0.16
RIVER-1	Reach-3	10695	Qreg	19.29	174.30	176.73	175.73	176.76	0.000634	0.89	35.99	79.85	0.21
RIVER-1	Reach-3	10695	Q48hr	26.76	174.30	176.78	176.05	176.82	0.001025	1.15	40.19	87.92	0.27
RIVER-1	Reach-3	10279	Q2	4.00	174.24	175.74	174.78	175.75	0.000291	0.43	9.60	14.34	0.13
RIVER-1	Reach-3	10279	Q5	6.68	174.24	176.20	174.93	176.20	0.000158	0.39	26.45	52.99	0.10
RIVER-1	Reach-3	10279	Q25	10.66	174.24	176.57	175.11	176.57	0.000111	0.38	56.28	165.23	0.09
RIVER-1	Reach-3	10279	Q100	14.07	174.24	176.68	175.24	176.68	0.000122	0.42	77.75	220.08	0.09
RIVER-1	Reach-3	10279	Qreg	19.29	174.24	176.70	175.43	176.71	0.000203	0.54	83.37	227.69	0.12
RIVER-1	Reach-3	10279	Q48hr	26.76	174.24	176.74	175.64	176.75	0.000328	0.69	91.84	246.03	0.15
RIVER-1	Reach-3	10045	Q2	4.00	174.19	175.73	174.82	175.74	0.000229	0.36	14.36	42.86	0.12
RIVER-1	Reach-3	10045	Q5	6.68	174.19	176.19	175.01	176.19	0.000079	0.28	42.59	87.86	0.07
RIVER-1	Reach-3	10045	Q25	10.66	174.19	176.56	175.21	176.56	0.000041	0.23	105.35	278.56	0.06
RIVER-1	Reach-3	10045	Q100	14.07	174.19	176.67	175.36	176.68	0.000049	0.26	137.60	302.63	0.06
RIVER-1	Reach-3	10045	Qreg	19.29	174.19	176.70	175.52	176.70	0.000080	0.34	144.74	305.39	0.08
RIVER-1	Reach-3	10045	Q48hr	26.76	174.19	176.73	175.71	176.74	0.000130	0.44	154.97	315.95	0.10
RIVER-1	Reach-3	9967	Q2	4.00	174.24	175.63	175.00	175.72	0.001922	1.27	3.14	38.43	0.36
RIVER-1	Reach-3	9967	Q5	6.68	174.24	176.04	175.26	176.18	0.002121	1.61	4.15	71.05	0.40
RIVER-1	Reach-3	9967	Q25	10.66	174.24	176.27	175.60	176.54	0.003534	2.26	4.71	176.70	0.52
RIVER-1	Reach-3	9967	Q100	14.07	174.24	175.92	175.85	176.60	0.012036	3.65	3.85	51.85	0.93
RIVER-1	Reach-3	9967	Qreg	19.29	174.24	176.65	176.65	176.69	0.004286	1.36	42.05	343.07	0.48
RIVER-1	Reach-3	9967	Q48hr	26.76	174.24	176.67	176.67	176.72	0.005164	1.52	51.49	362.39	0.53
RIVER-1	Reach-3	9948.5		Culvert									
RIVER-1	Reach-3	9929	Q2	4.00	174.29	175.51	175.00	175.61	0.002592	1.40	2.85	29.86	0.42
RIVER-1	Reach-3	9929	Q5	6.68	174.29	175.83	175.27	176.00	0.003272	1.85	3.62	60.60	0.49
RIVER-1	Reach-3	9929	Q25	10.66	174.29	175.80	175.59	176.26	0.008828	3.00	3.56	56.82	0.79
RIVER-1	Reach-3	9929	Q100	14.07	174.29	175.85	175.85	176.60	0.013759	3.83	3.68	64.45	1.00
RIVER-1	Reach-3	9929	Qreg	19.29	174.29	176.63	176.63	176.68	0.004260	1.40	43.95	386.20	0.48
RIVER-1	Reach-3	9929	Q48hr	26.76	174.29	176.68	176.66	176.71	0.003315	1.28	64.17	418.03	0.43
RIVER-1	Reach-3	9829	Q2	4.00	173.99	175.54	174.57	175.55	0.000273	0.43	15.73	60.03	0.13
RIVER-1	Reach-3	9829	Q5	6.68	173.99	175.90	174.75	175.90	0.000103	0.31	41.81	83.35	0.08
RIVER-1	Reach-3	9829	Q25	10.66	173.99	176.01	174.98	176.02	0.000160	0.41	51.35	91.03	0.10
RIVER-1	Reach-3	9829	Q100	14.07	173.99	176.06	175.14	176.07	0.000220	0.49	56.21	96.78	0.12
RIVER-1	Reach-3	9829	Qreg	19.29	173.99	176.30	175.57	176.31	0.000189	0.50	86.36	187.67	0.11

HEC-RAS Plan: Fringe6_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	9829	Q48hr	26.76	173.99	176.69	175.66	176.69	0.000062	0.32	234.44	593.50	0.07
RIVER-1	Reach-3	9462	Q2	4.00	173.97	175.51	174.49	175.51	0.000319	0.36	14.28	32.25	0.10
RIVER-1	Reach-3	9462	Q5	6.68	173.97	175.89	174.67	175.89	0.000136	0.28	34.45	68.21	0.07
RIVER-1	Reach-3	9462	Q25	10.66	173.97	175.99	174.87	175.99	0.000211	0.36	41.76	75.64	0.09
RIVER-1	Reach-3	9462	Q100	14.07	173.97	176.03	175.03	176.04	0.000302	0.44	45.14	82.36	0.11
RIVER-1	Reach-3	9462	Qreg	19.29	173.97	176.28	175.32	176.29	0.000207	0.40	71.38	145.40	0.09
RIVER-1	Reach-3	9462	Q48hr	26.76	173.97	176.68	175.52	176.68	0.000064	0.25	206.31	441.15	0.05
RIVER-1	Reach-3	8698	Q2	4.00	173.92	175.50	174.37	175.50	0.000042	0.12	38.60	74.79	0.04
RIVER-1	Reach-3	8698	Q5	6.68	173.92	175.88	174.51	175.88	0.000021	0.10	70.42	96.33	0.03
RIVER-1	Reach-3	8698	Q25	10.66	173.92	175.98	174.68	175.98	0.000037	0.14	80.81	121.17	0.04
RIVER-1	Reach-3	8698	Q100	14.07	173.92	176.02	174.81	176.02	0.000057	0.18	85.82	138.72	0.04
RIVER-1	Reach-3	8698	Qreg	19.29	173.92	176.27	175.14	176.27	0.000045	0.17	133.48	238.92	0.04
RIVER-1	Reach-3	8698	Q48hr	26.76	173.92	176.68	175.21	176.68	0.000026	0.15	262.32	371.73	0.03
RIVER-1	Reach-3	8570	Q2	4.00	173.97	175.49	174.37	175.49	0.000042	0.11	34.82	48.18	0.04
RIVER-1	Reach-3	8570	Q5	6.68	173.97	175.88	174.51	175.88	0.000028	0.11	59.95	93.25	0.03
RIVER-1	Reach-3	8570	Q25	10.66	173.97	175.98	174.77	175.98	0.000053	0.16	70.15	124.32	0.04
RIVER-1	Reach-3	8570	Q100	14.07	173.97	176.01	174.85	176.01	0.000083	0.20	74.94	142.34	0.05
RIVER-1	Reach-3	8570	Qreg	19.29	173.97	176.27	174.96	176.27	0.000067	0.20	133.43	317.42	0.05
RIVER-1	Reach-3	8570	Q48hr	26.76	173.97	176.67	175.04	176.68	0.000021	0.13	295.92	490.87	0.03
RIVER-1	Reach-3	8486	Q2	4.00	173.91	175.42	174.56	175.48	0.002004	1.07	3.75	38.36	0.28
RIVER-1	Reach-3	8486	Q5	6.68	173.91	175.76	174.82	175.87	0.002859	1.46	4.60	59.57	0.34
RIVER-1	Reach-3	8486	Q25	10.66	173.91	175.61	175.15	175.94	0.009609	2.53	4.22	45.81	0.62
RIVER-1	Reach-3	8486	Q100	14.07	173.91	175.92	175.92	175.99	0.013636	1.41	13.93	82.60	0.60
RIVER-1	Reach-3	8486	Qreg	19.29	173.91	176.26	175.96	176.26	0.000367	0.32	99.45	466.28	0.11
RIVER-1	Reach-3	8486	Q48hr	26.76	173.91	176.67	176.01	176.67	0.000023	0.10	345.63	679.23	0.03
RIVER-1	Reach-3	8467		Culvert									
RIVER-1	Reach-3	8450	Q2	4.00	173.76	174.94		174.97	0.001843	0.84	5.73	15.52	0.25
RIVER-1	Reach-3	8450	Q5	6.68	173.76	175.19		175.23	0.001782	0.95	8.69	28.83	0.26
RIVER-1	Reach-3	8450	Q25	10.66	173.76	175.52		175.55	0.001408	0.97	13.62	45.27	0.24
RIVER-1	Reach-3	8450	Q100	14.07	173.76	175.77		175.80	0.001060	0.92	19.73	67.26	0.21
RIVER-1	Reach-3	8450	Qreg	19.29	173.76	176.26		176.26	0.000095	0.18	154.29	565.82	0.05
RIVER-1	Reach-3	8450	Q48hr	26.76	173.76	176.67		176.67	0.000012	0.08	427.15	746.78	0.02
RIVER-1	Reach-3	8435	Q2	4.00	173.77	174.93		174.94	0.000212	0.30	14.66	25.64	0.11
RIVER-1	Reach-3	8435	Q5	6.68	173.77	175.19		175.20	0.000185	0.34	22.97	48.92	0.11
RIVER-1	Reach-3	8435	Q25	10.66	173.77	175.52		175.53	0.000108	0.31	46.35	87.64	0.08
RIVER-1	Reach-3	8435	Q100	14.07	173.77	175.77		175.78	0.000067	0.27	73.53	128.52	0.07
RIVER-1	Reach-3	8435	Qreg	19.29	173.77	176.26		176.26	0.000018	0.17	229.91	622.54	0.04
RIVER-1	Reach-3	8435	Q48hr	26.76	173.77	176.67		176.67	0.000005	0.10	575.16	969.95	0.02
RIVER-1	Reach-3	7960	Q2	4.00	173.83	174.93	174.22	174.93	0.000024	0.10	46.43	106.01	0.04
RIVER-1	Reach-3	7960	Q5	6.68	173.83	175.19	174.34	175.19	0.000016	0.10	76.15	121.46	0.03
RIVER-1	Reach-3	7960	Q25	10.66	173.83	175.52	174.49	175.52	0.000012	0.10	120.47	152.20	0.03
RIVER-1	Reach-3	7960	Q100	14.07	173.83	175.77	174.53	175.77	0.000009	0.10	161.63	176.94	0.03
RIVER-1	Reach-3	7960	Qreg	19.29	173.83	176.26	174.58	176.26	0.000004	0.08	349.66	715.56	0.02
RIVER-1	Reach-3	7960	Q48hr	26.76	173.83	176.67	174.63	176.67	0.000002	0.06	753.75	1215.52	0.01
RIVER-1	Reach-3	7886	Q2	4.00	173.71	174.93	174.41	174.93	0.000046	0.18	31.24	67.91	0.05
RIVER-1	Reach-3	7886	Q5	6.68	173.71	175.19	174.50	175.19	0.000037	0.19	47.16	99.15	0.05
RIVER-1	Reach-3	7886	Q25	10.66	173.71	175.52	174.56	175.52	0.000029	0.10	82.72	159.55	0.04
RIVER-1	Reach-3	7886	Q100	14.07	173.71	175.77	174.60	175.77	0.000019	0.10	125.53	182.29	0.03
RIVER-1	Reach-3	7886	Qreg	19.29	173.71	176.25	174.65	176.26	0.000006	0.08	343.91	824.19	0.02
RIVER-1	Reach-3	7886	Q48hr	26.76	173.71	176.67	174.70	176.67	0.000002	0.05	779.49	1219.91	0.01
RIVER-1	Reach-3	7871		Culvert									
RIVER-1	Reach-3	7857	Q2	4.00	173.71	174.93	174.29	174.93	0.000101	0.26	23.74	73.82	0.08
RIVER-1	Reach-3	7857	Q5	6.68	173.71	175.19	174.59	175.19	0.000065	0.24	39.12	98.81	0.07
RIVER-1	Reach-3	7857	Q25	10.66	173.71	175.52	174.68	175.52	0.000044	0.14	70.92	132.81	0.05
RIVER-1	Reach-3	7857	Q100	14.07	173.71	175.77	174.72	175.77	0.000027	0.13	107.72	165.95	0.04
RIVER-1	Reach-3	7857	Qreg	19.29	173.71	176.25	174.79	176.25	0.000007	0.09	314.95	760.53	0.02
RIVER-1	Reach-3	7857	Q48hr	26.76	173.71	176.67	174.84	176.67	0.000002	0.06	743.19	1254.67	0.01
RIVER-1	Reach-3	7750	Q2	4.00	173.90	174.92	174.21	174.92	0.000129	0.22	20.46	54.75	0.08
RIVER-1	Reach-3	7750	Q5	6.68	173.90	175.18	174.31	175.19	0.000082	0.22	36.76	70.28	0.07
RIVER-1	Reach-3	7750	Q25	10.66	173.90	175.52	174.43	175.52	0.000050	0.21	63.29	87.92	0.06
RIVER-1	Reach-3	7750	Q100	14.07	173.90	175.77	174.54	175.77	0.000037	0.20	90.36	163.99	0.05
RIVER-1	Reach-3	7750	Qreg	19.29	173.90	176.25	174.64	176.25	0.000009	0.12	353.03	932.06	0.03
RIVER-1	Reach-3	7750	Q48hr	26.76	173.90	176.67	174.75	176.67	0.000002	0.06	843.11	1303.00	0.01
RIVER-1	Reach-3	7395	Q2	4.00	173.93	174.91	174.19	174.91	0.000149	0.26	18.45	46.68	0.09
RIVER-1	Reach-3	7395	Q5	6.68	173.93	175.17	174.28	175.18	0.000098	0.26	32.79	62.97	0.08
RIVER-1	Reach-3	7395	Q25	10.66	173.93	175.51	174.40	175.51	0.000064	0.25	59.82	118.19	0.07
RIVER-1	Reach-3	7395	Q100	14.07	173.93	175.77	174.49	175.77	0.000043	0.23	104.81	255.85	0.06
RIVER-1	Reach-3	7395	Qreg	19.29	173.93	176.25	174.67	176.25	0.000007	0.11	383.16	1062.66	0.02
RIVER-1	Reach-3	7395	Q48hr	26.76	173.93	176.67	174.81	176.67	0.000002	0.06	920.66	1418.45	0.01

HEC-RAS Plan: Fringe6_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	7126	Q2	4.00	173.89	174.90	174.16	174.90	0.000043	0.15	35.34	83.44	0.05
RIVER-1	Reach-3	7126	Q5	6.68	173.89	175.17	174.25	175.17	0.000028	0.14	59.74	98.87	0.04
RIVER-1	Reach-3	7126	Q25	10.66	173.89	175.51	174.37	175.51	0.000020	0.14	98.25	132.56	0.04
RIVER-1	Reach-3	7126	Q100	14.07	173.89	175.76	174.47	175.77	0.000016	0.14	140.33	208.19	0.03
RIVER-1	Reach-3	7126	Qreg	19.29	173.89	176.25	174.53	176.25	0.000006	0.10	357.83	882.20	0.02
RIVER-1	Reach-3	7126	Q48hr	26.76	173.89	176.67	174.66	176.67	0.000002	0.06	821.04	1301.62	0.01
RIVER-1	Reach-3	6956	Q2	4.00	173.96	174.90	174.27	174.90	0.000099	0.21	24.29	57.21	0.08
RIVER-1	Reach-3	6956	Q5	6.68	173.96	175.17	174.38	175.17	0.000060	0.20	40.71	64.47	0.06
RIVER-1	Reach-3	6956	Q25	10.66	173.96	175.51	174.58	175.51	0.000042	0.20	65.18	101.81	0.05
RIVER-1	Reach-3	6956	Q100	14.07	173.96	175.76	174.66	175.76	0.000034	0.20	103.52	196.53	0.05
RIVER-1	Reach-3	6956	Qreg	19.29	173.96	176.25	174.72	176.25	0.000009	0.12	315.56	815.14	0.03
RIVER-1	Reach-3	6956	Q48hr	26.76	173.96	176.67	174.78	176.67	0.000002	0.07	778.88	1341.81	0.01
RIVER-1	Reach-3	6846	Q2	4.00	173.97	174.86	174.61	174.89	0.001608	0.87	5.81	57.03	0.31
RIVER-1	Reach-3	6846	Q5	6.68	173.97	175.14	174.73	175.16	0.001043	0.85	9.85	64.45	0.26
RIVER-1	Reach-3	6846	Q25	10.66	173.97	175.50	174.86	175.50	0.000532	0.41	29.03	95.32	0.17
RIVER-1	Reach-3	6846	Q100	14.07	173.97	175.76	174.95	175.76	0.000196	0.31	66.84	224.75	0.11
RIVER-1	Reach-3	6846	Qreg	19.29	173.97	176.25	175.07	176.25	0.000017	0.12	253.51	609.50	0.03
RIVER-1	Reach-3	6846	Q48hr	26.76	173.97	176.67	175.40	176.67	0.000004	0.07	685.99	1312.18	0.02
RIVER-1	Reach-3	6830		Culvert									
RIVER-1	Reach-3	6811	Q2	4.00	173.95	174.86	174.55	174.88	0.001025	0.69	7.09	63.07	0.25
RIVER-1	Reach-3	6811	Q5	6.68	173.95	175.13	174.66	175.15	0.000708	0.70	11.35	72.22	0.21
RIVER-1	Reach-3	6811	Q25	10.66	173.95	175.50	174.78	175.50	0.000366	0.31	33.35	104.87	0.14
RIVER-1	Reach-3	6811	Q100	14.07	173.95	175.76	174.86	175.76	0.000148	0.26	74.14	229.42	0.09
RIVER-1	Reach-3	6811	Qreg	19.29	173.95	176.25	174.97	176.25	0.000015	0.11	272.10	626.07	0.03
RIVER-1	Reach-3	6811	Q48hr	26.76	173.95	176.67	175.11	176.67	0.000004	0.07	680.07	1289.40	0.02
RIVER-1	Reach-3	6719	Q2	4.00	173.89	174.86	174.20	174.86	0.000043	0.13	35.61	75.20	0.05
RIVER-1	Reach-3	6719	Q5	6.68	173.89	175.14	174.29	175.14	0.000028	0.13	57.67	86.02	0.04
RIVER-1	Reach-3	6719	Q25	10.66	173.89	175.50	174.48	175.50	0.000019	0.14	95.38	125.01	0.04
RIVER-1	Reach-3	6719	Q100	14.07	173.89	175.76	174.53	175.76	0.000016	0.14	136.62	206.70	0.03
RIVER-1	Reach-3	6719	Qreg	19.29	173.89	176.25	174.57	176.25	0.000007	0.11	311.25	489.76	0.02
RIVER-1	Reach-3	6719	Q48hr	26.76	173.89	176.67	174.63	176.67	0.000003	0.08	597.71	1054.63	0.02
RIVER-1	Reach-3	6081	Q2	4.00	173.53	174.85		174.85	0.000158	0.29	16.15	35.02	0.10
RIVER-1	Reach-3	6081	Q5	6.68	173.53	175.13		175.13	0.000105	0.28	31.19	60.84	0.08
RIVER-1	Reach-3	6081	Q25	10.66	173.53	175.49		175.49	0.000061	0.26	56.08	79.95	0.07
RIVER-1	Reach-3	6081	Q100	14.07	173.53	175.75		175.75	0.000046	0.25	85.35	157.69	0.06
RIVER-1	Reach-3	6081	Qreg	19.29	173.53	176.25		176.25	0.000016	0.17	214.24	388.55	0.04
RIVER-1	Reach-3	6081	Q48hr	26.76	173.53	176.67		176.67	0.000006	0.11	456.97	836.08	0.02
RIVER-1	Reach-3	5744	Q2	4.00	173.55	174.76		174.81	0.001412	0.98	4.08	10.95	0.30
RIVER-1	Reach-3	5744	Q5	6.68	173.55	175.01		175.10	0.002021	1.34	4.98	29.07	0.37
RIVER-1	Reach-3	5744	Q25	10.66	173.55	175.30		175.46	0.002650	1.75	6.08	44.84	0.44
RIVER-1	Reach-3	5744	Q100	14.07	173.55	175.50		175.72	0.003155	2.06	6.84	66.14	0.49
RIVER-1	Reach-3	5744	Qreg	19.29	173.55	176.24		176.25	0.000139	0.54	90.39	353.82	0.11
RIVER-1	Reach-3	5744	Q48hr	26.76	173.55	176.67		176.67	0.000030	0.28	218.26	676.54	0.05
RIVER-1	Reach-3	5696		Culvert									
RIVER-1	Reach-3	5648	Q2	3.56	173.72	175.02		175.04	0.000530	0.66	6.78	57.55	0.19
RIVER-1	Reach-3	5648	Q5	5.92	173.72	175.21		175.23	0.000702	0.83	9.30	69.74	0.22
RIVER-1	Reach-3	5648	Q25	10.67	173.72	175.31		175.37	0.001562	1.30	11.12	81.61	0.34
RIVER-1	Reach-3	5648	Q100	14.08	173.72	175.46		175.53	0.001613	1.40	15.58	99.28	0.35
RIVER-1	Reach-3	5648	Qreg	19.14	173.72	176.14		176.15	0.000141	0.52	87.43	353.05	0.11
RIVER-1	Reach-3	5648	Q48hr	27.19	173.72	176.48		176.49	0.000046	0.33	204.58	693.49	0.06
RIVER-1	Reach-3	5335	Q2	3.56	173.66	175.01		175.01	0.000129	0.22	21.56	72.44	0.08
RIVER-1	Reach-3	5335	Q5	5.92	173.66	175.20		175.20	0.000086	0.21	36.82	87.25	0.07
RIVER-1	Reach-3	5335	Q25	10.67	173.66	175.31		175.31	0.000147	0.29	46.46	94.44	0.09
RIVER-1	Reach-3	5335	Q100	14.08	173.66	175.47		175.47	0.000116	0.29	63.53	128.55	0.09
RIVER-1	Reach-3	5335	Qreg	19.14	173.66	176.14		176.14	0.000012	0.13	225.73	352.84	0.03
RIVER-1	Reach-3	5335	Q48hr	27.19	173.66	176.48		176.48	0.000007	0.11	377.67	627.03	0.02
RIVER-1	Reach-3	5080	Q2	3.56	173.70	175.01		175.01	0.000013	0.09	48.62	104.29	0.03
RIVER-1	Reach-3	5080	Q5	5.92	173.70	175.20		175.20	0.000017	0.12	73.98	156.05	0.03
RIVER-1	Reach-3	5080	Q25	10.67	173.70	175.30		175.30	0.000036	0.18	91.01	171.88	0.05
RIVER-1	Reach-3	5080	Q100	14.08	173.70	175.47		175.47	0.000028	0.17	120.94	192.56	0.04
RIVER-1	Reach-3	5080	Qreg	19.14	173.70	176.14		176.14	0.000005	0.09	313.62	486.34	0.02
RIVER-1	Reach-3	5080	Q48hr	27.19	173.70	176.48		176.48	0.000004	0.09	556.03	924.49	0.02
RIVER-1	Reach-3	4910	Q2	3.56	173.72	175.01		175.01	0.000030	0.14	42.71	113.82	0.04
RIVER-1	Reach-3	4910	Q5	5.92	173.72	175.20		175.20	0.000028	0.15	67.23	141.51	0.04
RIVER-1	Reach-3	4910	Q25	10.67	173.72	175.30		175.30	0.000052	0.21	82.35	160.19	0.06
RIVER-1	Reach-3	4910	Q100	14.08	173.72	175.46		175.47	0.000041	0.20	115.63	253.74	0.05
RIVER-1	Reach-3	4910	Qreg	19.14	173.72	176.14		176.14	0.000003	0.07	561.46	1259.33	0.02
RIVER-1	Reach-3	4910	Q48hr	27.19	173.72	176.48		176.48	0.000002	0.06	1070.99	1637.41	0.01
RIVER-1	Reach-3	4720	Q2	3.56	173.73	174.93	174.41	174.99	0.002005	1.13	3.27	134.19	0.36
RIVER-1	Reach-3	4720	Q5	5.92	173.73	175.05	174.62	175.18	0.003598	1.63	4.19	179.56	0.49

HEC-RAS Plan: Fringe6_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	4720	Q25	10.67	173.73	175.23	175.23	175.28	0.013680	1.27	13.69	215.17	0.75
RIVER-1	Reach-3	4720	Q100	14.08	173.73	175.45	175.25	175.45	0.000349	0.30	75.75	386.92	0.13
RIVER-1	Reach-3	4720	Qreg	19.14	173.73	176.14	175.27	176.14	0.000002	0.04	724.30	1350.98	0.01
RIVER-1	Reach-3	4720	Q48hr	27.19	173.73	176.48	175.30	176.48	0.000001	0.03	1226.40	1538.31	0.01
RIVER-1	Reach-3	4702.5		Culvert									
RIVER-1	Reach-3	4686	Q2	3.56	173.56	174.73		174.81	0.002602	1.23	2.90	79.67	0.40
RIVER-1	Reach-3	4686	Q5	5.92	173.56	174.85	174.50	175.02	0.004955	1.83	3.24	116.03	0.56
RIVER-1	Reach-3	4686	Q25	10.67	173.56	175.23		175.24	0.004039	0.67	22.81	259.33	0.40
RIVER-1	Reach-3	4686	Q100	14.08	173.56	175.45		175.45	0.000178	0.21	106.16	541.13	0.09
RIVER-1	Reach-3	4686	Qreg	19.14	173.56	176.14		176.14	0.000002	0.03	826.50	1365.49	0.01
RIVER-1	Reach-3	4686	Q48hr	27.19	173.56	176.48		176.48	0.000001	0.03	1333.15	1564.81	0.01
RIVER-1	Reach-3	4489	Q2	3.56	173.77	174.78		174.78	0.000030	0.10	45.92	124.97	0.04
RIVER-1	Reach-3	4489	Q5	5.92	173.77	174.96		174.96	0.000028	0.11	69.84	145.69	0.04
RIVER-1	Reach-3	4489	Q25	10.67	173.77	175.23		175.23	0.000022	0.12	120.32	276.78	0.04
RIVER-1	Reach-3	4489	Q100	14.08	173.77	175.45		175.45	0.000013	0.10	231.02	723.28	0.03
RIVER-1	Reach-3	4489	Qreg	19.14	173.77	176.14		176.14	0.000001	0.03	922.88	1203.54	0.01
RIVER-1	Reach-3	4489	Q48hr	27.19	173.77	176.48		176.48	0.000001	0.03	1365.44	1356.34	0.01
RIVER-1	Reach-3	4334	Q2	3.56	173.92	174.78		174.78	0.000011	0.06	73.95	170.47	0.02
RIVER-1	Reach-3	4334	Q5	5.92	173.92	174.96		174.96	0.000010	0.07	108.87	221.18	0.02
RIVER-1	Reach-3	4334	Q25	10.67	173.92	175.23		175.23	0.000009	0.08	178.70	273.62	0.02
RIVER-1	Reach-3	4334	Q100	14.08	173.92	175.45		175.45	0.000006	0.07	253.89	508.86	0.02
RIVER-1	Reach-3	4334	Qreg	19.14	173.92	176.14		176.14	0.000001	0.03	937.11	1268.93	0.01
RIVER-1	Reach-3	4334	Q48hr	27.19	173.92	176.48		176.48	0.000001	0.03	1386.05	1322.10	0.01
RIVER-1	Reach-4	4079	Q2	3.74	173.70	174.77		174.77	0.000292	0.35	13.84	49.14	0.13
RIVER-1	Reach-4	4079	Q5	6.42	173.70	174.95		174.95	0.000233	0.36	26.72	85.74	0.12
RIVER-1	Reach-4	4079	Q25	11.14	173.70	175.23		175.23	0.000102	0.29	61.45	160.23	0.08
RIVER-1	Reach-4	4079	Q100	14.84	173.70	175.45		175.45	0.000049	0.22	113.18	348.05	0.06
RIVER-1	Reach-4	4079	Qreg	28.85	173.70	176.14		176.14	0.000004	0.09	616.51	1046.59	0.02
RIVER-1	Reach-4	4079	Q48hr	42.75	173.70	176.48		176.48	0.000003	0.07	995.45	1137.26	0.01
RIVER-1	Reach-4	3829	Q2	3.74	173.70	174.76	174.18	174.76	0.000168	0.25	19.18	60.81	0.10
RIVER-1	Reach-4	3829	Q5	6.42	173.70	174.94	174.30	174.94	0.000140	0.27	32.60	94.52	0.09
RIVER-1	Reach-4	3829	Q25	11.14	173.70	175.22	174.49	175.23	0.000076	0.23	72.48	220.93	0.07
RIVER-1	Reach-4	3829	Q100	14.84	173.70	175.44	174.60	175.45	0.000033	0.17	140.79	390.18	0.05
RIVER-1	Reach-4	3829	Qreg	28.85	173.70	176.14	174.76	176.14	0.000004	0.08	588.61	978.13	0.02
RIVER-1	Reach-4	3829	Q48hr	42.75	173.70	176.48	174.83	176.48	0.000003	0.07	951.92	1091.98	0.01
RIVER-1	Reach-4	3520	Q2	3.74	173.71	174.74	174.18	174.74	0.000240	0.17	34.22	73.29	0.07
RIVER-1	Reach-4	3520	Q5	6.42	173.71	174.93	174.30	174.93	0.000265	0.21	49.39	96.66	0.07
RIVER-1	Reach-4	3520	Q25	11.14	173.71	175.21	174.40	175.22	0.000222	0.23	82.14	134.00	0.07
RIVER-1	Reach-4	3520	Q100	14.84	173.71	175.44	174.43	175.44	0.000156	0.22	142.18	423.01	0.06
RIVER-1	Reach-4	3520	Qreg	28.85	173.71	176.14	174.55	176.14	0.000028	0.12	623.19	901.96	0.03
RIVER-1	Reach-4	3520	Q48hr	42.75	173.71	176.48	174.64	176.48	0.000019	0.11	950.06	993.45	0.02
RIVER-1	Reach-4	3215	Q2	3.74	173.69	174.71	174.14	174.71	0.000316	0.20	32.87	123.32	0.08
RIVER-1	Reach-4	3215	Q5	6.42	173.69	174.90	174.23	174.90	0.000235	0.20	63.45	207.85	0.07
RIVER-1	Reach-4	3215	Q25	11.14	173.69	175.20	174.38	175.20	0.000108	0.16	146.89	371.28	0.05
RIVER-1	Reach-4	3215	Q100	14.84	173.69	175.43	174.48	175.43	0.000058	0.14	250.38	541.67	0.04
RIVER-1	Reach-4	3215	Qreg	28.85	173.69	176.14	174.66	176.14	0.000012	0.08	822.52	905.13	0.02
RIVER-1	Reach-4	3215	Q48hr	42.75	173.69	176.48	174.75	176.48	0.000010	0.08	1139.88	941.63	0.02
RIVER-1	Reach-4	2884	Q2	3.74	173.66	174.69	174.12	174.69	0.000173	0.14	39.24	103.97	0.06
RIVER-1	Reach-4	2884	Q5	6.42	173.66	174.88	174.20	174.88	0.000163	0.16	61.27	126.76	0.06
RIVER-1	Reach-4	2884	Q25	11.14	173.66	175.19	174.28	175.19	0.000124	0.18	113.30	228.35	0.05
RIVER-1	Reach-4	2884	Q100	14.84	173.66	175.42	174.32	175.42	0.000082	0.16	177.19	336.32	0.04
RIVER-1	Reach-4	2884	Qreg	28.85	173.66	176.13	174.49	176.13	0.000024	0.11	600.56	717.72	0.03
RIVER-1	Reach-4	2884	Q48hr	42.75	173.66	176.48	174.59	176.48	0.000018	0.11	856.12	770.63	0.02
RIVER-1	Reach-4	2287	Q2	3.74	173.63	174.64		174.64	0.000461	0.22	33.64	145.77	0.09
RIVER-1	Reach-4	2287	Q5	6.42	173.63	174.84		174.84	0.000218	0.17	77.89	269.81	0.06
RIVER-1	Reach-4	2287	Q25	11.14	173.63	175.17		175.17	0.000077	0.13	191.54	394.04	0.04
RIVER-1	Reach-4	2287	Q100	14.84	173.63	175.41		175.41	0.000039	0.11	295.01	463.60	0.03
RIVER-1	Reach-4	2287	Qreg	28.85	173.63	176.13		176.13	0.000013	0.08	747.97	716.24	0.02
RIVER-1	Reach-4	2287	Q48hr	42.75	173.63	176.48		176.48	0.000011	0.08	1002.64	765.19	0.02
RIVER-1	Reach-4	1955	Q2	3.76	173.60	174.61		174.61	0.000219	0.15	39.27	95.24	0.06
RIVER-1	Reach-4	1955	Q5	6.44	173.60	174.83		174.83	0.000188	0.16	67.11	176.38	0.06
RIVER-1	Reach-4	1955	Q25	11.16	173.60	175.16		175.16	0.000103	0.15	148.50	357.07	0.05
RIVER-1	Reach-4	1955	Q100	14.87	173.60	175.41		175.41	0.000060	0.13	257.41	509.25	0.04
RIVER-1	Reach-4	1955	Qreg	31.39	173.60	176.13		176.13	0.000017	0.10	688.16	639.87	0.02
RIVER-1	Reach-4	1955	Q48hr	46.33	173.60	176.48		176.48	0.000016	0.10	920.28	713.55	0.02
RIVER-1	Reach-4	1602	Q2	3.76	173.19	174.57		174.57	0.000346	0.24	25.58	62.69	0.08
RIVER-1	Reach-4	1602	Q5	6.44	173.19	174.79		174.79	0.000345	0.28	40.32	74.95	0.08
RIVER-1	Reach-4	1602	Q25	11.16	173.19	175.13		175.14	0.000283	0.30	71.65	113.12	0.08
RIVER-1	Reach-4	1602	Q100	14.87	173.19	175.39		175.39	0.000226	0.30	108.71	180.82	0.07
RIVER-1	Reach-4	1602	Qreg	31.39	173.19	176.12		176.12	0.000093	0.24	296.40	346.57	0.05
RIVER-1	Reach-4	1602	Q48hr	46.33	173.19	176.47		176.47	0.000082	0.25	437.42	462.51	0.05

HEC-RAS Plan: Fringe6_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	1586	Q2	3.76	173.13	174.90	173.87	174.96	0.002888	1.12	3.35	8.00	0.27
RIVER-1	Reach-4	1586	Q5	6.44	173.13	175.43	174.19	175.54	0.003518	1.48	4.37	10.42	0.31
RIVER-1	Reach-4	1586	Q25	11.16	173.13	177.11	174.66	177.22	0.001698	1.48	7.55	490.15	0.24
RIVER-1	Reach-4	1586	Q100	14.87	173.13	177.28	174.98	177.46	0.002619	1.89	7.88	494.30	0.30
RIVER-1	Reach-4	1586	Qreg	31.39	173.13	177.87	177.57	177.87	0.000532	0.35	220.24	494.30	0.10
RIVER-1	Reach-4	1586	Q48hr	46.33	173.13	177.65	177.60	177.68	0.008306	1.22	114.43	494.30	0.38
RIVER-1	Reach-4	1550		Culvert									
RIVER-1	Reach-4	1514	Q2	3.76	173.32	174.71		174.81	0.001616	1.43	2.63	34.51	0.39
RIVER-1	Reach-4	1514	Q5	6.44	173.32	174.97		175.19	0.002667	2.06	3.13	55.47	0.51
RIVER-1	Reach-4	1514	Q25	11.16	173.32	175.51		175.88	0.003132	2.69	4.15	90.73	0.58
RIVER-1	Reach-4	1514	Q100	14.87	173.32	175.32	175.16	176.10	0.007538	3.93	3.79	80.20	0.89
RIVER-1	Reach-4	1514	Qreg	31.39	173.32	176.34	176.34	177.87	0.008397	5.47	5.74	232.24	1.00
RIVER-1	Reach-4	1514	Q48hr	46.33	173.32	177.64	177.64	177.68	0.002697	1.50	100.78	465.20	0.44
RIVER-1	Reach-4	1336	Q2	3.76	173.33	174.77		174.78	0.000046	0.18	39.43	112.99	0.06
RIVER-1	Reach-4	1336	Q5	6.44	173.33	175.12		175.12	0.000021	0.15	84.91	148.69	0.04
RIVER-1	Reach-4	1336	Q25	11.16	173.33	175.76		175.76	0.000006	0.10	215.44	255.22	0.02
RIVER-1	Reach-4	1336	Q100	14.87	173.33	175.86		175.86	0.000008	0.13	241.48	270.21	0.03
RIVER-1	Reach-4	1336	Qreg	31.39	173.33	177.16	174.67	177.16	0.000002	0.09	697.06	401.80	0.02
RIVER-1	Reach-4	1336	Q48hr	46.33	173.33	177.36	174.76	177.36	0.000003	0.12	779.58	401.80	0.02
RIVER-1	Reach-4	1282	Q2	3.76	173.36	174.76	173.85	174.77	0.000268	0.54	6.97	35.66	0.15
RIVER-1	Reach-4	1282	Q5	6.44	173.36	175.09	174.01	175.12	0.000364	0.73	8.78	53.70	0.19
RIVER-1	Reach-4	1282	Q25	11.16	173.36	175.72	174.24	175.76	0.000361	0.91	12.24	104.89	0.20
RIVER-1	Reach-4	1282	Q100	14.87	173.36	175.79	174.39	175.86	0.000580	1.18	12.61	107.07	0.25
RIVER-1	Reach-4	1282	Qreg	31.39	173.36	177.01	174.98	177.14	0.000620	1.62	19.36	277.43	0.28
RIVER-1	Reach-4	1282	Q48hr	46.33	173.36	177.05	175.42	177.34	0.001303	2.37	19.57	283.52	0.40
RIVER-1	Reach-4	1229		Culvert									
RIVER-1	Reach-4	1176	Q2	3.76	173.32	174.75		174.76	0.000244	0.52	7.17	131.61	0.15
RIVER-1	Reach-4	1176	Q5	6.44	173.32	175.08		175.10	0.000341	0.72	8.96	175.30	0.18
RIVER-1	Reach-4	1176	Q25	11.16	173.32	175.65		175.69	0.000374	0.92	12.11	217.61	0.20
RIVER-1	Reach-4	1176	Q100	14.87	173.32	175.66		175.74	0.000653	1.22	12.17	218.10	0.26
RIVER-1	Reach-4	1176	Qreg	31.39	173.32	176.27		176.48	0.001294	2.02	15.52	261.69	0.38
RIVER-1	Reach-4	1176	Q48hr	46.33	173.32	175.44	175.37	176.35	0.008964	4.22	10.97	204.05	0.95
RIVER-1	Reach-4	1003	Q2	3.76	173.39	174.75		174.75	0.000010	0.07	76.54	248.76	0.02
RIVER-1	Reach-4	1003	Q5	6.44	173.39	175.09		175.09	0.000003	0.05	187.29	418.56	0.01
RIVER-1	Reach-4	1003	Q25	11.16	173.39	175.67		175.67	0.000001	0.03	515.77	660.64	0.01
RIVER-1	Reach-4	1003	Q100	14.87	173.39	175.70		175.70	0.000001	0.03	533.91	666.92	0.01
RIVER-1	Reach-4	1003	Qreg	31.39	173.39	176.37		176.37	0.000001	0.03	1012.75	724.70	0.01
RIVER-1	Reach-4	1003	Q48hr	46.33	173.39	175.89		175.89	0.000006	0.08	668.90	702.66	0.02
RIVER-1	Reach-4	946	Q2	3.76	173.40	174.75		174.75	0.000007	0.08	107.28	381.83	0.02
RIVER-1	Reach-4	946	Q5	6.44	173.40	175.09		175.09	0.000002	0.05	252.55	467.88	0.01
RIVER-1	Reach-4	946	Q25	11.16	173.40	175.67		175.67	0.000001	0.03	570.28	599.27	0.01
RIVER-1	Reach-4	946	Q100	14.87	173.40	175.70		175.70	0.000001	0.04	586.69	600.55	0.01
RIVER-1	Reach-4	946	Qreg	31.39	173.40	176.37		176.37	0.000001	0.05	995.24	606.65	0.01
RIVER-1	Reach-4	946	Q48hr	46.33	173.40	175.89		175.89	0.000005	0.11	704.62	604.65	0.02
RIVER-1	Reach-4	884	Q2	3.76	173.40	174.75		174.75	0.000008	0.09	111.04	327.12	0.03
RIVER-1	Reach-4	884	Q5	6.44	173.40	175.09		175.09	0.000003	0.07	235.25	404.27	0.02
RIVER-1	Reach-4	884	Q25	11.16	173.40	175.67		175.67	0.000001	0.05	511.62	490.31	0.01
RIVER-1	Reach-4	884	Q100	14.87	173.40	175.70		175.70	0.000002	0.06	525.02	491.04	0.01
RIVER-1	Reach-4	884	Qreg	31.39	173.40	176.37		176.37	0.000002	0.07	860.08	498.39	0.01
RIVER-1	Reach-4	884	Q48hr	46.33	173.40	175.89		175.89	0.000010	0.15	621.32	495.38	0.03
RIVER-1	Reach-4	685	Q2	3.76	173.42	174.75		174.75	0.000011	0.09	92.93	278.65	0.03
RIVER-1	Reach-4	685	Q5	6.44	173.42	175.09		175.09	0.000004	0.07	193.25	327.21	0.02
RIVER-1	Reach-4	685	Q25	11.16	173.42	175.67		175.67	0.000002	0.05	400.67	369.65	0.01
RIVER-1	Reach-4	685	Q100	14.87	173.42	175.70		175.70	0.000002	0.07	410.76	370.85	0.02
RIVER-1	Reach-4	685	Qreg	31.39	173.42	176.37		176.37	0.000002	0.08	671.93	407.14	0.02
RIVER-1	Reach-4	685	Q48hr	46.33	173.42	175.89		175.89	0.000015	0.18	483.18	375.74	0.04
RIVER-1	Reach-4	522	Q2	3.76	173.44	174.70	174.16	174.75	0.001280	1.00	3.74	136.09	0.32
RIVER-1	Reach-4	522	Q5	6.44	173.44	174.99	174.36	175.08	0.001601	1.33	4.84	217.18	0.37
RIVER-1	Reach-4	522	Q25	11.16	173.44	175.52	174.66	175.66	0.001516	1.63	6.84	366.62	0.39
RIVER-1	Reach-4	522	Q100	14.87	173.44	175.39	174.86	175.67	0.003455	2.34	6.35	364.06	0.58
RIVER-1	Reach-4	522	Qreg	31.39	173.44	176.37	175.74	176.37	0.000041	0.22	282.76	372.71	0.06
RIVER-1	Reach-4	522	Q48hr	46.33	173.44	175.85	175.78	175.89	0.003158	1.35	89.58	371.05	0.49
RIVER-1	Reach-4	499		Culvert									
RIVER-1	Reach-4	476	Q2	3.76	173.22	174.50		174.55	0.001248	0.98	3.82	19.57	0.31
RIVER-1	Reach-4	476	Q5	6.44	173.22	174.49		174.64	0.003777	1.70	3.79	18.97	0.54
RIVER-1	Reach-4	476	Q25	11.16	173.22	174.44	174.44	174.93	0.013403	3.10	3.60	16.68	1.01
RIVER-1	Reach-4	476	Q100	14.87	173.22	174.65	174.65	175.24	0.012554	3.41	4.37	56.76	1.01
RIVER-1	Reach-4	476	Qreg	31.39	173.22	175.39	175.39	176.37	0.010691	4.38	7.17	324.59	1.01
RIVER-1	Reach-4	476	Q48hr	46.33	173.22	175.80	175.80	175.89	0.005617	1.95	69.37	366.31	0.66

HEC-RAS Plan: Fringe6_BC_174.50 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	256	Q2	3.64	173.43	174.51	173.92	174.51	0.000083	0.17	36.90	153.05	0.07
RIVER-1	Reach-4	256	Q5	6.19	173.43	174.53	174.12	174.53	0.000197	0.26	39.80	157.13	0.11
RIVER-1	Reach-4	256	Q25	10.20	173.43	174.57	174.24	174.58	0.000364	0.37	46.31	166.82	0.16
RIVER-1	Reach-4	256	Q100	14.39	173.43	174.61	174.33	174.62	0.000486	0.45	53.94	180.04	0.18
RIVER-1	Reach-4	256	Qreg	32.35	173.43	174.80	174.48	174.81	0.000617	0.61	93.11	232.90	0.22
RIVER-1	Reach-4	256	Q48hr	47.42	173.43	174.91	174.55	174.92	0.000691	0.70	118.21	241.75	0.23
RIVER-1	Reach-4	1	Q2	3.64	173.97	174.50	174.17	174.50	0.000236	0.26	20.46	104.27	0.12
RIVER-1	Reach-4	1	Q5	6.19	173.97	174.50	174.23	174.51	0.000685	0.44	20.46	104.27	0.21
RIVER-1	Reach-4	1	Q25	10.20	173.97	174.50	174.32	174.52	0.001859	0.73	20.46	104.27	0.34
RIVER-1	Reach-4	1	Q100	14.39	173.97	174.50	174.39	174.54	0.003697	1.03	20.46	104.27	0.49
RIVER-1	Reach-4	1	Qreg	32.35	173.97	174.57	174.57	174.69	0.009402	1.80	28.64	135.15	0.79
RIVER-1	Reach-4	1	Q48hr	47.42	173.97	174.65	174.65	174.79	0.009809	2.02	39.73	145.62	0.83

HEC-RAS Model Output:

Fringe6 Conditions

Simulation Results for 174.91 m Boundary Condition

HEC-RAS Plan: Fringe6_BC_174.91

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-5	Reach-1	3365	Q2	0.30	175.82	176.58	176.04	176.58	0.000284	0.16	1.83	3.79	0.07
RIVER-5	Reach-1	3365	Q5	0.67	175.82	176.88	176.15	176.89	0.000282	0.20	5.77	62.84	0.08
RIVER-5	Reach-1	3365	Q25	1.26	175.82	177.09	176.27	177.09	0.000060	0.10	45.88	362.63	0.04
RIVER-5	Reach-1	3365	Q100	1.80	175.82	177.21	176.35	177.21	0.000020	0.06	98.54	487.95	0.02
RIVER-5	Reach-1	3365	Qreg	3.95	175.82	177.47	176.58	177.47	0.000008	0.05	247.89	645.05	0.01
RIVER-5	Reach-1	3365	Q48hr	6.04	175.82	177.76	176.96	177.76	0.000003	0.04	457.09	748.61	0.01
RIVER-5	Reach-1	2275	Q2	0.30	175.75	176.48	175.95	176.48	0.000313	0.17	1.71	3.42	0.08
RIVER-5	Reach-1	2275	Q5	0.67	175.75	176.77	176.05	176.77	0.000427	0.24	2.79	4.17	0.09
RIVER-5	Reach-1	2275	Q25	1.26	175.75	177.04	176.16	177.04	0.000558	0.31	4.49	18.23	0.11
RIVER-5	Reach-1	2275	Q100	1.80	175.75	177.19	176.25	177.19	0.000384	0.28	16.31	142.13	0.09
RIVER-5	Reach-1	2275	Qreg	3.95	175.75	177.47	176.49	177.47	0.000090	0.16	93.53	466.31	0.05
RIVER-5	Reach-1	2275	Q48hr	6.04	175.75	177.76	176.68	177.76	0.000014	0.08	267.35	644.93	0.02
RIVER-5	Reach-1	1732	Q2	0.30	175.82	176.36		176.37	0.002562	0.43	0.69	4.05	0.20
RIVER-5	Reach-1	1732	Q5	0.67	175.82	176.59		176.62	0.003386	0.64	1.05	5.24	0.25
RIVER-5	Reach-1	1732	Q25	1.26	175.82	176.78		176.83	0.005413	0.95	1.32	6.17	0.32
RIVER-5	Reach-1	1732	Q100	1.80	175.82	176.96		177.02	0.005954	1.13	1.59	7.12	0.35
RIVER-5	Reach-1	1732	Qreg	3.95	175.82	177.17		177.39	0.015498	2.06	1.92	37.75	0.58
RIVER-5	Reach-1	1732	Q48hr	6.04	175.82	177.27		177.71	0.028589	2.94	2.06	54.61	0.80
RIVER-5	Reach-1	1690.5		Culvert									
RIVER-5	Reach-1	1649	Q2	0.30	175.88	176.57	176.15	176.58	0.001160	0.34	0.87	6.31	0.14
RIVER-5	Reach-1	1649	Q5	0.67	175.88	176.84	176.27	176.86	0.001711	0.53	1.27	7.76	0.18
RIVER-5	Reach-1	1649	Q25	1.26	175.88	177.07	176.41	177.10	0.002711	0.78	1.62	82.39	0.24
RIVER-5	Reach-1	1649	Q100	1.80	175.88	177.19	176.52	177.24	0.003905	1.00	1.80	192.50	0.29
RIVER-5	Reach-1	1649	Qreg	3.95	175.88	177.45	176.88	177.62	0.009753	1.81	2.19	330.82	0.48
RIVER-5	Reach-1	1649	Q48hr	6.04	175.88	177.54	177.17	177.88	0.018727	2.60	2.32	346.91	0.67
RIVER-5	Reach-1	1233	Q2	0.30	175.85	176.33		176.34	0.003480	0.35	0.85	2.94	0.21
RIVER-5	Reach-1	1233	Q5	0.67	175.85	176.66		176.66	0.001312	0.30	2.34	7.07	0.14
RIVER-5	Reach-1	1233	Q25	1.26	175.85	176.94		176.95	0.000602	0.24	5.26	14.92	0.10
RIVER-5	Reach-1	1233	Q100	1.80	175.85	177.07		177.08	0.000509	0.24	9.00	64.69	0.09
RIVER-5	Reach-1	1233	Qreg	3.95	175.85	177.53		177.53	0.000010	0.04	104.29	337.57	0.01
RIVER-5	Reach-1	1233	Q48hr	6.04	175.85	177.71		177.71	0.000006	0.03	170.14	384.61	0.01
RIVER-5	Reach-1	673	Q2	0.30	175.45	176.27		176.27	0.000143	0.10	2.81	5.40	0.05
RIVER-5	Reach-1	673	Q5	0.67	175.45	176.60		176.60	0.000164	0.14	4.71	6.11	0.05
RIVER-5	Reach-1	673	Q25	1.26	175.45	176.88		176.88	0.000254	0.19	6.58	7.65	0.07
RIVER-5	Reach-1	673	Q100	1.80	175.45	176.99		176.99	0.000446	0.24	7.58	9.95	0.09
RIVER-5	Reach-1	673	Qreg	3.95	175.45	177.53		177.53	0.000026	0.08	67.15	247.99	0.02
RIVER-5	Reach-1	673	Q48hr	6.04	175.45	177.71		177.71	0.000014	0.06	120.05	327.71	0.02
RIVER-4	Reach-1	5305	Q2	0.26	175.17	176.19	175.34	176.19	0.000061	0.07	4.28	8.79	0.03
RIVER-4	Reach-1	5305	Q5	0.72	175.17	176.53	175.46	176.53	0.000101	0.11	8.91	18.74	0.04
RIVER-4	Reach-1	5305	Q25	1.51	175.17	176.80	175.61	176.80	0.000120	0.13	24.27	152.87	0.04
RIVER-4	Reach-1	5305	Q100	2.63	175.17	176.97	175.76	176.97	0.000071	0.10	64.06	270.38	0.03
RIVER-4	Reach-1	5305	Qreg	6.51	175.17	177.53	176.07	177.53	0.000010	0.05	278.45	558.62	0.01
RIVER-4	Reach-1	5305	Q48hr	9.62	175.17	177.71	176.23	177.71	0.000009	0.05	388.71	665.57	0.01
RIVER-4	Reach-1	4959	Q2	0.26	175.06	176.19		176.19	0.000031	0.05	5.97	11.58	0.02
RIVER-4	Reach-1	4959	Q5	0.72	175.06	176.53		176.53	0.000063	0.09	10.99	20.15	0.03
RIVER-4	Reach-1	4959	Q25	1.51	175.06	176.79		176.79	0.000075	0.10	28.74	170.65	0.03
RIVER-4	Reach-1	4959	Q100	2.63	175.06	176.97		176.97	0.000050	0.09	69.68	288.73	0.03
RIVER-4	Reach-1	4959	Qreg	6.51	175.06	177.53		177.53	0.000007	0.04	368.68	788.36	0.01
RIVER-4	Reach-1	4959	Q48hr	9.62	175.06	177.71		177.71	0.000006	0.04	523.58	931.88	0.01
RIVER-4	Reach-1	4536	Q2	0.31	175.31	176.18		176.18	0.000173	0.10	3.80	8.55	0.04
RIVER-4	Reach-1	4536	Q5	0.84	175.31	176.51		176.51	0.000228	0.13	7.38	14.11	0.05
RIVER-4	Reach-1	4536	Q25	1.81	175.31	176.78		176.78	0.000216	0.15	27.06	243.75	0.05
RIVER-4	Reach-1	4536	Q100	3.16	175.31	176.96		176.96	0.000066	0.09	89.53	412.58	0.03
RIVER-4	Reach-1	4536	Qreg	8.04	175.31	177.52		177.52	0.000006	0.03	444.93	904.07	0.01
RIVER-4	Reach-1	4536	Q48hr	11.95	175.31	177.71		177.71	0.000006	0.03	621.44	1010.10	0.01
RIVER-4	Reach-2	3842	Q2	0.59	175.54	175.98		175.99	0.006465	0.49	1.21	4.19	0.29
RIVER-4	Reach-2	3842	Q5	1.48	175.54	176.31		176.33	0.003357	0.53	2.90	7.84	0.23
RIVER-4	Reach-2	3842	Q25	2.97	175.54	176.66		176.66	0.001065	0.37	9.39	40.46	0.13
RIVER-4	Reach-2	3842	Q100	4.77	175.54	176.94		176.94	0.000098	0.13	52.37	325.54	0.04
RIVER-4	Reach-2	3842	Qreg	11.60	175.54	177.52		177.52	0.000003	0.03	427.78	892.54	0.01
RIVER-4	Reach-2	3842	Q48hr	17.29	175.54	177.70		177.70	0.000002	0.03	594.90	951.91	0.01
RIVER-4	Reach-2	3440	Q2	0.59	174.86	175.79		175.80	0.000694	0.24	2.43	4.21	0.10
RIVER-4	Reach-2	3440	Q5	1.48	174.86	176.18		176.18	0.000613	0.28	5.62	12.35	0.10
RIVER-4	Reach-2	3440	Q25	2.97	174.86	176.61		176.61	0.000306	0.24	11.82	17.64	0.07
RIVER-4	Reach-2	3440	Q100	4.77	174.86	176.93		176.93	0.000138	0.18	34.25	185.93	0.05
RIVER-4	Reach-2	3440	Qreg	11.60	174.86	177.52		177.52	0.000004	0.04	352.21	731.28	0.01
RIVER-4	Reach-2	3440	Q48hr	17.29	174.86	177.70		177.70	0.000004	0.04	489.47	785.84	0.01
RIVER-4	Reach-2	3128	Q2	0.59	174.79	175.74		175.74	0.000436	0.20	2.94	4.89	0.08
RIVER-4	Reach-2	3128	Q5	1.48	174.79	176.12		176.12	0.000628	0.29	5.01	6.05	0.10
RIVER-4	Reach-2	3128	Q25	2.97	174.79	176.56		176.57	0.000721	0.37	7.94	7.33	0.11
RIVER-4	Reach-2	3128	Q100	4.77	174.79	176.90		176.90	0.000822	0.44	11.87	41.14	0.12

HEC-RAS Plan: Fringe6_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-4	Reach-2	3128	Qreg	11.60	174.79	177.52		177.52	0.000006	0.05	331.81	873.76	0.01
RIVER-4	Reach-2	3128	Q48hr	17.29	174.79	177.70		177.70	0.000004	0.04	498.06	956.23	0.01
RIVER-4	Reach-2	2805	Q2	0.59	174.82	175.69		175.69	0.000761	0.20	2.90	7.23	0.10
RIVER-4	Reach-2	2805	Q5	1.48	174.82	176.06		176.07	0.000570	0.26	5.76	7.88	0.10
RIVER-4	Reach-2	2805	Q25	2.97	174.82	176.50		176.51	0.000489	0.30	10.36	17.96	0.09
RIVER-4	Reach-2	2805	Q100	4.77	174.82	176.85		176.86	0.000338	0.29	17.69	23.79	0.08
RIVER-4	Reach-2	2805	Qreg	11.60	174.82	177.52		177.52	0.000017	0.08	204.82	526.83	0.02
RIVER-4	Reach-2	2805	Q48hr	17.29	174.82	177.70		177.70	0.000012	0.07	306.66	590.38	0.02
RIVER-4	Reach-2	1709	Q2	0.59	174.55	175.33		175.34	0.001520	0.34	1.75	3.14	0.14
RIVER-4	Reach-2	1709	Q5	1.48	174.55	175.74		175.75	0.001874	0.47	3.12	3.63	0.16
RIVER-4	Reach-2	1709	Q25	2.97	174.55	176.19		176.21	0.002244	0.61	4.88	4.21	0.18
RIVER-4	Reach-2	1709	Q100	4.77	174.55	176.58		176.61	0.002571	0.72	6.66	4.89	0.20
RIVER-4	Reach-2	1709	Qreg	11.60	174.55	177.50		177.51	0.000351	0.32	50.23	160.55	0.08
RIVER-4	Reach-2	1709	Q48hr	17.29	174.55	177.69		177.69	0.000203	0.26	90.67	271.03	0.06
RIVER-4	Reach-2	1139	Q2	0.64	174.23	175.16		175.17	0.000700	0.25	2.53	4.14	0.10
RIVER-4	Reach-2	1139	Q5	1.58	174.23	175.48		175.49	0.001255	0.40	3.95	4.87	0.14
RIVER-4	Reach-2	1139	Q25	3.16	174.23	175.86		175.88	0.001619	0.52	6.02	5.89	0.17
RIVER-4	Reach-2	1139	Q100	5.03	174.23	176.23		176.25	0.001718	0.60	8.36	6.92	0.17
RIVER-4	Reach-2	1139	Qreg	12.35	174.23	177.40		177.41	0.000903	0.57	28.75	118.84	0.14
RIVER-4	Reach-2	1139	Q48hr	18.42	174.23	177.64		177.65	0.000374	0.40	75.01	260.74	0.09
RIVER-4	Reach-2	1021	Q2	0.64	174.45	175.12	174.72	175.13	0.001269	0.41	1.54	4.88	0.17
RIVER-4	Reach-2	1021	Q5	1.58	174.45	175.40	174.87	175.43	0.002155	0.70	2.26	5.37	0.24
RIVER-4	Reach-2	1021	Q25	3.16	174.45	175.75	175.06	175.80	0.002812	1.00	3.16	6.04	0.29
RIVER-4	Reach-2	1021	Q100	5.03	174.45	176.08	175.26	176.16	0.003195	1.25	4.03	39.25	0.32
RIVER-4	Reach-2	1021	Qreg	12.35	174.45	177.17	175.85	177.34	0.003255	1.80	6.96	157.06	0.35
RIVER-4	Reach-2	1021	Q48hr	18.42	174.45	177.21	176.25	177.57	0.006827	2.63	7.24	160.19	0.51
RIVER-4	Reach-2	975		Culvert									
RIVER-4	Reach-2	929	Q2	0.64	174.12	174.98		174.99	0.000967	0.38	1.66	9.23	0.15
RIVER-4	Reach-2	929	Q5	1.58	174.12	175.13		175.16	0.002965	0.77	2.05	9.83	0.28
RIVER-4	Reach-2	929	Q25	3.16	174.12	175.39		175.46	0.004625	1.16	2.71	11.86	0.36
RIVER-4	Reach-2	929	Q100	5.03	174.12	175.62		175.74	0.006025	1.52	3.31	13.52	0.43
RIVER-4	Reach-2	929	Qreg	12.35	174.12	176.22		176.55	0.010005	2.53	4.88	21.40	0.59
RIVER-4	Reach-2	929	Q48hr	18.42	174.12	176.30		176.97	0.019298	3.62	5.09	21.79	0.83
RIVER-4	Reach-2	485	Q2	0.64	173.89	174.97	174.09	174.97	0.000044	0.09	6.81	8.05	0.03
RIVER-4	Reach-2	485	Q5	1.58	173.89	175.08	174.18	175.08	0.000190	0.21	7.71	8.30	0.07
RIVER-4	Reach-2	485	Q25	3.16	173.89	175.28	174.30	175.29	0.000422	0.33	9.45	8.84	0.10
RIVER-4	Reach-2	485	Q100	5.03	173.89	175.47	174.41	175.48	0.000680	0.45	11.10	9.33	0.13
RIVER-4	Reach-2	485	Qreg	12.35	173.89	176.14	174.72	176.16	0.000698	0.61	26.17	48.37	0.14
RIVER-4	Reach-2	485	Q48hr	18.42	173.89	176.49	174.93	176.50	0.000347	0.48	61.35	108.34	0.10
RIVER-3	Reach-1	1889	Q2	0.12	176.35	176.48	176.48	176.51	0.045040	0.75	0.16	2.06	0.88
RIVER-3	Reach-1	1889	Q5	0.25	176.35	176.66	176.52	176.67	0.003391	0.39	0.63	3.23	0.28
RIVER-3	Reach-1	1889	Q25	0.43	176.35	177.23	176.57	177.23	0.000054	0.11	5.35	26.27	0.04
RIVER-3	Reach-1	1889	Q100	0.61	176.35	177.15	176.61	177.15	0.000190	0.18	3.83	14.26	0.08
RIVER-3	Reach-1	1889	Qreg	1.25	176.35	177.26	176.72	177.26	0.000339	0.28	6.18	30.35	0.11
RIVER-3	Reach-1	1889	Q48hr	1.90	176.35	177.84	176.80	177.84	0.000006	0.05	49.60	97.50	0.02
RIVER-3	Reach-1	1443	Q2	0.12	175.71	176.27	175.85	176.27	0.000103	0.09	1.26	3.81	0.05
RIVER-3	Reach-1	1443	Q5	0.25	175.71	176.65		176.65	0.000038	0.08	3.06	5.54	0.03
RIVER-3	Reach-1	1443	Q25	0.43	175.71	177.22		177.22	0.000008	0.05	13.13	77.16	0.02
RIVER-3	Reach-1	1443	Q100	0.61	175.71	177.14		177.14	0.000027	0.09	8.59	42.89	0.03
RIVER-3	Reach-1	1443	Qreg	1.25	175.71	177.24		177.24	0.000053	0.13	14.55	80.58	0.04
RIVER-3	Reach-1	1443	Q48hr	1.90	175.71	177.84		177.84	0.000001	0.03	85.89	141.84	0.01
RIVER-3	Reach-1	1255	Q2	0.12	175.45	176.26		176.26	0.000036	0.07	1.72	3.53	0.03
RIVER-3	Reach-1	1255	Q5	0.25	175.45	176.65		176.65	0.000027	0.07	3.34	4.95	0.03
RIVER-3	Reach-1	1255	Q25	0.43	175.45	177.22		177.22	0.000003	0.04	20.45	101.93	0.01
RIVER-3	Reach-1	1255	Q100	0.61	175.45	177.14		177.14	0.000011	0.06	14.53	50.23	0.02
RIVER-3	Reach-1	1255	Qreg	1.25	175.45	177.24		177.24	0.000023	0.10	22.19	105.48	0.03
RIVER-3	Reach-1	1255	Q48hr	1.90	175.45	177.84		177.84	0.000001	0.03	102.28	149.35	0.01
RIVER-3	Reach-1	1186	Q2	0.12	174.90	176.26	175.07	176.26	0.000006	0.05	2.47	3.96	0.01
RIVER-3	Reach-1	1186	Q5	0.25	174.90	176.65	175.13	176.65	0.000010	0.07	3.28	5.70	0.02
RIVER-3	Reach-1	1186	Q25	0.43	174.90	177.22	175.19	177.22	0.000011	0.10	4.49	72.70	0.02
RIVER-3	Reach-1	1186	Q100	0.61	174.90	177.14	175.25	177.14	0.000025	0.14	4.32	64.72	0.03
RIVER-3	Reach-1	1186	Qreg	1.25	174.90	177.24	175.40	177.24	0.000092	0.28	4.52	73.14	0.06
RIVER-3	Reach-1	1186	Q48hr	1.90	174.90	177.84	175.52	177.84	0.000010	0.06	47.41	133.00	0.02
RIVER-3	Reach-1	1168		Culvert									
RIVER-3	Reach-1	1150	Q2	0.12	175.72	176.26	175.86	176.26	0.000202	0.14	0.83	2.25	0.07
RIVER-3	Reach-1	1150	Q5	0.25	175.72	176.65	175.91	176.65	0.000095	0.15	1.64	3.89	0.05
RIVER-3	Reach-1	1150	Q25	0.43	175.72	177.22	175.98	177.22	0.000048	0.15	2.85	60.68	0.04
RIVER-3	Reach-1	1150	Q100	0.61	175.72	177.14	176.03	177.14	0.000116	0.23	2.67	52.87	0.06
RIVER-3	Reach-1	1150	Qreg	1.25	175.72	177.22	176.18	177.23	0.000398	0.44	2.85	60.46	0.12
RIVER-3	Reach-1	1150	Q48hr	1.90	175.72	177.84	176.30	177.84	0.000010	0.06	49.41	144.70	0.02

HEC-RAS Plan: Fringe6_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-3	Reach-1	782	Q2	0.12	175.29	176.26	175.38	176.26	0.000002	0.02	5.42	8.24	0.01
RIVER-3	Reach-1	782	Q5	0.25	175.29	176.65	175.42	176.65	0.000002	0.03	10.31	26.67	0.01
RIVER-3	Reach-1	782	Q25	0.43	175.29	177.22	175.45	177.22	0.000000	0.01	54.37	124.98	0.00
RIVER-3	Reach-1	782	Q100	0.61	175.29	177.14	175.49	177.14	0.000001	0.02	44.35	111.78	0.01
RIVER-3	Reach-1	782	Qreg	1.25	175.29	177.22	175.57	177.22	0.000002	0.04	54.63	125.33	0.01
RIVER-3	Reach-1	782	Q48hr	1.90	175.29	177.84	175.63	177.84	0.000000	0.02	156.15	194.80	0.00
RIVER-3	Reach-1	465	Q2	0.12	175.02	176.26	175.14	176.26	0.000001	0.02	9.93	43.06	0.01
RIVER-3	Reach-1	465	Q5	0.25	175.02	176.65	175.18	176.65	0.000000	0.01	41.99	113.52	0.00
RIVER-3	Reach-1	465	Q25	0.43	175.02	177.22	175.23	177.22	0.000000	0.00	134.08	214.54	0.00
RIVER-3	Reach-1	465	Q100	0.61	175.02	177.14	175.27	177.14	0.000000	0.01	117.24	185.15	0.00
RIVER-3	Reach-1	465	Qreg	1.25	175.02	177.22	175.38	177.22	0.000000	0.01	134.51	215.53	0.00
RIVER-3	Reach-1	465	Q48hr	1.90	175.02	177.84	175.48	177.84	0.000000	0.01	320.77	364.70	0.00
RIVER-3	Reach-1	280	Q2	0.12	174.83	176.26	174.94	176.26	0.000000	0.00	35.47	71.74	0.00
RIVER-3	Reach-1	280	Q5	0.25	174.83	176.65	174.99	176.65	0.000000	0.00	67.87	99.89	0.00
RIVER-3	Reach-1	280	Q25	0.43	174.83	177.22	175.06	177.22	0.000000	0.00	155.46	237.61	0.00
RIVER-3	Reach-1	280	Q100	0.61	174.83	177.14	175.10	177.14	0.000000	0.01	136.41	210.46	0.00
RIVER-3	Reach-1	280	Qreg	1.25	174.83	177.22	175.26	177.22	0.000000	0.01	155.93	237.98	0.00
RIVER-3	Reach-1	280	Q48hr	1.90	174.83	177.84	175.35	177.84	0.000000	0.01	341.84	344.35	0.00
RIVER-2	Reach-1	3413	Q2	0.15	175.69	176.31	175.82	176.31	0.000119	0.08	1.88	4.74	0.04
RIVER-2	Reach-1	3413	Q5	0.51	175.69	176.74	175.92	176.74	0.000095	0.10	6.77	43.50	0.04
RIVER-2	Reach-1	3413	Q25	1.10	175.69	177.27	176.03	177.27	0.000003	0.02	55.66	118.78	0.01
RIVER-2	Reach-1	3413	Q100	1.70	175.69	177.27	176.11	177.27	0.000006	0.04	56.03	119.06	0.01
RIVER-2	Reach-1	3413	Qreg	4.37	175.69	177.74	176.36	177.74	0.000003	0.03	173.38	346.95	0.01
RIVER-2	Reach-1	3413	Q48hr	6.85	175.69	178.15	176.53	178.15	0.000000	0.01	682.75	916.06	0.00
RIVER-2	Reach-1	3308	Q2	0.15	175.79	176.30	175.98	176.31	0.000618	0.19	0.80	4.30	0.10
RIVER-2	Reach-1	3308	Q5	0.51	175.79	176.73	176.09	176.73	0.000620	0.31	1.65	60.74	0.11
RIVER-2	Reach-1	3308	Q25	1.10	175.79	177.26	176.22	177.27	0.000554	0.40	2.71	329.19	0.11
RIVER-2	Reach-1	3308	Q100	1.70	175.79	177.25	176.33	177.27	0.001372	0.63	2.69	321.13	0.17
RIVER-2	Reach-1	3308	Qreg	4.37	175.79	177.65	176.69	177.73	0.003761	1.25	3.50	843.51	0.30
RIVER-2	Reach-1	3308	Q48hr	6.85	175.79	178.00	176.97	178.13	0.005061	1.64	4.19	966.52	0.36
RIVER-2	Reach-1	3270.5		Culvert									
RIVER-2	Reach-1	3233	Q2	0.15	175.74	176.30	175.95	176.30	0.001248	0.23	0.68	2.93	0.12
RIVER-2	Reach-1	3233	Q5	0.51	175.74	176.72	176.10	176.73	0.000995	0.34	1.51	27.94	0.12
RIVER-2	Reach-1	3233	Q25	1.10	175.74	177.24	176.27	177.25	0.000810	0.43	2.55	85.46	0.12
RIVER-2	Reach-1	3233	Q100	1.70	175.74	177.20	176.38	177.23	0.002150	0.69	2.48	79.03	0.20
RIVER-2	Reach-1	3233	Qreg	4.37	175.74	177.35	176.75	177.48	0.009715	1.57	2.77	111.43	0.43
RIVER-2	Reach-1	3233	Q48hr	6.85	175.74	177.75	177.03	177.94	0.010323	1.92	3.57	395.89	0.46
RIVER-2	Reach-1	3063	Q2	0.15	175.71	176.29	175.85	176.29	0.000141	0.09	1.80	4.89	0.04
RIVER-2	Reach-1	3063	Q5	0.51	175.71	176.71	175.95	176.71	0.000140	0.12	4.33	7.18	0.05
RIVER-2	Reach-1	3063	Q25	1.10	175.71	177.24	176.05	177.24	0.000043	0.08	17.64	74.49	0.03
RIVER-2	Reach-1	3063	Q100	1.70	175.71	177.20	176.13	177.20	0.000143	0.15	14.92	61.97	0.05
RIVER-2	Reach-1	3063	Qreg	4.37	175.71	177.38	176.36	177.38	0.000218	0.21	29.66	92.86	0.07
RIVER-2	Reach-1	3063	Q48hr	6.85	175.71	177.84	176.53	177.84	0.000002	0.03	305.24	527.20	0.01
RIVER-2	Reach-1	2586.51	Q2	0.19	175.47	176.28	175.65	176.28	0.000067	0.07	2.64	5.42	0.03
RIVER-2	Reach-1	2586.51	Q5	0.65	175.47	176.69	175.77	176.69	0.000122	0.12	5.23	7.04	0.05
RIVER-2	Reach-1	2586.51	Q25	1.43	175.47	177.23	175.90	177.23	0.000037	0.10	23.20	101.95	0.03
RIVER-2	Reach-1	2586.51	Q100	2.22	175.47	177.18	175.99	177.18	0.000127	0.18	18.56	75.38	0.05
RIVER-2	Reach-1	2586.51	Qreg	5.79	175.47	177.35	176.28	177.35	0.000253	0.27	39.47	179.03	0.07
RIVER-2	Reach-1	2586.51	Q48hr	9.03	175.47	177.84	176.46	177.84	0.000006	0.05	265.60	506.88	0.01
RIVER-2	Reach-1	1837	Q2	0.19	175.09	176.27		176.27	0.000016	0.04	4.20	5.42	0.02
RIVER-2	Reach-1	1837	Q5	0.65	175.09	176.67		176.67	0.000056	0.10	6.61	6.51	0.03
RIVER-2	Reach-1	1837	Q25	1.43	175.09	177.23		177.23	0.000044	0.10	21.08	124.92	0.03
RIVER-2	Reach-1	1837	Q100	2.22	175.09	177.15		177.15	0.000156	0.19	14.69	47.47	0.05
RIVER-2	Reach-1	1837	Qreg	5.79	175.09	177.26		177.27	0.000563	0.37	26.08	162.64	0.10
RIVER-2	Reach-1	1837	Q48hr	9.03	175.09	177.84		177.84	0.000010	0.06	218.73	442.82	0.01
RIVER-2	Reach-1	999	Q2	0.19	175.01	176.27		176.27	0.000008	0.03	5.75	7.02	0.01
RIVER-2	Reach-1	999	Q5	0.65	175.01	176.66		176.66	0.000031	0.07	9.31	17.96	0.02
RIVER-2	Reach-1	999	Q25	1.43	175.01	177.22		177.22	0.000003	0.03	80.61	287.61	0.01
RIVER-2	Reach-1	999	Q100	2.22	175.01	177.14		177.14	0.000015	0.06	59.29	229.03	0.02
RIVER-2	Reach-1	999	Qreg	5.79	175.01	177.23		177.23	0.000049	0.11	83.32	294.42	0.03
RIVER-2	Reach-1	999	Q48hr	9.03	175.01	177.84		177.84	0.000003	0.04	288.26	345.00	0.01
RIVER-1	Reach-1	13837	Q2	0.14	175.83	176.28	175.89	176.28	0.000085	0.08	1.91	5.43	0.04
RIVER-1	Reach-1	13837	Q5	0.32	175.83	176.68	175.94	176.68	0.000038	0.07	4.50	7.54	0.03
RIVER-1	Reach-1	13837	Q25	0.61	175.83	177.30	175.99	177.30	0.000005	0.04	25.71	80.68	0.01
RIVER-1	Reach-1	13837	Q100	0.94	175.83	177.31	176.04	177.31	0.000011	0.06	27.17	85.84	0.02
RIVER-1	Reach-1	13837	Qreg	2.12	175.83	177.73	176.16	177.73	0.000005	0.05	78.28	165.01	0.01
RIVER-1	Reach-1	13837	Q48hr	3.11	175.83	177.84	176.25	177.84	0.000006	0.05	120.43	266.43	0.01
RIVER-1	Reach-1	13777	Q2	0.14	175.68	176.28	175.80	176.28	0.000294	0.20	0.71	5.17	0.08
RIVER-1	Reach-1	13777	Q5	0.32	175.68	176.68	175.88	176.68	0.000261	0.27	1.19	6.98	0.09
RIVER-1	Reach-1	13777	Q25	0.61	175.68	177.29	175.98	177.30	0.000193	0.32	1.93	72.32	0.08

HEC-RAS Plan: Fringe6_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-1	13777	Q100	0.94	175.68	177.30	176.08	177.31	0.000451	0.49	1.94	76.93	0.12
RIVER-1	Reach-1	13777	Qreg	2.12	175.68	177.72	176.37	177.73	0.001391	0.32	10.85	198.85	0.16
RIVER-1	Reach-1	13777	Q48hr	3.11	175.68	177.84	176.57	177.84	0.000348	0.19	29.36	200.01	0.09
RIVER-1	Reach-1	13745.5		Culvert									
RIVER-1	Reach-1	13714	Q2	0.14	175.87	176.27	175.99	176.27	0.001185	0.31	0.47	3.36	0.16
RIVER-1	Reach-1	13714	Q5	0.32	175.87	176.66	176.07	176.67	0.000570	0.34	0.94	48.24	0.12
RIVER-1	Reach-1	13714	Q25	0.61	175.87	177.22	176.18	177.23	0.000350	0.38	1.61	112.42	0.10
RIVER-1	Reach-1	13714	Q100	0.94	175.87	177.13	176.28	177.15	0.001050	0.63	1.50	80.63	0.18
RIVER-1	Reach-1	13714	Qreg	2.12	175.87	177.18	176.56	177.28	0.004618	1.35	1.57	92.58	0.38
RIVER-1	Reach-1	13714	Q48hr	3.11	175.87	177.84	176.75	177.84	0.000918	0.20	31.67	409.10	0.13
RIVER-1	Reach-1	13387	Q2	0.14	174.94	176.27		176.27	0.000005	0.03	4.60	5.11	0.01
RIVER-1	Reach-1	13387	Q5	0.32	174.94	176.66		176.66	0.000008	0.05	7.87	29.85	0.01
RIVER-1	Reach-1	13387	Q25	0.61	174.94	177.22		177.22	0.000000	0.01	166.40	483.97	0.00
RIVER-1	Reach-1	13387	Q100	0.94	174.94	177.14		177.14	0.000001	0.02	127.22	443.92	0.00
RIVER-1	Reach-1	13387	Qreg	2.12	174.94	177.23		177.23	0.000002	0.03	169.68	484.84	0.01
RIVER-1	Reach-1	13387	Q48hr	3.11	174.94	177.84		177.84	0.000000	0.01	540.64	689.10	0.00
RIVER-1	Reach-1	13099	Q2	0.14	174.88	176.27		176.27	0.000005	0.03	4.56	6.45	0.01
RIVER-1	Reach-1	13099	Q5	0.32	174.88	176.66		176.66	0.000008	0.04	8.58	16.49	0.01
RIVER-1	Reach-1	13099	Q25	0.61	174.88	177.22		177.22	0.000001	0.02	92.97	388.55	0.00
RIVER-1	Reach-1	13099	Q100	0.94	174.88	177.14		177.14	0.000003	0.04	63.77	318.24	0.01
RIVER-1	Reach-1	13099	Qreg	2.12	174.88	177.23		177.23	0.000007	0.06	95.48	394.06	0.01
RIVER-1	Reach-1	13099	Q48hr	3.11	174.88	177.84		177.84	0.000000	0.01	443.00	693.50	0.00
RIVER-1	Reach-2	12741	Q2	0.37	174.77	176.27	174.94	176.27	0.000002	0.04	15.24	40.81	0.01
RIVER-1	Reach-2	12741	Q5	1.07	174.77	176.66	175.08	176.66	0.000003	0.05	49.11	189.68	0.01
RIVER-1	Reach-2	12741	Q25	2.22	174.77	177.22	175.23	177.22	0.000000	0.02	250.00	426.04	0.01
RIVER-1	Reach-2	12741	Q100	3.41	174.77	177.14	175.34	177.14	0.000001	0.04	214.52	421.48	0.01
RIVER-1	Reach-2	12741	Qreg	8.56	174.77	177.23	175.69	177.23	0.000005	0.09	252.53	426.23	0.02
RIVER-1	Reach-2	12741	Q48hr	13.26	174.77	177.84	176.03	177.84	0.000001	0.05	523.02	452.47	0.01
RIVER-1	Reach-2	12664	Q2	0.37	174.88	176.27	175.09	176.27	0.000020	0.13	2.82	19.07	0.04
RIVER-1	Reach-2	12664	Q5	1.07	174.88	176.66	175.25	176.66	0.000069	0.29	3.66	81.89	0.07
RIVER-1	Reach-2	12664	Q25	2.22	174.88	177.22	175.43	177.22	0.000001	0.02	220.12	418.43	0.01
RIVER-1	Reach-2	12664	Q100	3.41	174.88	177.14	175.59	177.14	0.000002	0.04	185.36	412.51	0.01
RIVER-1	Reach-2	12664	Qreg	8.56	174.88	177.23	176.12	177.23	0.000008	0.09	222.55	418.90	0.02
RIVER-1	Reach-2	12664	Q48hr	13.26	174.88	177.84	176.52	177.84	0.000002	0.05	487.34	450.44	0.01
RIVER-1	Reach-2	12647.5		Culvert									
RIVER-1	Reach-2	12631	Q2	0.37	174.84	176.26	175.06	176.27	0.000019	0.13	2.88	26.49	0.04
RIVER-1	Reach-2	12631	Q5	1.07	174.84	176.65	175.21	176.65	0.000067	0.29	3.70	79.99	0.07
RIVER-1	Reach-2	12631	Q25	2.22	174.84	177.22	175.40	177.22	0.000000	0.01	276.76	384.77	0.00
RIVER-1	Reach-2	12631	Q100	3.41	174.84	177.14	175.56	177.14	0.000001	0.02	245.21	375.89	0.01
RIVER-1	Reach-2	12631	Qreg	8.56	174.84	177.23	176.09	177.23	0.000003	0.05	279.05	387.04	0.01
RIVER-1	Reach-2	12631	Q48hr	13.26	174.84	177.84	176.49	177.84	0.000001	0.03	536.32	439.93	0.01
RIVER-1	Reach-2	12252	Q2	0.37	174.63	176.26	174.86	176.26	0.000002	0.03	17.71	64.81	0.01
RIVER-1	Reach-2	12252	Q5	1.07	174.63	176.65	174.99	176.65	0.000002	0.04	59.88	157.48	0.01
RIVER-1	Reach-2	12252	Q25	2.22	174.63	177.22	175.14	177.22	0.000000	0.03	186.77	274.75	0.01
RIVER-1	Reach-2	12252	Q100	3.41	174.63	177.14	175.25	177.14	0.000002	0.05	163.83	271.87	0.01
RIVER-1	Reach-2	12252	Qreg	8.56	174.63	177.23	175.61	177.23	0.000007	0.10	188.23	274.88	0.02
RIVER-1	Reach-2	12252	Q48hr	13.26	174.63	177.84	175.86	177.84	0.000002	0.06	451.63	389.79	0.01
RIVER-1	Reach-2	11903	Q2	0.37	174.61	176.26		176.26	0.000002	0.03	17.59	61.96	0.01
RIVER-1	Reach-2	11903	Q5	1.07	174.61	176.65		176.65	0.000002	0.04	48.06	90.78	0.01
RIVER-1	Reach-2	11903	Q25	2.22	174.61	177.22		177.22	0.000001	0.04	117.51	204.57	0.01
RIVER-1	Reach-2	11903	Q100	3.41	174.61	177.14		177.14	0.000003	0.07	103.44	131.14	0.01
RIVER-1	Reach-2	11903	Qreg	8.56	174.61	177.23		177.23	0.000014	0.15	118.33	205.96	0.03
RIVER-1	Reach-2	11903	Q48hr	13.26	174.61	177.84		177.84	0.000005	0.10	296.09	331.30	0.02
RIVER-1	Reach-3	11584	Q2	3.92	174.50	176.20	175.20	176.25	0.000756	0.96	4.10	16.68	0.24
RIVER-1	Reach-3	11584	Q5	6.51	174.50	176.58	175.45	176.64	0.000799	1.13	9.54	62.52	0.25
RIVER-1	Reach-3	11584	Q25	10.30	174.50	177.22	175.76	177.22	0.000115	0.23	90.33	326.98	0.08
RIVER-1	Reach-3	11584	Q100	13.49	174.50	177.13	176.00	177.13	0.000389	0.40	64.86	253.51	0.15
RIVER-1	Reach-3	11584	Qreg	14.62	174.50	177.22	176.08	177.22	0.000232	0.33	90.33	326.98	0.11
RIVER-1	Reach-3	11584	Q48hr	19.78	174.50	177.84	176.81	177.84	0.000005	0.07	621.22	995.83	0.02
RIVER-1	Reach-3	11565.5		Culvert									
RIVER-1	Reach-3	11547	Q2	3.94	174.71	176.10	175.39	176.17	0.001472	1.16	3.38	55.20	0.32
RIVER-1	Reach-3	11547	Q5	6.55	174.71	176.52	175.63	176.63	0.001656	1.48	4.43	102.12	0.35
RIVER-1	Reach-3	11547	Q25	10.38	174.71	177.22	175.96	177.22	0.000201	0.34	78.26	316.21	0.11
RIVER-1	Reach-3	11547	Q100	13.62	174.71	176.79	176.19	177.13	0.004337	2.63	5.96	161.53	0.59
RIVER-1	Reach-3	11547	Qreg	15.59	174.71	177.22	177.05	177.22	0.000467	0.51	77.50	315.40	0.17
RIVER-1	Reach-3	11547	Q48hr	21.17	174.71	177.84	177.07	177.84	0.000007	0.09	554.08	981.33	0.02
RIVER-1	Reach-3	11400	Q2	3.94	174.54	176.10	175.21	176.11	0.000435	0.49	10.24	42.35	0.16
RIVER-1	Reach-3	11400	Q5	6.55	174.54	176.57	175.39	176.57	0.000093	0.29	46.76	128.38	0.08
RIVER-1	Reach-3	11400	Q25	10.38	174.54	177.22	175.60	177.22	0.000013	0.14	157.97	220.39	0.03

HEC-RAS Plan: Fringe6_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	11400	Q100	13.62	174.54	176.95	175.76	176.95	0.000057	0.27	106.61	172.55	0.06
RIVER-1	Reach-3	11400	Qreg	15.59	174.54	177.21	175.85	177.21	0.000029	0.21	157.06	219.49	0.05
RIVER-1	Reach-3	11400	Q48hr	21.17	174.54	177.84	176.23	177.84	0.000008	0.13	352.69	441.87	0.02
RIVER-1	Reach-3	11263	Q2	3.94	174.55	176.09	175.17	176.09	0.000374	0.45	12.14	41.59	0.15
RIVER-1	Reach-3	11263	Q5	6.55	174.55	176.56	175.35	176.56	0.000095	0.29	42.19	114.87	0.08
RIVER-1	Reach-3	11263	Q25	10.38	174.55	177.22	175.56	177.22	0.000013	0.14	154.18	206.43	0.03
RIVER-1	Reach-3	11263	Q100	13.62	174.55	176.95	175.71	176.95	0.000066	0.29	101.85	184.21	0.07
RIVER-1	Reach-3	11263	Qreg	15.59	174.55	177.21	175.79	177.21	0.000030	0.21	153.20	206.17	0.05
RIVER-1	Reach-3	11263	Q48hr	21.17	174.55	177.84	176.14	177.84	0.000009	0.14	313.72	361.82	0.03
RIVER-1	Reach-3	11179	Q2	3.94	174.52	176.08	175.20	176.09	0.000329	0.42	13.26	40.64	0.14
RIVER-1	Reach-3	11179	Q5	6.55	174.52	176.56	175.38	176.56	0.000085	0.28	45.08	113.87	0.08
RIVER-1	Reach-3	11179	Q25	10.38	174.52	177.22	175.61	177.22	0.000013	0.14	151.35	190.42	0.03
RIVER-1	Reach-3	11179	Q100	13.62	174.52	176.95	175.78	176.95	0.000060	0.28	102.42	167.20	0.07
RIVER-1	Reach-3	11179	Qreg	15.59	174.52	177.21	175.87	177.21	0.000029	0.21	150.36	190.18	0.05
RIVER-1	Reach-3	11179	Q48hr	21.17	174.52	177.84	176.10	177.84	0.000009	0.14	324.41	391.21	0.03
RIVER-1	Reach-3	10988	Q2	3.94	174.48	176.07	175.00	176.07	0.000121	0.31	21.35	58.00	0.09
RIVER-1	Reach-3	10988	Q5	6.55	174.48	176.56	175.17	176.56	0.000036	0.21	67.57	131.93	0.05
RIVER-1	Reach-3	10988	Q25	10.38	174.48	177.22	175.39	177.22	0.000005	0.10	266.50	459.40	0.02
RIVER-1	Reach-3	10988	Q100	13.62	174.48	176.94	175.52	176.95	0.000030	0.22	157.52	357.76	0.05
RIVER-1	Reach-3	10988	Qreg	15.59	174.48	177.21	175.59	177.21	0.000012	0.15	263.93	458.08	0.03
RIVER-1	Reach-3	10988	Q48hr	21.17	174.48	177.84	175.86	177.84	0.000003	0.08	583.99	555.34	0.02
RIVER-1	Reach-3	10842	Q2	3.94	174.53	176.00	175.20	176.05	0.001140	1.04	3.77	21.18	0.28
RIVER-1	Reach-3	10842	Q5	6.55	174.53	176.47	175.44	176.54	0.001034	1.21	7.18	97.09	0.28
RIVER-1	Reach-3	10842	Q25	10.38	174.53	177.22	175.75	177.22	0.000027	0.24	138.22	471.91	0.05
RIVER-1	Reach-3	10842	Q100	13.62	174.53	176.93	175.97	176.94	0.000318	0.78	65.24	367.50	0.16
RIVER-1	Reach-3	10842	Qreg	15.59	174.53	177.21	176.73	177.21	0.000063	0.37	136.25	471.07	0.07
RIVER-1	Reach-3	10842	Q48hr	21.17	174.53	177.84	176.83	177.84	0.000009	0.10	406.49	526.34	0.02
RIVER-1	Reach-3	10819.5		Culvert									
RIVER-1	Reach-3	10797	Q2	4.00	174.57	175.84	175.21	175.91	0.001760	1.20	3.34	34.74	0.34
RIVER-1	Reach-3	10797	Q5	6.68	174.57	176.19	175.46	176.31	0.002125	1.56	4.29	68.90	0.39
RIVER-1	Reach-3	10797	Q25	10.66	174.57	176.50	175.77	176.72	0.002980	2.08	5.13	72.33	0.48
RIVER-1	Reach-3	10797	Q100	14.07	174.57	176.55	176.01	176.92	0.004750	2.67	5.27	73.08	0.61
RIVER-1	Reach-3	10797	Qreg	19.29	174.57	176.40	176.34	177.21	0.011680	3.97	4.86	71.28	0.94
RIVER-1	Reach-3	10797	Q48hr	26.76	174.57	176.75	176.75	177.84	0.012393	4.60	5.81	97.51	1.00
RIVER-1	Reach-3	10695	Q2	4.00	174.30	175.84	174.96	175.85	0.000553	0.53	7.55	9.03	0.18
RIVER-1	Reach-3	10695	Q5	6.68	174.30	176.22	175.15	176.23	0.000416	0.58	14.63	29.57	0.16
RIVER-1	Reach-3	10695	Q25	10.66	174.30	176.58	175.36	176.59	0.000302	0.58	27.72	42.19	0.14
RIVER-1	Reach-3	10695	Q100	14.07	174.30	176.69	175.53	176.71	0.000372	0.67	33.45	65.06	0.16
RIVER-1	Reach-3	10695	Qreg	19.29	174.30	176.73	175.73	176.76	0.000634	0.89	35.99	79.85	0.21
RIVER-1	Reach-3	10695	Q48hr	26.76	174.30	176.78	176.05	176.82	0.001025	1.15	40.19	87.92	0.27
RIVER-1	Reach-3	10279	Q2	4.00	174.24	175.80	174.78	175.80	0.000247	0.41	10.40	18.44	0.12
RIVER-1	Reach-3	10279	Q5	6.68	174.24	176.19	174.93	176.20	0.000160	0.40	26.29	52.88	0.10
RIVER-1	Reach-3	10279	Q25	10.66	174.24	176.57	175.11	176.57	0.000111	0.38	56.36	165.57	0.09
RIVER-1	Reach-3	10279	Q100	14.07	174.24	176.68	175.24	176.68	0.000122	0.42	77.75	220.08	0.09
RIVER-1	Reach-3	10279	Qreg	19.29	174.24	176.70	175.43	176.71	0.000203	0.54	83.37	227.69	0.12
RIVER-1	Reach-3	10279	Q48hr	26.76	174.24	176.74	175.64	176.75	0.000328	0.69	91.84	246.03	0.15
RIVER-1	Reach-3	10045	Q2	4.00	174.19	175.78	174.82	175.79	0.000181	0.33	16.86	47.08	0.11
RIVER-1	Reach-3	10045	Q5	6.68	174.19	176.19	175.01	176.19	0.000080	0.28	42.32	87.23	0.07
RIVER-1	Reach-3	10045	Q25	10.66	174.19	176.56	175.21	176.57	0.000041	0.23	105.49	278.71	0.06
RIVER-1	Reach-3	10045	Q100	14.07	174.19	176.67	175.36	176.68	0.000049	0.26	137.60	302.63	0.06
RIVER-1	Reach-3	10045	Qreg	19.29	174.19	176.70	175.52	176.70	0.000080	0.34	144.74	305.39	0.08
RIVER-1	Reach-3	10045	Q48hr	26.76	174.19	176.73	175.71	176.74	0.000130	0.44	154.97	315.95	0.10
RIVER-1	Reach-3	9967	Q2	4.00	174.24	175.70	175.00	175.77	0.001631	1.21	3.30	40.38	0.33
RIVER-1	Reach-3	9967	Q5	6.68	174.24	176.04	175.26	176.17	0.002137	1.62	4.14	69.88	0.40
RIVER-1	Reach-3	9967	Q25	10.66	174.24	176.27	175.60	176.54	0.003529	2.26	4.71	177.04	0.52
RIVER-1	Reach-3	9967	Q100	14.07	174.24	175.92	175.85	176.60	0.012036	3.65	3.85	51.85	0.93
RIVER-1	Reach-3	9967	Qreg	19.29	174.24	176.65	176.65	176.69	0.004286	1.36	42.05	343.07	0.48
RIVER-1	Reach-3	9967	Q48hr	26.76	174.24	176.67	176.67	176.72	0.005164	1.52	51.49	362.39	0.53
RIVER-1	Reach-3	9948.5		Culvert									
RIVER-1	Reach-3	9929	Q2	4.00	174.29	175.60	175.00	175.69	0.002029	1.30	3.07	35.09	0.37
RIVER-1	Reach-3	9929	Q5	6.68	174.29	175.82	175.27	175.99	0.003313	1.85	3.61	59.79	0.49
RIVER-1	Reach-3	9929	Q25	10.66	174.29	175.80	175.59	176.26	0.008824	3.00	3.56	56.87	0.79
RIVER-1	Reach-3	9929	Q100	14.07	174.29	175.85	175.85	176.60	0.013759	3.83	3.68	64.45	1.00
RIVER-1	Reach-3	9929	Qreg	19.29	174.29	176.63	176.63	176.68	0.004260	1.40	43.95	386.20	0.48
RIVER-1	Reach-3	9929	Q48hr	26.76	174.29	176.68	176.66	176.71	0.003315	1.28	64.17	418.03	0.43
RIVER-1	Reach-3	9829	Q2	4.00	173.99	175.63	174.57	175.63	0.000157	0.34	21.41	65.81	0.10
RIVER-1	Reach-3	9829	Q5	6.68	173.99	175.90	174.75	175.90	0.000105	0.32	41.39	83.17	0.08
RIVER-1	Reach-3	9829	Q25	10.66	173.99	176.01	174.98	176.02	0.000160	0.41	51.37	91.05	0.10
RIVER-1	Reach-3	9829	Q100	14.07	173.99	176.06	175.14	176.07	0.000220	0.49	56.21	96.78	0.12
RIVER-1	Reach-3	9829	Qreg	19.29	173.99	176.30	175.57	176.31	0.000188	0.50	86.48	188.52	0.11

HEC-RAS Plan: Fringe6_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	9829	Q48hr	26.76	173.99	176.69	175.66	176.69	0.000062	0.32	234.44	593.50	0.07
RIVER-1	Reach-3	9462	Q2	4.00	173.97	175.61	174.49	175.61	0.000191	0.29	18.07	39.87	0.08
RIVER-1	Reach-3	9462	Q5	6.68	173.97	175.88	174.67	175.89	0.000140	0.28	34.08	68.00	0.07
RIVER-1	Reach-3	9462	Q25	10.66	173.97	175.99	174.87	175.99	0.000211	0.36	41.78	75.66	0.09
RIVER-1	Reach-3	9462	Q100	14.07	173.97	176.03	175.03	176.04	0.000302	0.44	45.14	82.36	0.11
RIVER-1	Reach-3	9462	Qreg	19.29	173.97	176.28	175.32	176.29	0.000207	0.40	71.49	145.59	0.09
RIVER-1	Reach-3	9462	Q48hr	26.76	173.97	176.68	175.52	176.68	0.000064	0.25	206.31	441.15	0.05
RIVER-1	Reach-3	8698	Q2	4.00	173.92	175.61	174.37	175.61	0.000024	0.10	46.97	79.13	0.03
RIVER-1	Reach-3	8698	Q5	6.68	173.92	175.88	174.51	175.88	0.000021	0.10	69.89	95.48	0.03
RIVER-1	Reach-3	8698	Q25	10.66	173.92	175.98	174.68	175.98	0.000037	0.14	80.83	121.27	0.04
RIVER-1	Reach-3	8698	Q100	14.07	173.92	176.02	174.81	176.02	0.000057	0.18	85.82	138.72	0.04
RIVER-1	Reach-3	8698	Qreg	19.29	173.92	176.27	175.14	176.27	0.000045	0.17	133.67	239.13	0.04
RIVER-1	Reach-3	8698	Q48hr	26.76	173.92	176.68	175.21	176.68	0.000026	0.15	262.32	371.73	0.03
RIVER-1	Reach-3	8570	Q2	4.00	173.97	175.60	174.37	175.60	0.000027	0.09	40.38	54.62	0.03
RIVER-1	Reach-3	8570	Q5	6.68	173.97	175.87	174.51	175.88	0.000029	0.11	59.43	92.00	0.03
RIVER-1	Reach-3	8570	Q25	10.66	173.97	175.98	174.77	175.98	0.000053	0.16	70.17	124.41	0.04
RIVER-1	Reach-3	8570	Q100	14.07	173.97	176.01	174.85	176.01	0.000083	0.20	74.94	142.34	0.05
RIVER-1	Reach-3	8570	Qreg	19.29	173.97	176.27	174.96	176.27	0.000066	0.20	133.69	317.71	0.05
RIVER-1	Reach-3	8570	Q48hr	26.76	173.97	176.67	175.04	176.68	0.000021	0.13	295.92	490.87	0.03
RIVER-1	Reach-3	8486	Q2	4.00	173.91	175.55	174.56	175.59	0.001546	0.99	4.06	41.23	0.25
RIVER-1	Reach-3	8486	Q5	6.68	173.91	175.75	174.82	175.86	0.002894	1.46	4.58	59.03	0.35
RIVER-1	Reach-3	8486	Q25	10.66	173.91	175.61	175.15	175.94	0.009602	2.52	4.22	45.85	0.62
RIVER-1	Reach-3	8486	Q100	14.07	173.91	175.92	175.92	175.99	0.013636	1.41	13.93	82.60	0.60
RIVER-1	Reach-3	8486	Qreg	19.29	173.91	176.26	175.96	176.26	0.000363	0.31	99.86	466.97	0.11
RIVER-1	Reach-3	8486	Q48hr	26.76	173.91	176.67	176.01	176.67	0.000023	0.10	345.63	679.23	0.03
RIVER-1	Reach-3	8467		Culvert									
RIVER-1	Reach-3	8450	Q2	4.00	173.76	175.10		175.12	0.000915	0.65	7.55	21.44	0.18
RIVER-1	Reach-3	8450	Q5	6.68	173.76	175.29		175.31	0.001254	0.83	9.94	35.21	0.22
RIVER-1	Reach-3	8450	Q25	10.66	173.76	175.54		175.57	0.001318	0.95	13.98	46.08	0.23
RIVER-1	Reach-3	8450	Q100	14.07	173.76	175.77		175.80	0.001038	0.92	19.95	69.31	0.21
RIVER-1	Reach-3	8450	Qreg	19.29	173.76	176.26		176.26	0.000094	0.17	154.77	566.00	0.05
RIVER-1	Reach-3	8450	Q48hr	26.76	173.76	176.67		176.67	0.000012	0.08	427.15	746.78	0.02
RIVER-1	Reach-3	8435	Q2	4.00	173.77	175.10		175.10	0.000097	0.23	19.25	30.90	0.08
RIVER-1	Reach-3	8435	Q5	6.68	173.77	175.28		175.29	0.000122	0.29	28.27	63.45	0.09
RIVER-1	Reach-3	8435	Q25	10.66	173.77	175.54		175.54	0.000099	0.30	48.08	89.53	0.08
RIVER-1	Reach-3	8435	Q100	14.07	173.77	175.78		175.78	0.000065	0.27	74.32	129.83	0.07
RIVER-1	Reach-3	8435	Qreg	19.29	173.77	176.26		176.26	0.000018	0.17	230.43	623.22	0.04
RIVER-1	Reach-3	8435	Q48hr	26.76	173.77	176.67		176.67	0.000005	0.10	575.16	969.95	0.02
RIVER-1	Reach-3	7960	Q2	4.00	173.83	175.10	174.22	175.10	0.000009	0.07	65.50	116.74	0.02
RIVER-1	Reach-3	7960	Q5	6.68	173.83	175.28	174.34	175.28	0.000011	0.09	87.79	127.08	0.03
RIVER-1	Reach-3	7960	Q25	10.66	173.83	175.54	174.49	175.54	0.000011	0.10	123.46	153.88	0.03
RIVER-1	Reach-3	7960	Q100	14.07	173.83	175.78	174.53	175.78	0.000009	0.10	162.72	177.70	0.03
RIVER-1	Reach-3	7960	Qreg	19.29	173.83	176.26	174.58	176.26	0.000004	0.08	350.26	716.12	0.02
RIVER-1	Reach-3	7960	Q48hr	26.76	173.83	176.67	174.63	176.67	0.000002	0.06	753.75	1215.52	0.01
RIVER-1	Reach-3	7886	Q2	4.00	173.71	175.10	174.41	175.10	0.000020	0.13	41.54	92.38	0.04
RIVER-1	Reach-3	7886	Q5	6.68	173.71	175.28	174.50	175.28	0.000025	0.16	53.25	108.27	0.04
RIVER-1	Reach-3	7886	Q25	10.66	173.71	175.54	174.56	175.54	0.000026	0.10	85.87	161.11	0.04
RIVER-1	Reach-3	7886	Q100	14.07	173.71	175.78	174.60	175.78	0.000018	0.10	126.66	183.15	0.03
RIVER-1	Reach-3	7886	Qreg	19.29	173.71	176.26	174.65	176.26	0.000006	0.08	344.60	825.22	0.02
RIVER-1	Reach-3	7886	Q48hr	26.76	173.71	176.67	174.70	176.67	0.000002	0.05	779.49	1219.91	0.01
RIVER-1	Reach-3	7871		Culvert									
RIVER-1	Reach-3	7857	Q2	4.00	173.71	175.10	174.29	175.10	0.000035	0.17	33.76	91.07	0.05
RIVER-1	Reach-3	7857	Q5	6.68	173.71	175.28	174.59	175.28	0.000043	0.21	45.15	104.71	0.05
RIVER-1	Reach-3	7857	Q25	10.66	173.71	175.54	174.68	175.54	0.000041	0.13	73.65	134.47	0.05
RIVER-1	Reach-3	7857	Q100	14.07	173.71	175.78	174.72	175.78	0.000027	0.13	108.82	168.45	0.04
RIVER-1	Reach-3	7857	Qreg	19.29	173.71	176.26	174.79	176.26	0.000007	0.09	315.60	762.36	0.02
RIVER-1	Reach-3	7857	Q48hr	26.76	173.71	176.67	174.84	176.67	0.000002	0.06	743.19	1254.67	0.01
RIVER-1	Reach-3	7750	Q2	4.00	173.90	175.10	174.21	175.10	0.000046	0.15	30.90	64.58	0.05
RIVER-1	Reach-3	7750	Q5	6.68	173.90	175.28	174.31	175.28	0.000052	0.19	43.76	76.45	0.06
RIVER-1	Reach-3	7750	Q25	10.66	173.90	175.54	174.43	175.54	0.000046	0.20	65.11	89.06	0.06
RIVER-1	Reach-3	7750	Q100	14.07	173.90	175.78	174.54	175.78	0.000036	0.20	91.45	168.15	0.05
RIVER-1	Reach-3	7750	Qreg	19.29	173.90	176.26	174.64	176.26	0.000009	0.12	353.83	933.52	0.03
RIVER-1	Reach-3	7750	Q48hr	26.76	173.90	176.67	174.75	176.67	0.000002	0.06	843.11	1303.00	0.01
RIVER-1	Reach-3	7395	Q2	4.00	173.93	175.09	174.19	175.09	0.000053	0.18	27.79	56.61	0.06
RIVER-1	Reach-3	7395	Q5	6.68	173.93	175.27	174.28	175.28	0.000062	0.22	39.36	69.74	0.06
RIVER-1	Reach-3	7395	Q25	10.66	173.93	175.53	174.40	175.53	0.000059	0.24	62.37	125.01	0.06
RIVER-1	Reach-3	7395	Q100	14.07	173.93	175.77	174.49	175.77	0.000041	0.22	106.54	260.06	0.06
RIVER-1	Reach-3	7395	Qreg	19.29	173.93	176.25	174.67	176.25	0.000007	0.11	384.07	1064.52	0.02
RIVER-1	Reach-3	7395	Q48hr	26.76	173.93	176.67	174.81	176.67	0.000002	0.06	920.66	1418.45	0.01

HEC-RAS Plan: Fringe6_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	7126	Q2	4.00	173.89	175.09	174.16	175.09	0.000015	0.10	51.90	93.51	0.03
RIVER-1	Reach-3	7126	Q5	6.68	173.89	175.27	174.25	175.27	0.000019	0.12	70.00	105.94	0.04
RIVER-1	Reach-3	7126	Q25	10.66	173.89	175.53	174.37	175.53	0.000019	0.14	101.11	138.15	0.04
RIVER-1	Reach-3	7126	Q100	14.07	173.89	175.77	174.47	175.77	0.000016	0.14	141.74	210.76	0.03
RIVER-1	Reach-3	7126	Qreg	19.29	173.89	176.25	174.53	176.25	0.000006	0.10	358.59	883.31	0.02
RIVER-1	Reach-3	7126	Q48hr	26.76	173.89	176.67	174.66	176.67	0.000002	0.06	821.04	1301.62	0.01
RIVER-1	Reach-3	6956	Q2	4.00	173.96	175.09	174.27	175.09	0.000032	0.14	35.62	62.53	0.04
RIVER-1	Reach-3	6956	Q5	6.68	173.96	175.27	174.38	175.27	0.000039	0.17	47.35	67.02	0.05
RIVER-1	Reach-3	6956	Q25	10.66	173.96	175.53	174.58	175.53	0.000039	0.19	67.42	108.19	0.05
RIVER-1	Reach-3	6956	Q100	14.07	173.96	175.77	174.66	175.77	0.000034	0.20	104.86	198.36	0.05
RIVER-1	Reach-3	6956	Qreg	19.29	173.96	176.25	174.72	176.25	0.000009	0.12	316.26	816.11	0.03
RIVER-1	Reach-3	6956	Q48hr	26.76	173.96	176.67	174.78	176.67	0.000002	0.07	778.88	1341.81	0.01
RIVER-1	Reach-3	6846	Q2	4.00	173.97	175.07	174.61	175.09	0.000498	0.56	8.89	62.79	0.18
RIVER-1	Reach-3	6846	Q5	6.68	173.97	175.25	174.73	175.27	0.000652	0.72	11.67	68.00	0.21
RIVER-1	Reach-3	6846	Q25	10.66	173.97	175.52	174.86	175.53	0.000452	0.38	31.27	99.88	0.15
RIVER-1	Reach-3	6846	Q100	14.07	173.97	175.77	174.95	175.77	0.000187	0.31	68.41	229.19	0.11
RIVER-1	Reach-3	6846	Qreg	19.29	173.97	176.25	175.07	176.25	0.000016	0.12	254.03	611.58	0.03
RIVER-1	Reach-3	6846	Q48hr	26.76	173.97	176.67	175.40	176.67	0.000004	0.07	685.99	1312.18	0.02
RIVER-1	Reach-3	6830		Culvert									
RIVER-1	Reach-3	6811	Q2	4.00	173.95	175.07	174.55	175.08	0.000333	0.46	10.34	68.95	0.15
RIVER-1	Reach-3	6811	Q5	6.68	173.95	175.25	174.66	175.26	0.000451	0.60	13.28	79.98	0.17
RIVER-1	Reach-3	6811	Q25	10.66	173.95	175.52	174.78	175.52	0.000310	0.30	35.83	107.21	0.13
RIVER-1	Reach-3	6811	Q100	14.07	173.95	175.76	174.86	175.77	0.000140	0.25	76.07	235.92	0.09
RIVER-1	Reach-3	6811	Qreg	19.29	173.95	176.25	174.97	176.25	0.000015	0.11	272.65	626.87	0.03
RIVER-1	Reach-3	6811	Q48hr	26.76	173.95	176.67	175.11	176.67	0.000004	0.07	680.07	1289.40	0.02
RIVER-1	Reach-3	6719	Q2	4.00	173.89	175.08	174.20	175.08	0.000013	0.09	52.16	82.77	0.03
RIVER-1	Reach-3	6719	Q5	6.68	173.89	175.25	174.29	175.25	0.000018	0.11	67.46	91.98	0.03
RIVER-1	Reach-3	6719	Q25	10.66	173.89	175.52	174.48	175.52	0.000018	0.13	98.30	127.16	0.04
RIVER-1	Reach-3	6719	Q100	14.07	173.89	175.76	174.53	175.76	0.000015	0.14	138.36	211.24	0.03
RIVER-1	Reach-3	6719	Qreg	19.29	173.89	176.25	174.57	176.25	0.000007	0.11	311.68	489.99	0.02
RIVER-1	Reach-3	6719	Q48hr	26.76	173.89	176.67	174.63	176.67	0.000003	0.08	597.71	1054.63	0.02
RIVER-1	Reach-3	6081	Q2	4.00	173.53	175.07		175.07	0.000050	0.19	27.66	58.33	0.06
RIVER-1	Reach-3	6081	Q5	6.68	173.53	175.24		175.25	0.000062	0.23	38.46	65.86	0.06
RIVER-1	Reach-3	6081	Q25	10.66	173.53	175.51		175.51	0.000057	0.25	58.01	82.68	0.06
RIVER-1	Reach-3	6081	Q100	14.07	173.53	175.76		175.76	0.000045	0.24	86.69	160.71	0.06
RIVER-1	Reach-3	6081	Qreg	19.29	173.53	176.25		176.25	0.000016	0.17	214.58	389.05	0.04
RIVER-1	Reach-3	6081	Q48hr	26.76	173.53	176.67		176.67	0.000006	0.11	456.97	836.08	0.02
RIVER-1	Reach-3	5744	Q2	4.00	173.55	175.02		175.06	0.000693	0.79	5.05	30.13	0.22
RIVER-1	Reach-3	5744	Q5	6.68	173.55	175.15		175.22	0.001447	1.21	5.51	36.58	0.32
RIVER-1	Reach-3	5744	Q25	10.66	173.55	175.33		175.49	0.002490	1.72	6.20	49.91	0.42
RIVER-1	Reach-3	5744	Q100	14.07	173.55	175.51		175.73	0.003087	2.05	6.89	66.98	0.48
RIVER-1	Reach-3	5744	Qreg	19.29	173.55	176.24		176.25	0.000138	0.54	90.60	354.03	0.11
RIVER-1	Reach-3	5744	Q48hr	26.76	173.55	176.67		176.67	0.000030	0.28	218.26	676.54	0.05
RIVER-1	Reach-3	5696		Culvert									
RIVER-1	Reach-3	5648	Q2	3.56	173.72	175.09		175.11	0.000400	0.59	7.68	62.07	0.17
RIVER-1	Reach-3	5648	Q5	5.92	173.72	175.23		175.25	0.000648	0.80	9.62	71.16	0.21
RIVER-1	Reach-3	5648	Q25	10.67	173.72	175.32		175.38	0.001519	1.28	11.29	82.42	0.33
RIVER-1	Reach-3	5648	Q100	14.08	173.72	175.48		175.54	0.001505	1.36	16.14	100.50	0.34
RIVER-1	Reach-3	5648	Qreg	19.14	173.72	176.15		176.16	0.000131	0.50	90.20	355.79	0.10
RIVER-1	Reach-3	5648	Q48hr	27.19	173.72	176.50		176.50	0.000043	0.32	211.01	710.55	0.06
RIVER-1	Reach-3	5335	Q2	3.56	173.66	175.09		175.09	0.000070	0.17	27.16	76.93	0.06
RIVER-1	Reach-3	5335	Q5	5.92	173.66	175.23		175.23	0.000075	0.20	38.84	90.77	0.07
RIVER-1	Reach-3	5335	Q25	10.67	173.66	175.32		175.32	0.000140	0.29	47.21	94.65	0.09
RIVER-1	Reach-3	5335	Q100	14.08	173.66	175.49		175.49	0.000108	0.28	65.54	131.62	0.08
RIVER-1	Reach-3	5335	Qreg	19.14	173.66	176.15		176.15	0.000011	0.12	230.11	355.42	0.03
RIVER-1	Reach-3	5335	Q48hr	27.19	173.66	176.50		176.50	0.000007	0.11	385.72	636.11	0.02
RIVER-1	Reach-3	5080	Q2	3.56	173.70	175.08		175.08	0.000010	0.08	57.30	129.38	0.03
RIVER-1	Reach-3	5080	Q5	5.92	173.70	175.22		175.22	0.000016	0.11	77.58	161.74	0.03
RIVER-1	Reach-3	5080	Q25	10.67	173.70	175.31		175.31	0.000034	0.17	92.42	172.54	0.05
RIVER-1	Reach-3	5080	Q100	14.08	173.70	175.48		175.48	0.000026	0.17	123.98	194.69	0.04
RIVER-1	Reach-3	5080	Qreg	19.14	173.70	176.15		176.15	0.000005	0.09	319.73	500.20	0.02
RIVER-1	Reach-3	5080	Q48hr	27.19	173.70	176.50		176.50	0.000003	0.09	567.92	943.00	0.02
RIVER-1	Reach-3	4910	Q2	3.56	173.72	175.08		175.08	0.000020	0.12	51.98	125.31	0.04
RIVER-1	Reach-3	4910	Q5	5.92	173.72	175.22		175.22	0.000024	0.14	70.52	145.76	0.04
RIVER-1	Reach-3	4910	Q25	10.67	173.72	175.31		175.31	0.000050	0.21	83.70	162.53	0.06
RIVER-1	Reach-3	4910	Q100	14.08	173.72	175.48		175.48	0.000039	0.20	119.74	263.34	0.05
RIVER-1	Reach-3	4910	Qreg	19.14	173.72	176.15		176.15	0.000003	0.07	577.20	1276.92	0.02
RIVER-1	Reach-3	4910	Q48hr	27.19	173.72	176.50		176.50	0.000001	0.06	1091.89	1642.47	0.01
RIVER-1	Reach-3	4720	Q2	3.56	173.73	175.02	174.41	175.07	0.001434	1.02	3.90	166.66	0.31
RIVER-1	Reach-3	4720	Q5	5.92	173.73	175.09	174.62	175.20	0.002943	1.52	4.99	188.48	0.44

HEC-RAS Plan: Fringe6_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	4720	Q25	10.67	173.73	175.28	175.23	175.29	0.003758	0.74	24.68	226.08	0.40
RIVER-1	Reach-3	4720	Q100	14.08	173.73	175.47	175.25	175.47	0.000280	0.27	82.57	414.79	0.12
RIVER-1	Reach-3	4720	Qreg	19.14	173.73	176.15	175.27	176.15	0.000002	0.04	741.15	1360.86	0.01
RIVER-1	Reach-3	4720	Q48hr	27.19	173.73	176.50	175.30	176.50	0.000001	0.03	1246.03	1543.24	0.01
RIVER-1	Reach-3	4702.5		Culvert									
RIVER-1	Reach-3	4686	Q2	3.56	173.56	174.93		174.98	0.001382	1.01	3.75	138.29	0.30
RIVER-1	Reach-3	4686	Q5	5.92	173.56	174.99	174.50	175.11	0.002932	1.53	5.04	153.17	0.44
RIVER-1	Reach-3	4686	Q25	10.67	173.56	175.28		175.28	0.001605	0.47	35.65	298.30	0.26
RIVER-1	Reach-3	4686	Q100	14.08	173.56	175.47		175.47	0.000146	0.19	114.91	572.39	0.09
RIVER-1	Reach-3	4686	Qreg	19.14	173.56	176.15		176.15	0.000001	0.03	843.54	1373.83	0.01
RIVER-1	Reach-3	4686	Q48hr	27.19	173.56	176.50		176.50	0.000001	0.03	1353.20	1568.87	0.01
RIVER-1	Reach-3	4489	Q2	3.56	173.77	174.96		174.96	0.000010	0.07	70.60	146.81	0.02
RIVER-1	Reach-3	4489	Q5	5.92	173.77	175.07		175.07	0.000016	0.09	86.96	165.85	0.03
RIVER-1	Reach-3	4489	Q25	10.67	173.77	175.28		175.28	0.000018	0.11	133.60	355.74	0.03
RIVER-1	Reach-3	4489	Q100	14.08	173.77	175.47		175.47	0.000012	0.09	242.64	739.46	0.03
RIVER-1	Reach-3	4489	Qreg	19.14	173.77	176.15		176.15	0.000001	0.03	937.87	1208.69	0.01
RIVER-1	Reach-3	4489	Q48hr	27.19	173.77	176.50		176.50	0.000001	0.03	1382.85	1363.67	0.01
RIVER-1	Reach-3	4334	Q2	3.56	173.92	174.96		174.96	0.000004	0.04	110.13	222.76	0.01
RIVER-1	Reach-3	4334	Q5	5.92	173.92	175.07		175.07	0.000006	0.06	134.80	249.95	0.02
RIVER-1	Reach-3	4334	Q25	10.67	173.92	175.28		175.28	0.000007	0.07	190.42	280.63	0.02
RIVER-1	Reach-3	4334	Q100	14.08	173.92	175.46		175.46	0.000006	0.07	262.33	552.44	0.02
RIVER-1	Reach-3	4334	Qreg	19.14	173.92	176.15		176.15	0.000001	0.03	952.94	1274.30	0.01
RIVER-1	Reach-3	4334	Q48hr	27.19	173.92	176.50		176.50	0.000001	0.03	1402.98	1322.17	0.01
RIVER-1	Reach-4	4079	Q2	3.74	173.70	174.96		174.96	0.000074	0.21	27.59	86.83	0.07
RIVER-1	Reach-4	4079	Q5	6.42	173.70	175.06		175.07	0.000106	0.26	38.01	119.38	0.08
RIVER-1	Reach-4	4079	Q25	11.14	173.70	175.27		175.27	0.000078	0.26	68.72	177.95	0.07
RIVER-1	Reach-4	4079	Q100	14.84	173.70	175.46		175.46	0.000044	0.21	118.99	375.84	0.06
RIVER-1	Reach-4	4079	Qreg	28.85	173.70	176.15		176.15	0.000004	0.08	629.61	1051.10	0.02
RIVER-1	Reach-4	4079	Q48hr	42.75	173.70	176.50		176.50	0.000002	0.07	1010.01	1137.54	0.01
RIVER-1	Reach-4	3829	Q2	3.74	173.70	174.96	174.18	174.96	0.000043	0.15	34.23	100.26	0.05
RIVER-1	Reach-4	3829	Q5	6.42	173.70	175.06	174.30	175.06	0.000064	0.19	45.76	123.07	0.06
RIVER-1	Reach-4	3829	Q25	11.14	173.70	175.27	174.49	175.27	0.000056	0.21	83.10	257.30	0.06
RIVER-1	Reach-4	3829	Q100	14.84	173.70	175.46	174.60	175.46	0.000030	0.17	147.27	404.60	0.05
RIVER-1	Reach-4	3829	Qreg	28.85	173.70	176.15	174.76	176.15	0.000004	0.08	600.90	990.02	0.02
RIVER-1	Reach-4	3829	Q48hr	42.75	173.70	176.50	174.83	176.50	0.000003	0.07	965.92	1092.46	0.01
RIVER-1	Reach-4	3520	Q2	3.74	173.71	174.95	174.18	174.95	0.000081	0.12	52.10	102.77	0.04
RIVER-1	Reach-4	3520	Q5	6.42	173.71	175.05	174.30	175.05	0.000147	0.17	62.71	110.50	0.05
RIVER-1	Reach-4	3520	Q25	11.14	173.71	175.26	174.40	175.26	0.000188	0.22	89.19	169.33	0.06
RIVER-1	Reach-4	3520	Q100	14.84	173.71	175.46	174.43	175.46	0.000144	0.21	149.57	447.13	0.06
RIVER-1	Reach-4	3520	Qreg	28.85	173.71	176.15	174.55	176.15	0.000027	0.12	634.54	908.83	0.03
RIVER-1	Reach-4	3520	Q48hr	42.75	173.71	176.49	174.64	176.50	0.000018	0.11	962.83	996.10	0.02
RIVER-1	Reach-4	3215	Q2	3.74	173.69	174.95	174.14	174.95	0.000058	0.10	73.51	225.07	0.03
RIVER-1	Reach-4	3215	Q5	6.42	173.69	175.04	174.23	175.04	0.000091	0.14	96.00	257.84	0.04
RIVER-1	Reach-4	3215	Q25	11.14	173.69	175.25	174.38	175.25	0.000081	0.15	165.86	394.29	0.04
RIVER-1	Reach-4	3215	Q100	14.84	173.69	175.45	174.48	175.45	0.000053	0.13	260.07	563.59	0.04
RIVER-1	Reach-4	3215	Qreg	28.85	173.69	176.15	174.66	176.15	0.000012	0.08	833.95	905.98	0.02
RIVER-1	Reach-4	3215	Q48hr	42.75	173.69	176.49	174.75	176.49	0.000009	0.08	1152.02	942.74	0.02
RIVER-1	Reach-4	2884	Q2	3.74	173.66	174.94	174.12	174.94	0.000040	0.09	69.29	135.30	0.03
RIVER-1	Reach-4	2884	Q5	6.42	173.66	175.03	174.20	175.03	0.000082	0.13	82.40	157.30	0.04
RIVER-1	Reach-4	2884	Q25	11.14	173.66	175.24	174.28	175.24	0.000098	0.16	125.64	241.16	0.05
RIVER-1	Reach-4	2884	Q100	14.84	173.66	175.44	174.32	175.44	0.000076	0.16	183.37	343.79	0.04
RIVER-1	Reach-4	2884	Qreg	28.85	173.66	176.15	174.49	176.15	0.000023	0.11	609.67	718.33	0.02
RIVER-1	Reach-4	2884	Q48hr	42.75	173.66	176.49	174.59	176.49	0.000018	0.11	866.10	772.79	0.02
RIVER-1	Reach-4	2287	Q2	3.74	173.63	174.93		174.93	0.000037	0.08	104.12	317.35	0.03
RIVER-1	Reach-4	2287	Q5	6.42	173.63	175.02		175.02	0.000071	0.11	133.08	371.60	0.04
RIVER-1	Reach-4	2287	Q25	11.14	173.63	175.23		175.23	0.000054	0.11	214.43	404.80	0.03
RIVER-1	Reach-4	2287	Q100	14.84	173.63	175.43		175.43	0.000035	0.10	303.82	468.48	0.03
RIVER-1	Reach-4	2287	Qreg	28.85	173.63	176.14		176.14	0.000012	0.08	757.16	716.91	0.02
RIVER-1	Reach-4	2287	Q48hr	42.75	173.63	176.49		176.49	0.000011	0.08	1012.63	766.57	0.02
RIVER-1	Reach-4	1955	Q2	3.76	173.60	174.93		174.93	0.000038	0.08	87.18	213.76	0.03
RIVER-1	Reach-4	1955	Q5	6.44	173.60	175.01		175.01	0.000070	0.11	105.14	233.21	0.04
RIVER-1	Reach-4	1955	Q25	11.16	173.60	175.22		175.22	0.000083	0.14	171.31	408.44	0.04
RIVER-1	Reach-4	1955	Q100	14.87	173.60	175.43		175.43	0.000055	0.13	267.34	520.04	0.03
RIVER-1	Reach-4	1955	Qreg	31.39	173.60	176.14		176.14	0.000017	0.09	696.39	641.27	0.02
RIVER-1	Reach-4	1955	Q48hr	46.33	173.60	176.49		176.49	0.000016	0.10	929.62	719.59	0.02
RIVER-1	Reach-4	1602	Q2	3.76	173.19	174.92		174.92	0.000066	0.13	51.28	84.84	0.04
RIVER-1	Reach-4	1602	Q5	6.44	173.19	174.99		175.00	0.000145	0.20	57.59	90.50	0.06
RIVER-1	Reach-4	1602	Q25	11.16	173.19	175.20		175.20	0.000218	0.27	79.45	121.80	0.07
RIVER-1	Reach-4	1602	Q100	14.87	173.19	175.41		175.41	0.000207	0.29	112.56	184.68	0.07
RIVER-1	Reach-4	1602	Qreg	31.39	173.19	176.14		176.14	0.000089	0.24	300.99	352.76	0.05
RIVER-1	Reach-4	1602	Q48hr	46.33	173.19	176.48		176.48	0.000084	0.25	443.55	471.68	0.05

HEC-RAS Plan: Fringe6_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	1586	Q2	3.76	173.13	175.13	173.87	175.18	0.001904	0.99	3.80	8.91	0.22
RIVER-1	Reach-4	1586	Q5	6.44	173.13	175.63	174.19	175.73	0.002656	1.36	4.75	11.70	0.27
RIVER-1	Reach-4	1586	Q25	11.16	173.13	177.11	174.66	177.22	0.001702	1.48	7.55	490.06	0.24
RIVER-1	Reach-4	1586	Q100	14.87	173.13	177.28	174.98	177.46	0.002619	1.89	7.88	494.30	0.30
RIVER-1	Reach-4	1586	Qreg	31.39	173.13	177.87	177.57	177.87	0.000532	0.35	220.24	494.30	0.10
RIVER-1	Reach-4	1586	Q48hr	46.33	173.13	177.65	177.60	177.68	0.008306	1.22	114.43	494.30	0.38
RIVER-1	Reach-4	1550		Culvert									
RIVER-1	Reach-4	1514	Q2	3.76	173.32	174.99		175.06	0.000875	1.19	3.16	57.28	0.29
RIVER-1	Reach-4	1514	Q5	6.44	173.32	175.16		175.33	0.001864	1.85	3.48	74.22	0.44
RIVER-1	Reach-4	1514	Q25	11.16	173.32	175.50		175.87	0.003146	2.69	4.14	90.50	0.58
RIVER-1	Reach-4	1514	Q100	14.87	173.32	175.32	175.16	176.10	0.007538	3.93	3.79	80.20	0.89
RIVER-1	Reach-4	1514	Qreg	31.39	173.32	176.34	176.34	177.87	0.008397	5.47	5.74	232.24	1.00
RIVER-1	Reach-4	1514	Q48hr	46.33	173.32	177.64	177.64	177.68	0.002697	1.50	100.78	465.20	0.44
RIVER-1	Reach-4	1336	Q2	3.76	173.33	175.04		175.04	0.000010	0.10	73.28	140.50	0.03
RIVER-1	Reach-4	1336	Q5	6.44	173.33	175.28		175.28	0.000011	0.11	109.86	166.97	0.03
RIVER-1	Reach-4	1336	Q25	11.16	173.33	175.76		175.76	0.000006	0.10	214.88	254.93	0.02
RIVER-1	Reach-4	1336	Q100	14.87	173.33	175.86		175.86	0.000008	0.13	241.48	270.21	0.03
RIVER-1	Reach-4	1336	Qreg	31.39	173.33	177.16	174.67	177.16	0.000002	0.09	697.06	401.80	0.02
RIVER-1	Reach-4	1336	Q48hr	46.33	173.33	177.36	174.76	177.36	0.000003	0.12	779.66	401.80	0.02
RIVER-1	Reach-4	1282	Q2	3.76	173.36	175.03	173.85	175.04	0.000141	0.44	8.45	50.97	0.11
RIVER-1	Reach-4	1282	Q5	6.44	173.36	175.25	174.01	175.28	0.000262	0.66	9.69	61.49	0.16
RIVER-1	Reach-4	1282	Q25	11.16	173.36	175.71	174.24	175.76	0.000362	0.91	12.23	104.76	0.20
RIVER-1	Reach-4	1282	Q100	14.87	173.36	175.79	174.39	175.86	0.000580	1.18	12.61	107.07	0.25
RIVER-1	Reach-4	1282	Qreg	31.39	173.36	177.01	174.98	177.14	0.000620	1.62	19.36	277.43	0.28
RIVER-1	Reach-4	1282	Q48hr	46.33	173.36	177.05	175.42	177.34	0.001303	2.37	19.57	283.54	0.40
RIVER-1	Reach-4	1229		Culvert									
RIVER-1	Reach-4	1176	Q2	3.76	173.32	175.02		175.03	0.000129	0.43	8.66	169.95	0.11
RIVER-1	Reach-4	1176	Q5	6.44	173.32	175.24		175.26	0.000248	0.65	9.86	190.66	0.16
RIVER-1	Reach-4	1176	Q25	11.16	173.32	175.65		175.69	0.000375	0.92	12.10	217.43	0.20
RIVER-1	Reach-4	1176	Q100	14.87	173.32	175.66		175.74	0.000653	1.22	12.17	218.10	0.26
RIVER-1	Reach-4	1176	Qreg	31.39	173.32	176.27		176.48	0.001294	2.02	15.52	261.69	0.38
RIVER-1	Reach-4	1176	Q48hr	46.33	173.32	175.44	175.37	176.35	0.008965	4.22	10.97	204.04	0.95
RIVER-1	Reach-4	1003	Q2	3.76	173.39	175.03		175.03	0.000002	0.03	162.88	383.18	0.01
RIVER-1	Reach-4	1003	Q5	6.44	173.39	175.25		175.25	0.000001	0.03	262.06	509.98	0.01
RIVER-1	Reach-4	1003	Q25	11.16	173.39	175.67		175.67	0.000001	0.03	514.34	660.39	0.01
RIVER-1	Reach-4	1003	Q100	14.87	173.39	175.70		175.70	0.000001	0.03	533.91	666.92	0.01
RIVER-1	Reach-4	1003	Qreg	31.39	173.39	176.37		176.37	0.000001	0.03	1012.75	724.70	0.01
RIVER-1	Reach-4	1003	Q48hr	46.33	173.39	175.89		175.89	0.000006	0.08	668.88	702.66	0.02
RIVER-1	Reach-4	946	Q2	3.76	173.40	175.03		175.03	0.000001	0.03	224.40	456.86	0.01
RIVER-1	Reach-4	946	Q5	6.44	173.40	175.25		175.25	0.000001	0.04	332.44	522.94	0.01
RIVER-1	Reach-4	946	Q25	11.16	173.40	175.67		175.67	0.000001	0.03	568.97	599.16	0.01
RIVER-1	Reach-4	946	Q100	14.87	173.40	175.70		175.70	0.000001	0.04	586.69	600.55	0.01
RIVER-1	Reach-4	946	Qreg	31.39	173.40	176.37		176.37	0.000001	0.05	995.24	606.65	0.01
RIVER-1	Reach-4	946	Q48hr	46.33	173.40	175.89		175.89	0.000005	0.11	704.60	604.65	0.02
RIVER-1	Reach-4	884	Q2	3.76	173.40	175.03		175.03	0.000002	0.05	211.02	392.37	0.01
RIVER-1	Reach-4	884	Q5	6.44	173.40	175.25		175.25	0.000002	0.05	307.11	479.62	0.01
RIVER-1	Reach-4	884	Q25	11.16	173.40	175.67		175.67	0.000001	0.05	510.56	490.26	0.01
RIVER-1	Reach-4	884	Q100	14.87	173.40	175.70		175.70	0.000002	0.06	525.02	491.04	0.01
RIVER-1	Reach-4	884	Qreg	31.39	173.40	176.37		176.37	0.000002	0.07	860.08	498.39	0.01
RIVER-1	Reach-4	884	Q48hr	46.33	173.40	175.89		175.89	0.000010	0.15	621.30	495.38	0.03
RIVER-1	Reach-4	685	Q2	3.76	173.42	175.03		175.03	0.000002	0.04	173.83	314.41	0.01
RIVER-1	Reach-4	685	Q5	6.44	173.42	175.25		175.25	0.000002	0.05	248.20	352.56	0.01
RIVER-1	Reach-4	685	Q25	11.16	173.42	175.67		175.67	0.000002	0.05	399.86	369.55	0.01
RIVER-1	Reach-4	685	Q100	14.87	173.42	175.70		175.70	0.000002	0.07	410.76	370.85	0.02
RIVER-1	Reach-4	685	Qreg	31.39	173.42	176.37		176.37	0.000002	0.08	671.93	407.14	0.02
RIVER-1	Reach-4	685	Q48hr	46.33	173.42	175.89		175.89	0.000015	0.18	483.16	375.74	0.04
RIVER-1	Reach-4	522	Q2	3.76	173.44	174.99	174.16	175.02	0.000537	0.77	4.86	218.73	0.22
RIVER-1	Reach-4	522	Q5	6.44	173.44	175.17	174.36	175.24	0.001022	1.16	5.54	287.79	0.31
RIVER-1	Reach-4	522	Q25	11.16	173.44	175.52	174.66	175.65	0.001524	1.63	6.83	366.57	0.39
RIVER-1	Reach-4	522	Q100	14.87	173.44	175.39	174.86	175.67	0.003455	2.34	6.35	364.06	0.58
RIVER-1	Reach-4	522	Qreg	31.39	173.44	176.37	175.74	176.37	0.000041	0.22	282.76	372.71	0.06
RIVER-1	Reach-4	522	Q48hr	46.33	173.44	175.85	175.78	175.89	0.003158	1.35	89.58	371.05	0.49
RIVER-1	Reach-4	499		Culvert									
RIVER-1	Reach-4	476	Q2	3.76	173.22	174.90		174.92	0.000417	0.71	5.31	168.82	0.19
RIVER-1	Reach-4	476	Q5	6.44	173.22	174.88		174.95	0.001295	1.23	5.22	156.42	0.33
RIVER-1	Reach-4	476	Q25	11.16	173.22	174.79		175.05	0.004804	2.28	4.90	111.75	0.64
RIVER-1	Reach-4	476	Q100	14.87	173.22	174.65	174.65	175.24	0.012554	3.41	4.37	56.76	1.01
RIVER-1	Reach-4	476	Qreg	31.39	173.22	175.39	175.39	176.37	0.010691	4.38	7.17	324.59	1.01
RIVER-1	Reach-4	476	Q48hr	46.33	173.22	175.80	175.80	175.89	0.005617	1.95	69.37	366.31	0.66

HEC-RAS Plan: Fringe6_BC_174.91 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	256	Q2	3.64	173.43	174.91	173.92	174.91	0.000004	0.05	119.41	242.01	0.02
RIVER-1	Reach-4	256	Q5	6.19	173.43	174.91	174.12	174.91	0.000011	0.09	119.64	242.06	0.03
RIVER-1	Reach-4	256	Q25	10.20	173.43	174.91	174.24	174.91	0.000031	0.15	120.22	242.19	0.05
RIVER-1	Reach-4	256	Q100	14.39	173.43	174.92	174.33	174.92	0.000059	0.21	121.14	242.39	0.07
RIVER-1	Reach-4	256	Qreg	32.35	173.43	174.95	174.48	174.95	0.000257	0.44	128.12	244.95	0.14
RIVER-1	Reach-4	256	Q48hr	47.42	173.43	174.98	174.55	174.99	0.000455	0.60	137.24	252.42	0.19
RIVER-1	Reach-4	1	Q2	3.64	173.97	174.91	174.17	174.91	0.000009	0.08	82.54	183.31	0.03
RIVER-1	Reach-4	1	Q5	6.19	173.97	174.91	174.23	174.91	0.000026	0.13	82.54	183.31	0.05
RIVER-1	Reach-4	1	Q25	10.20	173.97	174.91	174.32	174.91	0.000070	0.22	82.54	183.31	0.07
RIVER-1	Reach-4	1	Q100	14.39	173.97	174.91	174.39	174.91	0.000139	0.31	82.54	183.31	0.10
RIVER-1	Reach-4	1	Qreg	32.35	173.97	174.91	174.57	174.92	0.000701	0.69	82.54	183.31	0.24
RIVER-1	Reach-4	1	Q48hr	47.42	173.97	174.91	174.65	174.94	0.001506	1.01	82.54	183.31	0.35

HEC-RAS Model Output:

Fringe6 Conditions

Simulation Results for 175.74 m Boundary Condition

HEC-RAS Plan: Fringe6_BC_175.74

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-5	Reach-1	3365	Q2	0.30	175.82	176.58	176.04	176.58	0.000284	0.16	1.83	3.79	0.07
RIVER-5	Reach-1	3365	Q5	0.67	175.82	176.88	176.15	176.89	0.000282	0.20	5.77	62.85	0.08
RIVER-5	Reach-1	3365	Q25	1.26	175.82	177.09	176.27	177.09	0.000060	0.10	45.88	362.63	0.04
RIVER-5	Reach-1	3365	Q100	1.80	175.82	177.21	176.35	177.21	0.000020	0.06	98.43	487.68	0.02
RIVER-5	Reach-1	3365	Qreg	3.95	175.82	177.47	176.58	177.47	0.000008	0.05	247.83	644.96	0.01
RIVER-5	Reach-1	3365	Q48hr	6.04	175.82	177.76	176.96	177.76	0.000003	0.04	457.09	748.61	0.01
RIVER-5	Reach-1	2275	Q2	0.30	175.75	176.48	175.95	176.48	0.000313	0.17	1.71	3.42	0.08
RIVER-5	Reach-1	2275	Q5	0.67	175.75	176.77	176.05	176.77	0.000427	0.24	2.79	4.17	0.09
RIVER-5	Reach-1	2275	Q25	1.26	175.75	177.04	176.16	177.04	0.000558	0.31	4.49	18.23	0.11
RIVER-5	Reach-1	2275	Q100	1.80	175.75	177.19	176.25	177.19	0.000385	0.28	16.26	141.90	0.09
RIVER-5	Reach-1	2275	Qreg	3.95	175.75	177.47	176.49	177.47	0.000090	0.16	93.49	466.24	0.05
RIVER-5	Reach-1	2275	Q48hr	6.04	175.75	177.76	176.68	177.76	0.000014	0.08	267.35	644.93	0.02
RIVER-5	Reach-1	1732	Q2	0.30	175.82	176.36		176.37	0.002562	0.43	0.69	4.05	0.20
RIVER-5	Reach-1	1732	Q5	0.67	175.82	176.59		176.62	0.003386	0.64	1.05	5.24	0.25
RIVER-5	Reach-1	1732	Q25	1.26	175.82	176.78		176.83	0.005413	0.95	1.32	6.17	0.32
RIVER-5	Reach-1	1732	Q100	1.80	175.82	176.96		177.02	0.005954	1.13	1.59	7.12	0.35
RIVER-5	Reach-1	1732	Qreg	3.95	175.82	177.17		177.39	0.015498	2.06	1.92	37.75	0.58
RIVER-5	Reach-1	1732	Q48hr	6.04	175.82	177.27		177.71	0.028589	2.94	2.06	54.61	0.80
RIVER-5	Reach-1	1690.5		Culvert									
RIVER-5	Reach-1	1649	Q2	0.30	175.88	176.57	176.15	176.58	0.001160	0.34	0.87	6.31	0.14
RIVER-5	Reach-1	1649	Q5	0.67	175.88	176.84	176.27	176.86	0.001708	0.53	1.28	7.76	0.18
RIVER-5	Reach-1	1649	Q25	1.26	175.88	177.07	176.41	177.10	0.002715	0.78	1.62	82.09	0.24
RIVER-5	Reach-1	1649	Q100	1.80	175.88	177.19	176.52	177.24	0.003906	1.00	1.80	192.38	0.29
RIVER-5	Reach-1	1649	Qreg	3.95	175.88	177.47	176.88	177.63	0.009304	1.78	2.22	333.41	0.47
RIVER-5	Reach-1	1649	Q48hr	6.04	175.88	177.55	177.17	177.89	0.018283	2.59	2.34	348.73	0.66
RIVER-5	Reach-1	1233	Q2	0.30	175.85	176.33		176.34	0.003402	0.35	0.85	2.96	0.21
RIVER-5	Reach-1	1233	Q5	0.67	175.85	176.66		176.66	0.001279	0.30	2.37	7.12	0.14
RIVER-5	Reach-1	1233	Q25	1.26	175.85	176.94		176.95	0.000609	0.24	5.23	14.81	0.10
RIVER-5	Reach-1	1233	Q100	1.80	175.85	177.08		177.08	0.000492	0.23	9.22	67.74	0.09
RIVER-5	Reach-1	1233	Qreg	3.95	175.85	177.55		177.55	0.000008	0.04	110.86	348.01	0.01
RIVER-5	Reach-1	1233	Q48hr	6.04	175.85	177.72		177.72	0.000005	0.03	173.57	385.75	0.01
RIVER-5	Reach-1	673	Q2	0.30	175.45	176.27		176.27	0.000140	0.10	2.83	5.41	0.05
RIVER-5	Reach-1	673	Q5	0.67	175.45	176.60		176.60	0.000161	0.14	4.73	6.12	0.05
RIVER-5	Reach-1	673	Q25	1.26	175.45	176.88		176.88	0.000255	0.19	6.56	7.62	0.07
RIVER-5	Reach-1	673	Q100	1.80	175.45	176.99		177.00	0.000438	0.24	7.63	9.99	0.09
RIVER-5	Reach-1	673	Qreg	3.95	175.45	177.54		177.54	0.000022	0.07	72.11	259.15	0.02
RIVER-5	Reach-1	673	Q48hr	6.04	175.45	177.71		177.71	0.000013	0.06	123.02	331.12	0.02
RIVER-4	Reach-1	5305	Q2	0.26	175.17	176.20	175.34	176.20	0.000058	0.07	4.40	9.11	0.03
RIVER-4	Reach-1	5305	Q5	0.72	175.17	176.54	175.46	176.54	0.000098	0.11	9.04	18.94	0.03
RIVER-4	Reach-1	5305	Q25	1.51	175.17	176.81	175.61	176.81	0.000116	0.13	24.94	157.30	0.04
RIVER-4	Reach-1	5305	Q100	2.63	175.17	176.98	175.76	176.98	0.000066	0.10	66.41	271.91	0.03
RIVER-4	Reach-1	5305	Qreg	6.51	175.17	177.55	176.07	177.55	0.000009	0.05	289.38	565.55	0.01
RIVER-4	Reach-1	5305	Q48hr	9.62	175.17	177.72	176.23	177.72	0.000009	0.05	394.70	669.33	0.01
RIVER-4	Reach-1	4959	Q2	0.26	175.06	176.20		176.20	0.000030	0.05	6.12	11.78	0.02
RIVER-4	Reach-1	4959	Q5	0.72	175.06	176.53		176.53	0.000061	0.08	11.13	21.00	0.03
RIVER-4	Reach-1	4959	Q25	1.51	175.06	176.80		176.80	0.000072	0.10	29.55	173.69	0.03
RIVER-4	Reach-1	4959	Q100	2.63	175.06	176.98		176.98	0.000046	0.08	72.35	294.08	0.02
RIVER-4	Reach-1	4959	Qreg	6.51	175.06	177.54		177.54	0.000006	0.04	384.26	806.91	0.01
RIVER-4	Reach-1	4959	Q48hr	9.62	175.06	177.71		177.71	0.000006	0.04	532.01	939.55	0.01
RIVER-4	Reach-1	4536	Q2	0.31	175.31	176.19		176.19	0.000160	0.09	3.91	8.64	0.04
RIVER-4	Reach-1	4536	Q5	0.84	175.31	176.52		176.52	0.000221	0.13	7.48	14.27	0.05
RIVER-4	Reach-1	4536	Q25	1.81	175.31	176.78		176.78	0.000203	0.14	28.38	251.37	0.05
RIVER-4	Reach-1	4536	Q100	3.16	175.31	176.97		176.97	0.000059	0.08	93.57	418.56	0.03
RIVER-4	Reach-1	4536	Qreg	8.04	175.31	177.54		177.54	0.000006	0.03	462.96	931.90	0.01
RIVER-4	Reach-1	4536	Q48hr	11.95	175.31	177.71		177.71	0.000006	0.03	630.56	1011.48	0.01
RIVER-4	Reach-2	3842	Q2	0.59	175.54	176.02		176.03	0.004173	0.42	1.40	4.31	0.24
RIVER-4	Reach-2	3842	Q5	1.48	175.54	176.34		176.35	0.002909	0.50	3.08	8.47	0.21
RIVER-4	Reach-2	3842	Q25	2.97	175.54	176.67		176.68	0.000909	0.34	10.19	52.48	0.12
RIVER-4	Reach-2	3842	Q100	4.77	175.54	176.96		176.96	0.000083	0.12	56.38	341.20	0.04
RIVER-4	Reach-2	3842	Qreg	11.60	175.54	177.54		177.54	0.000003	0.03	445.47	899.86	0.01
RIVER-4	Reach-2	3842	Q48hr	17.29	175.54	177.71		177.71	0.000002	0.03	603.54	955.42	0.01
RIVER-4	Reach-2	3440	Q2	0.59	174.86	175.91		175.92	0.000403	0.20	2.96	4.56	0.08
RIVER-4	Reach-2	3440	Q5	1.48	174.86	176.24		176.24	0.000446	0.25	6.33	12.93	0.09
RIVER-4	Reach-2	3440	Q25	2.97	174.86	176.63		176.64	0.000279	0.23	12.25	21.31	0.07
RIVER-4	Reach-2	3440	Q100	4.77	174.86	176.95		176.95	0.000126	0.17	36.83	205.49	0.05
RIVER-4	Reach-2	3440	Qreg	11.60	174.86	177.54		177.54	0.000004	0.03	366.73	737.43	0.01
RIVER-4	Reach-2	3440	Q48hr	17.29	174.86	177.71		177.71	0.000004	0.03	496.60	787.62	0.01
RIVER-4	Reach-2	3128	Q2	0.59	174.79	175.89		175.89	0.000236	0.16	3.67	5.33	0.06
RIVER-4	Reach-2	3128	Q5	1.48	174.79	176.19		176.19	0.000500	0.27	5.44	6.25	0.09
RIVER-4	Reach-2	3128	Q25	2.97	174.79	176.59		176.59	0.000676	0.36	8.14	7.41	0.11
RIVER-4	Reach-2	3128	Q100	4.77	174.79	176.91		176.92	0.000767	0.43	12.66	53.31	0.12

HEC-RAS Plan: Fringe6_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-4	Reach-2	3128	Qreg	11.60	174.79	177.54		177.54	0.000006	0.04	349.27	886.63	0.01
RIVER-4	Reach-2	3128	Q48hr	17.29	174.79	177.71		177.71	0.000004	0.04	506.75	958.70	0.01
RIVER-4	Reach-2	2805	Q2	0.59	174.82	175.86		175.86	0.000239	0.14	4.21	7.58	0.06
RIVER-4	Reach-2	2805	Q5	1.48	174.82	176.15		176.15	0.000408	0.23	6.43	8.01	0.08
RIVER-4	Reach-2	2805	Q25	2.97	174.82	176.54		176.54	0.000435	0.29	10.93	18.75	0.09
RIVER-4	Reach-2	2805	Q100	4.77	174.82	176.87		176.87	0.000314	0.28	18.17	24.07	0.08
RIVER-4	Reach-2	2805	Qreg	11.60	174.82	177.54		177.54	0.000015	0.07	215.43	535.93	0.02
RIVER-4	Reach-2	2805	Q48hr	17.29	174.82	177.71		177.71	0.000011	0.07	312.05	592.44	0.02
RIVER-4	Reach-2	1709	Q2	0.59	174.55	175.78		175.78	0.000264	0.18	3.27	3.68	0.06
RIVER-4	Reach-2	1709	Q5	1.48	174.55	175.94		175.94	0.001040	0.38	3.87	3.87	0.12
RIVER-4	Reach-2	1709	Q25	2.97	174.55	176.26		176.28	0.001905	0.57	5.19	4.31	0.17
RIVER-4	Reach-2	1709	Q100	4.77	174.55	176.63		176.65	0.002375	0.69	6.88	4.99	0.19
RIVER-4	Reach-2	1709	Qreg	11.60	174.55	177.52		177.53	0.000292	0.29	53.94	168.25	0.07
RIVER-4	Reach-2	1709	Q48hr	17.29	174.55	177.70		177.70	0.000189	0.25	93.36	273.53	0.06
RIVER-4	Reach-2	1139	Q2	0.64	174.23	175.75		175.75	0.000089	0.12	5.39	5.59	0.04
RIVER-4	Reach-2	1139	Q5	1.58	174.23	175.83		175.83	0.000449	0.27	5.80	5.79	0.09
RIVER-4	Reach-2	1139	Q25	3.16	174.23	176.02		176.03	0.001100	0.45	6.96	6.32	0.14
RIVER-4	Reach-2	1139	Q100	5.03	174.23	176.32		176.34	0.001409	0.56	9.01	7.18	0.16
RIVER-4	Reach-2	1139	Qreg	12.35	174.23	177.44		177.45	0.000711	0.51	34.45	144.32	0.12
RIVER-4	Reach-2	1139	Q48hr	18.42	174.23	177.66		177.66	0.000333	0.38	78.79	264.92	0.08
RIVER-4	Reach-2	1021	Q2	0.64	174.45	175.75	174.72	175.75	0.000115	0.20	3.16	6.04	0.06
RIVER-4	Reach-2	1021	Q5	1.58	174.45	175.80	174.87	175.81	0.000617	0.48	3.29	8.30	0.14
RIVER-4	Reach-2	1021	Q25	3.16	174.45	175.94	175.06	175.98	0.001732	0.86	3.66	22.45	0.23
RIVER-4	Reach-2	1021	Q100	5.03	174.45	176.20	175.26	176.27	0.002504	1.16	4.33	44.81	0.29
RIVER-4	Reach-2	1021	Qreg	12.35	174.45	177.23	175.85	177.38	0.003009	1.75	7.34	160.85	0.34
RIVER-4	Reach-2	1021	Q48hr	18.42	174.45	177.24	176.25	177.59	0.006533	2.59	7.47	162.34	0.50
RIVER-4	Reach-2	975		Culvert									
RIVER-4	Reach-2	929	Q2	0.64	174.12	175.74		175.74	0.000071	0.18	3.63	14.47	0.05
RIVER-4	Reach-2	929	Q5	1.58	174.12	175.76		175.77	0.000419	0.43	3.68	14.65	0.12
RIVER-4	Reach-2	929	Q25	3.16	174.12	175.80		175.84	0.001510	0.83	3.79	15.11	0.22
RIVER-4	Reach-2	929	Q100	5.03	174.12	175.94		176.01	0.002871	1.22	4.14	17.21	0.31
RIVER-4	Reach-2	929	Qreg	12.35	174.12	176.42		176.69	0.007156	2.29	5.39	22.55	0.51
RIVER-4	Reach-2	929	Q48hr	18.42	174.12	176.64		177.12	0.011407	3.09	5.96	55.05	0.65
RIVER-4	Reach-2	485	Q2	0.64	173.89	175.74	174.09	175.74	0.000006	0.05	13.96	12.28	0.01
RIVER-4	Reach-2	485	Q5	1.58	173.89	175.75	174.18	175.75	0.000034	0.11	14.12	13.56	0.03
RIVER-4	Reach-2	485	Q25	3.16	173.89	175.78	174.30	175.78	0.000127	0.22	14.50	16.09	0.06
RIVER-4	Reach-2	485	Q100	5.03	173.89	175.89	174.41	175.90	0.000240	0.32	16.81	24.01	0.08
RIVER-4	Reach-2	485	Qreg	12.35	173.89	176.49	174.72	176.49	0.000158	0.32	61.06	108.19	0.07
RIVER-4	Reach-2	485	Q48hr	18.42	173.89	176.86	174.93	176.86	0.000044	0.19	154.57	191.57	0.04
RIVER-3	Reach-1	1889	Q2	0.12	176.35	176.48	176.48	176.51	0.045040	0.75	0.16	2.06	0.88
RIVER-3	Reach-1	1889	Q5	0.25	176.35	176.67	176.52	176.68	0.002905	0.37	0.67	3.30	0.26
RIVER-3	Reach-1	1889	Q25	0.43	176.35	177.24	176.57	177.24	0.000049	0.10	5.63	27.83	0.04
RIVER-3	Reach-1	1889	Q100	0.61	176.35	177.15	176.61	177.15	0.000189	0.18	3.84	14.28	0.08
RIVER-3	Reach-1	1889	Qreg	1.25	176.35	177.27	176.72	177.27	0.000308	0.27	6.49	31.59	0.10
RIVER-3	Reach-1	1889	Q48hr	1.90	176.35	177.84	176.80	177.84	0.000006	0.05	49.60	97.50	0.02
RIVER-3	Reach-1	1443	Q2	0.12	175.71	176.32	175.85	176.32	0.000065	0.08	1.48	4.07	0.04
RIVER-3	Reach-1	1443	Q5	0.25	175.71	176.66		176.66	0.000036	0.08	3.13	5.59	0.03
RIVER-3	Reach-1	1443	Q25	0.43	175.71	177.24		177.24	0.000007	0.05	13.97	78.72	0.02
RIVER-3	Reach-1	1443	Q100	0.61	175.71	177.14		177.14	0.000027	0.09	8.60	42.95	0.03
RIVER-3	Reach-1	1443	Qreg	1.25	175.71	177.25		177.25	0.000048	0.13	15.48	85.21	0.04
RIVER-3	Reach-1	1443	Q48hr	1.90	175.71	177.84		177.84	0.000001	0.03	85.89	141.84	0.01
RIVER-3	Reach-1	1255	Q2	0.12	175.45	176.32		176.32	0.000026	0.06	1.93	3.72	0.03
RIVER-3	Reach-1	1255	Q5	0.25	175.45	176.66		176.66	0.000026	0.07	3.40	5.01	0.03
RIVER-3	Reach-1	1255	Q25	0.43	175.45	177.24		177.24	0.000003	0.03	21.57	104.09	0.01
RIVER-3	Reach-1	1255	Q100	0.61	175.45	177.14		177.14	0.000011	0.06	14.54	50.24	0.02
RIVER-3	Reach-1	1255	Qreg	1.25	175.45	177.25		177.25	0.000022	0.09	23.41	110.53	0.03
RIVER-3	Reach-1	1255	Q48hr	1.90	175.45	177.84		177.84	0.000001	0.03	102.28	149.35	0.01
RIVER-3	Reach-1	1186	Q2	0.12	174.90	176.32	175.07	176.32	0.000005	0.05	2.60	4.05	0.01
RIVER-3	Reach-1	1186	Q5	0.25	174.90	176.66	175.13	176.66	0.000010	0.07	3.31	5.80	0.02
RIVER-3	Reach-1	1186	Q25	0.43	174.90	177.23	175.19	177.23	0.000011	0.10	4.52	73.08	0.02
RIVER-3	Reach-1	1186	Q100	0.61	174.90	177.14	175.25	177.14	0.000025	0.14	4.32	64.75	0.03
RIVER-3	Reach-1	1186	Qreg	1.25	174.90	177.25	175.40	177.25	0.000091	0.28	4.54	75.56	0.06
RIVER-3	Reach-1	1186	Q48hr	1.90	174.90	177.84	175.52	177.84	0.000010	0.06	47.41	133.00	0.02
RIVER-3	Reach-1	1168		Culvert									
RIVER-3	Reach-1	1150	Q2	0.12	175.72	176.32	175.86	176.32	0.000135	0.12	0.95	2.74	0.06
RIVER-3	Reach-1	1150	Q5	0.25	175.72	176.66	175.91	176.66	0.000091	0.15	1.67	3.92	0.05
RIVER-3	Reach-1	1150	Q25	0.43	175.72	177.23	175.98	177.23	0.000046	0.15	2.87	62.44	0.04
RIVER-3	Reach-1	1150	Q100	0.61	175.72	177.14	176.03	177.14	0.000116	0.23	2.67	52.89	0.06
RIVER-3	Reach-1	1150	Qreg	1.25	175.72	177.23	176.18	177.24	0.000387	0.44	2.87	62.18	0.12
RIVER-3	Reach-1	1150	Q48hr	1.90	175.72	177.84	176.30	177.84	0.000010	0.06	49.41	144.70	0.02

HEC-RAS Plan: Fringe6_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-3	Reach-1	782	Q2	0.12	175.29	176.32	175.38	176.32	0.000002	0.02	5.90	8.44	0.01
RIVER-3	Reach-1	782	Q5	0.25	175.29	176.66	175.42	176.66	0.000002	0.03	10.63	27.24	0.01
RIVER-3	Reach-1	782	Q25	0.43	175.29	177.23	175.45	177.23	0.000000	0.01	55.74	126.84	0.00
RIVER-3	Reach-1	782	Q100	0.61	175.29	177.14	175.49	177.14	0.000001	0.02	44.37	111.81	0.01
RIVER-3	Reach-1	782	Qreg	1.25	175.29	177.24	175.57	177.24	0.000002	0.04	56.06	127.27	0.01
RIVER-3	Reach-1	782	Q48hr	1.90	175.29	177.84	175.63	177.84	0.000000	0.02	156.15	194.80	0.00
RIVER-3	Reach-1	465	Q2	0.12	175.02	176.32	175.14	176.32	0.000001	0.01	12.67	53.17	0.00
RIVER-3	Reach-1	465	Q5	0.25	175.02	176.66	175.18	176.66	0.000000	0.01	43.33	114.90	0.00
RIVER-3	Reach-1	465	Q25	0.43	175.02	177.23	175.23	177.23	0.000000	0.00	136.44	219.81	0.00
RIVER-3	Reach-1	465	Q100	0.61	175.02	177.14	175.27	177.14	0.000000	0.01	117.28	185.17	0.00
RIVER-3	Reach-1	465	Qreg	1.25	175.02	177.24	175.38	177.24	0.000000	0.01	137.00	220.97	0.00
RIVER-3	Reach-1	465	Q48hr	1.90	175.02	177.84	175.48	177.84	0.000000	0.01	320.77	364.70	0.00
RIVER-3	Reach-1	280	Q2	0.12	174.83	176.32	174.94	176.32	0.000000	0.00	39.67	72.41	0.00
RIVER-3	Reach-1	280	Q5	0.25	174.83	176.66	174.99	176.66	0.000000	0.00	69.05	99.99	0.00
RIVER-3	Reach-1	280	Q25	0.43	174.83	177.23	175.06	177.23	0.000000	0.00	158.05	239.57	0.00
RIVER-3	Reach-1	280	Q100	0.61	174.83	177.14	175.10	177.14	0.000000	0.01	136.46	210.50	0.00
RIVER-3	Reach-1	280	Qreg	1.25	174.83	177.24	175.26	177.24	0.000000	0.01	158.65	240.02	0.00
RIVER-3	Reach-1	280	Q48hr	1.90	174.83	177.84	175.35	177.84	0.000000	0.01	341.84	344.35	0.00
RIVER-2	Reach-1	3413	Q2	0.15	175.69	176.36	175.82	176.36	0.000088	0.07	2.09	4.97	0.04
RIVER-2	Reach-1	3413	Q5	0.51	175.69	176.75	175.92	176.75	0.000088	0.09	7.17	46.36	0.04
RIVER-2	Reach-1	3413	Q25	1.10	175.69	177.28	176.03	177.28	0.000003	0.02	56.76	119.61	0.01
RIVER-2	Reach-1	3413	Q100	1.70	175.69	177.27	176.11	177.27	0.000006	0.04	56.03	119.06	0.01
RIVER-2	Reach-1	3413	Qreg	4.37	175.69	177.74	176.36	177.74	0.000003	0.03	174.31	347.44	0.01
RIVER-2	Reach-1	3413	Q48hr	6.85	175.69	178.15	176.53	178.15	0.000000	0.01	682.75	916.06	0.00
RIVER-2	Reach-1	3308	Q2	0.15	175.79	176.35	175.98	176.35	0.000426	0.17	0.90	4.57	0.08
RIVER-2	Reach-1	3308	Q5	0.51	175.79	176.74	176.09	176.74	0.000597	0.30	1.67	62.75	0.11
RIVER-2	Reach-1	3308	Q25	1.10	175.79	177.27	176.22	177.27	0.000541	0.40	2.73	335.93	0.11
RIVER-2	Reach-1	3308	Q100	1.70	175.79	177.25	176.33	177.27	0.001372	0.63	2.69	321.13	0.17
RIVER-2	Reach-1	3308	Qreg	4.37	175.79	177.65	176.69	177.73	0.003739	1.25	3.50	844.55	0.30
RIVER-2	Reach-1	3308	Q48hr	6.85	175.79	178.00	176.97	178.13	0.005061	1.64	4.19	966.52	0.36
RIVER-2	Reach-1	3270.5		Culvert									
RIVER-2	Reach-1	3233	Q2	0.15	175.74	176.35	175.95	176.35	0.000860	0.20	0.77	4.46	0.10
RIVER-2	Reach-1	3233	Q5	0.51	175.74	176.73	176.10	176.73	0.000954	0.33	1.53	28.60	0.12
RIVER-2	Reach-1	3233	Q25	1.10	175.74	177.25	176.27	177.26	0.000791	0.43	2.57	87.67	0.12
RIVER-2	Reach-1	3233	Q100	1.70	175.74	177.20	176.38	177.23	0.002149	0.69	2.48	79.06	0.20
RIVER-2	Reach-1	3233	Qreg	4.37	175.74	177.36	176.75	177.48	0.009652	1.57	2.78	111.50	0.43
RIVER-2	Reach-1	3233	Q48hr	6.85	175.74	177.75	177.03	177.94	0.010323	1.92	3.57	395.89	0.46
RIVER-2	Reach-1	3063	Q2	0.15	175.71	176.34	175.85	176.34	0.000097	0.07	2.06	5.15	0.04
RIVER-2	Reach-1	3063	Q5	0.51	175.71	176.72	175.95	176.72	0.000135	0.12	4.40	7.25	0.05
RIVER-2	Reach-1	3063	Q25	1.10	175.71	177.25	176.05	177.25	0.000040	0.08	18.37	77.52	0.03
RIVER-2	Reach-1	3063	Q100	1.70	175.71	177.20	176.13	177.20	0.000143	0.15	14.93	62.01	0.05
RIVER-2	Reach-1	3063	Qreg	4.37	175.71	177.38	176.36	177.38	0.000212	0.21	29.96	93.27	0.07
RIVER-2	Reach-1	3063	Q48hr	6.85	175.71	177.84	176.53	177.84	0.000002	0.03	305.24	527.20	0.01
RIVER-2	Reach-1	2586.51	Q2	0.19	175.47	176.33	175.65	176.33	0.000049	0.06	2.95	5.65	0.03
RIVER-2	Reach-1	2586.51	Q5	0.65	175.47	176.70	175.77	176.70	0.000118	0.12	5.30	7.08	0.05
RIVER-2	Reach-1	2586.51	Q25	1.43	175.47	177.24	175.90	177.24	0.000034	0.09	24.24	107.65	0.03
RIVER-2	Reach-1	2586.51	Q100	2.22	175.47	177.18	175.99	177.18	0.000127	0.18	18.57	75.43	0.05
RIVER-2	Reach-1	2586.51	Qreg	5.79	175.47	177.35	176.28	177.35	0.000244	0.27	40.27	185.12	0.07
RIVER-2	Reach-1	2586.51	Q48hr	9.03	175.47	177.84	176.46	177.84	0.000006	0.05	265.60	506.88	0.01
RIVER-2	Reach-1	1837	Q2	0.19	175.09	176.33		176.33	0.000013	0.04	4.52	5.58	0.01
RIVER-2	Reach-1	1837	Q5	0.65	175.09	176.69		176.69	0.000054	0.10	6.68	6.54	0.03
RIVER-2	Reach-1	1837	Q25	1.43	175.09	177.24		177.24	0.000040	0.10	22.46	134.27	0.03
RIVER-2	Reach-1	1837	Q100	2.22	175.09	177.15		177.15	0.000156	0.19	14.70	47.56	0.05
RIVER-2	Reach-1	1837	Qreg	5.79	175.09	177.27		177.27	0.000519	0.35	27.54	170.68	0.10
RIVER-2	Reach-1	1837	Q48hr	9.03	175.09	177.84		177.84	0.000010	0.06	218.73	442.82	0.01
RIVER-2	Reach-1	999	Q2	0.19	175.01	176.33		176.33	0.000006	0.03	6.16	7.31	0.01
RIVER-2	Reach-1	999	Q5	0.65	175.01	176.68		176.68	0.000030	0.07	9.52	20.23	0.02
RIVER-2	Reach-1	999	Q25	1.43	175.01	177.23		177.23	0.000003	0.03	83.76	295.43	0.01
RIVER-2	Reach-1	999	Q100	2.22	175.01	177.14		177.14	0.000015	0.06	59.34	229.17	0.02
RIVER-2	Reach-1	999	Qreg	5.79	175.01	177.24		177.24	0.000045	0.11	86.66	302.50	0.03
RIVER-2	Reach-1	999	Q48hr	9.03	175.01	177.84		177.84	0.000003	0.04	288.26	345.00	0.01
RIVER-1	Reach-1	13837	Q2	0.14	175.83	176.34	175.89	176.34	0.000056	0.06	2.20	5.67	0.03
RIVER-1	Reach-1	13837	Q5	0.32	175.83	176.70	175.94	176.70	0.000036	0.07	4.59	7.60	0.03
RIVER-1	Reach-1	13837	Q25	0.61	175.83	177.31	175.99	177.31	0.000005	0.04	26.60	83.87	0.01
RIVER-1	Reach-1	13837	Q100	0.94	175.83	177.31	176.04	177.31	0.000011	0.06	27.19	85.91	0.02
RIVER-1	Reach-1	13837	Qreg	2.12	175.83	177.74	176.16	177.74	0.000005	0.05	80.29	167.10	0.01
RIVER-1	Reach-1	13837	Q48hr	3.11	175.83	177.84	176.25	177.84	0.000006	0.05	120.43	266.43	0.01
RIVER-1	Reach-1	13777	Q2	0.14	175.68	176.33	175.80	176.33	0.000219	0.18	0.78	5.39	0.07
RIVER-1	Reach-1	13777	Q5	0.32	175.68	176.69	175.88	176.69	0.000251	0.26	1.21	7.03	0.08
RIVER-1	Reach-1	13777	Q25	0.61	175.68	177.30	175.98	177.31	0.000189	0.32	1.94	77.04	0.08

HEC-RAS Plan: Fringe6_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-1	13777	Q100	0.94	175.68	177.30	176.08	177.31	0.000451	0.49	1.94	76.95	0.12
RIVER-1	Reach-1	13777	Qreg	2.12	175.68	177.74	176.37	177.74	0.001091	0.29	11.84	199.01	0.15
RIVER-1	Reach-1	13777	Q48hr	3.11	175.68	177.84	176.57	177.84	0.000348	0.19	29.36	200.01	0.09
RIVER-1	Reach-1	13745.5		Culvert									
RIVER-1	Reach-1	13714	Q2	0.14	175.87	176.32	175.99	176.33	0.000748	0.27	0.54	4.51	0.13
RIVER-1	Reach-1	13714	Q5	0.32	175.87	176.67	176.07	176.68	0.000543	0.33	0.96	48.49	0.12
RIVER-1	Reach-1	13714	Q25	0.61	175.87	177.23	176.18	177.24	0.000341	0.38	1.62	121.15	0.10
RIVER-1	Reach-1	13714	Q100	0.94	175.87	177.13	176.28	177.15	0.001049	0.63	1.50	80.69	0.18
RIVER-1	Reach-1	13714	Qreg	2.12	175.87	177.20	176.56	177.29	0.004478	1.34	1.58	96.90	0.37
RIVER-1	Reach-1	13714	Q48hr	3.11	175.87	177.84	176.75	177.84	0.000918	0.20	31.67	409.10	0.13
RIVER-1	Reach-1	13387	Q2	0.14	174.94	176.32		176.32	0.000004	0.03	4.89	5.23	0.01
RIVER-1	Reach-1	13387	Q5	0.32	174.94	176.67		176.67	0.000008	0.05	8.26	37.69	0.01
RIVER-1	Reach-1	13387	Q25	0.61	174.94	177.23		177.23	0.000000	0.01	171.67	488.87	0.00
RIVER-1	Reach-1	13387	Q100	0.94	174.94	177.14		177.14	0.000001	0.02	127.32	444.06	0.00
RIVER-1	Reach-1	13387	Qreg	2.12	174.94	177.24		177.24	0.000002	0.03	175.24	490.25	0.01
RIVER-1	Reach-1	13387	Q48hr	3.11	174.94	177.84		177.84	0.000000	0.01	540.64	689.10	0.00
RIVER-1	Reach-1	13099	Q2	0.14	174.88	176.32		176.32	0.000005	0.03	4.95	7.08	0.01
RIVER-1	Reach-1	13099	Q5	0.32	174.88	176.67		176.67	0.000008	0.04	8.78	17.15	0.01
RIVER-1	Reach-1	13099	Q25	0.61	174.88	177.23		177.23	0.000001	0.02	97.23	399.13	0.00
RIVER-1	Reach-1	13099	Q100	0.94	174.88	177.14		177.14	0.000003	0.04	63.84	318.45	0.01
RIVER-1	Reach-1	13099	Qreg	2.12	174.88	177.24		177.24	0.000007	0.05	100.05	404.93	0.01
RIVER-1	Reach-1	13099	Q48hr	3.11	174.88	177.84		177.84	0.000000	0.01	443.00	693.50	0.00
RIVER-1	Reach-2	12741	Q2	0.37	174.77	176.32	174.94	176.32	0.000002	0.03	17.73	44.99	0.01
RIVER-1	Reach-2	12741	Q5	1.07	174.77	176.67	175.08	176.67	0.000002	0.05	51.38	202.44	0.01
RIVER-1	Reach-2	12741	Q25	2.22	174.77	177.23	175.23	177.23	0.000000	0.02	254.62	426.39	0.00
RIVER-1	Reach-2	12741	Q100	3.41	174.77	177.14	175.34	177.14	0.000001	0.04	214.62	421.50	0.01
RIVER-1	Reach-2	12741	Qreg	8.56	174.77	177.24	175.69	177.24	0.000005	0.08	257.40	426.62	0.02
RIVER-1	Reach-2	12741	Q48hr	13.26	174.77	177.84	176.03	177.84	0.000001	0.05	523.02	452.47	0.01
RIVER-1	Reach-2	12664	Q2	0.37	174.88	176.32	175.09	176.32	0.000017	0.13	2.95	33.87	0.03
RIVER-1	Reach-2	12664	Q5	1.07	174.88	176.67	175.25	176.67	0.000068	0.29	3.69	86.32	0.07
RIVER-1	Reach-2	12664	Q25	2.22	174.88	177.23	175.43	177.23	0.000001	0.02	224.66	419.09	0.01
RIVER-1	Reach-2	12664	Q100	3.41	174.88	177.14	175.59	177.14	0.000002	0.04	185.46	412.51	0.01
RIVER-1	Reach-2	12664	Qreg	8.56	174.88	177.24	176.12	177.24	0.000007	0.09	227.34	419.23	0.02
RIVER-1	Reach-2	12664	Q48hr	13.26	174.88	177.84	176.52	177.84	0.000002	0.05	487.34	450.44	0.01
RIVER-1	Reach-2	12647.5		Culvert									
RIVER-1	Reach-2	12631	Q2	0.37	174.84	176.32	175.06	176.32	0.000016	0.12	3.01	31.53	0.03
RIVER-1	Reach-2	12631	Q5	1.07	174.84	176.66	175.21	176.66	0.000066	0.29	3.73	80.52	0.07
RIVER-1	Reach-2	12631	Q25	2.22	174.84	177.23	175.40	177.23	0.000000	0.01	280.95	389.37	0.00
RIVER-1	Reach-2	12631	Q100	3.41	174.84	177.14	175.56	177.14	0.000001	0.02	245.29	375.89	0.01
RIVER-1	Reach-2	12631	Qreg	8.56	174.84	177.24	176.09	177.24	0.000003	0.05	283.39	392.53	0.01
RIVER-1	Reach-2	12631	Q48hr	13.26	174.84	177.84	176.49	177.84	0.000001	0.03	536.32	439.93	0.01
RIVER-1	Reach-2	12252	Q2	0.37	174.63	176.32	174.86	176.32	0.000002	0.03	21.82	80.08	0.01
RIVER-1	Reach-2	12252	Q5	1.07	174.63	176.66	174.99	176.66	0.000002	0.04	61.71	158.36	0.01
RIVER-1	Reach-2	12252	Q25	2.22	174.63	177.23	175.14	177.23	0.000000	0.02	189.75	275.02	0.01
RIVER-1	Reach-2	12252	Q100	3.41	174.63	177.14	175.25	177.14	0.000002	0.05	163.90	271.88	0.01
RIVER-1	Reach-2	12252	Qreg	8.56	174.63	177.24	175.61	177.24	0.000007	0.10	191.30	275.15	0.02
RIVER-1	Reach-2	12252	Q48hr	13.26	174.63	177.84	175.86	177.84	0.000002	0.06	451.63	389.79	0.01
RIVER-1	Reach-2	11903	Q2	0.37	174.61	176.32		176.32	0.000001	0.03	21.39	69.81	0.01
RIVER-1	Reach-2	11903	Q5	1.07	174.61	176.66		176.66	0.000002	0.04	49.12	91.37	0.01
RIVER-1	Reach-2	11903	Q25	2.22	174.61	177.23		177.23	0.000001	0.04	119.75	208.20	0.01
RIVER-1	Reach-2	11903	Q100	3.41	174.61	177.14		177.14	0.000003	0.07	103.47	131.16	0.01
RIVER-1	Reach-2	11903	Qreg	8.56	174.61	177.24		177.24	0.000013	0.14	120.66	209.52	0.03
RIVER-1	Reach-2	11903	Q48hr	13.26	174.61	177.84		177.84	0.000005	0.10	296.09	331.30	0.02
RIVER-1	Reach-3	11584	Q2	3.92	174.50	176.27	175.20	176.31	0.000665	0.92	4.29	18.51	0.22
RIVER-1	Reach-3	11584	Q5	6.51	174.50	176.60	175.45	176.65	0.000760	1.11	10.04	66.82	0.25
RIVER-1	Reach-3	11584	Q25	10.30	174.50	177.23	175.76	177.23	0.000104	0.22	93.99	338.32	0.08
RIVER-1	Reach-3	11584	Q100	13.49	174.50	177.13	176.00	177.13	0.000388	0.40	64.93	253.65	0.15
RIVER-1	Reach-3	11584	Qreg	14.62	174.50	177.23	176.08	177.23	0.000209	0.32	94.20	339.18	0.11
RIVER-1	Reach-3	11584	Q48hr	19.78	174.50	177.84	176.81	177.84	0.000005	0.07	621.22	995.83	0.02
RIVER-1	Reach-3	11565.5		Culvert									
RIVER-1	Reach-3	11547	Q2	3.94	174.71	176.18	175.39	176.24	0.001238	1.11	3.56	61.90	0.30
RIVER-1	Reach-3	11547	Q5	6.55	174.71	176.53	175.63	176.64	0.001618	1.47	4.46	105.40	0.35
RIVER-1	Reach-3	11547	Q25	10.38	174.71	177.23	175.96	177.23	0.000179	0.32	81.80	319.82	0.10
RIVER-1	Reach-3	11547	Q100	13.62	174.71	176.79	176.19	177.13	0.004331	2.63	5.97	161.60	0.59
RIVER-1	Reach-3	11547	Qreg	15.59	174.71	177.23	177.05	177.23	0.000406	0.48	81.59	319.61	0.16
RIVER-1	Reach-3	11547	Q48hr	21.17	174.71	177.84	177.07	177.84	0.000007	0.09	554.08	981.33	0.02
RIVER-1	Reach-3	11400	Q2	3.94	174.54	176.18	175.21	176.19	0.000282	0.41	14.23	55.55	0.13
RIVER-1	Reach-3	11400	Q5	6.55	174.54	176.58	175.39	176.58	0.000086	0.28	48.34	128.87	0.07
RIVER-1	Reach-3	11400	Q25	10.38	174.54	177.23	175.60	177.23	0.000012	0.14	160.43	222.76	0.03

HEC-RAS Plan: Fringe6_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	11400	Q100	13.62	174.54	176.95	175.76	176.95	0.000057	0.27	106.68	172.60	0.06
RIVER-1	Reach-3	11400	Qreg	15.59	174.54	177.23	175.85	177.23	0.000028	0.20	159.92	222.27	0.05
RIVER-1	Reach-3	11400	Q48hr	21.17	174.54	177.84	176.23	177.84	0.000008	0.13	352.69	441.87	0.02
RIVER-1	Reach-3	11263	Q2	3.94	174.55	176.17	175.17	176.18	0.000233	0.37	15.90	45.74	0.12
RIVER-1	Reach-3	11263	Q5	6.55	174.55	176.57	175.35	176.58	0.000089	0.29	43.65	118.55	0.08
RIVER-1	Reach-3	11263	Q25	10.38	174.55	177.23	175.56	177.23	0.000012	0.14	156.49	207.23	0.03
RIVER-1	Reach-3	11263	Q100	13.62	174.55	176.95	175.71	176.95	0.000066	0.29	101.94	184.28	0.07
RIVER-1	Reach-3	11263	Qreg	15.59	174.55	177.23	175.79	177.23	0.000028	0.21	155.89	207.00	0.05
RIVER-1	Reach-3	11263	Q48hr	21.17	174.55	177.84	176.14	177.84	0.000009	0.14	313.72	361.82	0.03
RIVER-1	Reach-3	11179	Q2	3.94	174.52	176.17	175.20	176.17	0.000200	0.35	16.99	43.59	0.11
RIVER-1	Reach-3	11179	Q5	6.55	174.52	176.57	175.38	176.57	0.000081	0.27	46.54	118.81	0.07
RIVER-1	Reach-3	11179	Q25	10.38	174.52	177.23	175.61	177.23	0.000012	0.14	153.49	193.45	0.03
RIVER-1	Reach-3	11179	Q100	13.62	174.52	176.95	175.78	176.95	0.000060	0.28	102.49	167.22	0.07
RIVER-1	Reach-3	11179	Qreg	15.59	174.52	177.22	175.87	177.23	0.000028	0.21	152.85	192.25	0.05
RIVER-1	Reach-3	11179	Q48hr	21.17	174.52	177.84	176.10	177.84	0.000009	0.14	324.41	391.21	0.03
RIVER-1	Reach-3	10988	Q2	3.94	174.48	176.16	175.00	176.16	0.000078	0.26	27.23	69.31	0.07
RIVER-1	Reach-3	10988	Q5	6.55	174.48	176.57	175.17	176.57	0.000034	0.20	69.25	133.20	0.05
RIVER-1	Reach-3	10988	Q25	10.38	174.48	177.23	175.39	177.23	0.000005	0.10	271.70	467.21	0.02
RIVER-1	Reach-3	10988	Q100	13.62	174.48	176.94	175.52	176.95	0.000030	0.22	157.69	357.87	0.05
RIVER-1	Reach-3	10988	Qreg	15.59	174.48	177.22	175.59	177.22	0.000011	0.15	269.95	466.49	0.03
RIVER-1	Reach-3	10988	Q48hr	21.17	174.48	177.84	175.86	177.84	0.000003	0.08	583.99	555.34	0.02
RIVER-1	Reach-3	10842	Q2	3.94	174.53	176.10	175.20	176.15	0.000897	0.97	4.10	35.36	0.25
RIVER-1	Reach-3	10842	Q5	6.55	174.53	176.49	175.44	176.56	0.000991	1.19	7.44	98.47	0.28
RIVER-1	Reach-3	10842	Q25	10.38	174.53	177.23	175.75	177.23	0.000025	0.24	141.28	473.04	0.05
RIVER-1	Reach-3	10842	Q100	13.62	174.53	176.93	175.97	176.94	0.000317	0.77	65.37	367.67	0.16
RIVER-1	Reach-3	10842	Qreg	15.59	174.53	177.22	176.73	177.22	0.000059	0.36	139.83	472.46	0.07
RIVER-1	Reach-3	10842	Q48hr	21.17	174.53	177.84	176.83	177.84	0.000009	0.10	406.49	526.34	0.02
RIVER-1	Reach-3	10819.5		Culvert									
RIVER-1	Reach-3	10797	Q2	4.00	174.57	175.97	175.21	176.03	0.001240	1.08	3.71	47.94	0.29
RIVER-1	Reach-3	10797	Q5	6.68	174.57	176.21	175.46	176.33	0.002036	1.54	4.35	69.23	0.39
RIVER-1	Reach-3	10797	Q25	10.66	174.57	176.51	175.77	176.73	0.002915	2.06	5.17	72.47	0.48
RIVER-1	Reach-3	10797	Q100	14.07	174.57	176.55	176.01	176.92	0.004745	2.67	5.27	73.09	0.61
RIVER-1	Reach-3	10797	Qreg	19.29	174.57	176.48	176.34	177.22	0.010104	3.80	5.08	72.12	0.88
RIVER-1	Reach-3	10797	Q48hr	26.76	174.57	176.75	176.75	177.84	0.012393	4.60	5.81	97.51	1.00
RIVER-1	Reach-3	10695	Q2	4.00	174.30	175.98	174.96	175.99	0.000339	0.46	9.08	14.12	0.14
RIVER-1	Reach-3	10695	Q5	6.68	174.30	176.24	175.15	176.25	0.000385	0.56	15.27	30.23	0.16
RIVER-1	Reach-3	10695	Q25	10.66	174.30	176.59	175.36	176.61	0.000291	0.57	28.24	43.00	0.14
RIVER-1	Reach-3	10695	Q100	14.07	174.30	176.69	175.53	176.71	0.000372	0.67	33.50	65.48	0.16
RIVER-1	Reach-3	10695	Qreg	19.29	174.30	176.79	175.73	176.81	0.000512	0.82	41.17	92.47	0.19
RIVER-1	Reach-3	10695	Q48hr	26.76	174.30	177.16	176.05	177.17	0.000271	0.67	88.93	164.59	0.14
RIVER-1	Reach-3	10279	Q2	4.00	174.24	175.96	174.78	175.96	0.000144	0.34	15.15	39.41	0.09
RIVER-1	Reach-3	10279	Q5	6.68	174.24	176.22	174.93	176.22	0.000146	0.38	27.54	53.74	0.10
RIVER-1	Reach-3	10279	Q25	10.66	174.24	176.58	175.11	176.58	0.000105	0.37	58.58	172.02	0.09
RIVER-1	Reach-3	10279	Q100	14.07	174.24	176.68	175.24	176.68	0.000122	0.42	77.90	220.34	0.09
RIVER-1	Reach-3	10279	Qreg	19.29	174.24	176.77	175.43	176.78	0.000150	0.47	100.15	267.74	0.10
RIVER-1	Reach-3	10279	Q48hr	26.76	174.24	177.16	175.64	177.16	0.000050	0.31	218.97	329.98	0.06
RIVER-1	Reach-3	10045	Q2	4.00	174.19	175.95	174.82	175.95	0.000079	0.24	25.72	57.54	0.07
RIVER-1	Reach-3	10045	Q5	6.68	174.19	176.21	175.01	176.22	0.000072	0.27	44.48	92.37	0.07
RIVER-1	Reach-3	10045	Q25	10.66	174.19	176.58	175.21	176.58	0.000041	0.23	109.14	281.16	0.06
RIVER-1	Reach-3	10045	Q100	14.07	174.19	176.68	175.36	176.68	0.000048	0.26	137.80	302.71	0.06
RIVER-1	Reach-3	10045	Qreg	19.29	174.19	176.77	175.52	176.77	0.000057	0.29	166.59	321.47	0.07
RIVER-1	Reach-3	10045	Q48hr	26.76	174.19	177.15	175.71	177.15	0.000022	0.20	300.43	365.52	0.04
RIVER-1	Reach-3	9967	Q2	4.00	174.24	175.89	175.00	175.94	0.001054	1.06	3.76	47.78	0.27
RIVER-1	Reach-3	9967	Q5	6.68	174.24	176.07	175.26	176.20	0.002019	1.59	4.21	80.27	0.39
RIVER-1	Reach-3	9967	Q25	10.66	174.24	176.29	175.60	176.55	0.003418	2.24	4.76	194.99	0.51
RIVER-1	Reach-3	9967	Q100	14.07	174.24	175.94	175.85	176.61	0.011730	3.63	3.88	53.50	0.92
RIVER-1	Reach-3	9967	Qreg	19.29	174.24	176.76	176.65	176.77	0.000753	0.62	85.44	433.97	0.21
RIVER-1	Reach-3	9967	Q48hr	26.76	174.24	177.15	176.67	177.15	0.000043	0.19	326.11	709.75	0.05
RIVER-1	Reach-3	9948.5		Culvert									
RIVER-1	Reach-3	9929	Q2	4.00	174.29	175.82	175.00	175.88	0.001198	1.11	3.60	59.24	0.29
RIVER-1	Reach-3	9929	Q5	6.68	174.29	175.86	175.27	176.03	0.003028	1.80	3.70	66.48	0.47
RIVER-1	Reach-3	9929	Q25	10.66	174.29	175.91	175.59	176.30	0.006979	2.79	3.82	70.73	0.71
RIVER-1	Reach-3	9929	Q100	14.07	174.29	175.92	175.85	176.60	0.011883	3.66	3.84	74.08	0.93
RIVER-1	Reach-3	9929	Qreg	19.29	174.29	176.76	176.63	176.76	0.000561	0.56	98.79	485.53	0.18
RIVER-1	Reach-3	9929	Q48hr	26.76	174.29	177.15	176.66	177.15	0.000035	0.17	348.67	717.79	0.05
RIVER-1	Reach-3	9829	Q2	4.00	173.99	175.84	174.57	175.84	0.000050	0.21	37.00	81.08	0.06
RIVER-1	Reach-3	9829	Q5	6.68	173.99	175.93	174.75	175.94	0.000087	0.29	44.53	84.46	0.07
RIVER-1	Reach-3	9829	Q25	10.66	173.99	176.09	174.98	176.09	0.000120	0.37	59.06	105.38	0.09
RIVER-1	Reach-3	9829	Q100	14.07	173.99	176.25	175.14	176.25	0.000116	0.38	77.06	137.42	0.09
RIVER-1	Reach-3	9829	Qreg	19.29	173.99	176.76	175.57	176.76	0.000022	0.20	280.04	675.75	0.04

HEC-RAS Plan: Fringe6_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	9829	Q48hr	26.76	173.99	177.15	175.66	177.15	0.000007	0.12	573.64	773.48	0.02
RIVER-1	Reach-3	9462	Q2	4.00	173.97	175.84		175.84	0.000064	0.19	30.97	66.27	0.05
RIVER-1	Reach-3	9462	Q5	6.68	173.97	175.92		175.92	0.000114	0.26	36.83	70.26	0.06
RIVER-1	Reach-3	9462	Q25	10.66	173.97	176.08		176.08	0.000145	0.31	48.89	90.23	0.07
RIVER-1	Reach-3	9462	Q100	14.07	173.97	176.23		176.23	0.000135	0.32	64.71	120.15	0.07
RIVER-1	Reach-3	9462	Qreg	19.29	173.97	176.76		176.76	0.000021	0.15	246.67	495.96	0.03
RIVER-1	Reach-3	9462	Q48hr	26.76	173.97	177.15		177.15	0.000006	0.09	464.96	639.42	0.02
RIVER-1	Reach-3	8698	Q2	4.00	173.92	175.83	174.37	175.83	0.000009	0.06	65.92	88.54	0.02
RIVER-1	Reach-3	8698	Q5	6.68	173.92	175.92	174.51	175.92	0.000018	0.10	73.88	101.62	0.02
RIVER-1	Reach-3	8698	Q25	10.66	173.92	176.07	174.68	176.07	0.000028	0.13	93.95	166.89	0.03
RIVER-1	Reach-3	8698	Q100	14.07	173.92	176.23	174.81	176.23	0.000027	0.13	125.54	245.82	0.03
RIVER-1	Reach-3	8698	Qreg	19.29	173.92	176.76	175.14	176.76	0.000008	0.09	349.12	654.23	0.02
RIVER-1	Reach-3	8698	Q48hr	26.76	173.92	177.15	175.21	177.15	0.000003	0.06	656.32	845.29	0.01
RIVER-1	Reach-3	8570	Q2	4.00	173.97	175.83		175.83	0.000012	0.07	55.78	83.17	0.02
RIVER-1	Reach-3	8570	Q5	6.68	173.97	175.92		175.92	0.000026	0.11	63.37	100.54	0.03
RIVER-1	Reach-3	8570	Q25	10.66	173.97	176.07		176.07	0.000041	0.14	83.69	183.61	0.04
RIVER-1	Reach-3	8570	Q100	14.07	173.97	176.22		176.22	0.000045	0.16	120.21	290.74	0.04
RIVER-1	Reach-3	8570	Qreg	19.29	173.97	176.76		176.76	0.000008	0.08	353.48	627.21	0.02
RIVER-1	Reach-3	8570	Q48hr	26.76	173.97	177.15		177.15	0.000003	0.06	647.61	845.54	0.01
RIVER-1	Reach-3	8486	Q2	4.00	173.91	175.83	174.58	175.83	0.000149	0.13	20.08	86.96	0.06
RIVER-1	Reach-3	8486	Q5	6.68	173.91	175.91	174.76	175.91	0.000256	0.19	27.33	98.89	0.08
RIVER-1	Reach-3	8486	Q25	10.66	173.91	176.06	174.93	176.06	0.000235	0.21	50.06	205.19	0.08
RIVER-1	Reach-3	8486	Q100	14.07	173.91	176.22	175.05	176.22	0.000117	0.17	103.05	445.74	0.06
RIVER-1	Reach-3	8486	Qreg	19.29	173.91	176.76	175.22	176.76	0.000006	0.05	449.79	827.79	0.01
RIVER-1	Reach-3	8486	Q48hr	26.76	173.91	177.15	175.40	177.15	0.000002	0.04	804.91	963.98	0.01
RIVER-1	Reach-3	8467		Culvert									
RIVER-1	Reach-3	8450	Q2	4.00	173.76	175.83		175.83	0.000099	0.13	23.53	93.58	0.05
RIVER-1	Reach-3	8450	Q5	6.68	173.76	175.90		175.91	0.000175	0.18	32.82	145.18	0.07
RIVER-1	Reach-3	8450	Q25	10.66	173.76	176.06		176.06	0.000156	0.20	63.48	283.14	0.07
RIVER-1	Reach-3	8450	Q100	14.07	173.76	176.22		176.22	0.000071	0.15	132.01	530.82	0.05
RIVER-1	Reach-3	8450	Qreg	19.29	173.76	176.75		176.75	0.000004	0.05	490.21	786.85	0.01
RIVER-1	Reach-3	8450	Q48hr	26.76	173.76	177.15		177.15	0.000002	0.04	847.04	1014.65	0.01
RIVER-1	Reach-3	8435	Q2	4.00	173.77	175.83		175.83	0.000004	0.07	80.70	145.50	0.02
RIVER-1	Reach-3	8435	Q5	6.68	173.77	175.91		175.91	0.000009	0.11	93.54	192.43	0.03
RIVER-1	Reach-3	8435	Q25	10.66	173.77	176.06		176.06	0.000013	0.14	133.55	348.20	0.03
RIVER-1	Reach-3	8435	Q100	14.07	173.77	176.22		176.22	0.000011	0.13	206.04	567.63	0.03
RIVER-1	Reach-3	8435	Qreg	19.29	173.77	176.75		176.75	0.000002	0.06	656.90	1009.44	0.01
RIVER-1	Reach-3	8435	Q48hr	26.76	173.77	177.15		177.15	0.000001	0.04	1063.25	1047.07	0.01
RIVER-1	Reach-3	7960	Q2	4.00	173.83	175.83	174.22	175.83	0.000001	0.03	171.20	184.01	0.01
RIVER-1	Reach-3	7960	Q5	6.68	173.83	175.90	174.34	175.90	0.000001	0.04	186.71	218.20	0.01
RIVER-1	Reach-3	7960	Q25	10.66	173.83	176.06	174.49	176.06	0.000003	0.06	233.68	414.01	0.01
RIVER-1	Reach-3	7960	Q100	14.07	173.83	176.22	174.53	176.22	0.000003	0.06	321.95	683.63	0.01
RIVER-1	Reach-3	7960	Qreg	19.29	173.83	176.75	174.58	176.75	0.000001	0.05	856.92	1258.99	0.01
RIVER-1	Reach-3	7960	Q48hr	26.76	173.83	177.15	174.63	177.15	0.000000	0.03	1362.07	1295.89	0.01
RIVER-1	Reach-3	7886	Q2	4.00	173.71	175.83	174.41	175.83	0.000001	0.03	135.60	195.67	0.01
RIVER-1	Reach-3	7886	Q5	6.68	173.71	175.90	174.50	175.90	0.000003	0.04	152.66	255.07	0.01
RIVER-1	Reach-3	7886	Q25	10.66	173.71	176.06	174.56	176.06	0.000004	0.06	209.65	508.04	0.02
RIVER-1	Reach-3	7886	Q100	14.07	173.71	176.22	174.60	176.22	0.000004	0.06	312.08	779.29	0.02
RIVER-1	Reach-3	7886	Qreg	19.29	173.71	176.75	174.65	176.75	0.000001	0.04	883.62	1293.28	0.01
RIVER-1	Reach-3	7886	Q48hr	26.76	173.71	177.15	174.70	177.15	0.000000	0.03	1434.71	1472.55	0.01
RIVER-1	Reach-3	7871		Culvert									
RIVER-1	Reach-3	7857	Q2	4.00	173.71	175.83	174.29	175.83	0.000002	0.03	117.67	194.58	0.01
RIVER-1	Reach-3	7857	Q5	6.68	173.71	175.90	174.59	175.90	0.000004	0.05	135.40	260.71	0.02
RIVER-1	Reach-3	7857	Q25	10.66	173.71	176.06	174.68	176.06	0.000005	0.07	190.33	498.46	0.02
RIVER-1	Reach-3	7857	Q100	14.07	173.71	176.22	174.72	176.22	0.000005	0.07	285.98	699.76	0.02
RIVER-1	Reach-3	7857	Qreg	19.29	173.71	176.75	174.79	176.75	0.000001	0.04	851.11	1330.96	0.01
RIVER-1	Reach-3	7857	Q48hr	26.76	173.71	177.15	174.84	177.15	0.000000	0.03	1410.09	1486.62	0.01
RIVER-1	Reach-3	7750	Q2	4.00	173.90	175.83	174.21	175.83	0.000002	0.05	101.57	241.47	0.01
RIVER-1	Reach-3	7750	Q5	6.68	173.90	175.90	174.31	175.90	0.000006	0.08	124.26	335.93	0.02
RIVER-1	Reach-3	7750	Q25	10.66	173.90	176.06	174.43	176.06	0.000007	0.10	194.91	611.10	0.02
RIVER-1	Reach-3	7750	Q100	14.07	173.90	176.21	174.54	176.22	0.000005	0.09	316.95	894.62	0.02
RIVER-1	Reach-3	7750	Qreg	19.29	173.90	176.75	174.64	176.75	0.000001	0.04	952.70	1328.16	0.01
RIVER-1	Reach-3	7750	Q48hr	26.76	173.90	177.15	174.75	177.15	0.000000	0.03	1515.58	1496.12	0.01
RIVER-1	Reach-3	7395	Q2	4.00	173.93	175.83	174.19	175.83	0.000003	0.06	121.70	306.58	0.01
RIVER-1	Reach-3	7395	Q5	6.68	173.93	175.90	174.28	175.90	0.000005	0.08	149.10	404.90	0.02
RIVER-1	Reach-3	7395	Q25	10.66	173.93	176.06	174.40	176.06	0.000006	0.10	226.51	596.45	0.02
RIVER-1	Reach-3	7395	Q100	14.07	173.93	176.21	174.49	176.21	0.000004	0.09	343.28	949.17	0.02
RIVER-1	Reach-3	7395	Qreg	19.29	173.93	176.75	174.67	176.75	0.000001	0.04	1039.41	1436.35	0.01
RIVER-1	Reach-3	7395	Q48hr	26.76	173.93	177.15	174.81	177.15	0.000000	0.03	1629.55	1540.87	0.01

HEC-RAS Plan: Fringe6_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	7126	Q2	4.00	173.89	175.83	174.16	175.83	0.000001	0.04	154.07	240.10	0.01
RIVER-1	Reach-3	7126	Q5	6.68	173.89	175.90	174.25	175.90	0.000002	0.06	174.36	284.93	0.01
RIVER-1	Reach-3	7126	Q25	10.66	173.89	176.05	174.37	176.05	0.000003	0.07	227.58	461.82	0.02
RIVER-1	Reach-3	7126	Q100	14.07	173.89	176.21	174.47	176.21	0.000004	0.08	325.59	756.77	0.02
RIVER-1	Reach-3	7126	Qreg	19.29	173.89	176.75	174.53	176.75	0.000001	0.04	933.41	1403.51	0.01
RIVER-1	Reach-3	7126	Q48hr	26.76	173.89	177.15	174.66	177.15	0.000000	0.03	1550.63	1625.70	0.01
RIVER-1	Reach-3	6956	Q2	4.00	173.96	175.83	174.27	175.83	0.000002	0.05	117.79	256.64	0.01
RIVER-1	Reach-3	6956	Q5	6.68	173.96	175.90	174.38	175.90	0.000005	0.08	138.55	287.19	0.02
RIVER-1	Reach-3	6956	Q25	10.66	173.96	176.05	174.58	176.05	0.000006	0.10	191.27	440.67	0.02
RIVER-1	Reach-3	6956	Q100	14.07	173.96	176.21	174.66	176.21	0.000006	0.10	285.38	737.13	0.02
RIVER-1	Reach-3	6956	Qreg	19.29	173.96	176.75	174.72	176.75	0.000001	0.04	893.84	1410.73	0.01
RIVER-1	Reach-3	6956	Q48hr	26.76	173.96	177.15	174.78	177.15	0.000000	0.03	1502.18	1610.95	0.01
RIVER-1	Reach-3	6846	Q2	4.00	173.97	175.83	174.61	175.83	0.000010	0.07	83.15	260.58	0.02
RIVER-1	Reach-3	6846	Q5	6.68	173.97	175.90	174.73	175.90	0.000016	0.10	104.87	297.08	0.03
RIVER-1	Reach-3	6846	Q25	10.66	173.97	176.05	174.86	176.05	0.000015	0.11	154.98	377.98	0.03
RIVER-1	Reach-3	6846	Q100	14.07	173.97	176.21	174.95	176.21	0.000011	0.10	230.94	558.06	0.03
RIVER-1	Reach-3	6846	Qreg	19.29	173.97	176.75	175.07	176.75	0.000001	0.04	800.05	1412.06	0.01
RIVER-1	Reach-3	6846	Q48hr	26.76	173.97	177.15	175.40	177.15	0.000001	0.03	1419.00	1660.04	0.01
RIVER-1	Reach-3	6830		Culvert									
RIVER-1	Reach-3	6811	Q2	4.00	173.95	175.83	174.55	175.83	0.000008	0.06	91.67	280.20	0.02
RIVER-1	Reach-3	6811	Q5	6.68	173.95	175.90	174.66	175.90	0.000013	0.08	115.14	320.62	0.03
RIVER-1	Reach-3	6811	Q25	10.66	173.95	176.05	174.78	176.05	0.000013	0.09	170.57	408.92	0.03
RIVER-1	Reach-3	6811	Q100	14.07	173.95	176.21	174.86	176.21	0.000010	0.09	248.46	585.40	0.03
RIVER-1	Reach-3	6811	Qreg	19.29	173.95	176.75	174.97	176.75	0.000001	0.04	790.18	1343.52	0.01
RIVER-1	Reach-3	6811	Q48hr	26.76	173.95	177.15	175.11	177.15	0.000001	0.03	1401.55	1646.98	0.01
RIVER-1	Reach-3	6719	Q2	4.00	173.89	175.83	174.20	175.83	0.000001	0.04	152.35	246.98	0.01
RIVER-1	Reach-3	6719	Q5	6.68	173.89	175.90	174.29	175.90	0.000003	0.06	173.14	292.13	0.01
RIVER-1	Reach-3	6719	Q25	10.66	173.89	176.05	174.48	176.05	0.000004	0.08	224.63	383.37	0.02
RIVER-1	Reach-3	6719	Q100	14.07	173.89	176.21	174.53	176.21	0.000004	0.08	292.79	457.26	0.02
RIVER-1	Reach-3	6719	Qreg	19.29	173.89	176.75	174.57	176.75	0.000001	0.05	690.12	1150.75	0.01
RIVER-1	Reach-3	6719	Q48hr	26.76	173.89	177.15	174.63	177.15	0.000001	0.04	1239.40	1597.41	0.01
RIVER-1	Reach-3	6081	Q2	4.00	173.53	175.82		175.82	0.000003	0.07	98.47	189.81	0.02
RIVER-1	Reach-3	6081	Q5	6.68	173.53	175.90		175.90	0.000007	0.10	113.63	202.43	0.02
RIVER-1	Reach-3	6081	Q25	10.66	173.53	176.05		176.05	0.000011	0.13	147.90	272.88	0.03
RIVER-1	Reach-3	6081	Q100	14.07	173.53	176.21		176.21	0.000010	0.14	199.75	371.59	0.03
RIVER-1	Reach-3	6081	Qreg	19.29	173.53	176.75		176.75	0.000002	0.07	531.91	940.55	0.01
RIVER-1	Reach-3	6081	Q48hr	26.76	173.53	177.15		177.15	0.000001	0.06	1024.41	1520.49	0.01
RIVER-1	Reach-3	5744	Q2	4.00	173.55	175.82		175.82	0.000113	0.43	16.80	185.51	0.09
RIVER-1	Reach-3	5744	Q5	6.68	173.55	175.89		175.90	0.000195	0.58	26.57	221.64	0.12
RIVER-1	Reach-3	5744	Q25	10.66	173.55	176.04		176.05	0.000154	0.54	50.48	261.92	0.11
RIVER-1	Reach-3	5744	Q100	14.07	173.55	176.21		176.21	0.000095	0.44	82.49	343.29	0.09
RIVER-1	Reach-3	5744	Qreg	19.29	173.55	176.75		176.75	0.000011	0.17	259.85	791.68	0.03
RIVER-1	Reach-3	5744	Q48hr	26.76	173.55	177.15		177.15	0.000005	0.13	556.22	1421.32	0.02
RIVER-1	Reach-3	5696		Culvert									
RIVER-1	Reach-3	5648	Q2	3.56	173.72	175.74		175.74	0.000032	0.22	31.50	189.26	0.05
RIVER-1	Reach-3	5648	Q5	5.92	173.72	175.75		175.76	0.000082	0.35	32.84	190.89	0.08
RIVER-1	Reach-3	5648	Q25	10.67	173.72	175.78		175.79	0.000227	0.59	35.58	193.90	0.13
RIVER-1	Reach-3	5648	Q100	14.08	173.72	175.90		175.91	0.000237	0.63	48.00	209.03	0.14
RIVER-1	Reach-3	5648	Qreg	19.14	173.72	176.49		176.49	0.000022	0.23	207.94	702.64	0.04
RIVER-1	Reach-3	5648	Q48hr	27.19	173.72	176.86		176.86	0.000007	0.14	445.88	1122.31	0.03
RIVER-1	Reach-3	5335	Q2	3.56	173.66	175.74		175.74	0.000002	0.05	109.16	221.65	0.01
RIVER-1	Reach-3	5335	Q5	5.92	173.66	175.75		175.76	0.000006	0.07	112.17	225.03	0.02
RIVER-1	Reach-3	5335	Q25	10.67	173.66	175.78		175.78	0.000016	0.13	118.43	233.82	0.03
RIVER-1	Reach-3	5335	Q100	14.08	173.66	175.90		175.90	0.000017	0.14	148.74	276.36	0.04
RIVER-1	Reach-3	5335	Qreg	19.14	173.66	176.49		176.49	0.000004	0.08	382.01	631.87	0.02
RIVER-1	Reach-3	5335	Q48hr	27.19	173.66	176.86		176.86	0.000002	0.07	671.97	1037.28	0.01
RIVER-1	Reach-3	5080	Q2	3.56	173.70	175.74		175.74	0.000001	0.03	177.76	220.92	0.01
RIVER-1	Reach-3	5080	Q5	5.92	173.70	175.75		175.75	0.000002	0.05	180.72	222.89	0.01
RIVER-1	Reach-3	5080	Q25	10.67	173.70	175.78		175.78	0.000005	0.08	186.81	227.24	0.02
RIVER-1	Reach-3	5080	Q100	14.08	173.70	175.90		175.90	0.000005	0.09	215.71	287.87	0.02
RIVER-1	Reach-3	5080	Qreg	19.14	173.70	176.49		176.49	0.000002	0.06	562.60	933.50	0.01
RIVER-1	Reach-3	5080	Q48hr	27.19	173.70	176.86		176.86	0.000001	0.05	1061.12	1686.08	0.01
RIVER-1	Reach-3	4910	Q2	3.56	173.72	175.74		175.74	0.000001	0.03	207.36	474.66	0.01
RIVER-1	Reach-3	4910	Q5	5.92	173.72	175.75		175.75	0.000002	0.05	213.78	495.79	0.01
RIVER-1	Reach-3	4910	Q25	10.67	173.72	175.78		175.78	0.000006	0.09	227.74	547.08	0.02
RIVER-1	Reach-3	4910	Q100	14.08	173.72	175.90		175.90	0.000006	0.09	306.99	801.03	0.02
RIVER-1	Reach-3	4910	Qreg	19.14	173.72	176.49		176.49	0.000001	0.04	1082.70	1640.16	0.01
RIVER-1	Reach-3	4910	Q48hr	27.19	173.72	176.86		176.86	0.000000	0.03	1729.38	1862.61	0.01
RIVER-1	Reach-3	4720	Q2	3.56	173.73	175.74	174.41	175.74	0.000001	0.02	265.45	910.77	0.01
RIVER-1	Reach-3	4720	Q5	5.92	173.73	175.75	174.62	175.75	0.000003	0.04	277.50	926.86	0.01

HEC-RAS Plan: Fringe6_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-3	4720	Q25	10.67	173.73	175.78	175.23	175.78	0.000007	0.06	302.38	962.95	0.02
RIVER-1	Reach-3	4720	Q100	14.08	173.73	175.90	175.25	175.90	0.000005	0.05	422.15	1120.97	0.02
RIVER-1	Reach-3	4720	Qreg	19.14	173.73	176.49	175.27	176.49	0.000000	0.02	1237.48	1541.24	0.01
RIVER-1	Reach-3	4720	Q48hr	27.19	173.73	176.86	175.30	176.86	0.000000	0.02	1826.67	1652.26	0.00
RIVER-1	Reach-3	4702.5		Culvert									
RIVER-1	Reach-3	4686	Q2	3.56	173.56	175.74		175.74	0.000001	0.02	337.66	1051.19	0.01
RIVER-1	Reach-3	4686	Q5	5.92	173.56	175.75		175.75	0.000002	0.03	351.49	1070.82	0.01
RIVER-1	Reach-3	4686	Q25	10.67	173.56	175.78		175.78	0.000004	0.04	380.19	1109.97	0.02
RIVER-1	Reach-3	4686	Q100	14.08	173.56	175.90		175.90	0.000003	0.04	515.07	1203.97	0.01
RIVER-1	Reach-3	4686	Qreg	19.14	173.56	176.49		176.49	0.000000	0.02	1344.86	1567.18	0.01
RIVER-1	Reach-3	4686	Q48hr	27.19	173.56	176.86		176.86	0.000000	0.02	1942.27	1668.04	0.00
RIVER-1	Reach-3	4489	Q2	3.56	173.77	175.74		175.74	0.000000	0.01	484.73	994.18	0.00
RIVER-1	Reach-3	4489	Q5	5.92	173.77	175.75		175.75	0.000000	0.02	497.70	1000.78	0.01
RIVER-1	Reach-3	4489	Q25	10.67	173.77	175.78		175.78	0.000001	0.03	524.08	1013.03	0.01
RIVER-1	Reach-3	4489	Q100	14.08	173.77	175.90		175.90	0.000001	0.03	645.37	1078.90	0.01
RIVER-1	Reach-3	4489	Qreg	19.14	173.77	176.49		176.49	0.000000	0.02	1375.62	1360.44	0.00
RIVER-1	Reach-3	4489	Q48hr	27.19	173.77	176.86		176.86	0.000000	0.02	1903.56	1466.62	0.00
RIVER-1	Reach-3	4334	Q2	3.56	173.92	175.74		175.74	0.000000	0.01	487.15	959.41	0.00
RIVER-1	Reach-3	4334	Q5	5.92	173.92	175.75		175.75	0.000000	0.02	499.66	968.18	0.00
RIVER-1	Reach-3	4334	Q25	10.67	173.92	175.78		175.78	0.000001	0.03	525.22	985.37	0.01
RIVER-1	Reach-3	4334	Q100	14.08	173.92	175.90		175.90	0.000001	0.03	645.20	1092.65	0.01
RIVER-1	Reach-3	4334	Qreg	19.14	173.92	176.49		176.49	0.000000	0.02	1395.99	1322.14	0.00
RIVER-1	Reach-3	4334	Q48hr	27.19	173.92	176.86		176.86	0.000000	0.02	1882.57	1326.75	0.00
RIVER-1	Reach-4	4079	Q2	3.74	173.70	175.74		175.74	0.000001	0.03	268.06	674.01	0.01
RIVER-1	Reach-4	4079	Q5	6.42	173.70	175.75		175.75	0.000001	0.04	276.90	691.27	0.01
RIVER-1	Reach-4	4079	Q25	11.14	173.70	175.78		175.78	0.000004	0.07	295.25	714.63	0.02
RIVER-1	Reach-4	4079	Q100	14.84	173.70	175.90		175.90	0.000004	0.07	385.74	846.60	0.02
RIVER-1	Reach-4	4079	Qreg	28.85	173.70	176.49		176.49	0.000001	0.05	1004.12	1137.43	0.01
RIVER-1	Reach-4	4079	Q48hr	42.75	173.70	176.86		176.86	0.000001	0.04	1423.34	1141.69	0.01
RIVER-1	Reach-4	3829	Q2	3.74	173.70	175.74	174.18	175.74	0.000000	0.02	280.00	552.53	0.01
RIVER-1	Reach-4	3829	Q5	6.42	173.70	175.75	174.30	175.75	0.000001	0.04	287.23	574.33	0.01
RIVER-1	Reach-4	3829	Q25	11.14	173.70	175.78	174.49	175.78	0.000003	0.06	302.53	604.45	0.01
RIVER-1	Reach-4	3829	Q100	14.84	173.70	175.90	174.60	175.90	0.000003	0.07	379.78	728.35	0.02
RIVER-1	Reach-4	3829	Qreg	28.85	173.70	176.49	174.76	176.49	0.000001	0.05	960.35	1092.27	0.01
RIVER-1	Reach-4	3829	Q48hr	42.75	173.70	176.86	174.83	176.86	0.000001	0.05	1373.04	1151.58	0.01
RIVER-1	Reach-4	3520	Q2	3.74	173.71	175.74	174.18	175.74	0.000002	0.03	307.05	658.77	0.01
RIVER-1	Reach-4	3520	Q5	6.42	173.71	175.75	174.30	175.75	0.000006	0.05	315.55	670.75	0.01
RIVER-1	Reach-4	3520	Q25	11.14	173.71	175.78	174.40	175.78	0.000017	0.08	333.07	697.65	0.02
RIVER-1	Reach-4	3520	Q100	14.84	173.71	175.90	174.43	175.90	0.000019	0.09	418.97	771.96	0.02
RIVER-1	Reach-4	3520	Qreg	28.85	173.71	176.49	174.55	176.49	0.000008	0.07	958.01	995.03	0.02
RIVER-1	Reach-4	3520	Q48hr	42.75	173.71	176.86	174.64	176.86	0.000007	0.07	1338.64	1074.10	0.01
RIVER-1	Reach-4	3215	Q2	3.74	173.69	175.74	174.14	175.74	0.000001	0.02	474.81	857.12	0.00
RIVER-1	Reach-4	3215	Q5	6.42	173.69	175.75	174.23	175.75	0.000003	0.04	485.54	860.60	0.01
RIVER-1	Reach-4	3215	Q25	11.14	173.69	175.78	174.38	175.78	0.000008	0.06	506.98	862.00	0.01
RIVER-1	Reach-4	3215	Q100	14.84	173.69	175.89	174.48	175.89	0.000008	0.06	607.40	871.55	0.01
RIVER-1	Reach-4	3215	Qreg	28.85	173.69	176.49	174.66	176.49	0.000004	0.05	1148.15	942.38	0.01
RIVER-1	Reach-4	3215	Q48hr	42.75	173.69	176.86	174.75	176.86	0.000004	0.06	1500.59	979.09	0.01
RIVER-1	Reach-4	2884	Q2	3.74	173.66	175.74	174.12	175.74	0.000002	0.03	326.03	647.90	0.01
RIVER-1	Reach-4	2884	Q5	6.42	173.66	175.75	174.20	175.75	0.000005	0.05	333.98	653.90	0.01
RIVER-1	Reach-4	2884	Q25	11.14	173.66	175.78	174.28	175.78	0.000014	0.08	349.85	660.35	0.02
RIVER-1	Reach-4	2884	Q100	14.84	173.66	175.89	174.32	175.89	0.000016	0.09	429.32	701.27	0.02
RIVER-1	Reach-4	2884	Qreg	28.85	173.66	176.49	174.49	176.49	0.000008	0.07	863.56	772.50	0.02
RIVER-1	Reach-4	2884	Q48hr	42.75	173.66	176.86	174.59	176.86	0.000007	0.08	1167.60	907.51	0.01
RIVER-1	Reach-4	2287	Q2	3.74	173.63	175.74		175.74	0.000001	0.02	475.61	650.54	0.00
RIVER-1	Reach-4	2287	Q5	6.42	173.63	175.75		175.75	0.000002	0.03	483.31	657.16	0.01
RIVER-1	Reach-4	2287	Q25	11.14	173.63	175.78		175.78	0.000006	0.05	498.63	668.30	0.01
RIVER-1	Reach-4	2287	Q100	14.84	173.63	175.89		175.89	0.000008	0.06	577.50	699.96	0.01
RIVER-1	Reach-4	2287	Qreg	28.85	173.63	176.49		176.49	0.000005	0.06	1011.12	766.41	0.01
RIVER-1	Reach-4	2287	Q48hr	42.75	173.63	176.86		176.86	0.000005	0.06	1297.70	790.93	0.01
RIVER-1	Reach-4	1955	Q2	3.76	173.60	175.74		175.74	0.000001	0.02	444.78	612.38	0.00
RIVER-1	Reach-4	1955	Q5	6.44	173.60	175.75		175.75	0.000003	0.03	451.92	613.26	0.01
RIVER-1	Reach-4	1955	Q25	11.16	173.60	175.77		175.77	0.000007	0.05	465.91	614.61	0.01
RIVER-1	Reach-4	1955	Q100	14.87	173.60	175.89		175.89	0.000008	0.06	537.22	621.10	0.01
RIVER-1	Reach-4	1955	Qreg	31.39	173.60	176.49		176.49	0.000007	0.07	928.59	718.68	0.01
RIVER-1	Reach-4	1955	Q48hr	46.33	173.60	176.85		176.85	0.000007	0.08	1208.19	818.18	0.01
RIVER-1	Reach-4	1602	Q2	3.76	173.19	175.74		175.74	0.000004	0.05	184.57	257.96	0.01
RIVER-1	Reach-4	1602	Q5	6.44	173.19	175.75		175.75	0.000012	0.08	187.41	259.88	0.02
RIVER-1	Reach-4	1602	Q25	11.16	173.19	175.77		175.77	0.000035	0.13	192.90	262.47	0.03
RIVER-1	Reach-4	1602	Q100	14.87	173.19	175.89		175.89	0.000041	0.15	223.88	276.00	0.03
RIVER-1	Reach-4	1602	Qreg	31.39	173.19	176.48		176.48	0.000038	0.17	444.56	472.92	0.03
RIVER-1	Reach-4	1602	Q48hr	46.33	173.19	176.85		176.85	0.000032	0.17	651.23	602.84	0.03

HEC-RAS Plan: Fringe6_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	1586	Q2	3.76	173.13	175.90	173.87	175.92	0.000648	0.72	5.25	13.36	0.14
RIVER-1	Reach-4	1586	Q5	6.44	173.13	176.21	174.19	176.27	0.001329	1.10	5.85	19.61	0.20
RIVER-1	Reach-4	1586	Q25	11.16	173.13	177.22	174.66	177.33	0.001550	1.44	7.76	494.00	0.23
RIVER-1	Reach-4	1586	Q100	14.87	173.13	177.28	174.98	177.46	0.002618	1.89	7.88	494.30	0.30
RIVER-1	Reach-4	1586	Qreg	31.39	173.13	177.87	177.57	177.87	0.000532	0.35	220.24	494.30	0.10
RIVER-1	Reach-4	1586	Q48hr	46.33	173.13	177.65	177.60	177.68	0.008306	1.22	114.43	494.30	0.38
RIVER-1	Reach-4	1550		Culvert									
RIVER-1	Reach-4	1514	Q2	3.76	173.32	175.73		175.76	0.000258	0.82	4.57	106.11	0.17
RIVER-1	Reach-4	1514	Q5	6.44	173.32	175.70		175.81	0.000784	1.43	4.52	104.84	0.30
RIVER-1	Reach-4	1514	Q25	11.16	173.32	175.61		175.95	0.002683	2.57	4.35	98.81	0.54
RIVER-1	Reach-4	1514	Q100	14.87	173.32	175.44		176.14	0.006160	3.70	4.02	85.96	0.81
RIVER-1	Reach-4	1514	Qreg	31.39	173.32	176.34	176.34	177.87	0.008397	5.47	5.74	232.24	1.00
RIVER-1	Reach-4	1514	Q48hr	46.33	173.32	177.64	177.64	177.68	0.002697	1.50	100.78	465.20	0.44
RIVER-1	Reach-4	1336	Q2	3.76	173.33	175.75		175.75	0.000001	0.04	212.45	254.05	0.01
RIVER-1	Reach-4	1336	Q5	6.44	173.33	175.78		175.78	0.000002	0.06	218.30	256.66	0.01
RIVER-1	Reach-4	1336	Q25	11.16	173.33	175.85		175.85	0.000005	0.10	236.70	269.00	0.02
RIVER-1	Reach-4	1336	Q100	14.87	173.33	175.93		175.93	0.000007	0.12	258.84	275.49	0.03
RIVER-1	Reach-4	1336	Qreg	31.39	173.33	177.16	174.67	177.16	0.000002	0.09	697.06	401.80	0.02
RIVER-1	Reach-4	1336	Q48hr	46.33	173.33	177.36	174.76	177.36	0.000003	0.12	779.58	401.80	0.02
RIVER-1	Reach-4	1282	Q2	3.76	173.36	175.75	173.85	175.75	0.000039	0.30	12.41	106.63	0.06
RIVER-1	Reach-4	1282	Q5	6.44	173.36	175.76	174.01	175.77	0.000113	0.52	12.48	106.78	0.11
RIVER-1	Reach-4	1282	Q25	11.16	173.36	175.80	174.24	175.84	0.000319	0.88	12.71	107.27	0.18
RIVER-1	Reach-4	1282	Q100	14.87	173.36	175.85	174.39	175.92	0.000526	1.14	12.99	107.92	0.24
RIVER-1	Reach-4	1282	Qreg	31.39	173.36	177.01	174.98	177.14	0.000620	1.62	19.36	277.43	0.28
RIVER-1	Reach-4	1282	Q48hr	46.33	173.36	177.05	175.42	177.34	0.001303	2.37	19.57	283.52	0.40
RIVER-1	Reach-4	1229		Culvert									
RIVER-1	Reach-4	1176	Q2	3.76	173.32	175.74		175.74	0.000037	0.30	12.61	224.99	0.06
RIVER-1	Reach-4	1176	Q5	6.44	173.32	175.74		175.75	0.000109	0.51	12.59	224.78	0.11
RIVER-1	Reach-4	1176	Q25	11.16	173.32	175.73		175.77	0.000331	0.89	12.56	224.22	0.19
RIVER-1	Reach-4	1176	Q100	14.87	173.32	175.72		175.80	0.000594	1.19	12.52	223.59	0.25
RIVER-1	Reach-4	1176	Qreg	31.39	173.32	176.27		176.48	0.001294	2.02	15.52	261.69	0.38
RIVER-1	Reach-4	1176	Q48hr	46.33	173.32	175.44	175.37	176.35	0.008964	4.22	10.97	204.05	0.95
RIVER-1	Reach-4	1003	Q2	3.76	173.39	175.74		175.74	0.000000	0.01	563.47	680.14	0.00
RIVER-1	Reach-4	1003	Q5	6.44	173.39	175.74		175.74	0.000000	0.01	564.80	681.08	0.00
RIVER-1	Reach-4	1003	Q25	11.16	173.39	175.75		175.75	0.000001	0.02	569.63	684.40	0.01
RIVER-1	Reach-4	1003	Q100	14.87	173.39	175.76		175.76	0.000001	0.03	575.77	686.76	0.01
RIVER-1	Reach-4	1003	Qreg	31.39	173.39	176.37		176.37	0.000001	0.03	1012.77	724.70	0.01
RIVER-1	Reach-4	1003	Q48hr	46.33	173.39	175.89		175.89	0.000006	0.08	668.90	702.66	0.02
RIVER-1	Reach-4	946	Q2	3.76	173.40	175.74		175.74	0.000000	0.01	613.13	603.35	0.00
RIVER-1	Reach-4	946	Q5	6.44	173.40	175.74		175.74	0.000000	0.02	614.31	603.41	0.00
RIVER-1	Reach-4	946	Q25	11.16	173.40	175.75		175.75	0.000000	0.03	618.57	603.60	0.01
RIVER-1	Reach-4	946	Q100	14.87	173.40	175.76		175.76	0.000001	0.04	623.97	603.88	0.01
RIVER-1	Reach-4	946	Qreg	31.39	173.40	176.37		176.37	0.000001	0.05	995.25	606.65	0.01
RIVER-1	Reach-4	946	Q48hr	46.33	173.40	175.89		175.89	0.000005	0.11	704.62	604.65	0.02
RIVER-1	Reach-4	884	Q2	3.76	173.40	175.74		175.74	0.000000	0.01	546.67	492.39	0.00
RIVER-1	Reach-4	884	Q5	6.44	173.40	175.74		175.74	0.000000	0.03	547.62	492.44	0.01
RIVER-1	Reach-4	884	Q25	11.16	173.40	175.75		175.75	0.000001	0.04	551.08	492.63	0.01
RIVER-1	Reach-4	884	Q100	14.87	173.40	175.76		175.76	0.000001	0.06	555.49	493.14	0.01
RIVER-1	Reach-4	884	Qreg	31.39	173.40	176.37		176.37	0.000002	0.07	860.09	498.39	0.01
RIVER-1	Reach-4	884	Q48hr	46.33	173.40	175.89		175.89	0.000010	0.15	621.32	495.38	0.03
RIVER-1	Reach-4	685	Q2	3.76	173.42	175.74		175.74	0.000000	0.02	427.17	372.05	0.00
RIVER-1	Reach-4	685	Q5	6.44	173.42	175.74		175.74	0.000000	0.03	427.88	372.09	0.01
RIVER-1	Reach-4	685	Q25	11.16	173.42	175.75		175.75	0.000001	0.05	430.48	372.25	0.01
RIVER-1	Reach-4	685	Q100	14.87	173.42	175.76		175.76	0.000002	0.06	433.77	372.44	0.01
RIVER-1	Reach-4	685	Qreg	31.39	173.42	176.37		176.37	0.000002	0.08	671.94	407.14	0.02
RIVER-1	Reach-4	685	Q48hr	46.33	173.42	175.89		175.89	0.000015	0.18	483.18	375.74	0.04
RIVER-1	Reach-4	522	Q2	3.76	173.44	175.74	174.16	175.74	0.000104	0.22	47.97	370.41	0.09
RIVER-1	Reach-4	522	Q5	6.44	173.44	175.74	174.36	175.74	0.000312	0.38	47.58	370.41	0.15
RIVER-1	Reach-4	522	Q25	11.16	173.44	175.74	174.66	175.75	0.000983	0.68	46.58	370.39	0.26
RIVER-1	Reach-4	522	Q100	14.87	173.44	175.73	174.86	175.76	0.001897	0.93	44.84	370.37	0.37
RIVER-1	Reach-4	522	Qreg	31.39	173.44	176.37	175.74	176.37	0.000041	0.22	282.77	372.71	0.06
RIVER-1	Reach-4	522	Q48hr	46.33	173.44	175.85	175.78	175.89	0.003158	1.35	89.58	371.05	0.49
RIVER-1	Reach-4	499		Culvert									
RIVER-1	Reach-4	476	Q2	3.76	173.22	175.74		175.74	0.000085	0.23	48.06	364.93	0.08
RIVER-1	Reach-4	476	Q5	6.44	173.22	175.74		175.74	0.000255	0.40	47.56	364.90	0.14
RIVER-1	Reach-4	476	Q25	11.16	173.22	175.73		175.75	0.000815	0.71	46.04	364.80	0.25
RIVER-1	Reach-4	476	Q100	14.87	173.22	175.73		175.76	0.001609	0.99	43.58	364.68	0.35
RIVER-1	Reach-4	476	Qreg	31.39	173.22	175.39	175.39	176.37	0.010720	4.38	7.17	324.49	1.01
RIVER-1	Reach-4	476	Q48hr	46.33	173.22	175.80	175.80	175.89	0.005617	1.95	69.37	366.31	0.66

HEC-RAS Plan: Fringe6_BC_175.74 (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
RIVER-1	Reach-4	256	Q2	3.64	173.43	175.74	173.92	175.74	0.000000	0.02	385.75	339.31	0.00
RIVER-1	Reach-4	256	Q5	6.19	173.43	175.74	174.12	175.74	0.000000	0.03	385.76	339.31	0.01
RIVER-1	Reach-4	256	Q25	10.20	173.43	175.74	174.24	175.74	0.000001	0.05	385.80	339.31	0.01
RIVER-1	Reach-4	256	Q100	14.39	173.43	175.74	174.33	175.74	0.000002	0.06	385.84	339.31	0.02
RIVER-1	Reach-4	256	Qreg	32.35	173.43	175.74	174.48	175.74	0.000012	0.14	386.26	339.32	0.03
RIVER-1	Reach-4	256	Q48hr	47.42	173.43	175.74	174.55	175.74	0.000026	0.21	386.86	339.34	0.05
RIVER-1	Reach-4	1	Q2	3.64	173.97	175.74	174.17	175.74	0.000000	0.02	299.73	301.28	0.01
RIVER-1	Reach-4	1	Q5	6.19	173.97	175.74	174.23	175.74	0.000001	0.04	299.73	301.28	0.01
RIVER-1	Reach-4	1	Q25	10.20	173.97	175.74	174.32	175.74	0.000002	0.06	299.73	301.28	0.02
RIVER-1	Reach-4	1	Q100	14.39	173.97	175.74	174.39	175.74	0.000005	0.09	299.73	301.28	0.02
RIVER-1	Reach-4	1	Qreg	32.35	173.97	175.74	174.58	175.74	0.000023	0.19	299.73	301.28	0.05
RIVER-1	Reach-4	1	Q48hr	47.42	173.97	175.74	174.65	175.74	0.000049	0.28	299.73	301.28	0.07

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