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Technical Memorandum

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Subject: **Mud Creek Flood Risk Mapping from Prince of Wales Drive to Rideau River**

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Executive Summary

This report provides a summary of the analytical methods used and underlying assumptions applied in the preparation of flood plain mapping for Mud Creek from Prince of Wales Drive to the Rideau River. The project has been completed in accordance with the technical guidelines set out under the Canada-Ontario Flood Damage Reduction Program (FDRP) (MNR, 1986), and the technical guide for the flood hazard delineation in Ontario (MNR, 2002) as laid out by the Ontario Ministry of Natural Resources. The 1:100 year flood lines delineated here are suitable for use in the RVCA's regulation limits mapping (as per Ontario Regulation 174/06) and in municipal land use planning and development approval processes under the Planning Act.

Contents

1. Introduction

In September 2017, The City of Ottawa and three conservation authorities (Mississippi, Rideau and South Nation) initiated the second phase of the flood risk mapping program within the boundary of the City (the first phase ran from 2012 through 2018). A multi-year plan for mapping a number of high priority rivers and streams was made. As part of this program, the RVCA has identified four streams, where the existing mapping would be updated or mapping will be created for the first time. Mud Creek is one of them.

There is no previous flood mapping of Mud Creek. However, as part of the Environmental Management Plan of the Village of Manotick, a hydraulic model (HEC-RAS) was set up for Mud Creek from First Line Road to the Rideau River (MMM, 2005). A QUALHYMO model from 1993 was refined and used for estimating 1:100 year flows, which were then used in the HEC-RAS model. Although the 1:100 year water levels were computed and the floodplain was plotted during this study, its main purpose was for the design of infrastructure. The hydraulic analysis seems to be at a very basic level and MMM (2005) never stated whether it meets the provincial mapping standards. The RVCA accepted this analysis for the purposes of infrastructure design but never adopted it as a regulatory floodplain. We have used the information contained in this study report for comparison purposes.

Engineered flood risk mapping is available for the Rideau River (RVCA, 2017a). Information from this study, when found useful, is used in the present study. Summary of available information has recently been compiled by RVCA in a catchment report card of Mud Creek (RVCA, 2013).

This report provides a summary of the analytical methods used and underlying assumptions applied in the preparation of flood plain mapping for Mud Creek from Prince of Wales Drive to the confluence with the Rideau River (Figures 1 and 2). The project has been done in accordance with the technical guidelines set out under the Canada-Ontario Flood Damage Reduction Program (FDRP) (MNR, 1986), and the technical guide for the flood hazard delineation in Ontario (MNR, 2002) as laid out by the Ontario Ministry of Natural Resources. It also conforms to the 'generic regulation' guidelines of Conservation Ontario (2005). The 1:100 year flood lines delineated here are

suitable for use in the RVCA's regulation limits mapping (as per Ontario Regulation 174/06) and in municipal land use planning and development approval processes under the Planning Act.

2. Study Area

A 12.5 km reach of the Mud Creek has been mapped (Figures 2 and 17). The study area is partially urbanized and is a part of southern Ottawa (Figure 4). About 22% of the area is developed (residential, commercial, institutional, streets, and recreational). About 57% is agricultural and about 21% is forest.

The following streams were modeled and mapped:

- Mud Creek (12.5 km)
- Tributary C or Brownlee Branch (0.4 km)

3. Data Used

LIDAR: High quality topography is the key to high quality flood risk mapping. Digital Elevation Models (DEM) were derived from LIDAR data procured by the City of Ottawa. The Mud Creek watershed was covered by two LIDAR data sets, flown in November 15-22, 2012 and in April 25-29, 2015. The 2012 data set has a density of about 4 to 5 points per square meter, and an estimated consolidated vertical accuracy (CVA) of 20 cm (Airborne Imagery, 2013). The corresponding values for the 2015 data set are 4 to 10 points per square meter and 20-25 cm respectively (Airborne Imagery, 2015). The spatial extent of these two data sets is shown in Figure C.3 in Appendix C. The City also provided 0.25 m contour lines that were derived from LIDAR data. However, we only used the LIDAR points directly for this study, and the contour lines were never used.

The accuracy of the LIDAR data was checked in the field by RVCA staff in July-August 2016. The true elevations of on-the-ground features that are identifiable on the mapping were determined using RVCA's survey grade GPS equipment (Trimble R8) and were compared with the elevations indicated by the LIDAR spot heights, to determine that any differences between mapped and true elevations were within the accuracy prescribed by the FDRP standards.

In total, 155 spot heights were verified (see Table C.1 and Figure C.1 in Appendix C). As described in the FDRP guidelines (MNR 1986), the spot height checks are considered satisfactory when 90% of the data points are within 0.33 m of the field measurement. As shown in Table C.1, this criterion has been adequately met[1]. On average, the spot heights are within 3.4 cm (Table C.1).

Watercourses: A GIS-based watercourse layer was obtained from the City of Ottawa. It was a flow network generated by the City using their LiDAR topography, augmented by culvert and bridge overrides to ensure hydraulic connectivity. This layer was modified by RVCA's GIS staff using the DRAPE 2014 imagery (Frugo, 2015) and following the procedures outline by the MNR (2011). The resultant watercourses were integrated into a jurisdiction-wide dataset maintained by RVCA's GIS department.

[1] FDRP (1986) Manual also specifies criteria for checking contour crossings. However, in this study we used only LIDAR spot heights, not contour lines. Therefore, we did not check the accuracy of contour lines supplied by the City of Ottawa.

Catchment Delineation: Catchments were derived using the ArcHydro and Spatial Analyst extensions in ESRI's ArcMap. The City of Ottawa's LiDAR topography was processed into a 2m DEM and then augmented by the RVCA watercourse layer. The augmentation involved 'burning down' the watercourses into the LiDAR surface and then filling the areas back up, along with all other depressions, to form a cohesive surface devoid of localized sinks. This hydrologically-corrected DEM ensures hydraulic connectivity throughout the analysis surface. The subcatchments of Mud Creek were generated off this surface via pour points placed at key stream confluences and road crossings. The resulting catchments were validated via the LiDAR topography and visual interpretation using DRAPE 2014 imagery (Fugro, 2015).

Drape Imagery: The Drape imagery was collected during a period from 28 April through 7 June 2014 with a horizontal accuracy of ±0.5 metre (Fugro, 2015). This high-quality colored photo clearly shows the rivers, creeks, land use, houses, buildings, roads, infrastructure, vegetation and other details.

2017 Aerial photo: The 2017 aerial photo was captured during May 16-20, 2017. It was provided to us by the City of Ottawa. It is accurate, sharp and in colour, and shows various natural and man-made features clearly.

Building footprint: The 'building footprint' layer was provided by the City of Ottawa for the area inside the urban boundary (Figure 6). It enables us to accurately draw flood lines around buildings. This data layer contained information collected over a number of years.

Land use: A GIS-based land use data set, containing information updated in 2010, was obtained from the City of Ottawa. RVCA's GIS staff further updated the data based on information related to planning and regulations programs. Locations where land uses had changed (e.g., forest cover replaced with agriculture) were identified by visual inspection of the DRAPE 2014 imagery (Fugro, 2015) and recent observations by RVCA staff. RVCA's Planning staff provided Official Plans for the City of Ottawa (2018), most importantly the Manotick Secondary Plan (City of Ottawa, 2015), as well as subdivision plans for the Mahogany (Stantec, 2018), Special Design Area (exp, 2015), and Seabrook developments (Holzman, 2012). For areas with ambiguous development plans, conservative estimates produced the 'SUB' land use classification which resulted in one

extra category of land use for a total of 40 (see Table 1 and Figure 4). These changes were incorporated into a bespoke land use layer used only for hydrologic parameter estimations of Mud Creek. Some land use categories listed in Table 1 are not present in the Mud subwatershed (e.g., RL-1, R3-S, R4-X, R4, R5, etc).

Imperviousness: A GIS-based data layer showing the impervious surfaces was obtained from the City of Ottawa. It identified various impervious surfaces such as roads, parking lots, buildings, etc. (Figure 5). This data was based on information collected over a number of years up to 2011. Designs for areas of future development were compared against the surrounding community and conservatively correlated to TR-55 cover types: low density residential correlated to ½ acre lots (25% impervious), high-density residential correlated to town houses (65% impervious), and commercial (85% impervious). The imperviousness varied in the range from 1% to 24% for the sub-catchments, with an average of 6.7% for the entire Mud catchment (Table 3a). This data set was used in the hydrologic analysis.

Soil classification: A soils classification layer was obtained from MNRF's LIO (Land Information Ontario) database, details of which are documented in a report by MNR (2012). Soil is classified into four categories (A, B, C and D) based on infiltration capacity.

Group A soils have a high infiltration rate (low runoff potential) when thoroughly wet; these consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B soils have a moderate infiltration rate and consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture; these soils have a moderate rate of water transmission.

Group C soils have a slow infiltration rate and consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture; these soils have a slow rate of water transmission.

Group D soils have a very slow infiltration rate (high runoff potential) and consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are

shallow over nearly impervious material; these soils have a very slow rate of water transmission.

This report (MNR, 2012) describes the infiltration rate in qualitative terms without giving numerical values. However, it appears to be based on the SCS's original classification. USDA-SCS (1986) gives specific range of infiltration or transmission rate (Group A: greater than 0.30 inch/hour; Group B: 0.15-0.30 inch/hour; Group C: 0.05-0.15 inch/hour; Group D: 0-0.05 inch/hour). This soil information was used in hydrological parameter estimation.

As shown in Table 2a and Figure 3a, Soil Group D is predominant (44%) in the Mud catchment, followed by Group B (25%) and Group C (19%). Thus, the soil in this area has a low infiltration rate. It consists chiefly of poorly drained soils. The texture is fine clay with low rate of water transmission.

About 4.5% of the watershed area is 'unclassified' or has missing soil group information (Table 2a). A portion of the Kars Esker extends in a southeast-northwest direction through the eastern portion of the Mud Basin, on which there are several quarries. These quarries have no attributed soil group data, but a visual inspection of Figures 3a-b provide convincing evidence that assigning such areas with Soil Group A is justifiable.

Soil Permeability: A GIS-based data layer showing the soil permeability was obtained from the Ontario Geological Survey (2010). Four categories of soil permeability were identified: high, low-medium, variable and low. These categories roughly coincided with the soil groups (A, B, C and D). Table 2b and Figure 3b show soil permeability information in Mud catchment. This information was not directly used in the present analysis but was only used for corroborating soil classification data.

4. Hydrological Computations

4.1 Overall Methodology

In the absence of any streamflow measurement – a common situation in many small catchments – we have used a single-event hydrological model to estimate flood flows at key locations along Mud Creek. This approach is sometimes referred to as the 'return period design storm' method and is one of the acceptable flow estimation procedures discussed in the provincial guidelines (MNR, 1986, 2002). In this method, a synthetic design storm (hyetograph) of specified return period is fed into a rainfall-runoff model to generate the corresponding peak flow, which is generally assumed to have the same return period. This procedure is quite popular and is regularly used in studies related to drainage, stormwater, flooding, and so on. This method is also accepted by FEMA (2009), although they call it simply 'rainfall-runoff modeling'.

For small catchments of this size, floods generated by summer storms are expected to be larger compared to spring freshet and should therefore be used in flood risk mapping. Past studies in this area support this notion[2].

Suitable data for calibrating the SWMHYMO model was not available. Therefore, we have estimated the flood quantiles based on theoretical (or synthetic) storms and uncalibrated hydrologic modeling as the best available methodology at the present time. As described later in the report, lack of data also prevented calibration of the hydraulic model.

Synthetic storms of various types and durations were first used to estimate the 1:100 year flood flows. Based largely on engineering judgement, one of the storms was selected as suitable for the flood mapping purposes within the Mud Creek basin. The selected storm was then used to estimate the flood quantiles for various return periods (2, 5, 10, 20, 50, 100, 200, 350 and 500 years).

[2] For example, the 1:100 year summer and spring floods of Flowing Creek (with an area of 49.5 km^2) were estimated at 51 and 46 cms respectively by PRS/JFSA (2005) during a larger mapping study on the Jock watershed; it was recommended that the summer flows be used for flood mapping. MVCA (2015) analyzed snowmelt events using the Ottawa Airport data and concluded that 'if a location on a river has a response time somewhat longer than 12 hours, it would be expected that snow melt would govern" (as opposed to summer rainfall). Mud Creek catchment's response time is much lower (1.4-9.4 hours) than 12 hours; therefore, summer rainfall is expected to produce larger runoff than spring snowmelt.

4.2 SWMHYMO Model

We have used version 4.02 of SWMHYMO model (JFSA 2000) for estimating the summer floods. This model is used widely in Ontario for both urban and rural catchments.

As shown in Figures 2 and 7, the Mud Creek basin has been divided into twelve catchments, and flood quantiles have been estimated at sixteen nodes and twelve catchment outlets along the creek and its tributaries (Figure 13). A schematic of the SWMHYMO model is shown in Figure 8, where both the catchments and channel segments used for flow routing are included.

The Mud catchment is within the periphery of the City urban core and is partially developed. The City of Ottawa Official Plan (2003) indicates no significant additional change in this area in the foreseeable future. However, the amended OPA 150 released in 2013 envisages some small land use changes along the southern fringe of Mud Creek catchment; these include the Manotick Subdivision (exp, 2015), Seabrook Subdivision (Holzman, 2012) and Mahogany Subdivision (Stantec, 2018). Moreover, the quarries in the northern portion of the Mud Creek watershed are likely to be reclaimed at some point in the future and be developed; therefore, we have considered this area as developed. We have used this information for the hydrologic analysis. The hydrologic analysis therefore is based on the future condition as required by the provincial guideline (MNR, 2002).

Among the available runoff-generating modules in SWMHYMO model, two commands (CALIB NASHYD and CALIB STANDHYD) were considered for calculating runoff from rural and urban catchments respectively. In case of Mud Creek, eleven catchments are rural (imperviousness less than 20%) and only one is urban with an imperviousness of 24.2%. Therefore, both the CALIB STANDHYD and CALIB NASHYD commands were used.

The CALIB NASHYD command, used for rural areas with imperviousness less than 20%, requires the following input:

$AREA$ = area of the catchment (hectares),

DWF = dry weather flow component (m^3/s),

CN or $CN*$ = original or conjugate (modified) curve number,

IA = initial abstraction (mm),

DT = computational time step (minutes),

N = number of lineal reservoirs, and

T_p = time to peak (hour).

Table 3a lists the parameters for all twelve catchments within the Mud basin. The dry weather flow or base flow was assumed to be zero (DWF = 0.0). A one minute time step was used (DT = 1.0 minute). The number of linear reservoirs was set at three (N = 3). These are typical values that hydrologists use in the absence of more site-specific information.

For the catchments with more than 20% imperviousness, CALIB STANDHYD command was used. Only one catchment (WC2) was in this category. The future land use was used in the hydrologic analysis and flood risk delineation, in accordance with MNR (2002) guidelines. CALIB STANDHYD command requires the following input parameters:

$AREA$ = area of the catchment (hectares),

DWF = dry weather flow component (m^3/s),

CN or $CN*$ = original or conjugate (modified) curve number,

$TIMP$ = total imperviousness ratio (between 0.0 and 1.0),

$XIMP$ = directly connected imperviousness ratio (between 0.0 and 1.0),

$LOSS$ = type of loss over impervious surface,

DT = computational time step (minutes),

$IAper$ = initial abstraction on pervious surface (mm),

$SLPP$ = average pervious surface slope (%),

LGP = average lot depth (m),

MNP = roughness coefficient for pervious surface,

SCP = linear reservoir storage coefficient for pervious surface (minutes),

$IAimp$ = initial abstraction on impervious surface (mm),

$SLPI$ = average impervious surface slope (%),

LGI = average overflow travel length (m),

MNI = roughness coefficient for impervious surface, and

SCI = linear reservoir storage coefficient for impervious surface (minutes).

Table 3b lists the parameters for catchment WC2. The dry weather flow or base flow was assumed to be zero (DWF = 0.0). A one minute time step was used (DT = 1.0 minute). These are typical values that hydrologists use in the absence of more site-specific information. The rest of the parameters and how they were estimated are explained in Table 3b.

Two parameters (curve number and time to peak) are very important in SWMHYMO modeling and therefore require elaborate discussion.

Curve Number Method: The curve number (CN) method of estimating runoff was first introduced by US Department of Agriculture's Soil Conservation Service (USDA-SCS 1986) and is widely used in North America and elsewhere. This method is used in the SWMHYMO model too. The curve number (CN) was calculated based on land use and soil type (Tables 1 and 2a). Equivalent land use and associated CN from TR-55 were first selected for each of the 40 land use and 4 soils types found in this region (Table 4). For each elemental area with a particular land use-soil combination, the appropriate CN value was chosen; these CN values were then area-averaged over the whole catchment to find the aggregate CN for the catchment. CN values varied from 70 to 81 for different sub-catchments, with an average value of 76.8 for the entire Mud catchment (Table 3a).

Both the original SCS curve number method and its 'conjugate' or modified version can be used in SWMHYMO. For this study, we have used the modified method – commonly known as the $CN*$ method. For parameter estimation and calculation procedures, we have closely followed the original SCS manual (USDA-SCS, 1986) and a recent, comprehensive state-of-the-art review done by a task committee (Hawkins et al., 2009).

The first step is estimating the CN value based on land use and soil type as given in the SCS manual (USDA-SCS, 1986). We have used the following information:

- 2010 land use data set from the City of Ottawa
- 2012 soil classification by LIO/OMAFRA/MNR (MNR, 2012)
- 2018 land use data compiled by RVCA staff

Both data sets were available in digital format. Tables 1, 2a and 4 summarizes parameters related to the estimation of CN and $CN*$. This process was automated in the GIS system.

Once CN was estimated, then the 'conjugate' or modified curve number $CN*$ was calculated using the following equation:

$$CN* = \frac{100}{1.879(\frac{100}{CN} - 1)^{1.15} + 1}$$

Soil storage capacity (S) in mm was related to $CN*$ by the relation:

$$CN* = \frac{25400}{254 + S}$$

And the initial abstraction (IA) in mm was calculated as:

$$IA = 0.05S$$

The above equations were taken from Hawkins et al. (2009; page 35, 9 and 34 respectively).

While the original CN was estimated based on the assumption of an initial abstraction equal to 20% of the soil moisture capacity, later research revealed that the initial abstraction equal to 5% of the soil moisture capacity is more appropriate, the new curve number was called $CN*$, and the relationship between CN and $CN*$ was established. At present, both the original and the modified methods are widely used, with more and more practitioners preferring the latter. However, given that they can be readily converted to each other, one has the option to use any of them.

Time to Peak: The time of concentration (T_c) of a watershed is defined as the time required for water to move from the most remote part of the watershed to its outlet. Many methods are available, mostly empirical and developed for specific conditions, to

estimate T_c. Here, we have used the 'velocity method' originally introduced by Soil Conservation Service (USDA-SCS, 1986) and later elaborated by Natural Resources Conservation Service (USDA-NRCS, 2010). This method has a sound physical basis[3], i.e., the movement of water over the land and along the channel, although estimating parameters – as the case frequently is in hydrology – is at best an approximation.

The time to peak (T_p) is defined as the time between rainfall event and the corresponding peak flow. It is related to the time of concentration as (USDA-CSC 1986, page 15-3):

$$T_p = 0.6T_c$$

Both T_c and T_p were calculated using the method detailed in the USDA-NRCS (2010) manual. The time to peak (T_p) was an input to SWMHYMO model (Table 3a). It varied from 1.38 to 8.51 hours for different sub-catchments.

All estimated parameters necessary for the SWMHYMO modeling of the Mud Creek catchment are listed in Tables 3a-b.

Channel Routing: The ROUTE CHANNEL command of the SWMHYMO model was used for routing the flow along rivers and streams. The model requires channel length, slope, roughness and a typical channel cross-section. Channel length and slope are given in Table 3a. Figure 8 shows how the channels fit within the overall model structure. Typical cross-section for each channel was based on the characteristic main channel and adjacent floodplains where applicable. Manning's roughness coefficients for the main channel and floodplain were also assigned based on land use and expected flow

[3] The SCS velocity method is generally considered to have a sound physical basis and is often used as a yardstick to evaluate other methods (see, for instance, McCuen et al. 1984; Grimaldi et al. 2012 and Sharifi and Hosseini 2011). Grimaldi et al. found that as much as 500% variation is quite common when using different methods to estimate time of concentration. They also made an interesting remark: "Indeed, it a paradox that advanced hydraulic models, such as 2-D flood propagation models for hydraulic risk mapping based on very expensive topographic and remote sensing data, are actually limited by design hydrographs based on anachronistic parameters, such as Tc." This is consistent with the commonly observed fact that hydraulic calculations are much more accurate than hydrologic calculations. Also, from the practitioner's point of view, "as a general rule, methods that compute individual travel times for various types of flow segments (for example, overland flows and channelized flows), and then sum the individual travel times to estimate the total travel time, are thought to be the most reliable" (Bentley Systems 2007b).

conditions. Care was taken to ensure that parameter values used in SWMHYMO were consistent with those used in HEC-RAS model.

It is noted that the ROUTE CHANNEL command gives rise to numerical instability for short channels with mild slope. The exact reason of this is not known. This happened for three small channels, namely, C2, C3 and C6, which we removed from the model. This basically means that the hydrograph has been translated along the channel without any attenuation or time lag, which gave a slightly higher flow peak (compared to an attenuated peak) at the downstream end and a slightly conservative flood level estimation. We found this to be a practical way to circumvent this problem without compromising model performance.

4.3 Selection of Design Storm

A wide variety of design (or synthetic) storms are available. However, a particular storm is generally selected for flood mapping purposes after appropriate scrutiny. For this study, synthetic storms of two types (Chicago and SCS Type II) and four durations (3, 6, 12 and 24 hours) were considered for hydrologic modeling (Table 5). These storms are routinely used in Canada for both stormwater management and flood risk studies. Recent studies in neighboring conservation authorities (SNCA 2014; MVCA 2015) as well as within the RVCA (RVCA 2016, 2017a, 2017b, 2017c, 2017d, 2018a, 2018b, 2018c) confirm the suitability of these storms for the purposes of floodplain mapping in small basins.

The following synthetic storms were considered:

- 3 hour SCS Type II storm
- 6 hour SCS Type II storm
- 12 hour SCS Type II storm
- 24 hour SCS Type II storm
- 3 hour Chicago storm
- 6 hour Chicago storm
- 12 hour Chicago storm
- 24 hour Chicago storm

Hyetographs corresponding to these storms were generated from the most recent IDF curve at Ottawa Airport (Station ID 6106000), obtained from Environment Canada[4]. This IDF curve was based on the most recent analysis using 39 years of data from 1967 to 2007 (with 2001 and 2005 data missing)[5]. Generally, the curve for a certain return period follows an equation like:

$$I = \frac{a}{(b+t)^c}$$

where,

I = rainfall intensity (mm/hour), and

a, b, c = constants.

From the EC IDF curve (Figure 9), equations were fitted via the STORM software and constants determined for all return periods (Figure 10). These equations were then used to generate rainfall hyetographs, for which we used the STORMS 2010 utility software (version 3.0.1) from JFSA (2011). Figure 11 shows the storm hyetographs. Hyetographs were input to SWMHYMO model, where they drive the rainfall-runoff computation. This procedure was followed for all Chicago storms and the SCS 24 hour storm. For all other SCS storms (3, 6, 12 hour durations), the distribution was taken from the City Sewer Guidelines (2012; page 5.18).

Using the eight synthetic storms, the 1:100 year flows were computed for all sub-catchments and at key locations along the stream (Table 6), which were then scrutinized to select an appropriate storm for the purposes of flood mapping. This step is somewhat subjective and requires engineering judgement. As expected, the longer duration storms produced higher flows; usually the flow corresponding to a 3 hour storm was about 56-61% of that produced by a 24 hour storm. The SCS storms produced slightly higher flows (by about 1-10%) compared to Chicago storms. The estimated flows from various storms

[4] Information on IDF curve was obtained from Environment Canada's website [http://climate.weather.gc.ca/prods_servs/engineering_e.html].

[5] City of Ottawa's Sewer Design Guidelines (2012) contain an old IDF curve based on 1961-1990 data, which yields somewhat smaller storm depths than the more recent IDF curve (based on 1967-2007 data). We have opted to use the most recent IDF curve because it reflects recent climatic conditions, is based on more data (39 years as opposed to 31 years), and is slightly conservative (produces bigger storms). The FDRP Manual (MNR 1986) also recommends the use of most recent IDF information.

were thus within the typical variation associated with hydrologic computation; no storm produced extremely high or low flows. This appears to endorse the notion that all storms considered here and associated flows were within the realm of hydrological plausibility. No storm stood out as an outlier or as unrealistic. In the selection of a storm for flood mapping purposes, we wanted to be as close as possible to reality with a slight degree of conservatism. Considering all, we selected the 24 hour SCS Type II storm as the most suitable for Mud Creek flood mapping[6]. As can be seen in Table 6 and Figure 12, it produced the higher flows, but only marginally so (1-10% higher than those produced by the Chicago storm). This selection was consistent with our philosophy of being as close as possible to reality, with only a slight degree of conservatism to account for the uncertainty.

4.4 Estimated Flood Quantiles

After the 24 hour SCS Type II storm was selected for the flood mapping purposes, the SYMHYMO model was run for all events with return periods from 2 to 500 years (Table 7). Input and output files of the SWMHYMO model are included in Appendix D. Estimated flood quantiles at key locations were tabulated (Table 8 and Figures 13 and 14). Flood flows from this table were then used in the hydraulic modeling; thus, this table is the link between hydrologic and hydraulic computations.

The flows calculated by MMM (2007) are about 30% of the flood quantiles we have estimated in this study. There are several reasons for this variation. First, it can partly be attributed to the use of different IDF curves; we used the latest IDF curve which translates into a 10-15% higher rainfall. Another reason is the details of land use and soil information used; ours were much more detailed than theirs. They have also used smaller basin areas (about 15% lower than ours), lower CN values (73 vs. 77), higher initial abstraction (6.8 mm vs. 6.1 mm). All these factors contribute to the difference in flow estimates. However, at the end, based on the more detailed and better quality of the data

[6] The hydrological analyses done here and the results obtained therefrom are considered suitable for the purposes of floodplain mapping of Mud Creek only, and for no other purpose. It should be emphasized that the methodology, storms considered and selected, modeling, and the estimated flood quantiles may not be suitable for any other purpose, including land drainage, stormwater management and infrastructure design. Any subsequent use of the data, model and other information contained in this report should be made only after independent verification and scrutiny by qualified engineers/hydrologists.

we used, we concluded that our estimate of flood quantiles is more appropriate for flood mapping purposes.

4.5 Comparison with Other Methods

In order to assess the reasonableness of the flood quantiles computed here (with SCS Type II 24 hour storm), a comparison was made to those computed at other small catchments elsewhere (Figures 15 and 16). Besides comparing the data points to each other, three lines were drawn to provide the context. They are:

- Area pro-rating: based on Jock River at Moodie Drive; 1:100 year spring flood of 196 cms based on measured data (PSR/JFSA 2004a)
- 1:100 year floods computed by the Index Flood Method (MNR, 1986)
- Creager envelope curve with a coefficient of 30 (Watt et al. 1989)

Figures 15 and 16 show that, in general, the Mud Creek flows are in the same range as other catchments within the RVCA (taken from PSR/JFSA 2005; JFSA 2009; RVCA 2016, 2017a, 2017b, 2017c, 2017d, 2018a, 2018b, 2018c) and from adjacent conservation authorities (SNCA, 2014; MVCA, 2015). One notable exception is Bilberry Creek, which is fully urbanized with soils mostly composed of clay with a low infiltration rate and shows higher flows. Some of the urban catchments within the Jock watershed also have higher flows comparable to those in Bilberry basin.

We note that all of the estimated floods within the Mud basin are higher than those given by the Index Flood Method, which was based on measured streamflow data and was prescribed by MNR (1986) for estimating floods in the absence of better information. All data points are below the Creager envelope curve, which is the upper-most limit of extreme flood flows in Canada. On the balance, we found that the estimated Mud flows are congruent with other information and are within the confines of pertinent estimation methods.

5. Hydraulic Computations

5.1 HEC-RAS Model

Following standard procedures (MNR, 1986; USACE, 1990, 2010), a steady-state hydraulic model of Mud Creek was built. The HEC-RAS software (version 4.1.0) developed by the US Army Corps of Engineers (USACE, 2010) was used. It uses the same back water calculation procedure as HEC-2 (USACE, 1990), which has been the industry standard since the 1970s, but with improved data processing and graphical capabilities. About 13 km of Mud Creek was included in the HEC-RAS model.

Cross-Sections: The cross-sections used in the modeling were generated from the latest topography (2012 and 2015 LIDAR) using GIS tools. While the above-water part of the cross-sections generated from LIDAR is accurate, the under-water portion of the channel is sometimes not adequate. In such cases, the under-water portion of the cross-section was adjusted from field observation. Since the LIDAR were flown during low flow conditions, the adjustment required for under-water channel was usually minor (less than 30-50 cm). The probable impact of such minor adjustments on 1:100 year flood level is expected to be insignificant as well. Therefore, the cross-sectional data was considered adequate for the purposes of flood mapping.

In total, 171 cross-sections were used in our HEC-RAS model. Figure 17 shows a schematic of the HEC-RAS model. Drawing MD-1 in Appendix F shows the cross-sections in greater detail, along with the computed Regulatory Flood Levels (RFLs) and flood risk limits. The location and alignment of river cross-sections within the model were based on engineering judgment as related to the expected flow during high flood events.

Channel Roughness: Based on our best understanding of the expected channel, flow and vegetation conditions, the Manning's roughness coefficient was estimated to be 0.035 in the main channel and 0.035-0.08 for the overbank areas[7] (Table B.1 in Appendix B). These values were consistent with standard values, such as those recommended by Chow (1959).

[7] We note that for the cross-sections within the Rideau River valley (downstream of Rideau Valley Drive), low roughness values were used. This is because this area is affected by the backwater and we do not expect any head loss of Mud Creek in this area.

Bridges/Culverts: Within the study area there are twelve road crossings (Table 11). As-built drawings were obtained from the City. Moreover, field survey by RVCA technicians during Spring 2018 were used for determining bridge/culvert dimensions. Road crossings and associated cross-sections were updated to match the as-built information.

In modeling bridges in HEC-RAS, we meticulously followed the guidance provided by USACE (2010). In this model, each bridge structure requires both a low flow and high flow modelling method to be selected. None of the bridges modelled along Mud Creek had piers, as such selecting the Energy Method for low flow computations was most appropriate. High flow computations were also set to the Energy Method, except for two cases where the Pressure/Weir Method was used:

- the Farm Driveway (between cross-section 1430 and 1435) as it was overtopped but its downstream side was not submerged by the tailwater; and
- First Line Road (between cross-sections 1455 and 1460) as the deck and embankment created a large obstruction to flow, causing a pronounced backwater effect.

Highway 416 consists of two separate but closely spaced bridges. In between the bridges, we used low contraction/expansion values (0.01-0.09) because there is not enough room for significant expansion or contraction of the flow.

Flood Quantiles: The estimated design flows from the hydrologic analysis (discussed above), with return periods ranging from 2 to 500 years (Table 8), were used in the HEC-RAS model. Table 9 shows the flows that were input to the HEC-RAS model.

For each channel reach, flows at both upstream and downstream ends were estimated form the SWMHYMO model, as listed in Table 8. As is the usual practice, the higher of these two flows – almost always the downstream one – was used for the hydraulic calculation in the HEC-RAS model. However, in the case of Mud Creek, downstream flows were found to be always higher than upstream flows.

Downstream Boundary Condition: Known or estimated water levels are usually used as downstream boundary conditions in HEC-RAS models. In this case, Mud Creek drains into the Rideau River. So, the water level prevailing in the Rideau River during summer months (the Mud Creek floods are assumed to occur during this time) constitutes the most appropriate boundary condition. The summer water levels in the Rideau River are much lower than the spring flood levels as computed in a recent study (RVCA, 2017a); see Figure 20 and Table 10. Since the summer water level is not measured at this location, the 2-year spring flood level (82.22 m) provides a practical but conservative surrogate of it. We used this level as the boundary condition for all summer flood events in Mud Creek.

Once the model was set up, the computed profiles and other parameters were scrutinized to assess the reasonableness of model outputs. Special attention was given to the computed water level and energy profiles near road crossings. Adjustments of model parameters – mainly the channel resistance and contraction and expansion coefficients – were made as necessary.

Suitable data to calibrate or validate the HEC-RAS model was not available. Therefore, no calibration was done[8]. However, we exercised professional judgement and tried to be slightly on the conservative side. Our approach of slight conservatism (a combination of hydrologic and hydraulic computations) is also congruent with the current notion of the Precautionary Principle, which applies when there exist considerable scientific uncertainties about causality, magnitude, probability, and consequences of different course of action (UNESCO 2005). The Precautionary Principle is also a key policy of Environment Canada[9].

[8] Given the constraints, this HEC-RAS model is the best we could build for the limited purpose of floodplain mapping at this time. We recognize that this model may not be suitable for other purposes. Further model improvement/adjustment/modification may be necessary for other purposes; it all depends on the purpose of the modeling and the features and phenomena a model is meant to capture. We therefore caution against using this model for other purposes without first confirming its suitability.

[9] Canada's environmental policy is also guided by the precautionary principle and is reflected in the Federal Sustainable Development Act (2008), which states that the Minister of Environment must "develop a Federal Sustainable Development Strategy based on the precautionary principle". The precautionary principle states that: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation". In other words, the absence of complete scientific evidence to take precautions does not mean

5.2 Computed Water Surface Profiles

The HEC-RAS model was run with the design floods. The 1:100 year computed water surface elevations and other parameters are shown in Table 13. Typical water surface profiles and all cross-sections are included in Appendix B.

Computed water surface elevations for various flood events with return periods ranging from 2 to 500 years are presented in Tables 14 and 15. It should be pointed out that the model has been built for the expected conditions prevailing during intense rainfall-generated flood events in the summer. Caution should be used when applying this model to simulate water surface profiles for events of other magnitude and during other seasons of the year.

Computed head losses across road crossings are listed in Table 12.

In cold climate areas like Ontario, spring floods may also be accompanied by ice jams. Here we have only analyzed the summer floods, not the spring floods. We are unaware of any ice-related flooding that caused significant concern in this area.

The reach of the Mud Creek from First Line Road to the Rideau River was modeled by MMM (2007); their computed water surface profile was compared to ours. In general, the profiles have similar shape, but the MMM profile was somewhat lower (by 40 to 80 cm). This can be partly explained by the lower flows used by MMM. The width of our floodplain was wider than MMM's by about 5-10 m in most places; it was about 50 m wider at one location, but it was a flat valley land. In other places, our floodplain was narrower by about 5-15 m. It appears that most of change in floodplain was a result of local regrading associated with development. It should be emphasized that the MMM floodplain was never adopted by RVCA.

5.3 Sensitivity Analysis

Flood quantiles have the highest degree of uncertainty in our computation and is most likely to affect the water surface profile. Therefore, we decided to test the sensitivity of water surface profile to a wide variation in flow.

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that precautions should not be taken – especially when there is a possibility of irreversible damage (Environment Canada, 2010).

The sensitivity analysis was conducted to determine how much the computed water surface elevations will vary with changes in the value used for the 1:100 year discharge. Six flow conditions were tested:

- 1:100 year flow increased by 10%
- 1:100 year flow increased by 25%
- 1:100 year flow increased by 50%
- 1:100 year flows decreased by 10%
- 1:100 year flow decreased by 25%
- 1:100 year flow decreased by 50%

Figures 18 and 19 show the computed water surface profiles and the differences in computed water levels for each condition. Figure 18 indicates that the computed water surface elevations are less sensitive to the discharge value in the steeper portions of the reach and more sensitive upstream of road crossings. The sensitivity analysis indicates that the computed water level can vary by about 0.15 m for a 10% variation in flow along most of the river reach, which is typical in the hydrologic estimation of design flow. For a 25% increase in flow, the water level, on average, can go up by about 0.25 m.

The sensitivity analysis provides an indication of the potential implications of inaccuracies in flow estimation, and changes in the expected flood flows that might result from urbanization and climate change.

6. Selection of Regulatory Flood Levels

As per Section 3 of the Provincial Policy Statement under the Planning Act (MMAH, 2005, 2014), the regulatory flood in Zone 2, which includes the RVCA, is the 1:100 year flood. Depending on the local hydraulic conditions, the computed water surface elevation, the energy grade or a value in between is generally taken as the Regulatory Flood Level (RFL). Engineering judgment is applied to recommend an appropriate value for the regulatory flood level at each cross-section, using the model outputs and considering hydraulic characteristics of the river reach, and the inherent limitations of numerical modeling.

When the stream velocity is relatively low and varies only gradually over relatively long river reaches, the water surface can generally be taken as the RFL.

However, near bridges, culverts and other water control structures and on steeper reaches where streamflow velocities are higher, and may change more abruptly, the computed water surface elevation may be substantially lower than the energy grade level, with the possibility that the water level may rise to the energy grade near obstacles and irregularities in the channel profile or cross-section which may not be represented in the hydraulic model. In such cases, the regulatory flood level is generally based on the computed energy grade as a conservative approach, given that the model-generated water surface elevation is less likely to be a true representation of flood risk in such situations.

Another possible situation arises when the computed water surface profile is undulating, with downstream water levels occasionally higher than upstream levels. When this occurs, it is more often an artifact from the simplifying assumptions of the modeling scheme than a reliable prediction of the actual differences in streamflow velocity and depth (and hence energy grade) from one cross-section to the next. Accordingly, the regulatory flood level at the upstream cross-section is taken to be equivalent to the downstream water surface elevation in these situations.

In all cases, the RFL is always between the computed water level and energy grade line. Hence, for the sake of simplicity and consistency, the energy grade elevation is often used as the RFL as a standard practice in delineating flood hazard areas.

For the present study, the regulatory flood levels were set equal to the computed energy grade and are tabulated in Table 13, along with the computed water surface elevations and energy grades at each cross-section in the model.

7. Flood Line Delineation

7.1 General

Once the RFLs are established, the plotting of 1:100 year flood lines or flood risk limits is a relatively straightforward matter. Given the topographical information in the form of LIDAR spot heights, the inundated area below the RFLs can be easily delineated manually or by using automated computer programs. In the present case, it was done manually with a focus on areas with complex topography, infrastructure, and overbank flow paths. The raw LIDAR spot heights were extensively used in the plotting the flood risk limit.

Field surveys were conducted by RVCA staff on 28 September and 2 November 2018 to verify hydraulic connectivity through culvert openings and flood prone areas.

The record of site-specific information associated with RVCA's regulatory approval process since 2010 was checked (Table 16). It was found that no site-specific work affects the flood risk lines.

Drawings MD-1 and MD-2 in Appendix F depict the delineated floodplain.

7.2 Buildings in the Floodplain

Presence of existing buildings within the floodplain and associated variation in the way a building could be exposed to flood risk required special attention. Recently, RVCA has consolidated a few rules for drawing flood lines in the vicinity of buildings (Appendix A), which have been followed in this study. Due to the limitations of the data and methodology used in the current mapping done at a large scale, and the small degree of (inevitable) subjectivity in drawing flood lines around buildings at a smaller scale, RVCA recommends that, should the need arise for accurate flood line delineation near buildings, site-specific information be taken into account when dealing with flood risk at these locations. It is the practice of RVCA to refine flood lines when more accurate information becomes available.

7.3 Islands in the Floodplain

Presence of small islands, especially those associated with septic beds, within the floodplain also requires special attention. Recently, RVCA has decided to show small

islands with an area less than 1000 m^2 as flood risk area (Appendix A) This guidance was followed during this study.

7.4 Spill Sections

Three spill sections were identified during this study (see Drawing MD-1). They were minor in nature and had water depth in the order of 25-50 cm. During exceptionally large flood events, water is expected to spill over to the Stevens Creek watershed.

Because of the minor nature of the spills and the flows escaping therethrough, no adjustment was made to the flow values. In other words, the current HEC-RAS modeling uses an assumption that all flow is retained in the creek, i.e., no water escapes the creek. Therefore, the floodplain delineated here is conservative.

7.5 Flood Mapping Data in GIS

The regulatory flood lines and cross-sections have been incorporated as separate layers in RVCA's Geographical Information System (GIS). In this system, one can view the flood lines, cross-sections, design flow, water level, energy grade, RFL, and other computed parameters. The flood lines can be overlain on the aerial photography or any other base mapping layers that are in the system and at any scale that suits the user's need.

The regulatory flood line layer is maintained and updated as required according to the established procedures of the RVCA (RVCA 2005).

Drawings MD-1 and MD-2 show the flood risk limits as delineated in this study. At all cross-section locations, the RFL is indicated. The general surroundings and land marks are also included for easy referencing.

8. Project Deliverables

The key information or knowledge products generated from this project are:

1) The Flood Mapping Report (this Technical Memorandum) – which summarizes the analytical methods that were used and the underlying assumptions
2) SWMHYMO model files
3) HEC-RAS model files
4) The flood risk limit lines in GIS format (shape files) – identifying the extent of lands which are considered to be vulnerable to flooding during a regulatory flood event (1:100 year flood)
5) The position and orientation of cross-sections used in the HEC-RAS model, in GIS format (shape files) – which, when used in conjunction with the HEC-RAS model output files, informs the user as to the estimated 1:100 year water surface elevation and the regulatory flood level for any location in the study area

A "documentation folder" containing working notes and relevant background information accumulated during the study process is maintained by the water resources engineering unit within RVCA's Watershed Science and Engineering Services department.

9. Closure

The hydrotechnical and cartographic procedures used in this study generally conform to present day standards for flood hazard delineation, as set out in the MNR's Natural Hazards Technical Guide (MNR, 2002). The resulting 1:100 year flood lines are suitable for use in the RVCA's regulation limits mapping (as per Ontario Regulation 174/06) and in municipal land use planning and development approval processes under the Planning Act.

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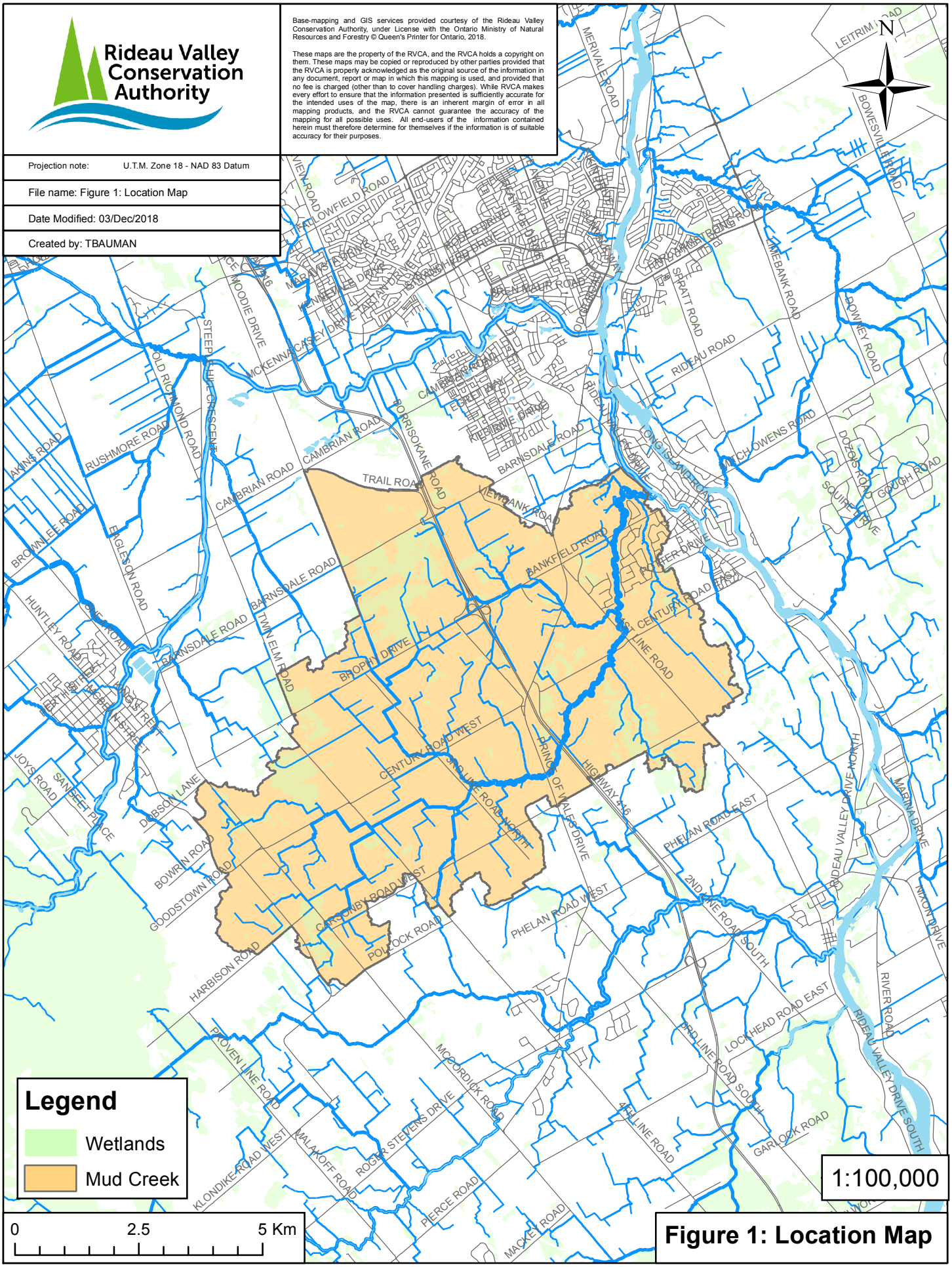
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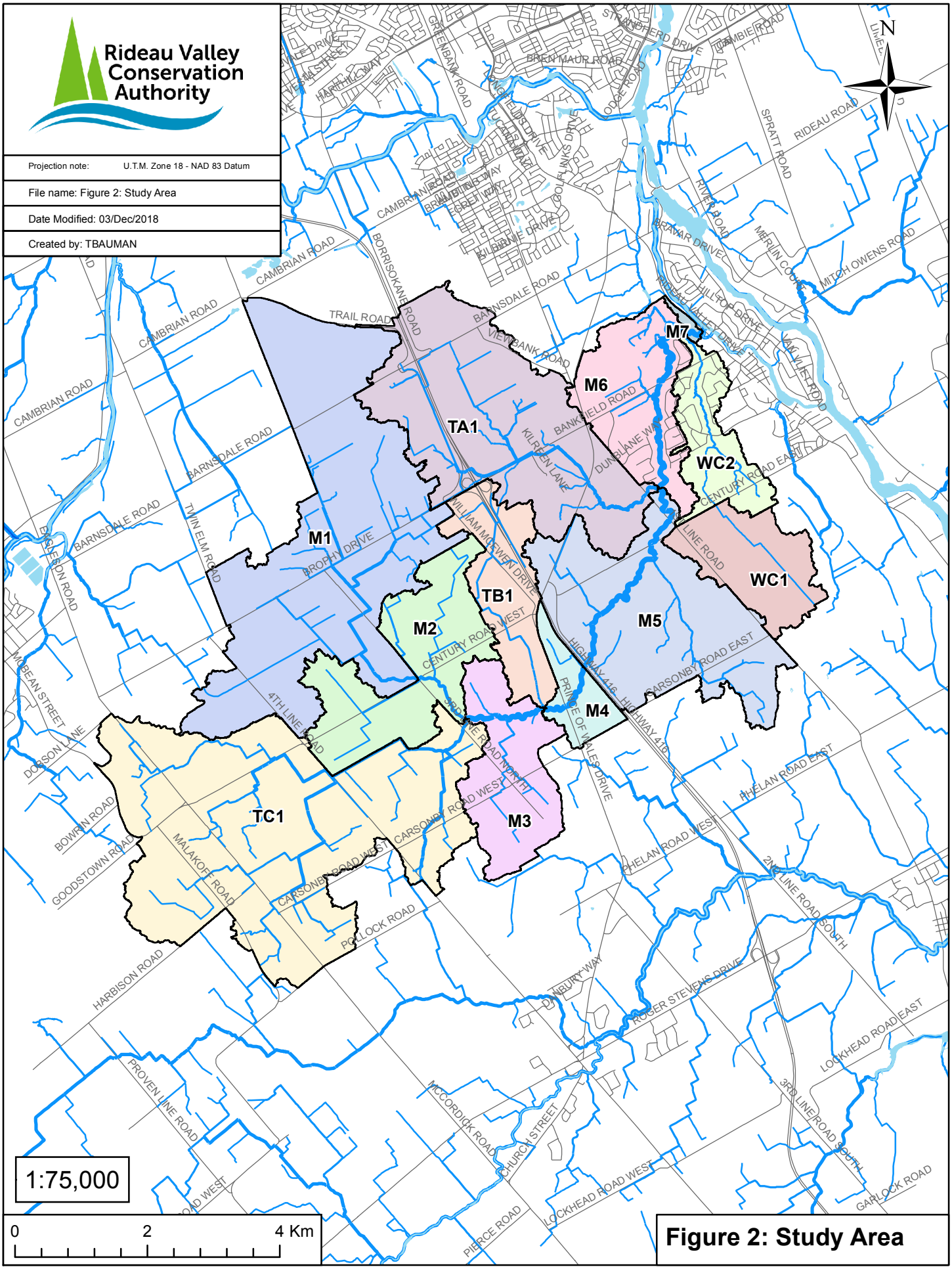
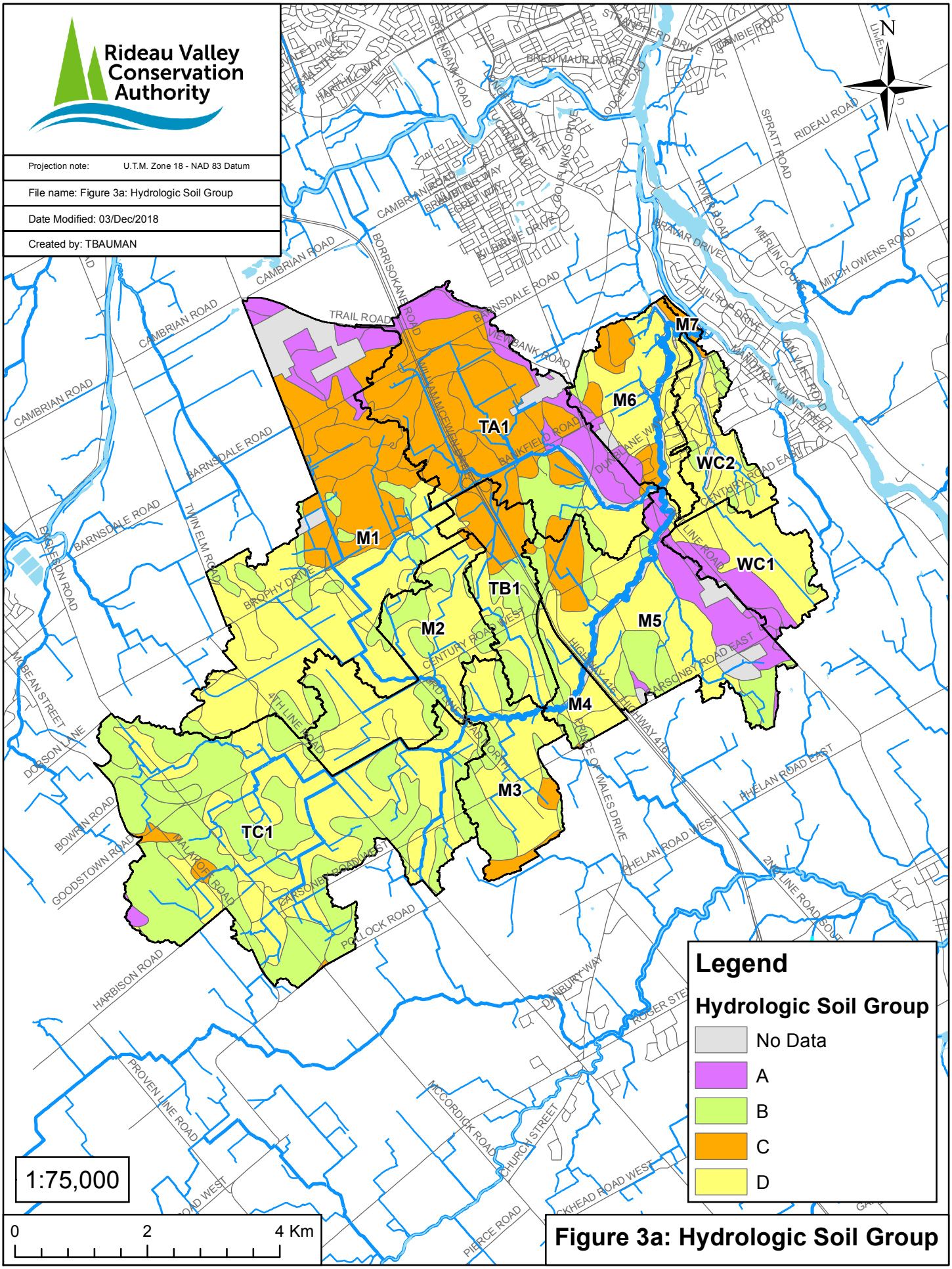
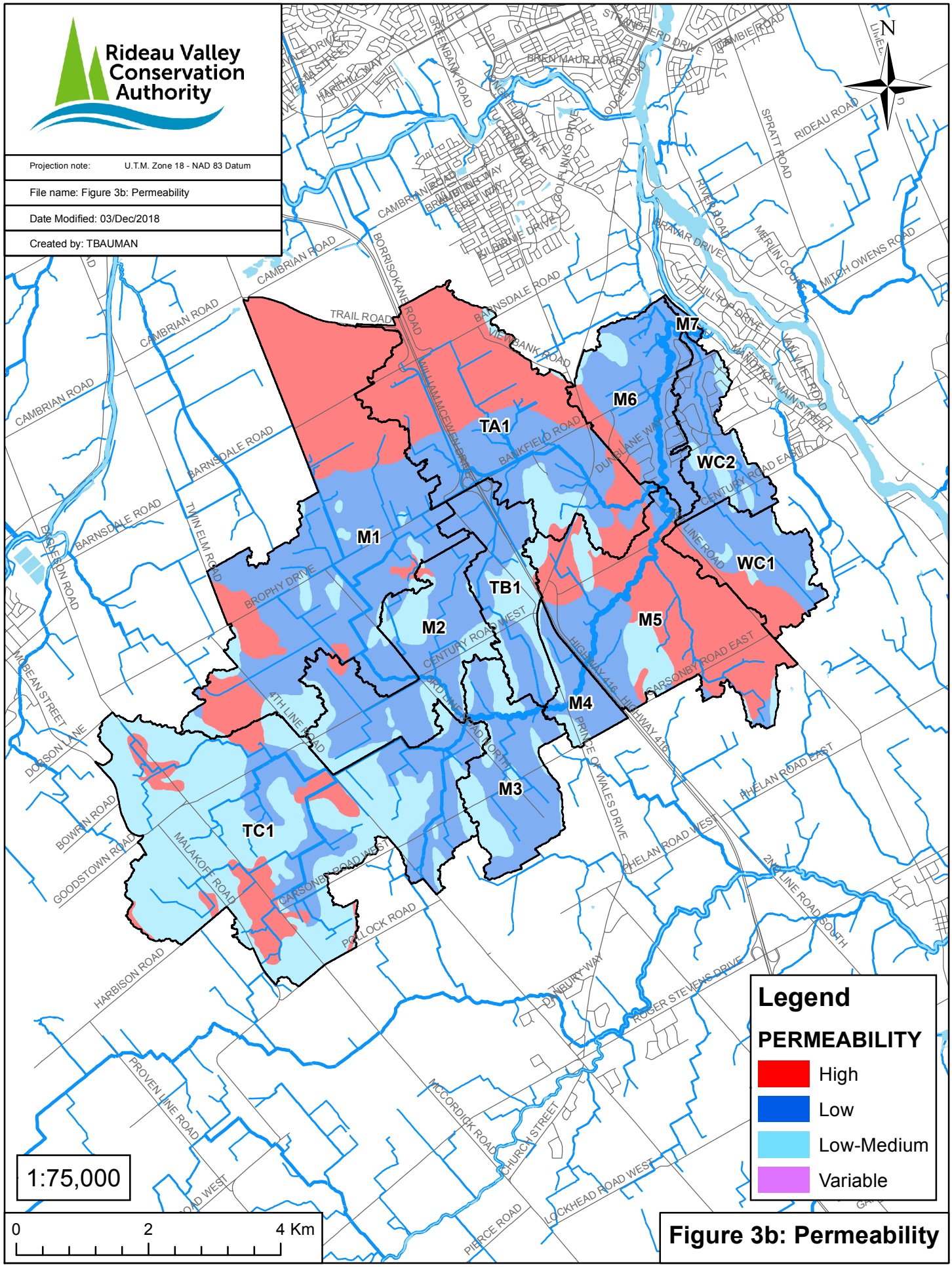
1:100,000
Figure 1: Location Map


Rideau Valley Conservation Authority
Projection note: U.T.M. Zone 18 - NAD 83 Datum
File name: Figure 2: Study Area
Date Modified: 03/Dec/2018
Created by: TBAUMAN
N
TA1
TB1
TC1
M1
M2
M3
M4
M5
M6
M7
WC1
WC2
1:75,000
0
2
4 Km
Figure 2: Study Area


Rideau Valley Conservation Authority
Projection note: U.T.M. Zone 18 - NAD 83 Datum
File name: Figure 3a: Hydrologic Soil Group
Date Modified: 03/Dec/2018
Created by: TBAUMAN
N
M7
M6
TA1
WC2
M1
WC1
TB1
M5
M2
M4
M3
TC1
Legend
Hydrologic Soil Group
No Data
A
B
C
D
1:75,000
0
2
4 Km
Figure 3a: Hydrologic Soil Group


Rideau Valley Conservation Authority
Projection note: U.T.M. Zone 18 - NAD 83 Datum
File name: Figure 3b: Permeability
Date Modified: 03/Dec/2018
Created by: TBAUMAN
N
M1
M2
M3
M4
M5
M6
M7
TA1
TB1
TC1
WC1
WC2
Legend
PERMEABILITY
High
Low
Low-Medium
Variable
1:75,000
0
2
4 Km
Figure 3b: Permeability

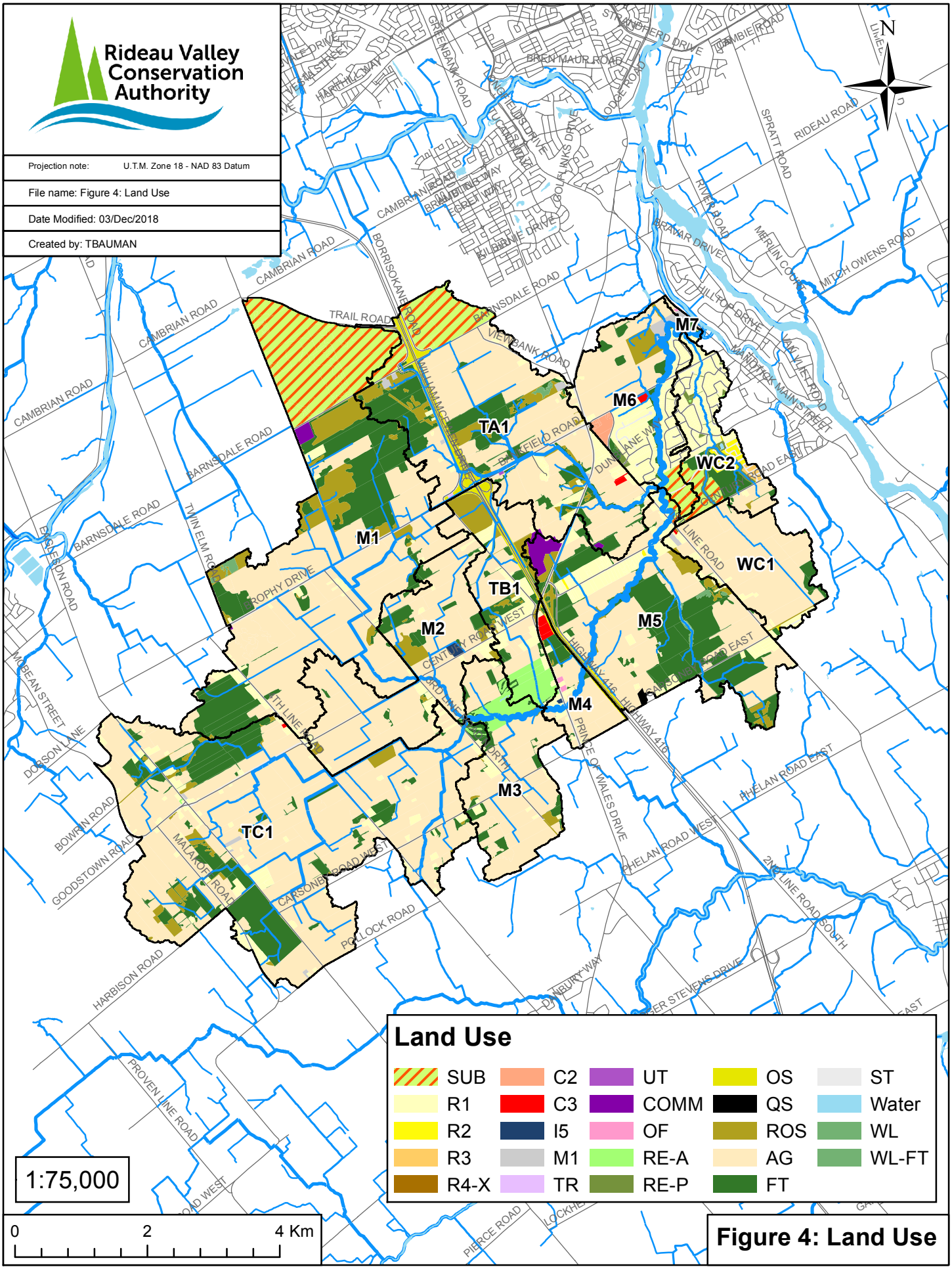
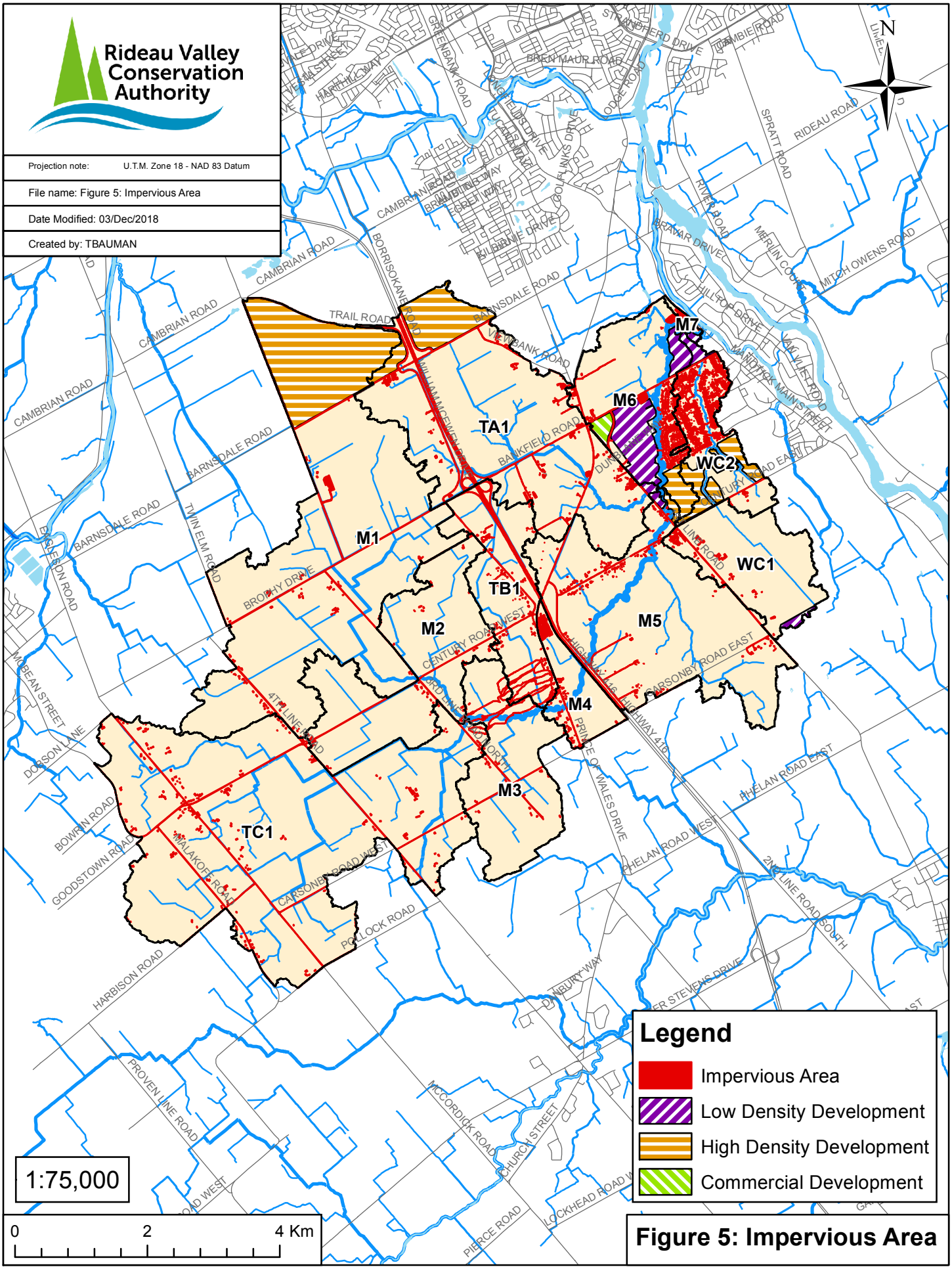


Figure 4: Land Use


Rideau Valley Conservation Authority
Projection note: U.T.M. Zone 18 - NAD 83 Datum
File name: Figure 5: Impervious Area
Date Modified: 03/Dec/2018
Created by: TBAUMAN
N
M1
M2
M3
M4
M5
M6
M7
TA1
TB1
TC1
WC1
WC2
Legend
Impervious Area
Low Density Development
High Density Development
Commercial Development
1:75,000
0
2
4 Km
Figure 5: Impervious Area

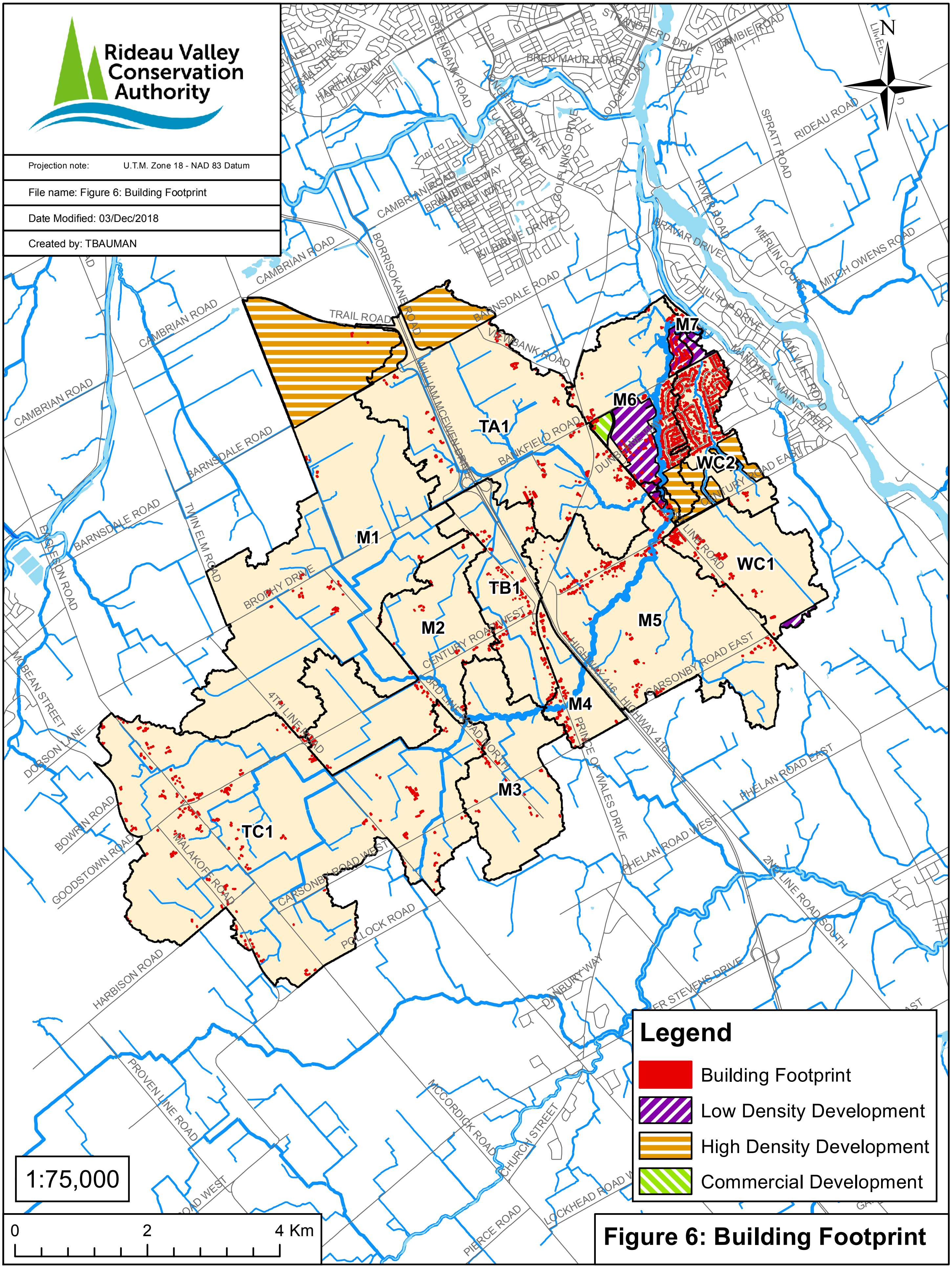


Figure 6: Building Footprint

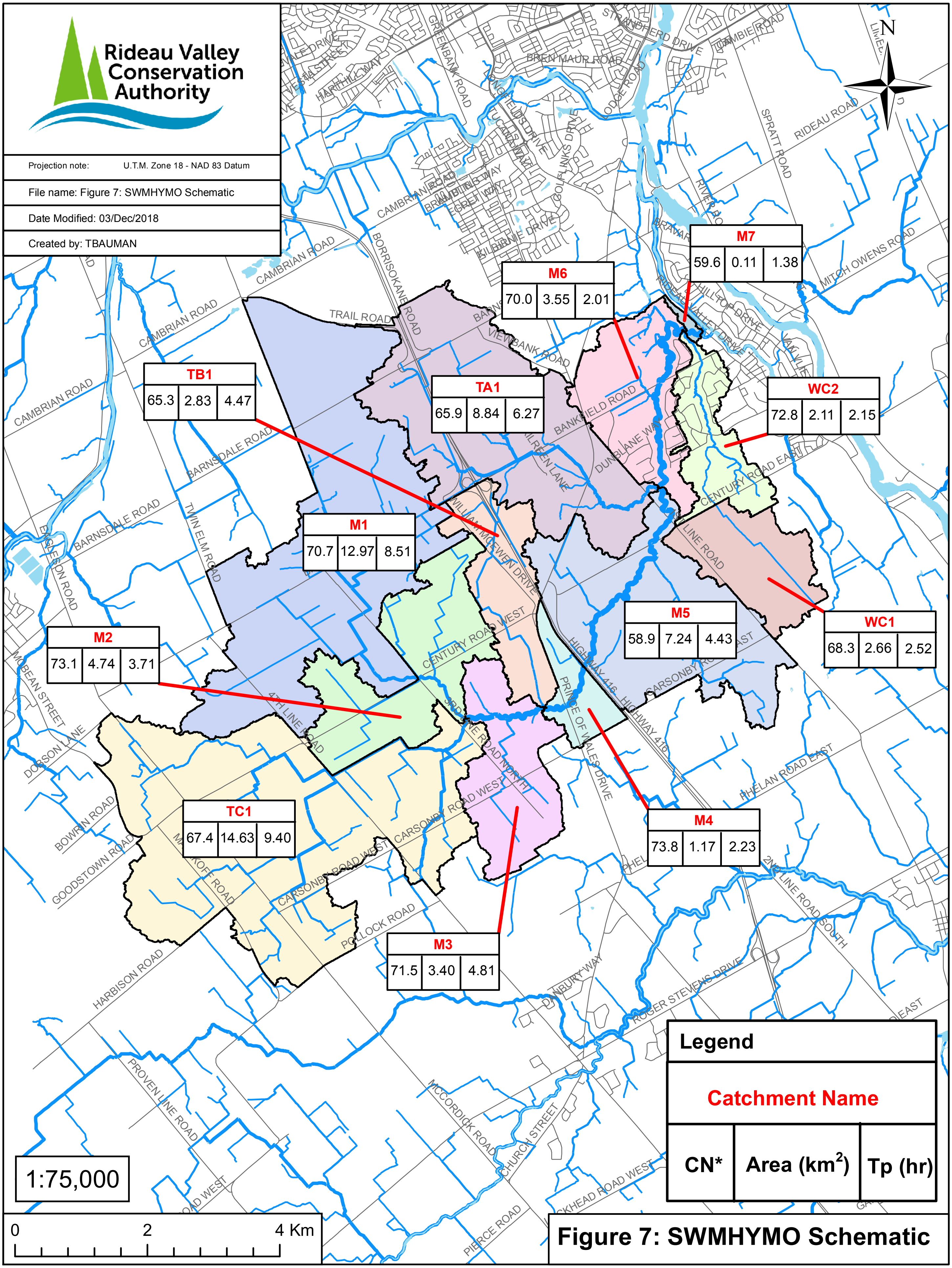


Figure 7: SWMHYMO Schematic

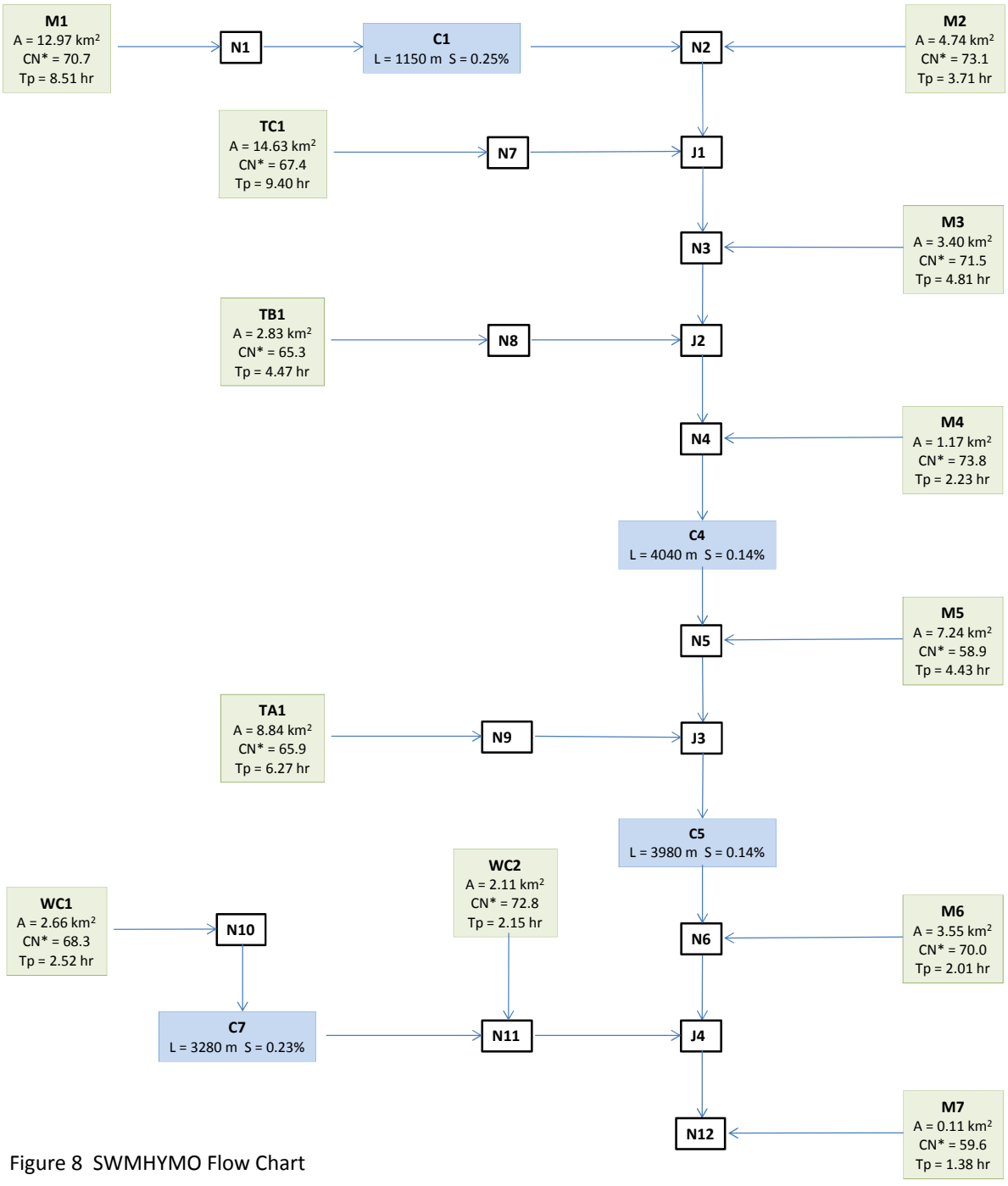


Figure 8 SWMHYMO Flow Chart

Figure 9 IDF curve for Ottawa Airport based on 1967-2007 data

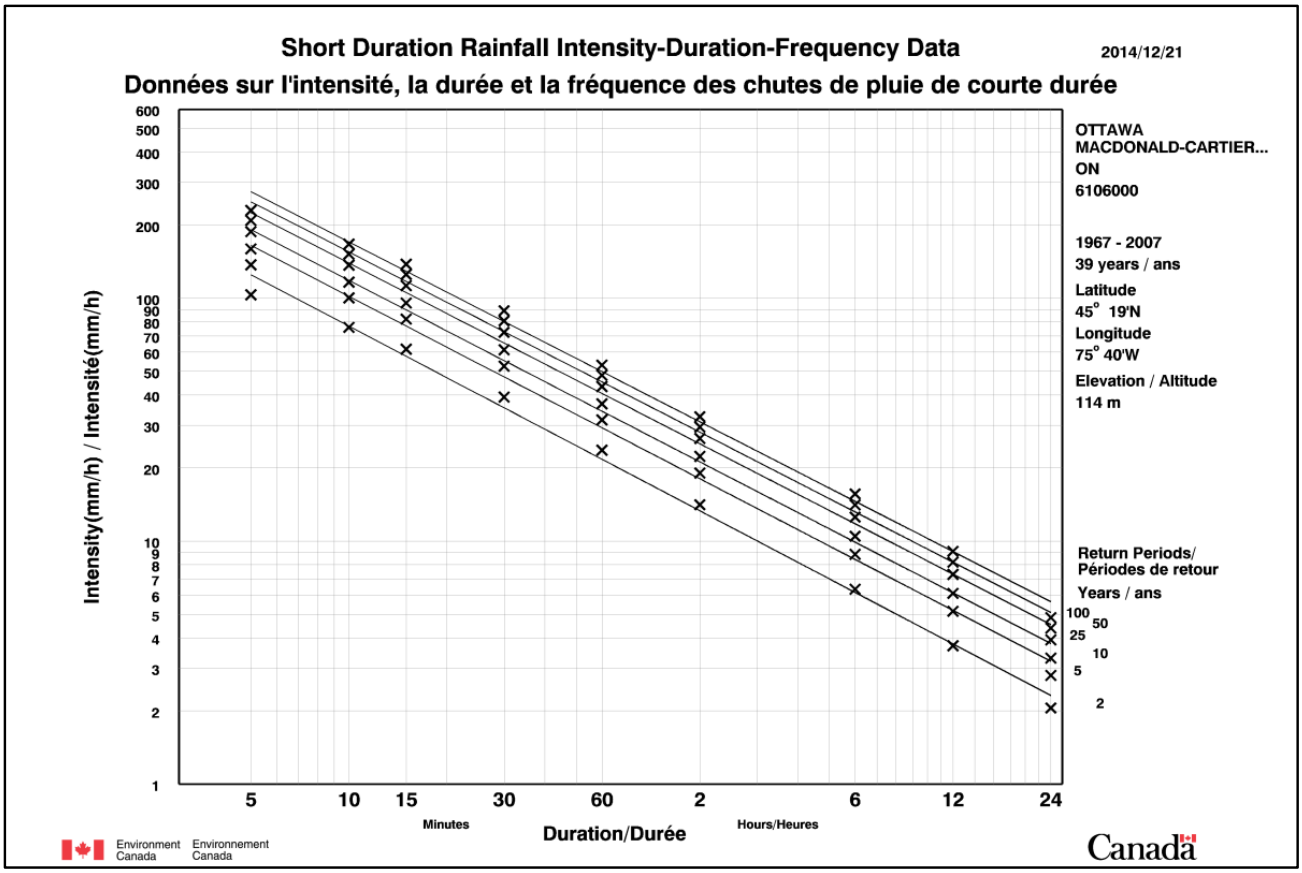


Figure 10 Fitted IDF curves for Ottawa Airport generated by STORMS software

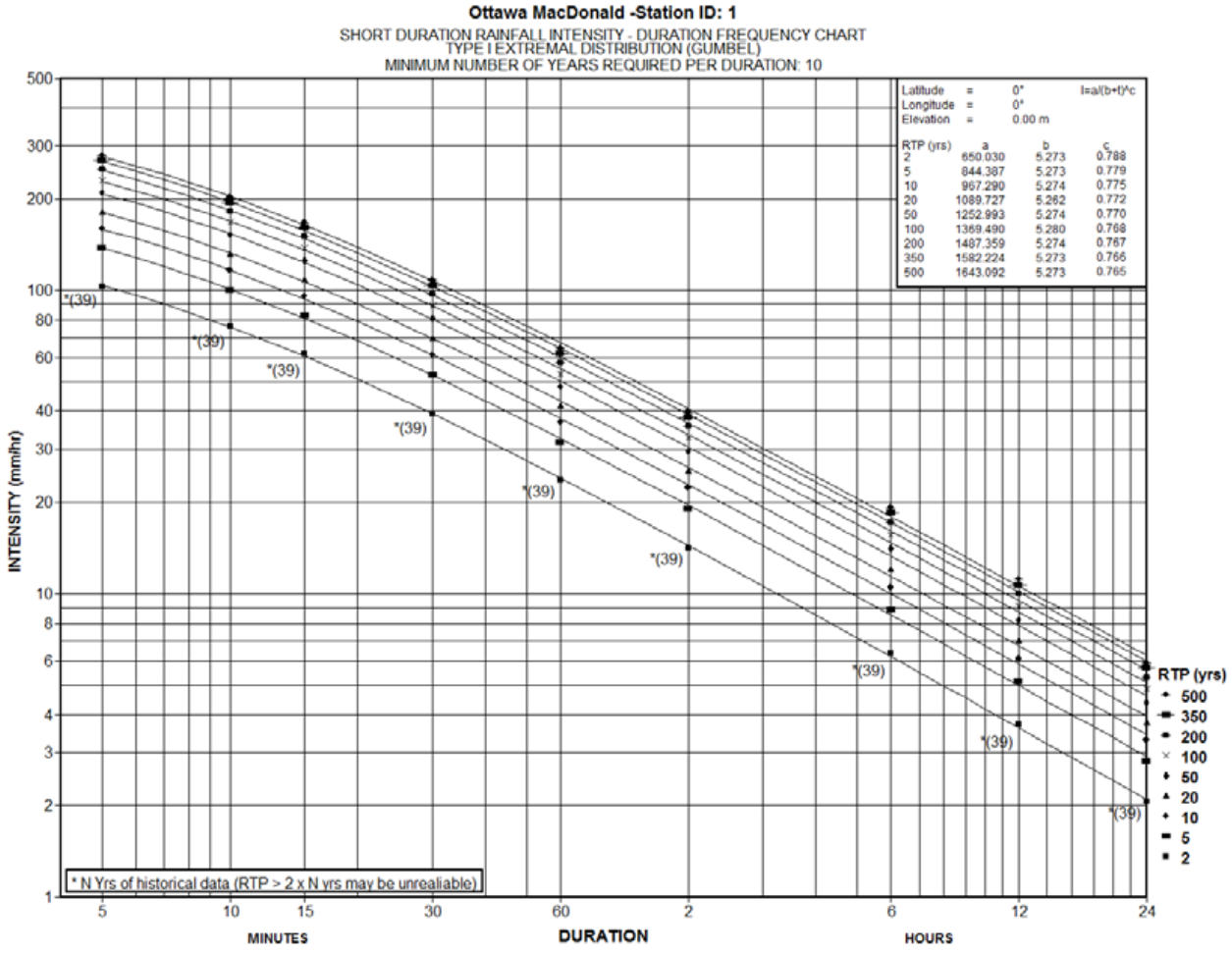
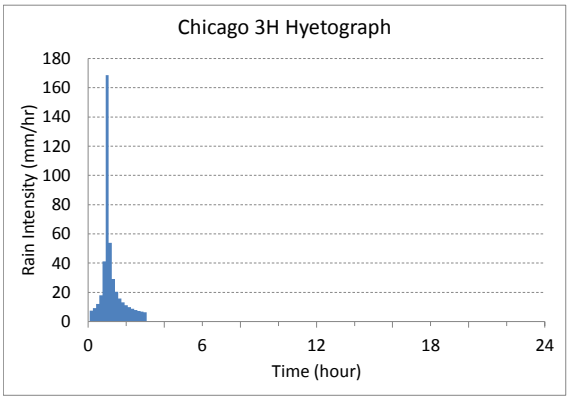
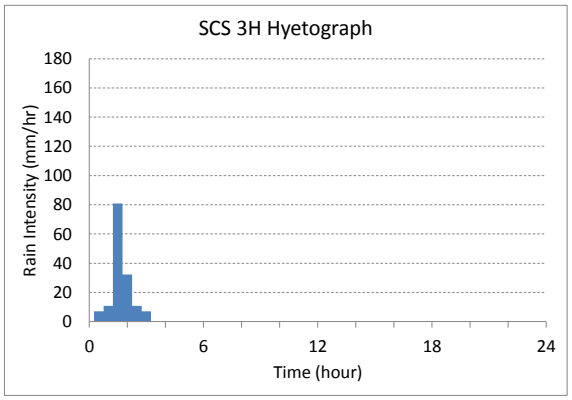
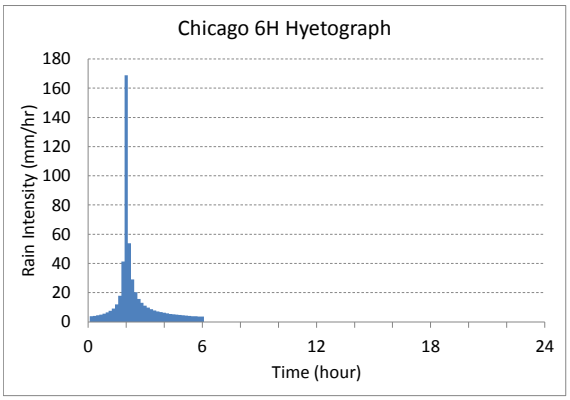
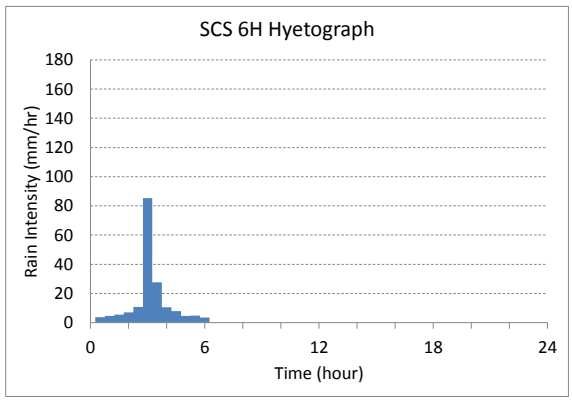


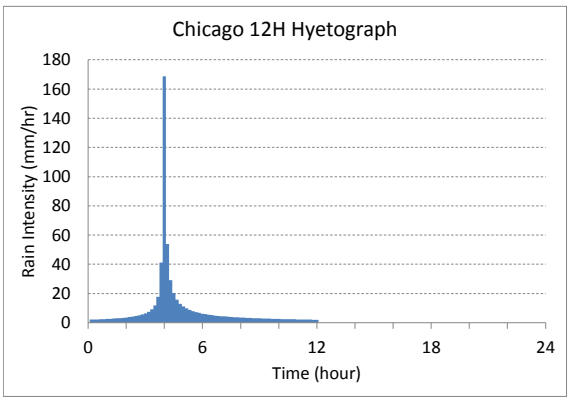
Figure 11 Hyetographs of various design storms

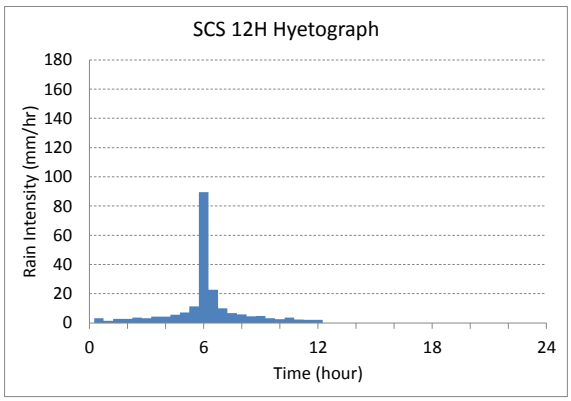


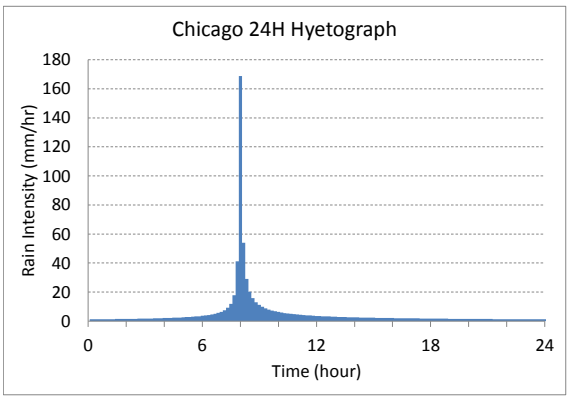












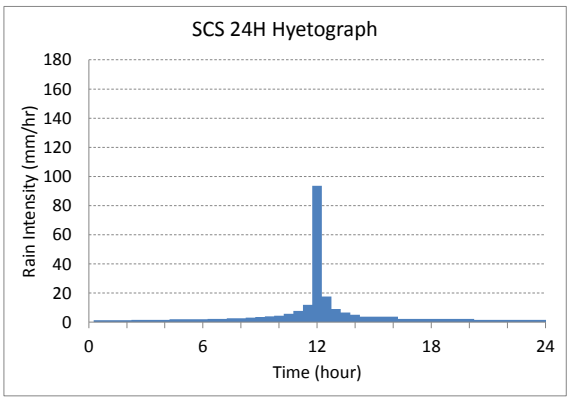
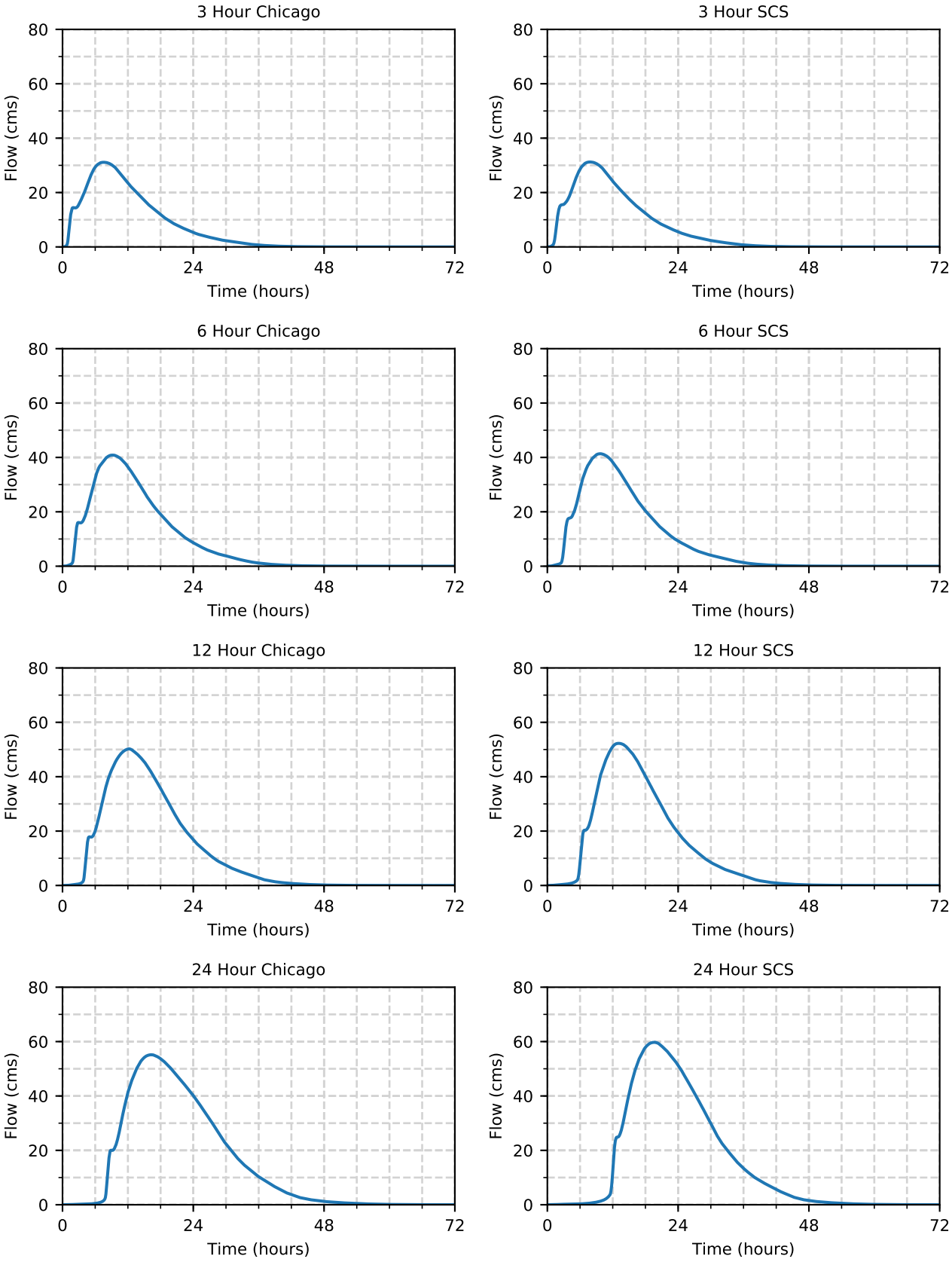


Figure 12 SWMHYMO generated flow at node N12 for different design storms



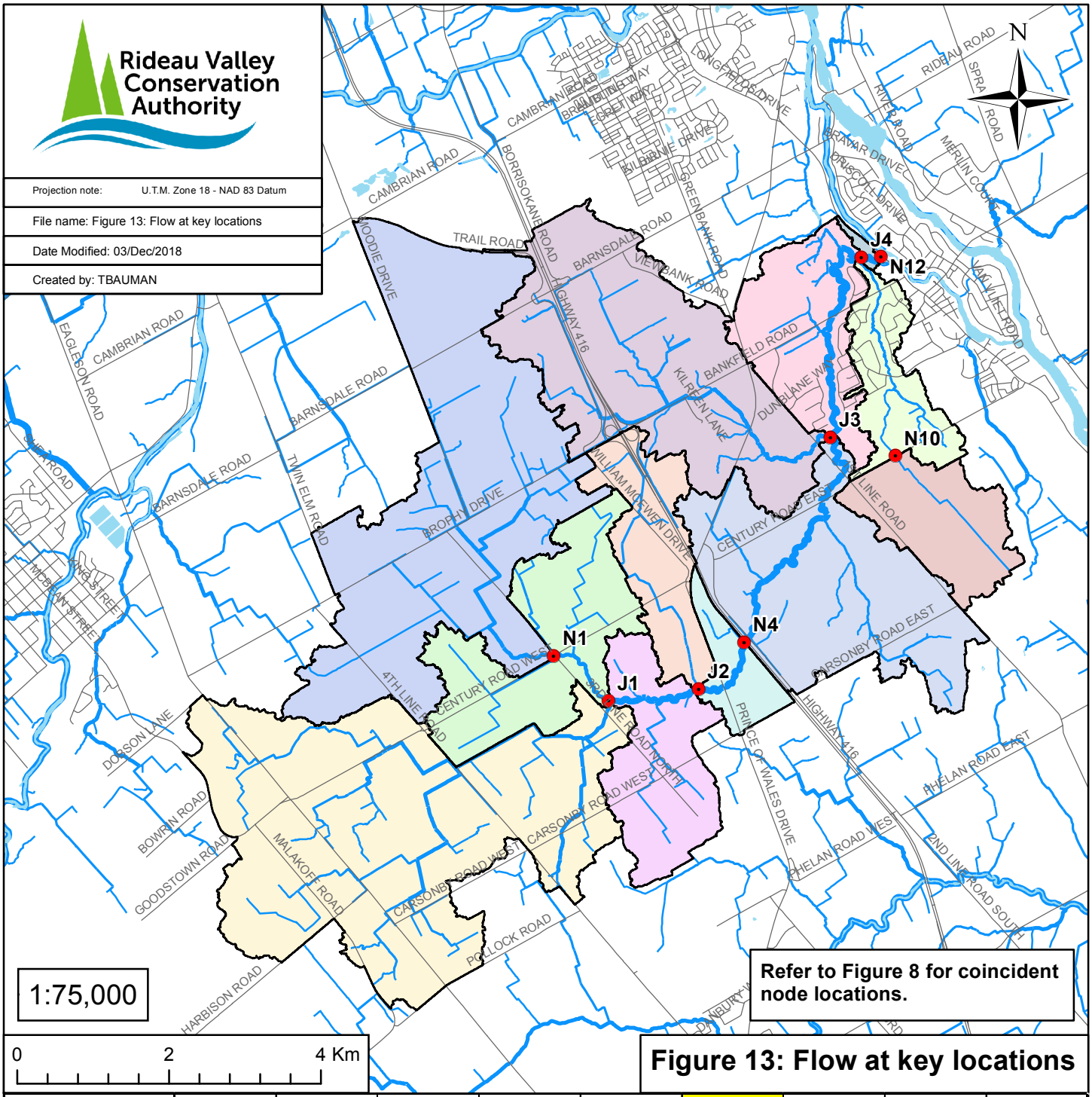


Figure 13: Flow at key locations

Return Period (year)	2	5	10	20	50	100	200	350	500
Nodes	Flow (cms)								
N1	2.67	4.95	6.59	8.34	10.70	12.58	14.44	16.03	17.15
N2	3.89	7.19	9.57	12.10	15.55	18.27	20.98	23.28	24.82
N3	6.98	13.03	17.42	22.09	28.42	33.48	38.50	42.72	45.72
N4	7.86	14.70	19.67	24.97	32.18	37.93	43.65	48.48	51.87
N5	8.91	16.95	22.84	29.18	37.70	44.55	51.40	57.24	61.33
N6	11.06	21.16	28.54	36.33	46.92	55.42	64.01	71.32	76.44
N7	2.42	4.59	6.17	7.87	10.19	12.05	13.89	15.48	16.59
N8	0.73	1.42	1.93	2.49	3.25	3.87	4.49	5.01	5.39
N9	1.82	3.52	4.78	6.13	7.98	9.48	10.97	12.25	13.15
N10	1.21	2.31	3.12	4.00	5.19	6.14	7.09	7.90	8.48
N11	3.17	6.07	8.31	10.79	14.38	17.30	20.13	22.66	24.46
N12	12.14	23.08	30.98	39.31	50.66	59.75	68.93	76.77	82.25
J1	6.06	11.31	15.12	19.17	24.67	29.06	33.38	37.11	39.71
J2	7.61	14.26	19.09	24.24	31.25	36.84	42.39	47.07	50.39
J3	10.73	20.47	27.61	35.31	45.68	54.02	62.36	69.49	74.47
J4	12.13	23.06	30.95	39.28	50.63	59.70	68.88	76.71	82.19

Figure 14 Estimated 1:100 year flows along Mud Creek

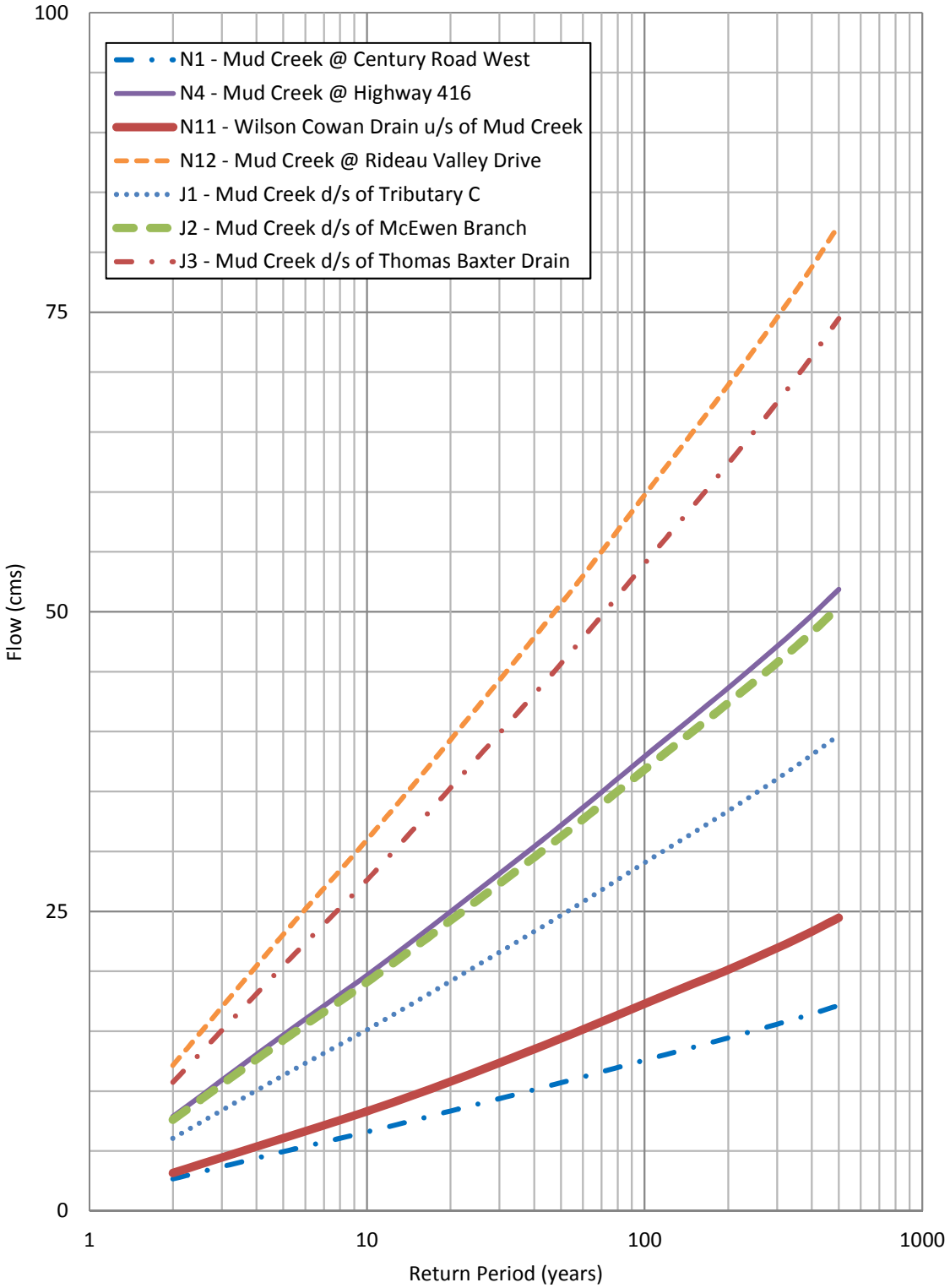


Figure 15 Comparison of estimated 1:100 year flows

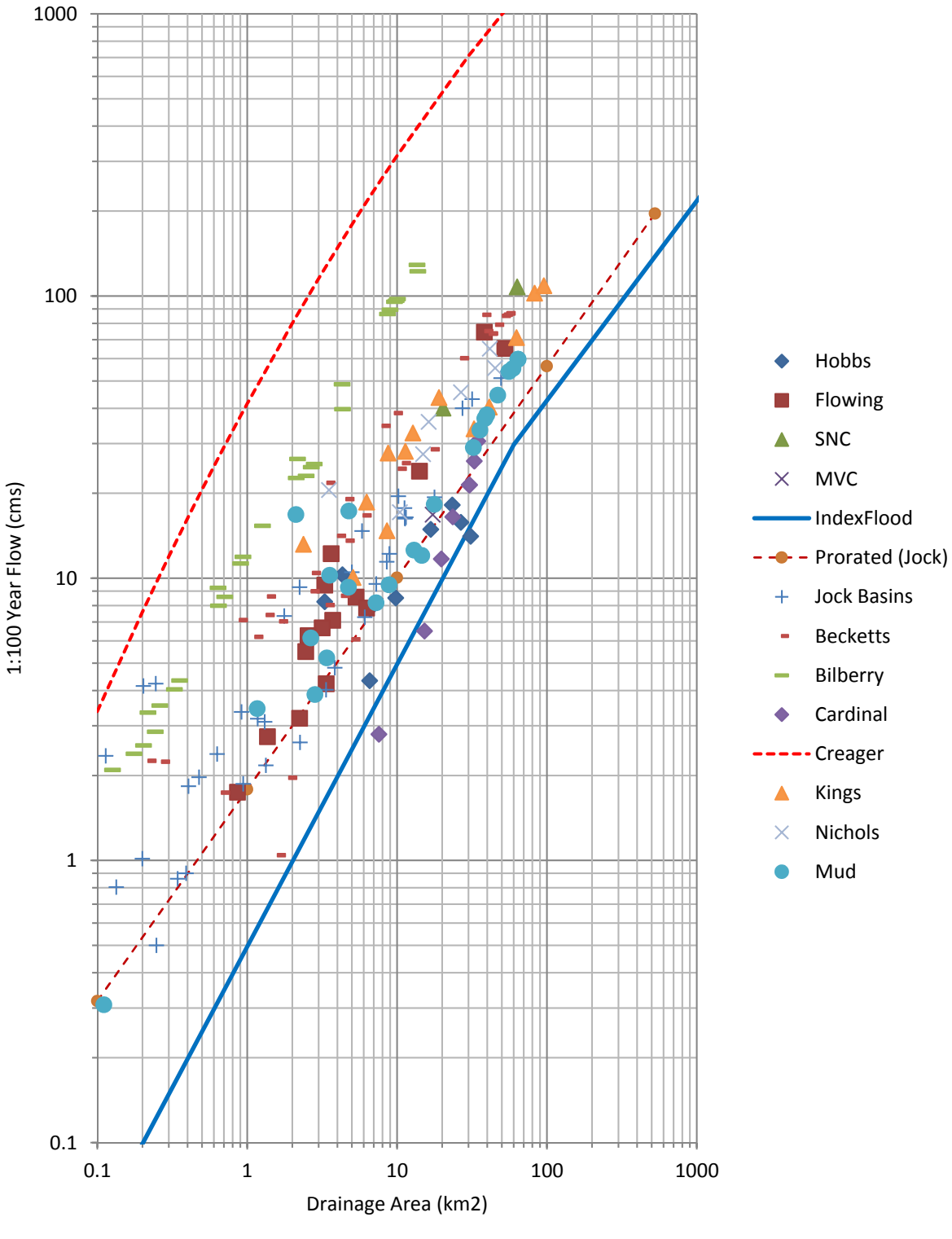
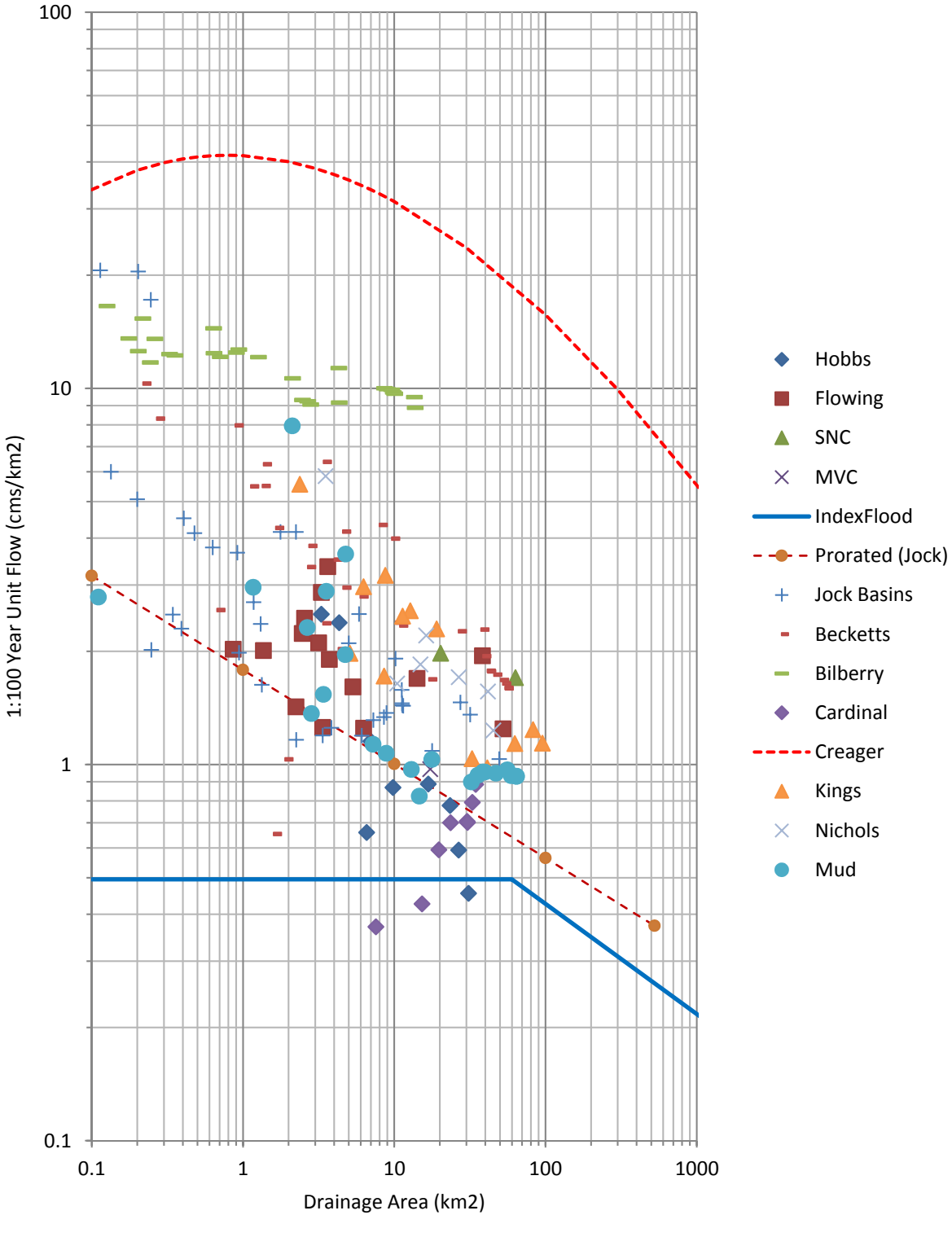


Figure 16 Comparison of 1:100 year flows per unit area



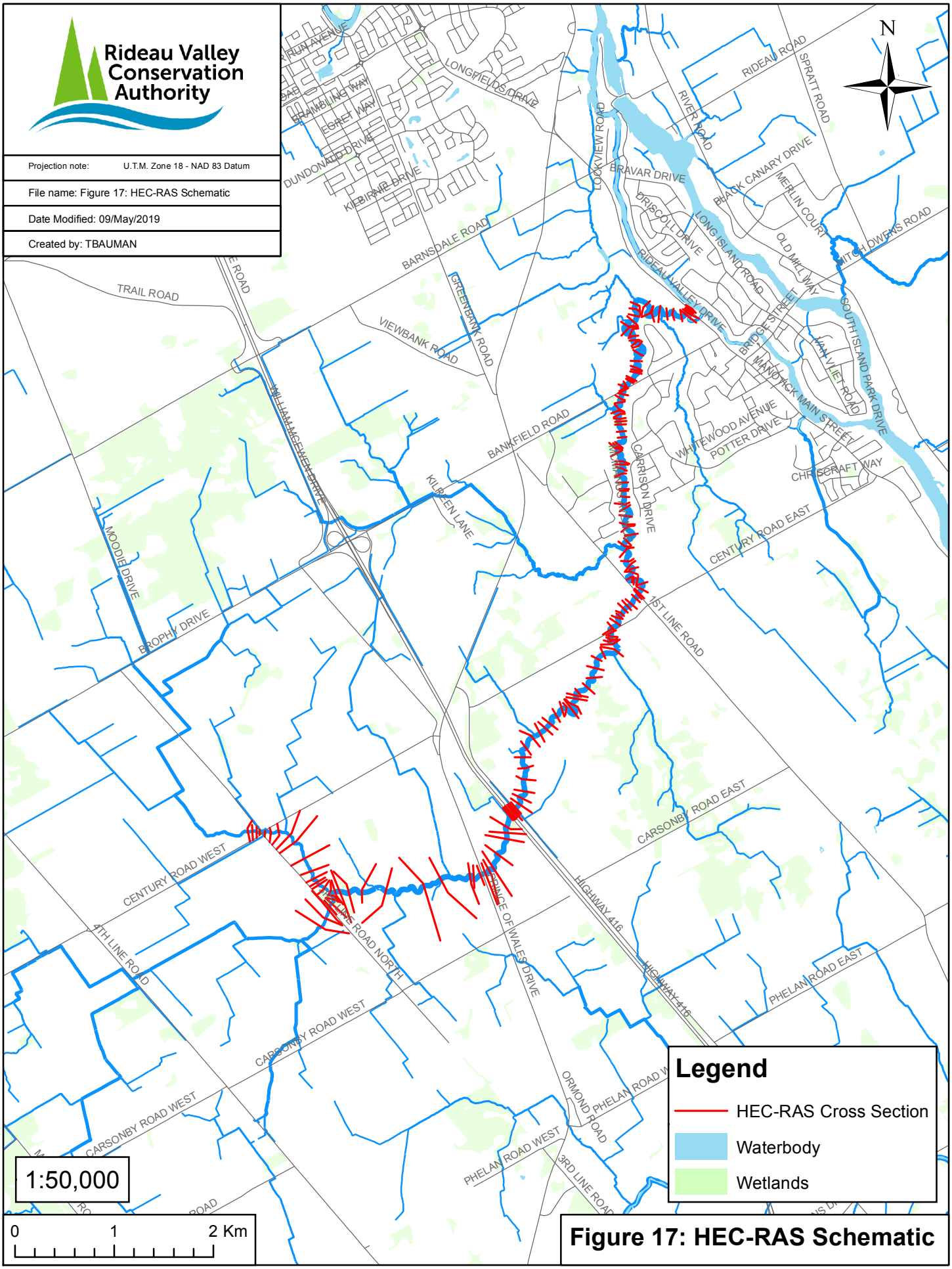

Rideau Valley Conservation Authority
Projection note: U.T.M. Zone 18 - NAD 83 Datum
File name: Figure 17: HEC-RAS Schematic
Date Modified: 09/May/2019
Created by: TBAUMAN
N
Legend
HEC-RAS Cross Section
Waterbody
Wetlands
1:50,000
0
1
2 Km
Figure 17: HEC-RAS Schematic

Figure 18a Sensitivity analysis of the computed water level for the design flow (Mud Creek)

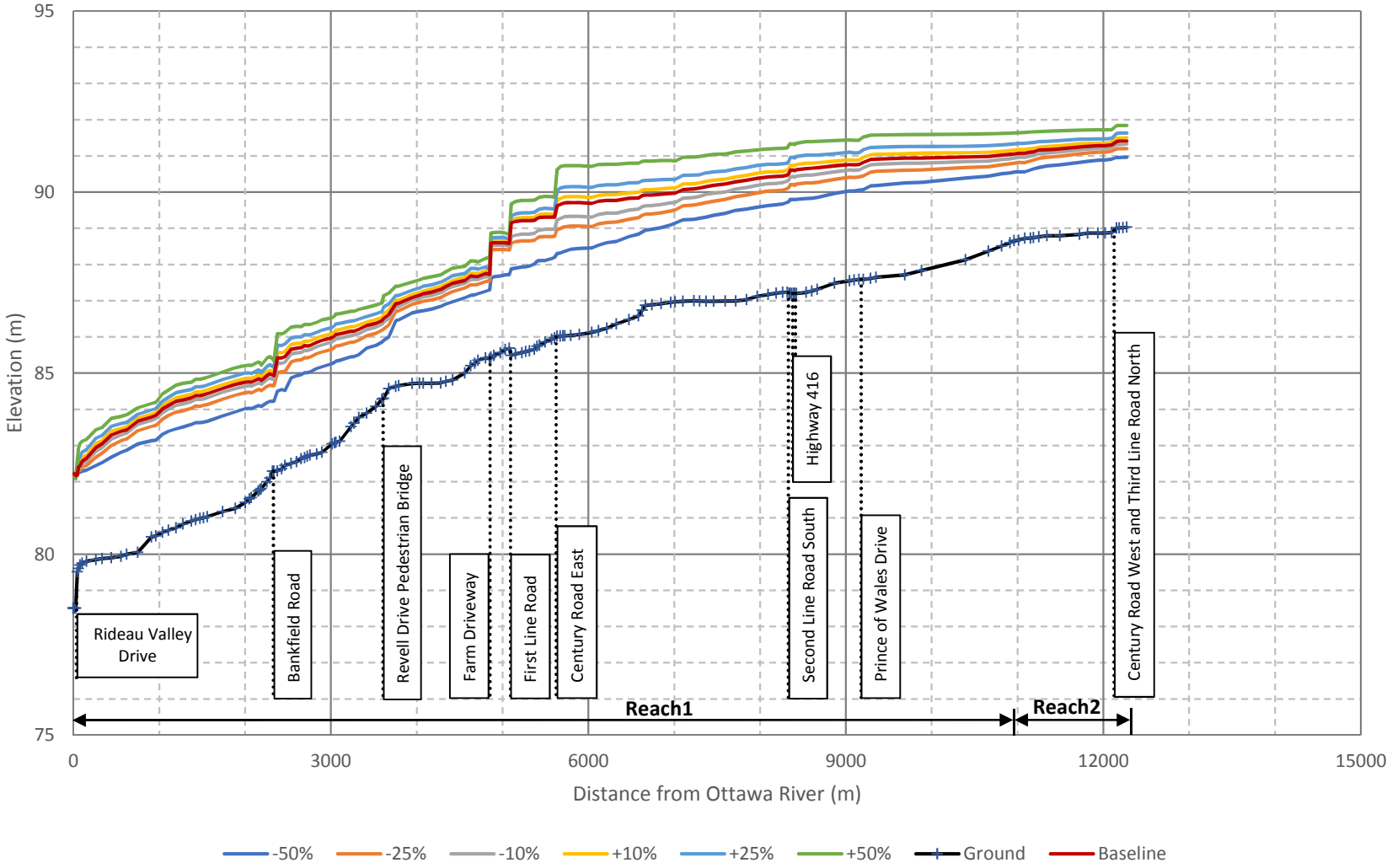


Figure 18b Sensitivity analysis of the computed water level for the design flow (Tributary C)

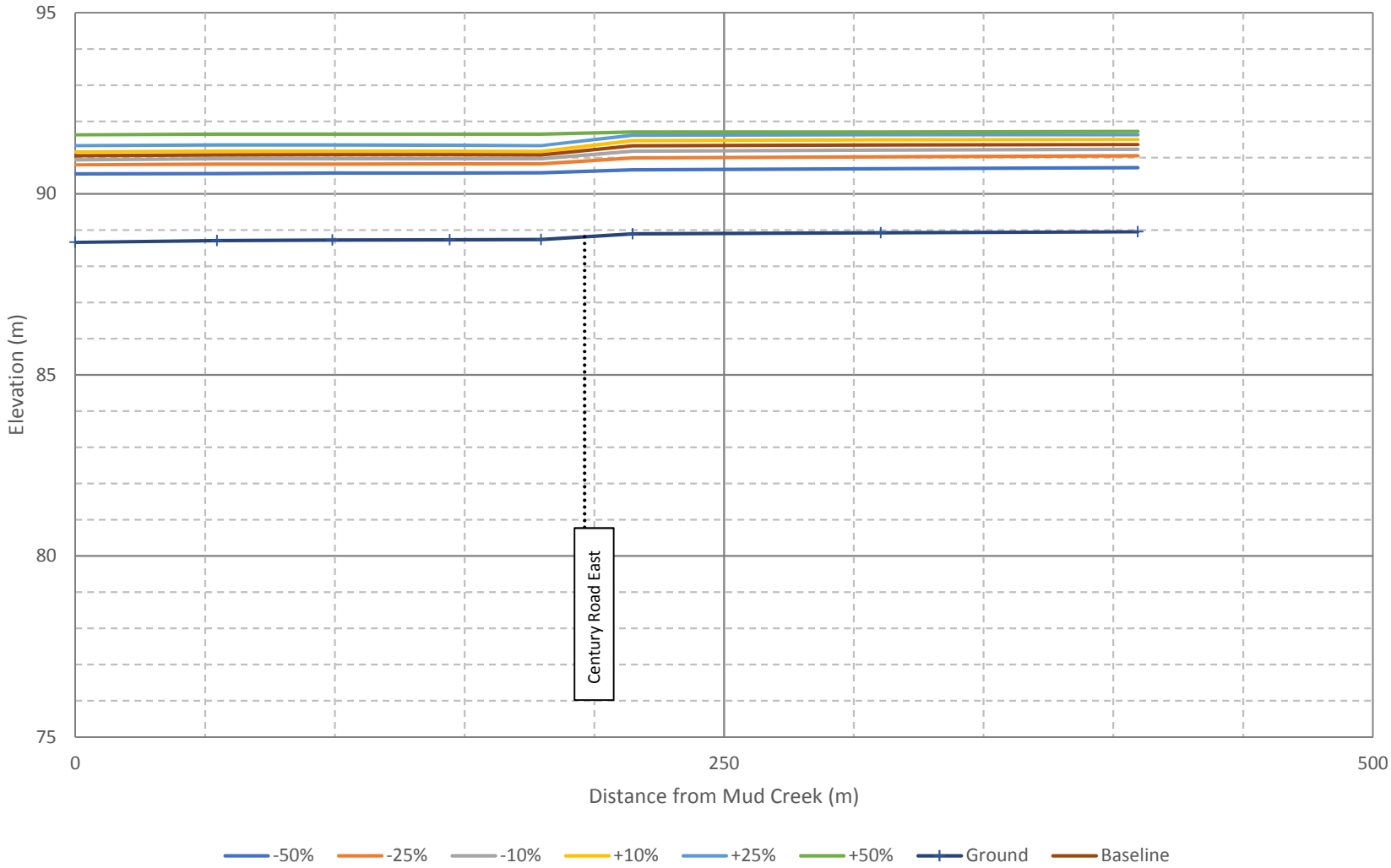


Figure 19a Sensitivity analysis of water level differences (Mud Creek)

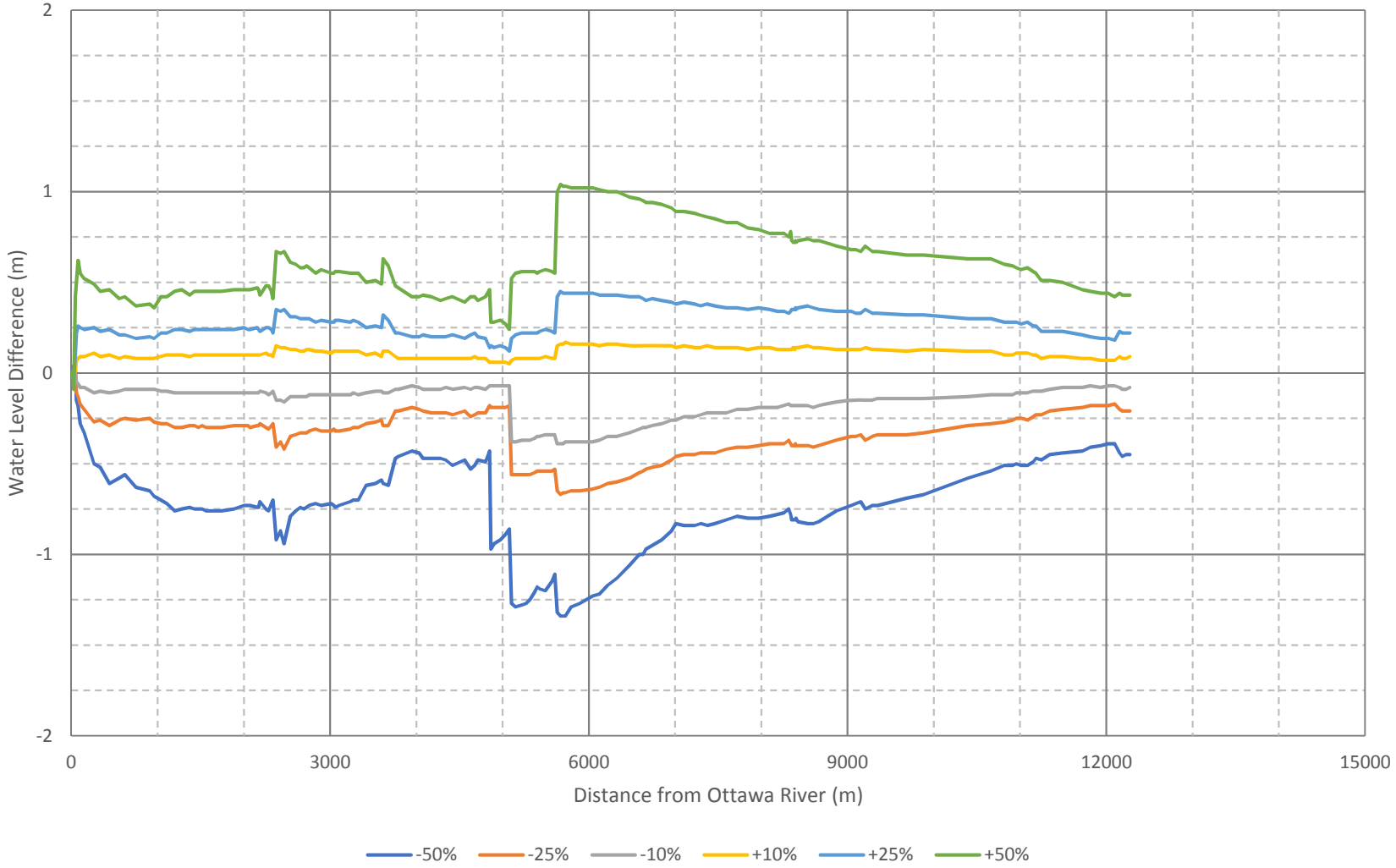


Figure 19b Sensitivity analysis of water level differences (Tributary C)

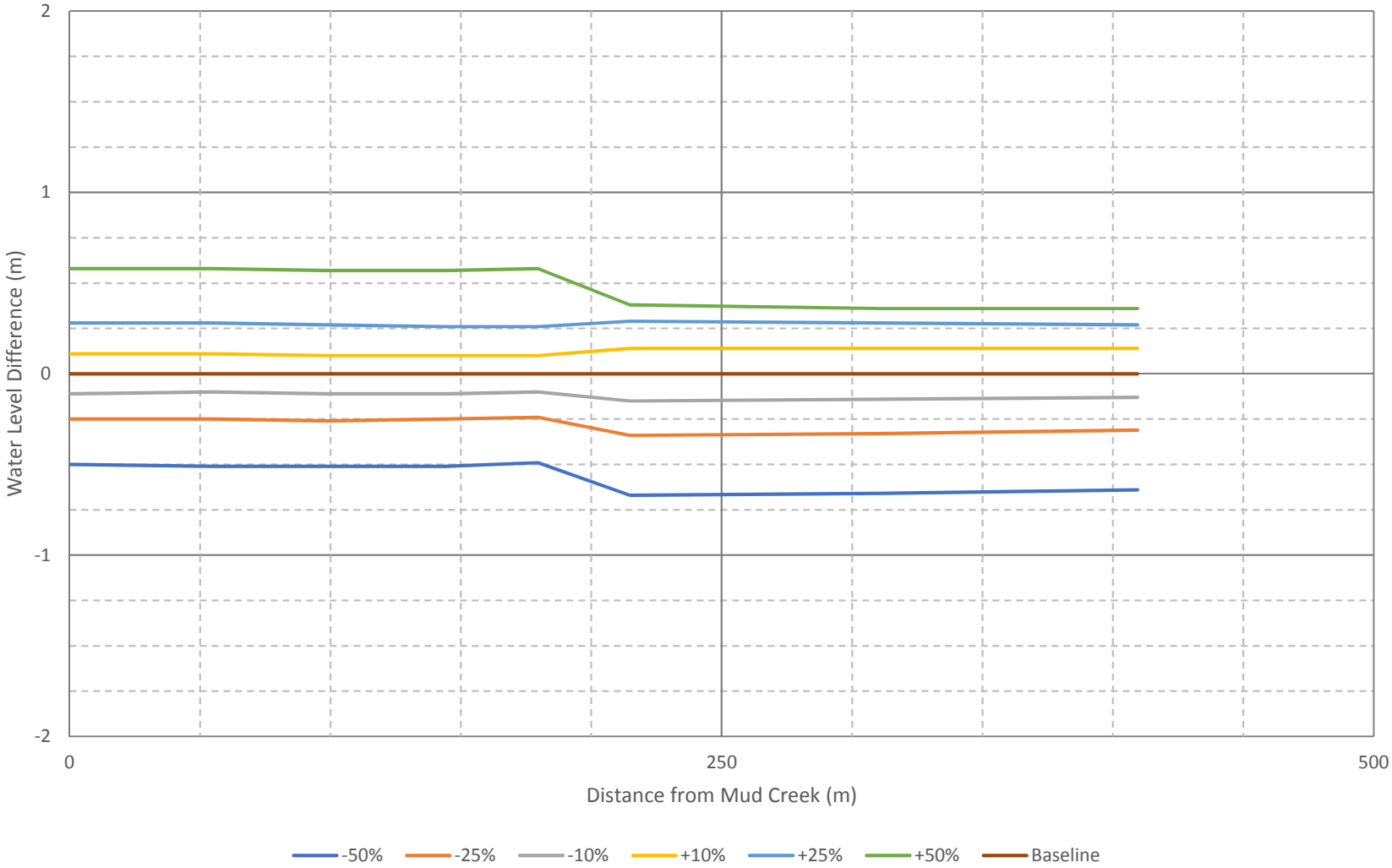


Figure 20 Selection of Boundary Condition for Mud Creek

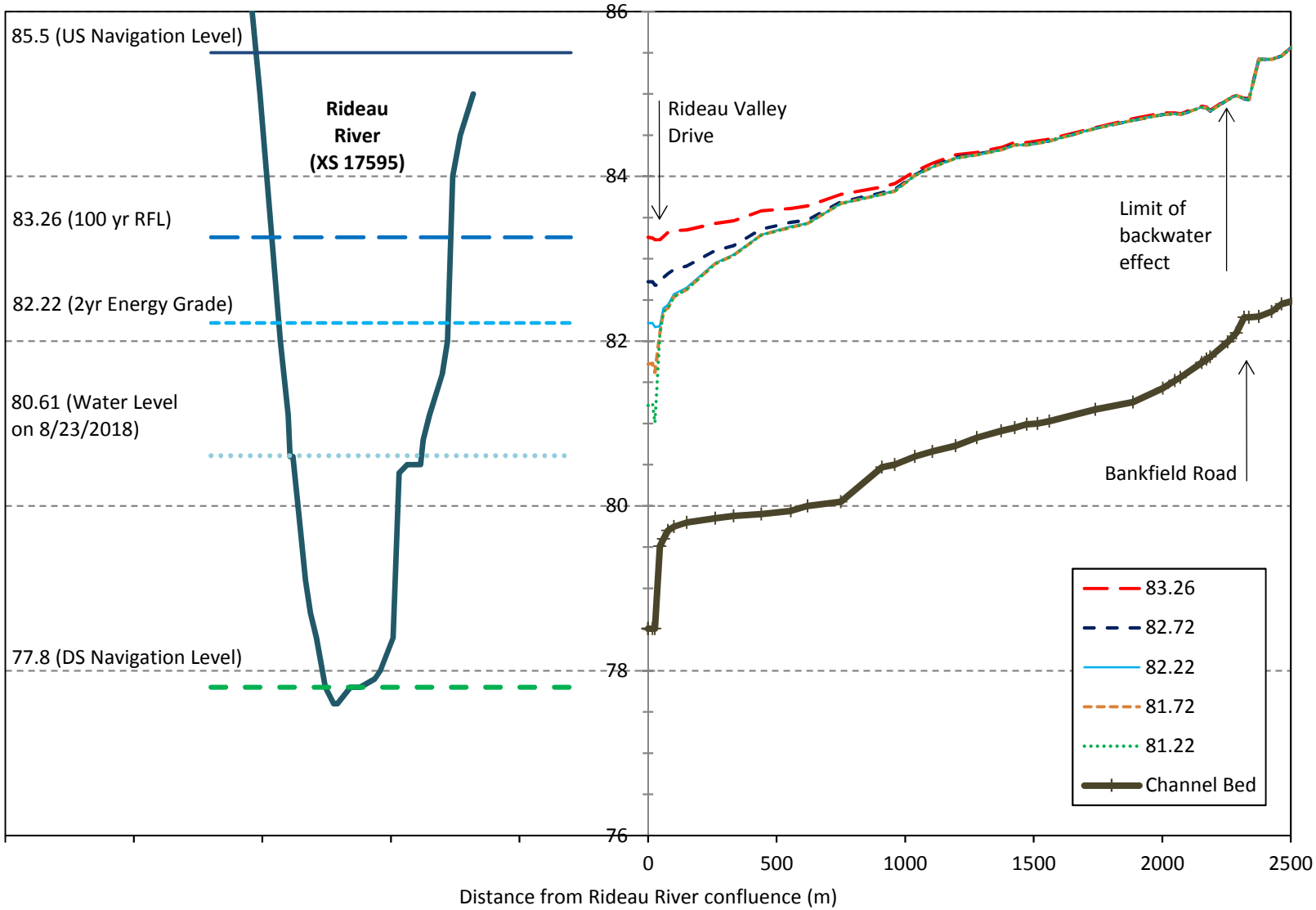


Table 1 Land use breakdown in the Mud Basin

		Catchment	M1		M2		*M3*		M4		M5		M6		*M7*	
	Code	Land use description	Area (km^2)	%	Area (km^2)	%	Area (km^2)	%	Area (km^2)	%	Area (km2)	%	Area (km2)	%	Area (km2)	%
1	R1	Single -detached residential	0.30	*2.30*	0.22	*4.64*	0.13	*3.85*	0.12	*10.11*	0.83	*11.53*	1.12	*31.57*	0.02	*22.54*
2	R1-L	Linked Single	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
3	R2	Semi -detached residential	0.00	*0.00*	0.00	*0.00*	0.00	*0.06*	0.00	*0.00*	0.01	*0.17*	0.00	*0.00*	0.00	*0.00*
4	R3	Row and townhouse	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
5	R3-S	Stacked townhouse	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
6	R4-X	Duplex, triplex, single dwelling with apartment unit	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
7	R4	Apartment	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
8	R5	Mobile	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
9	C1	Regional shopping center	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
10	C2	Community shopping center	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.10	*2.70*	0.00	*0.00*
11	C3	Other Commercial	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.05	*4.71*	0.00	*0.00*	0.02	*0.49*	0.00	*0.00*
12	I1	Elementary school	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
13	I2	Secondary school	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
14	I3	Post-secondary school	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
15	I3-r	Student campus residences	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
16	I4	Hospital, rehabilitation, nursing home	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
17	I5	Other Institution	0.00	*0.00*	0.04	*0.77*	0.00	*0.00*	0.00	*0.40*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
18	M1	Industrial	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.02*	0.00	*0.00*	0.08	*2.13*	0.02	*14.42*
19	M2	Industrial mall-condo	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
20	TR	Transportation	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
21	UT	Utility	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
22	COMM	Communications	0.06	*0.48*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.16	*2.24*	0.00	*0.00*	0.00	*0.00*
23	OF	Office	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.01	*1.27*	0.00	*0.00*	0.00	*0.00*	0.00	*1.83*
24	RE-A	Active recreation	0.00	*0.00*	0.00	*0.07*	0.29	*8.67*	0.00	*0.32*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
25	RE-A-s	Active recreation on school property	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
26	RE-P	Passive Recreation	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.03	*0.41*	0.08	*2.16*	0.00	*0.00*
27	RE-P-s	Passive recreation on school property	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
28	OS	Open space	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.05	*4.03*	0.10	*1.33*	0.00	*0.05*	0.00	*0.00*
29	ROS	Idle and shrub Land	1.01	*7.78*	0.20	*4.31*	0.09	*2.53*	0.01	*1.26*	0.39	*5.45*	0.21	*6.03*	0.02	*14.70*
30	AG	Agriculture	6.42	*49.50*	3.83	*80.84*	2.54	*74.67*	0.68	*58.62*	2.97	*41.03*	1.21	*33.95*	0.01	*13.02*
31	V1	Vacant Land	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
32	V2	Vacant building	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
33	FT	Forest	2.38	*18.34*	0.34	*7.11*	0.29	*8.55*	0.14	*11.76*	2.32	*32.13*	0.26	*7.40*	0.03	*26.51*
34	ST	Street	0.35	*2.68*	0.11	*2.25*	0.05	*1.58*	0.09	*7.49*	0.27	*3.67*	0.27	*7.54*	0.01	*6.98*
35	QS	Quarry	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.02	*0.27*	0.00	*0.00*	0.00	*0.00*
36	WL	Wetland	0.04	*0.34*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.04	*0.60*	0.00	*0.00*	0.00	*0.00*
37	WL-FT	Wetland	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
38	WATER	Water	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
39	IW	Water	0.00	*0.00*	0.00	*0.00*	0.00	*0.10*	0.00	*0.00*	0.04	*0.50*	0.00	*0.00*	0.00	*0.00*
40	SUB	Future Subdivision Development	2.41	*18.57*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.05	*0.66*	0.21	*5.95*	0.00	*0.00*
		Total	12.97	*100*	4.74	*100*	3.40	*100*	1.17	*100*	7.24	*100*	3.55	*100*	0.11	*100*

Note: Land use is based on City of Ottawa parcels which conform to the projected land use zoning according to the Official Plan of 2003, updated to Official Plan Amendment #214 in 2018.

Table 1 Land use breakdown in the Mud Basin (continued)

		Catchment	WC1		WC2		TA1		TB1		TC1		Entire Mud	
	Code	Land use description	Area (km2)	%	Area (km^2)	%	Area (km^2)	%	Area (km^2)	%	Area (km^2)	%	Area (km^2)	%
1	R1	Single -detached residential	0.19	*6.99*	0.85	*40.22*	0.39	*4.38*	0.45	*15.80*	0.79	*5.40*	5.41	*8.42*
2	R1-L	Linked Single	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
3	R2	Semi -detached residential	0.00	*0.00*	0.10	*4.71*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.11	*0.18*
4	R3	Row and townhouse	0.00	*0.00*	0.03	*1.61*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.03	*0.05*
5	R3-S	Stacked townhouse	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
6	R4-X	Duplex, triplex, single dwelling with apartment unit	0.00	*0.07*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
7	R4	Apartment	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
8	R5	Mobile	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
9	C1	Regional shopping center	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
10	C2	Community shopping center	0.00	*0.00*	0.00	*0.00*	0.00	*0.02*	0.00	*0.00*	0.00	*0.00*	0.10	*0.15*
11	C3	Other Commercial	0.00	*0.09*	0.00	*0.00*	0.02	*0.21*	0.00	*0.00*	0.00	*0.02*	0.10	*0.15*
12	I1	Elementary school	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
13	I2	Secondary school	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
14	I3	Post-secondary school	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
15	I3-r	Student campus residences	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
16	I4	Hospital, rehabilitation, nursing home	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
17	I5	Other Institution	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.04	*0.06*
18	M1	Industrial	0.02	*0.60*	0.00	*0.00*	0.06	*0.73*	0.00	*0.00*	0.03	*0.21*	0.20	*0.32*
19	M2	Industrial mall-condo	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
20	TR	Transportation	0.00	*0.00*	0.00	*0.00*	0.00	*0.04*	0.00	*0.00*	0.00	*0.00*	0.00	*0.01*
21	UT	Utility	0.00	*0.00*	0.00	*0.00*	0.00	*0.04*	0.00	*0.00*	0.00	*0.00*	0.00	*0.01*
22	COMM	Communications	0.00	*0.00*	0.00	*0.00*	0.02	*0.20*	0.01	*0.43*	0.00	*0.00*	0.25	*0.40*
23	OF	Office	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.02	*0.03*
24	RE-A	Active recreation	0.00	*0.04*	0.00	*0.20*	0.00	*0.00*	0.34	*11.84*	0.02	*0.14*	0.66	*1.03*
25	RE-A-s	Active recreation on school property	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
26	RE-P	Passive Recreation	0.00	*0.00*	0.16	*7.41*	0.00	*0.02*	0.00	*0.00*	0.00	*0.00*	0.26	*0.41*
27	RE-P-s	Passive recreation on school property	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
28	OS	Open space	0.00	*0.17*	0.00	*0.17*	0.32	*3.59*	0.15	*5.42*	0.00	*0.00*	0.62	*0.97*
29	ROS	Idle and shrub Land	0.03	*1.00*	0.01	*0.31*	0.56	*6.35*	0.38	*13.27*	0.43	*2.94*	3.34	*5.20*
30	AG	Agriculture	2.25	*84.83*	0.21	*10.07*	4.59	*51.85*	1.10	*38.80*	10.65	*72.80*	36.46	*56.75*
31	V1	Vacant Land	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
32	V2	Vacant building	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
33	FT	Forest	0.10	*3.92*	0.24	*11.28*	1.48	*16.76*	0.24	*8.35*	2.25	*15.40*	10.07	*15.68*
34	ST	Street	0.06	*2.26*	0.26	*12.08*	0.45	*5.04*	0.17	*6.08*	0.45	*3.08*	2.52	*3.92*
35	QS	Quarry	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.02	*0.03*
36	WL	Wetland	0.00	*0.00*	0.00	*0.00*	0.03	*0.30*	0.00	*0.00*	0.00	*0.00*	0.11	*0.18*
37	WL-FT	Wetland	0.00	*0.00*	0.00	*0.00*	0.00	*0.03*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*
38	WATER	Water	0.00	*0.00*	0.00	*0.19*	0.00	*0.00*	0.00	*0.00*	0.00	*0.00*	0.00	*0.01*
39	IW	Water	0.00	*0.00*	0.00	*0.00*	0.00	*0.01*	0.00	*0.00*	0.00	*0.01*	0.04	*0.07*
40	SUB	Future Subdivision Development	0.00	*0.00*	0.25	*11.76*	0.92	*10.44*	0.00	*0.00*	0.00	*0.00*	3.84	*5.97*
		Total	2.66	*100*	2.11	*100*	8.84	*100*	2.83	*100*	14.63	*100*	64.24	*100*

Note: Land use is based on City of Ottawa parcels which conform to the projected land use zoning according to the Official Plan of 2003, updated to Official Plan Amendment #214 in 2018.

Table 2a Hydrological Soil Groups in Mud Basin

		Soil Group area (km^2)					as percent (%) of catchment area				
Catchment	Area (km^2)	A	B	C	D	Unclassified	A	B	C	D	Unclassified
M1	12.97	1.04	1.33	3.74	5.90	0.96	8.03	10.22	28.84	45.52	7.39
M2	4.74	0.00	1.22	0.04	3.48	0.00	0.00	25.77	0.82	73.41	0.00
M3	3.40	0.00	1.00	0.33	2.07	0.00	0.00	29.45	9.59	60.96	0.00
M4	1.17	0.00	0.30	0.01	0.80	0.06	0.00	26.02	0.47	68.26	5.25
M5	7.24	1.25	1.52	0.63	3.05	0.79	17.31	21.05	8.64	42.09	10.91
M6	3.55	0.24	0.12	0.71	2.08	0.40	6.64	3.28	19.92	58.76	11.40
M7	0.11	0.00	0.00	0.09	0.00	0.02	0.00	0.00	80.71	0.00	19.29
WC1	2.66	0.79	0.06	0.00	1.79	0.02	29.64	2.41	0.00	67.32	0.64
WC2	2.11	0.00	0.31	0.02	1.60	0.19	0.00	14.86	0.75	75.56	8.82
TA1	8.84	1.54	0.70	5.57	0.57	0.46	17.41	7.96	63.00	6.44	5.19
TB1	2.83	0.00	1.10	0.89	0.84	0.00	0.00	38.84	31.53	29.63	0.00
TC1	14.63	0.08	8.22	0.22	6.11	0.00	0.51	56.21	1.49	41.79	0.00
Entire Mud	64.24	4.93	15.89	12.23	28.29	2.90	7.68	24.74	19.04	44.03	4.51

Note: Based on MNRF's LIO (Land Information System) database and documentation by MNR (2012)

Note: Unclassified soils were treated as HSG A. This was guided by an inspection of Figure 3a, where unclassified soils are generally surrounded by HSG A. These areas are known to coincide with past and present aggregate activities on the Kars Esker, a groundwater recharge feature with high permeability (see Figure 3b).

Table 2b Permeability in Mud Basin

		Permeability area (km^2)				as percent (%) of catchment area			
Catchment	Area (km^2)	High	Low-medium	Variable	Low	High	Low-medium	Variable	Low
M1	12.97	5.18	1.12	0.00	6.66	39.98	8.65	0.00	51.38
M2	4.74	0.08	1.43	0.00	3.22	1.76	30.23	0.00	68.00
M3	3.40	0.00	1.07	0.00	2.33	0.00	31.58	0.00	68.42
M4	1.17	0.00	0.24	0.00	0.93	0.00	20.35	0.00	79.65
M5	7.24	4.53	1.03	0.00	1.68	62.54	14.27	0.00	23.19
M6	3.55	0.38	0.20	0.00	2.96	10.78	5.76	0.00	83.45
M7	0.11	0.00	0.00	0.00	0.11	0.00	0.00	0.00	100.00
WC1	2.66	0.78	0.19	0.00	1.68	29.47	7.28	0.00	63.24
WC2	2.11	0.00	0.40	0.00	1.71	0.15	19.07	0.00	80.77
TA1	8.84	4.87	0.72	0.00	3.25	55.09	8.17	0.00	36.73
TB1	2.83	0.02	1.01	0.00	1.80	0.82	35.79	0.00	63.39
TC1	14.63	1.80	9.54	0.00	3.29	12.30	65.21	0.00	22.49
Entire Mud	64.24	17.66	16.97	0.00	29.61	27.49	26.42	0.00	46.09

Note: Based on Ontario Geological Survey surficial geology layer (OGS 2010)

Table 3a Estimated watershed parameters (Mud Creek)

Catchment	Area (km^2)	Imperviousness (%)	CN [1]	CN* [2]	IA (mm)	Channel Slope (%)	Channel Length (m)	Tc [3] (hr)	Tp [4] (hr)
M1	12.97	13.3	78.8	70.7	5.26	0.14	5400	14.18	8.51
M2	4.74	1.1	80.5	73.1	4.68	0.25	1150	6.18	3.71
M3	3.40	1.1	79.4	71.5	5.06	0.10	1400	8.02	4.81
M4	1.17	7.0	81.0	73.8	4.50	0.06	1170	3.71	2.23
M5	7.24	2.1	70.3	58.9	8.88	0.14	4040	7.39	4.43
M6	3.55	16.3	78.3	70.0	5.44	0.14	3980	3.35	2.01
M7	0.11	18.0	70.8	59.6	8.62	0.09	330	2.29	1.38
WC1	2.66	2.0	77.1	68.3	5.90	0.13	2240	4.19	2.52
WC2	2.11	24.2	80.3	72.8	4.74	0.23	3280	3.58	2.15
TA1	8.84	9.3	75.5	65.9	6.56	0.26	5460	10.45	6.27
TB1	2.83	3.8	75.0	65.3	6.74	0.13	4310	7.45	4.47
TC1	14.63	1.4	76.5	67.4	6.15	0.12	7220	15.67	9.40
Entire Mud	64.24	6.7	76.8	67.9	6.07	0.14	17470	---	---

1) Calculated from land use and TR-55 Curve Number tables (Urban Hydrology for Small Watersheds by USDA-SCS, 1986)

2) Calculated based on equation $CN^*=100/(1.879((100/CN)-1)^{1.15}+1)$ (Curve Number Hydrology by Hawkins et al., 2009)

3) Calculated based on the velocity method (National engineering handbook Chapter 15 by USDA-NRCS, 2010)

4) Calculated based on $t_p = 0.6 \times t_c$

Table 3b SWMHYMO parameters for urban catchments (Mud Creek)

Parameter	SWMHYMO Catchment ID											
	M1	M2	M3	M4	M5	M6	M7	WC1	WC2	TA1	TB1	TC1
AREA (ha)	1296.6	474.1	339.8	116.7	723.6	354.8	11.0	265.5	211.4	884.5	283.3	1462.6
TIMP	0.133	0.011	0.011	0.070	0.021	0.163	0.180	0.020	0.242	0.093	0.038	0.014
XIMP	0.106	0.009	0.009	0.056	0.017	0.131	0.144	0.016	0.194	0.074	0.030	0.011
LOSS	2	2	2	2	2	2	2	2	2	2	2	2
CN	70.7	73.1	71.5	73.8	58.9	70.0	59.6	68.3	72.8	65.9	65.3	67.4
Pervious surface												
IAper (mm)	5.26	4.68	5.06	4.50	8.88	5.44	8.62	5.90	4.74	6.56	6.74	6.15
SLPP (%)	2	2	2	2	2	2	2	2	2	2	2	2
LGP (m)	90	90	90	90	90	90	90	90	90	90	90	90
MNP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
SCP (min)	0	0	0	0	0	0	0	0	0	0	0	0
Impervious surface												
IAimp (mm)	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
SLPI (%)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
LGI (m)	2940	1778	1505	882	2196	1538	271	1331	1187	2428	1374	3123
MNI	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
SCI (min)	0	0	0	0	0	0	0	0	0	0	0	0

Parameter	Description
AREA (ha)	Catchment area. Calculated based on topography.
TIMP	Ratio of total impervious area to catchment area. Calculated based on bulding footprint, roads, and the projected land use.
XIMP	Ratio of directly connected impervious area to catchment area. Usually taken as 80% of TIMP as per the SWMHYMO Maunal (2000). This value is typical in the City of Ottawa and widely used by others (SNCA 2014, JFSA 2014)
LOSS	A pointer used to select the procedure to be used to calculate the losses over pervious surface. Optoins are: 1= Horton infiltration equation; 2= SCS CN procedure; 3= proportional loss coeffient). We used option 2, which ties well with the overall CN-based calculation.
CN	Curve number. Calculated based on land use and soil types.
Pervious surface	
IAper (mm)	Initial abstraction for pervious surface. Typical value selected as per the City of Ottawa Sewer Design Guideline (2012).
SLPP (%)	Average pervious surface slope over which runoff travels. The values of SLPP usually represents the value of an average lot in rural subdivisions. This value is typical in the City of Ottawa and widely used by others (SNCA 2014, JFSA 2014).
LGP (m)	The average lot depth which surface water has to travel before it reaches the street or the sewer system. Typical taken as the slope of lots in rural subdivisions. This value is typical in the City of Ottawa and widely used by others (SNCA 2014, JFSA 2014).
MNP	The representative roughness coefficient of the pervious surface over which water travels before reaching the street or the sewer system. Value selected is typical for SWMHYMO to represent sheet flow over a residential lot, as lidentified by the SWMHYMO Manual (2000).
SCP (min)	The storage coefficient for the linear reservoir of the pervious portion of the area. When set to '0', the model will compute the value of SCP based on the values of LGP, MNP, SLPP and maximum effective rainfall intensity over the pervious area/ SWMHYMO Manual (2000).
Impervious surface	
IAimp (mm)	Initial abstraction for impervious surface. Typical value selected as per the City of Ottawa Sewer Design Guideline (2012).
SLPI (%)	Average impervious surface slope over which runoff travels. The values of SLPI usually represents the slope of conveyance pipes. This value is typical in the City of Ottawa and widely used by others (SNCA 2014, JFSA 2014).
LGI (m)	The drainage area's average representative overflow travel length of the main conveyance system which usually includes sewer pipes and roadside ditches. Calculated as (AREA/CLI)^(0.5); CLI = 1.5; as per SWMHYMO Manual (2000).
MNI	The average roughness coefficient of the impervious surface over which water travels. Values are a weighted average for typical road and ditch systems in the City of Ottawa. Typical taken as the slope of lots in rural subdivisions. This value is typical in the City of Ottawa and widely used by others (SNCA 2014, JFSA 2014).
SCI (min)	The storage coefficient for the linear reservoir of the impervious portion of the area. When set to '0', the model will compute the value of SCI based on the values of LGI, MNI, SLPI and maximum effective rainfall intensity as per SWMHYMO Manual (2000). No other option is available.

Table 4 Curve number for different land use and soil groups

	City of Ottawa Land Use [1]		Corresponding TR-55 land cover category [2]		Assigned Curve Number (CN)			
			Cover description		Soil group			
	LU_2010 code	Land use description	Cover type	Hydrologic condition	A	B	C	D
1	R1	Single -detached residential	Residential district (average lot size 2 acres)	N/A	46	65	77	82
2	R1-L	Linked Single	Residential district (average lot size 2 acres)	N/A	46	65	77	82
3	R2	Semi -detached residential	Residential district (average lot size 1/4 acre)	N/A	61	75	83	87
4	R3	Row and townhouse	Residential district (average lot size 1/8 acre or less (townhouse))	N/A	77	85	90	92
5	R3-S	Stacked townhouse	Residential district (average lot size 1/8 acre or less (townhouse))	N/A	77	85	90	92
6	R4-X	Duplex, triplex, single dwelling with apartment unit	Residential district (average lot size 1/4 acre)	N/A	61	75	83	87
7	R4	Apartment	Residential district (average lot size 1 acre)	N/A	51	68	79	84
8	R5	Mobile	Residential district (average lot size 1/8 acre or less (townhouse))	N/A	77	85	90	92
9	C1	Regional shopping center	Commercial and business	N/A	89	92	94	95
10	C2	Community shopping center	Commercial and business	N/A	89	92	94	95
11	C3	Other Commercial	Commercial and business	N/A	89	92	94	95
12	I1	Elementary school	Commercial and business	N/A	89	92	94	95
13	I2	Secondary school	Commercial and business	N/A	89	92	94	95
14	I3	Post-secondary school	Commercial and business	N/A	89	92	94	95
15	I3-r	Student campus residences	Commercial and business	N/A	89	92	94	95
16	I4	Hospital, rehabilitation, nursing home	Commercial and business	N/A	89	92	94	95
17	I5	Other Institution	Commercial and business	N/A	89	92	94	95
18	M1	Industrial	Industrial	N/A	81	88	91	93
19	M2	Industrial mall-condo	Industrial	N/A	81	88	91	93
20	TR	Transportation	Paved Parking lots, roofs, driveways. Etc (excluding right of way)	N/A	98	98	98	98
21	UT	Utility	Industrial	N/A	81	88	91	93
22	COMM	Communications	Industrial	N/A	81	88	91	93
23	OF	Office	Industrial	N/A	81	88	91	93
24	RE-A	Active recreation	Open space (lawns, parks, golf courses, cemeteries, etc)	Good condition (grass cover >75%)	39	61	74	80
25	RE-A-s	Active recreation on school property	Open space (lawns, parks, golf courses, cemeteries, etc)	Good condition (grass cover >75%)	39	61	74	80
26	RE-P	Passive Recreation	Open space (lawns, parks, golf courses, cemeteries, etc)	Fair condition (Grass cover 50% to 75%)	49	69	79	84
27	RE-P-s	Passive recreation on school property	Open space (lawns, parks, golf courses, cemeteries, etc)	Fair condition (Grass cover 50% to 75%)	49	69	79	84
28	OS	Open space	Open space (lawns, parks, golf courses, cemeteries, etc)	Fair condition (Grass cover 50% to 75%)	49	69	79	84
29	ROS	Idle and shrub Land	Brush--brush weed grass mixture with brush the major element	Good (>75% ground cover)	30	48	65	73
30	AG	Agriculture	Row Crops	Good	64	75	82	85
31	V1	Vacant Land	Brush--brush weed grass mixture with brush the major element	Good (>75% ground cover)	30	48	65	73
32	V2	Vacant building	Residential district (average lot size 1/8 acre or less (townhouse))	N/A	77	85	90	92
33	FT	Forest	Wood	Good	30	55	70	77
34	ST	Street	Streets and roads	N/A	98	98	98	98
35	QS	Quarry	Industrial	N/A	81	88	91	93
36	WL	Wetland	N/A	N/A	98	98	98	98
37	WL-FT	Wetland	N/A	N/A	98	98	98	98
38	WATER	Water	N/A	N/A	98	98	98	98
39	IW	Water	N/A	N/A	98	98	98	98
40	SUB	Future subdivision development	Residential district (average lot size 1/8 acre or less (townhouse))	N/A	77	85	90	92

1) Land use codes based on City of Ottawa Parcels LU_2010 recived in 2015

2) Values and descriptors extracted from TR-55 "Urban Hydrology for Small Watersheds", USDA, Natural Resources Conservation Service, June 1986

Table 5 Characteristics of design storms

	Duration	Total volume	Peak intensity	Time step	Source of hyetograph shape
	(hour)	(mm)	(mm/hr)	(minutes)	
Chicago 3 hour	3	74.43	168.71	10	Generated by STORMS software
Chicago 6 hour	6	88.42	168.71	10	Generated by STORMS software
Chicago 12 hour	12	104.44	168.71	10	Generated by STORMS software
Chicago 24 hour	24	123.02	168.71	10	Generated by STORMS software
SCS 3 hour	3	74.47	80.87	30	City of Ottawa Sewer Design Guidelines 2012
SCS 6 hour	6	88.43	85.25	30	City of Ottawa Sewer Design Guidelines 2012
SCS 12 hour	12	104.44	89.40	30	City of Ottawa Sewer Design Guidelines 2012
SCS 24 hour	24	123.01	93.49	30	Generated by STORMS software

Table 6 Estimated peak flows generated by various storms

Storm	3H Chicago	6H Chicago	12H Chicago	24H Chicago	3H SCS	6H SCS	12H SCS	24H SCS
Return Period	100 year	100 year	100 year	100 year	100 year	100 year	100 year	100 year
Flow	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
Catchments								
M1	6.47	8.53	10.56	11.70	6.48	8.60	10.93	12.58
M2	5.66	6.95	7.67	8.44	5.71	7.27	8.35	9.29
M3	3.01	3.83	4.33	4.77	3.02	3.93	4.68	5.22
M4	2.25	2.54	2.81	3.10	2.31	2.75	3.09	3.45
M5	4.34	5.71	6.54	7.32	4.37	5.90	7.18	8.19
M6	6.51	7.34	8.17	9.08	6.74	8.01	9.08	10.24
M7	0.18	0.20	0.23	0.26	0.19	0.23	0.27	0.31
WC1	3.79	4.41	4.91	5.46	3.88	4.78	5.44	6.14
WC2	11.64	12.82	13.91	15.11	11.49	13.01	14.78	16.81
TA1	4.98	6.59	7.87	8.69	5.00	6.69	8.39	9.48
TB1	2.15	2.78	3.15	3.49	2.17	2.87	3.43	3.87
TC1	5.90	7.89	9.96	11.21	5.91	7.94	10.25	12.05
Nodes								
N1	6.47	8.53	10.56	11.70	6.48	8.60	10.93	12.58
N2	10.09	13.10	15.37	16.83	10.13	13.31	16.37	18.27
N3	17.84	23.42	28.24	30.98	17.90	23.70	29.68	33.48
N4	20.53	26.87	31.91	34.99	20.61	27.26	33.84	37.93
N5	23.87	31.39	37.24	40.94	23.97	31.88	39.60	44.55
N6	29.01	38.23	46.48	51.13	29.10	38.69	48.82	55.42
N7	5.90	7.89	9.96	11.21	5.91	7.94	10.25	12.05
N8	2.15	2.78	3.15	3.49	2.17	2.87	3.43	3.87
N9	4.98	6.59	7.87	8.69	5.00	6.69	8.39	9.48
N10	3.79	4.41	4.91	5.46	3.88	4.78	5.44	6.14
N11	11.74	12.94	14.08	15.37	11.64	13.20	15.07	17.30
N12	31.12	40.88	50.24	55.19	31.23	41.38	52.26	59.75
J1	15.10	19.93	24.49	26.98	15.14	20.12	25.48	29.06
J2	19.81	25.95	30.98	33.99	19.88	26.32	32.77	36.84
J3	28.84	37.97	45.11	49.62	28.95	38.57	47.99	54.02
J4	31.12	40.87	50.20	55.15	31.23	41.37	52.23	59.70

Table 7 SCS Type II 24 hour design storms for different return periods

Return Period	Total volume	Peak intensity	Time step	hyetograph generated by
(year)	(mm)	(mm/hr)	(minutes)	
2	50.48	38.08	30	STORMS software
5	70.01	53.21	30	STORMS software
10	82.57	62.75	30	STORMS software
20	95.07	72.25	30	STORMS software
50	110.92	84.3	30	STORMS software
100	123.01	93.49	30	STORMS software
200	134.57	102.27	30	STORMS software
350	144.20	109.59	30	STORMS software
500	150.84	114.64	30	STORMS software

Table 8 Estimated peak flows for SCS Type II 24 hour design storm

Storm	24 hour SCS Type II								
Return Period	2 year	5 year	10 year	20 year	50 year	100 year	200 year	350year	500 year
Flow	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)
Catchments									
M1	2.67	4.95	6.59	8.34	10.70	12.58	14.44	16.03	17.15
M2	2.01	3.70	4.91	6.19	7.91	9.29	10.64	11.79	12.59
M3	1.10	2.05	2.73	3.46	4.44	5.22	5.99	6.65	7.11
M4	0.75	1.38	1.83	2.31	2.95	3.45	3.95	4.38	4.67
M5	1.35	2.80	3.89	5.11	6.80	8.19	9.58	10.80	11.65
M6	2.08	3.93	5.27	6.72	8.67	10.24	11.79	13.12	14.05
M7	0.05	0.11	0.15	0.19	0.26	0.31	0.36	0.41	0.44
WC1	1.21	2.31	3.12	4.00	5.19	6.14	7.09	7.90	8.48
WC2	3.01	5.84	8.02	10.43	13.96	16.81	19.57	22.03	23.79
TA1	1.82	3.52	4.78	6.13	7.98	9.48	10.97	12.25	13.15
TB1	0.73	1.42	1.93	2.49	3.25	3.87	4.49	5.01	5.39
TC1	2.42	4.59	6.17	7.87	10.19	12.05	13.89	15.48	16.59
Nodes									
N1	2.67	4.95	6.59	8.34	10.70	12.58	14.44	16.03	17.15
N2	3.89	7.19	9.57	12.10	15.55	18.27	20.98	23.28	24.82
N3	6.98	13.03	17.42	22.09	28.42	33.48	38.50	42.72	45.72
N4	7.86	14.70	19.67	24.97	32.18	37.93	43.65	48.48	51.87
N5	8.91	16.95	22.84	29.18	37.70	44.55	51.40	57.24	61.33
N6	11.06	21.16	28.54	36.33	46.92	55.42	64.01	71.32	76.44
N7	2.42	4.59	6.17	7.87	10.19	12.05	13.89	15.48	16.59
N8	0.73	1.42	1.93	2.49	3.25	3.87	4.49	5.01	5.39
N9	1.82	3.52	4.78	6.13	7.98	9.48	10.97	12.25	13.15
N10	1.21	2.31	3.12	4.00	5.19	6.14	7.09	7.90	8.48
N11	3.17	6.07	8.31	10.79	14.38	17.30	20.13	22.66	24.46
N12	12.14	23.08	30.98	39.31	50.66	59.75	68.93	76.77	82.25
J1	6.06	11.31	15.12	19.17	24.67	29.06	33.38	37.11	39.71
J2	7.61	14.26	19.09	24.24	31.25	36.84	42.39	47.07	50.39
J3	10.73	20.47	27.61	35.31	45.68	54.02	62.36	69.49	74.47
J4	12.13	23.06	30.95	39.28	50.63	59.70	68.88	76.71	82.19

Table 9 Estimated flows for hydraulic modeling (HEC-RAS)

			Return Period (year)	2	5	10	20	50	100	200	350	500
Stream	Reach	Nearest Cross Section	Distance from Rideau Confluence (m)	Flow (cms)								
Mud Creek	Reach3	1790	12273	2.67	4.95	6.59	8.34	10.70	12.58	14.44	16.03	17.15
Mud Creek	Reach3	1775	12097	3.89	7.19	9.57	12.10	15.55	18.27	20.98	23.28	24.82
Mud Creek	Reach2	1725	10959	6.98	13.03	17.42	22.09	28.42	33.48	38.50	42.72	45.72
Mud Creek	Reach2	1700	9350	7.86	14.70	19.67	24.97	32.18	37.93	43.65	48.48	51.87
Mud Creek	Reach2	1660	8401	8.91	16.95	22.84	29.18	37.70	44.55	51.40	57.24	61.33
Mud Creek	Reach2	1400	4340	11.06	21.16	28.54	36.33	46.92	55.42	64.01	71.32	76.44
Mud Creek	Reach1	1135	333	12.14	23.08	30.98	39.31	50.66	59.75	68.93	76.77	82.25
Tributary C	Reach1	3125	11368	2.42	4.59	6.17	7.87	10.19	12.05	13.89	15.48	16.59

Table 10 Computed water level and energy grade at Rideau River

Return Period (years)	Water Level Cross Section 17595 (m)	Energy Grade Cross Section 17595 (m)
2	82.20	82.22
5	82.56	82.58
10	82.76	82.79
20	82.91	82.94
50	83.09	83.13
100	83.22	83.26
200	83.34	83.38
350	83.41	83.45
500	83.48	83.52

Source: RVCA (2017) Rideau River Flood Risk Mapping from Hogs Back to Kars, 17 July 2017. (https://www.rvca.ca/media/k2/attachments/RideauMappingHBtoKars.pdf)

Table 11 Structures on Mud Creek

Stream	Location	Bridge or Culvert	Chainage (m)	Bounding Cross Sections	Width[1] (m)	Height[1] (m)	Length[2] (m)	Upstream Invert[1] (m)	Downstream Invert[1] (m)	Upstream Obvert[1] (m)	Downstream Obvert[1] (m)	Source(s)
Mud Creek	Rideau Valley Drive	B	36	1105 & 1110	20.03	---	13.72	79.51	78.51	84.00	84.00	RVCA Survey May 16th 2018, and City of Ottawa drawing: Mud Creek Bridge Rehabilitation, Drawing # B11781009-003 McCormick Rankin. March 2009.
Mud Creek	Bankfield Road	B	2330	1255 & 1230	16.49	---	10.60	82.29	82.29	86.77	86.77	RVCA Survey May 16th 2018, and City of Ottawa drawing: Mud Creek Bridge Rehabilitation, Drawing # B11782007-006 McCormick Rankin. April 2008.
Mud Creek	Revell Drive Ped Bridge	B	3608	1350 & 1355	18.72	---	2.85	84.30	84.28	86.71	86.71	RVCA Survey May 16th 2018, and City of Ottawa drawing: Manotick Estates (Phase 6) Pedestrian Bridge, Drawing # S1 Trow Associates. November 2010.
Mud Creek	Farm Driveway	B	4855	1430 & 1435	5.35	---	4.43	85.44	85.40	87.94	87.97	RVCA Survey May 16th 2018 (visual dimension estimates from roadside), deck approach and stream elevations obtained from LiDAR.
Mud Creek	First Line Road	B	5092	1455 & 1460	6.10	---	9.50	85.50	85.68	88.88	88.87	RVCA Survey May 16th 2018, and City of Ottawa drawing: Mud Creek Bridge (SN 877830) Rehabilitation, Drawing # B-87783003-001 DM Wills Associates. June 2006.
Mud Creek	Century Road East	C	5624	1500 & 1505	8.84	3.28	18.40	86.02	85.97	89.30	89.25	RVCA Survey May 16th 2018.
Mud Creek	Second Line Road South	B	8331	1630 & 1635	9.20	---	9.84	87.21	87.23	91.36	91.38	RVCA Survey May 16th 2018, and City of Ottawa drawing: Bridge Replacement over Mud Creek, Drawing #63-2-2 Alex J. Graham. May 1963.
Mud Creek	HWY 416 Northbound	B	8380	1645 & 1650	16.00	---	13.50	87.20	87.20	91.70	91.70	Ministry of Transportation drawings: Mud Creek Bridge, 3-358-1-52,-57 McNeely Engineering & Structures. September 1982. Mud Creek Pavement and Deck Rehab Hwy 416, Drawing #3-358.1-1. July 2015.
Mud Creek	HWY 416 Southbound	B	8413	1660 & 1665	17.51	---	12.96	87.20	87.20	91.95	91.95	Ministry of Transportation drawing: Mud Creek Hwy 416 Southbound Lanes, Drawing #3-358.2-175, -180 UMA Engineering. April 1996.
Mud Creek	Prince of Wales Drive	B	9178	1690 & 1695	17.14	---	14.03	87.59	87.59	91.68	91.68	RVCA Survey May 16th 2018, and City of Ottawa drawing: Mud Creek Bridge (SN 877830) Rehabilitation, Drawing # B-87783003-001 DM Wills Associates. June 2006.
Mud Creek	Century Road West	C	12126	1775 & 1780	4.51	2.70	41.40	89.01	88.88	91.71	91.58	RVCA Survey May 16th 2018, and City of Ottawa drawing: Mud Creek Culvert Extension, Drawing # B-778701-1, -2 M.M. Dillon Limited. September 1965.
Tributary B	Third Line Road North	C	11244	3110 & 3115	3.83	2.70	18.90	88.77	88.62	91.47	91.32	RVCA Survey May 16th 2018, and City of Ottawa drawing: Third Line Road North O/P Mud Creek (SN. 877880), Drawing # 04 McIntosh Perry. March 2010.

1) RVCA Surveys 2018 as well as design drawings
2) From DRAPE imagery as well as GPS coordinates from RVCA Survey 2018

Table 12 Calculated head loss at road crossings (during 1:100 Year flood)

Stream	Location	Chainage (m)	Bounding Cross Sections	Upstream Energy Grade (m)	Downstream Energy Grade (m)	Head Loss (cm)	Road Overtopped
Mud Creek	Rideau Valley Drive	36	1105 & 1110	82.52	82.37	15	No
Mud Creek	Bankfield Road	2330	1255 & 1260	85.32	85.19	13	No
Mud Creek	Revell Drive Pedestrian Bridge	3608	1350 & 1355	86.64	86.58	6	No
Mud Creek	Farm Driveway	4855	1430 & 1435	88.60	88.14	46	Yes
Mud Creek	First Line Road	5092	1455 & 1460	89.20	88.72	48	No
Mud Creek	Century Road East	5624	1500 & 1505	89.68	89.37	31	No
Mud Creek	Second Line Road South	8331	1630 & 1635	90.62	90.57	5	No
Mud Creek	Highway 416 Northbound	8380	1645 & 1650	90.64	90.63	1	No
Mud Creek	Highway 416 Southbound	8413	1660 & 1665	90.64	90.64	0	No
Mud Creek	Prince of Wales Drive	9178	1690 & 1695	90.88	90.81	7	No
Mud Creek	Century Road West and Third Line Road North	12125	1775 & 1780	91.40	91.36	4	No
Tributary C	Third Line Road North	11155	3110 & 3115	91.34	91.12	22	No

Table 13 Regulatory Flood Levels for 100 Year Flood Event

River	Reach	Xsec ID #	Q (total) (cms)	Computed WSEL (m)	EGL (m)	RFL (m)
Mud Creek	Reach1	1085	59.75	82.22	82.29	---
	Reach1	1090	59.75	82.22	82.29	---
	Reach1	1095	59.75	82.22	82.29	---
	Reach1	1100	59.75	82.22	82.29	---
	Reach1	1105	59.75	82.17	82.37	---
	Reach1	1108	Rideau Valley Drive			
	Reach1	1110	59.75	82.18	82.52	82.52
	Reach1	1111	59.75	82.40	82.61	82.61
	Reach1	1115	59.75	82.44	82.67	82.67
	Reach1	1120	59.75	82.57	82.73	82.73
	Reach1	1125	59.75	82.65	82.86	82.86
	Reach1	1130	59.75	82.95	83.09	83.09
	Reach1	1135	59.75	83.05	83.22	83.22
	Reach1	1140	55.42	83.29	83.36	83.36
	Reach1	1145	55.42	83.39	83.48	83.48
	Reach1	1150	55.42	83.43	83.58	83.58
	Reach1	1155	55.42	83.67	83.74	83.74
	Reach1	1160	55.42	83.78	83.90	83.90
	Reach1	1165	55.42	83.83	84.00	84.00
	Reach1	1170	55.42	84.01	84.13	84.13
	Reach1	1175	55.42	84.11	84.21	84.21
	Reach1	1180	55.42	84.22	84.27	84.27
	Reach1	1185	55.42	84.26	84.33	84.33
	Reach1	1190	55.42	84.32	84.39	84.39
	Reach1	1195	55.42	84.38	84.42	84.42
	Reach1	1200	55.42	84.38	84.45	84.45
	Reach1	1205	55.42	84.40	84.47	84.47
	Reach1	1210	55.42	84.43	84.51	84.51
	Reach1	1215	55.42	84.58	84.64	84.64
	Reach1	1220	55.42	84.68	84.74	84.74
	Reach1	1225	55.42	84.75	84.79	84.79
	Reach1	1226	55.42	84.76	84.82	84.82
	Reach1	1230	55.42	84.75	84.84	84.84
	Reach1	1235	55.42	84.84	84.89	84.89
	Reach1	1236	55.42	84.83	84.91	84.91
	Reach1	1240	55.42	84.79	84.94	84.94
	Reach1	1245	55.42	84.93	85.03	85.03
	Reach1	1250	55.42	84.98	85.07	85.07
	Reach1	1255	55.42	84.94	85.19	85.19
	Reach1	1258	Bankfield Road			
	Reach1	1260	55.42	84.93	85.32	85.32
	Reach1	1265	55.42	85.42	85.48	85.48
	Reach1	1270	55.42	85.42	85.54	85.54
	Reach1	1275	55.42	85.46	85.62	85.62
	Reach1	1280	55.42	85.66	85.70	85.70
	Reach1	1285	55.42	85.69	85.73	85.73
	Reach1	1290	55.42	85.70	85.77	85.77
	Reach1	1295	55.42	85.76	85.79	85.79
	Reach1	1296	55.42	85.75	85.82	85.82
	Reach1	1300	55.42	85.76	85.86	85.86
	Reach1	1305	55.42	85.85	85.92	85.92

River	Reach	Xsec ID #	Q (total) (cms)	Computed WSEL (m)	EGL (m)	RFL (m)
Mud Creek	Reach1	1310	55.42	85.90	85.97	85.97
	Reach1	1315	55.42	85.98	86.07	86.07
	Reach1	1316	55.42	86.03	86.09	86.09
	Reach1	1320	55.42	86.07	86.10	86.10
	Reach1	1325	55.42	86.08	86.13	86.13
	Reach1	1330	55.42	86.16	86.20	86.20
	Reach1	1331	55.42	86.16	86.23	86.23
	Reach1	1335	55.42	86.21	86.29	86.29
	Reach1	1340	55.42	86.31	86.37	86.37
	Reach1	1345	55.42	86.37	86.46	86.46
	Reach1	1350	55.42	86.45	86.58	86.58
	Reach1	1353	Revell Drive Pedestrian Bridge			
	Reach1	1355	55.42	86.51	86.64	86.64
	Reach1	1360	55.42	86.62	86.82	86.82
	Reach1	1365	55.42	86.92	86.95	86.95
	Reach1	1370	55.42	86.93	87.00	87.00
	Reach1	1375	55.42	87.09	87.14	87.14
	Reach1	1380	55.42	87.15	87.20	87.20
	Reach1	1385	55.42	87.19	87.23	87.23
	Reach1	1390	55.42	87.24	87.29	87.29
	Reach1	1395	55.42	87.31	87.39	87.39
	Reach1	1400	55.42	87.39	87.45	87.45
	Reach1	1405	44.55	87.48	87.51	87.51
	Reach1	1410	44.55	87.56	87.65	87.65
	Reach1	1415	44.55	87.68	87.69	87.69
	Reach1	1416	44.55	87.67	87.71	87.71
	Reach1	1420	44.55	87.67	87.76	87.76
	Reach1	1425	44.55	87.75	87.89	87.89
	Reach1	1430	44.55	87.73	88.14	88.14
	Reach1	1433	Farm Driveway			
	Reach1	1435	44.55	88.59	88.60	88.60
	Reach1	1440	44.55	88.60	88.61	88.61
	Reach1	1445	44.55	88.60	88.62	88.62
	Reach1	1450	44.55	88.60	88.64	88.64
	Reach1	1455	44.55	88.58	88.72	88.72
	Reach1	1458	First Line Road			
	Reach1	1460	44.55	89.15	89.20	89.20
	Reach1	1465	44.55	89.19	89.22	89.22
	Reach1	1470	44.55	89.21	89.23	89.23
	Reach1	1471	44.55	89.21	89.24	89.24
	Reach1	1475	44.55	89.21	89.26	89.26
	Reach1	1480	44.55	89.22	89.29	89.29
	Reach1	1481	44.55	89.27	89.31	89.31
	Reach1	1485	44.55	89.30	89.31	89.31
	Reach1	1490	44.55	89.31	89.32	89.32
	Reach1	1495	44.55	89.31	89.34	89.34
	Reach1	1500	44.55	89.31	89.37	89.37
	Reach1	1503	Century Road East			
	Reach1	1505	44.55	89.62	89.68	89.68
	Reach1	1506	44.55	89.66	89.7	89.7
	Reach1	1510	44.55	89.69	89.71	89.71
	Reach1	1511	44.55	89.7	89.71	89.71

River	Reach	Xsec ID #	Q (total) (cms)	Computed WSEL (m)	EGL (m)	RFL (m)
Mud Creek	Reach1	1515	44.55	89.71	89.71	89.71
	Reach1	1520	44.55	89.71	89.72	89.72
	Reach1	1525	44.55	89.69	89.74	89.74
	Reach1	1530	44.55	89.75	89.77	89.77
	Reach1	1535	44.55	89.77	89.78	89.78
	Reach1	1540	44.55	89.77	89.8	89.8
	Reach1	1545	44.55	89.83	89.85	89.85
	Reach1	1550	44.55	89.84	89.9	89.9
	Reach1	1551	44.55	89.9	89.92	89.92
	Reach1	1555	44.55	89.92	89.92	89.92
	Reach1	1556	44.55	89.92	89.94	89.94
	Reach1	1560	44.55	89.94	89.96	89.96
	Reach1	1561	44.55	89.96	90.01	90.01
	Reach1	1565	44.55	89.97	90.06	90.06
	Reach1	1570	44.55	90.07	90.09	90.09
	Reach1	1575	44.55	90.09	90.13	90.13
	Reach1	1580	44.55	90.11	90.15	90.15
	Reach1	1585	44.55	90.15	90.18	90.18
	Reach1	1590	44.55	90.19	90.21	90.21
	Reach1	1595	44.55	90.22	90.27	90.27
	Reach1	1600	44.55	90.28	90.33	90.33
	Reach1	1605	44.55	90.33	90.37	90.37
	Reach1	1610	44.55	90.38	90.41	90.41
	Reach1	1615	44.55	90.42	90.44	90.44
	Reach1	1620	44.55	90.43	90.47	90.47
	Reach1	1625	44.55	90.44	90.52	90.52
	Reach1	1630	44.55	90.47	90.57	90.57
	Reach1	1633	Second Line Road South			
	Reach1	1635	44.55	90.53	90.62	90.62
	Reach1	1640	44.55	90.61	90.63	90.63
	Reach1	1645	44.55	90.6	90.63	90.63
	Reach1	1648	Highway 416 Northbound			
	Reach1	1650	44.55	90.61	90.64	90.64
	Reach1	1655	44.55	90.6	90.64	90.64
	Reach1	1660	44.55	90.59	90.64	90.64
	Reach1	1663	Highway 416 Southbound			
	Reach1	1665	37.93	90.62	90.64	90.64
	Reach1	1670	37.93	90.65	90.66	90.66
	Reach1	1671	37.93	90.66	90.67	90.67
	Reach1	1675	37.93	90.67	90.69	90.69
	Reach1	1680	37.93	90.72	90.74	90.74
	Reach1	1685	37.93	90.76	90.77	90.77
	Reach1	1686	37.93	90.75	90.78	90.78
	Reach1	1690	37.93	90.76	90.81	90.81
	Reach1	1693	Prince of Wales Drive			
	Reach1	1695	37.93	90.82	90.88	90.88
	Reach1	1696	37.93	90.9	90.91	90.91
	Reach1	1700	37.93	90.91	90.92	90.92
	Reach1	1705	33.48	90.94	90.94	90.94
	Reach1	1710	33.48	90.94	90.95	90.95
	Reach1	1715	33.48	90.97	90.97	90.97
	Reach1	1716	33.48	90.98	90.99	90.99

River	Reach	Xsec ID #	Q (total) (cms)	Computed WSEL (m)	EGL (m)	RFL (m)
Mud Creek	Reach1	1717	33.48	91.02	91.03	91.03
	Reach1	1720	33.48	91.04	91.06	91.06
	Reach1	1725	33.48	91.05	91.07	91.07
	Reach2	1730	18.27	91.07	91.08	91.08
	Reach2	1735	18.27	91.07	91.09	91.09
	Reach2	1740	18.27	91.1	91.12	91.12
	Reach2	1745	18.27	91.11	91.14	91.14
	Reach2	1746	18.27	91.16	91.17	91.17
	Reach2	1750	18.27	91.17	91.18	91.18
	Reach2	1755	18.27	91.19	91.21	91.21
	Reach2	1760	18.27	91.25	91.26	91.26
	Reach2	1765	18.27	91.26	91.27	91.27
	Reach2	1770	18.27	91.28	91.28	91.28
	Reach2	1771	18.27	91.28	91.3	91.3
	Reach2	1775	18.27	91.3	91.36	91.36
	Reach2	1778	Century Road West and Third Line Road North			
	Reach2	1780	12.58	91.39	91.4	91.4
	Reach2	1781	12.58	91.41	91.41	91.41
	Reach2	1785	12.58	91.41	91.41	91.41
	Reach2	1790	12.58	91.41	91.41	91.41
Tributary C	Reach1	3100	12.05	91.07	91.08	91.08
	Reach1	3101	12.05	91.08	91.08	91.08
	Reach1	3105	12.05	91.08	91.09	91.09
	Reach1	3110	12.05	91.07	91.12	91.12
	Reach1	3113	Third Line Road North			
	Reach1	3115	12.05	91.33	91.34	91.34
	Reach1	3120	12.05	91.35	91.36	91.36
	Reach1	3125	12.05	91.36	91.37	91.37

Table 14 Flows and computed water levels for the 2, 5, 10, and 20 year flood events

River	Reach	Xsec ID	Flow (m^3/s) and Computed WSEL (m) for Different Flood Events							
			Q2	WL2	Q5	WL5	Q10	WL10	Q20	WL20
Mud Creek	Reach1	1085	12.14	82.22	23.08	82.22	30.98	82.22	39.31	82.22
	Reach1	1090	12.14	82.22	23.08	82.22	30.98	82.22	39.31	82.22
	Reach1	1095	12.14	82.22	23.08	82.22	30.98	82.22	39.31	82.22
	Reach1	1100	12.14	82.22	23.08	82.22	30.98	82.22	39.31	82.22
	Reach1	1105	12.14	82.22	23.08	82.21	30.98	82.21	39.31	82.20
	Reach1	1108	Rideau Valley Drive							
	Reach1	1110	12.14	82.22	23.08	82.21	30.98	82.21	39.31	82.20
	Reach1	1111	12.14	82.22	23.08	82.23	30.98	82.25	39.31	82.27
	Reach1	1115	12.14	82.23	23.08	82.24	30.98	82.26	39.31	82.29
	Reach1	1120	12.14	82.23	23.08	82.26	30.98	82.30	39.31	82.35
	Reach1	1125	12.14	82.24	23.08	82.28	30.98	82.33	39.31	82.40
	Reach1	1130	12.14	82.26	23.08	82.36	30.98	82.46	39.31	82.59
	Reach1	1135	12.14	82.28	23.08	82.42	30.98	82.54	39.31	82.69
	Reach1	1140	11.06	82.32	21.16	82.53	28.54	82.70	36.33	82.88
	Reach1	1145	11.06	82.36	21.16	82.63	28.54	82.84	36.33	83.02
	Reach1	1150	11.06	82.39	21.16	82.68	28.54	82.89	36.33	83.08
	Reach1	1155	11.06	82.46	21.16	82.82	28.54	83.07	36.33	83.28
	Reach1	1160	11.06	82.50	21.16	82.89	28.54	83.16	36.33	83.39
	Reach1	1165	11.06	82.50	21.16	82.91	28.54	83.18	36.33	83.42
	Reach1	1170	11.06	82.59	21.16	83.05	28.54	83.34	36.33	83.60
	Reach1	1175	11.06	82.63	21.16	83.12	28.54	83.42	36.33	83.69
	Reach1	1180	11.06	82.67	21.16	83.18	28.54	83.50	36.33	83.77
	Reach1	1185	11.06	82.69	21.16	83.22	28.54	83.54	36.33	83.81
	Reach1	1190	11.06	82.74	21.16	83.29	28.54	83.62	36.33	83.89
	Reach1	1195	11.06	82.77	21.16	83.33	28.54	83.66	36.33	83.94
	Reach1	1200	11.06	82.77	21.16	83.34	28.54	83.67	36.33	83.94
	Reach1	1205	11.06	82.78	21.16	83.35	28.54	83.68	36.33	83.96
	Reach1	1210	11.06	82.81	21.16	83.38	28.54	83.71	36.33	83.99
	Reach1	1215	11.06	82.93	21.16	83.51	28.54	83.85	36.33	84.13
	Reach1	1220	11.06	83.05	21.16	83.63	28.54	83.96	36.33	84.25
	Reach1	1225	11.06	83.16	21.16	83.73	28.54	84.05	36.33	84.32
	Reach1	1226	11.06	83.17	21.16	83.75	28.54	84.06	36.33	84.33
	Reach1	1230	11.06	83.18	21.16	83.74	28.54	84.05	36.33	84.32
	Reach1	1235	11.06	83.23	21.16	83.82	28.54	84.14	36.33	84.41
	Reach1	1236	11.06	83.23	21.16	83.81	28.54	84.13	36.33	84.40
	Reach1	1240	11.06	83.23	21.16	83.80	28.54	84.11	36.33	84.37
	Reach1	1245	11.06	83.31	21.16	83.89	28.54	84.21	36.33	84.48
	Reach1	1250	11.06	83.36	21.16	83.94	28.54	84.26	36.33	84.53
	Reach1	1255	11.06	83.37	21.16	83.94	28.54	84.25	36.33	84.52
	Reach1	1258	Bankfield Road							
	Reach1	1260	11.06	83.40	21.16	83.96	28.54	84.26	36.33	84.52
	Reach1	1265	11.06	83.62	21.16	84.20	28.54	84.53	36.33	84.84
	Reach1	1270	11.06	83.67	21.16	84.26	28.54	84.59	36.33	84.88
	Reach1	1275	11.06	83.60	21.16	84.18	28.54	84.55	36.33	84.87
	Reach1	1280	11.06	84.03	21.16	84.63	28.54	84.90	36.33	85.15
	Reach1	1285	11.06	84.10	21.16	84.70	28.54	84.96	36.33	85.20
	Reach1	1290	11.06	84.13	21.16	84.72	28.54	84.99	36.33	85.22
	Reach1	1295	11.06	84.16	21.16	84.76	28.54	85.03	36.33	85.28
	Reach1	1296	11.06	84.18	21.16	84.77	28.54	85.04	36.33	85.28
	Reach1	1300	11.06	84.20	21.16	84.79	28.54	85.06	36.33	85.30
	Reach1	1305	11.06	84.28	21.16	84.87	28.54	85.16	36.33	85.40

River	Reach	Xsec ID	Flow (m^3/s) and Computed WSEL (m) for Different Flood Events							
			Q2	WL2	Q5	WL5	Q10	WL10	Q20	WL20
Mud Creek	Reach1	1310	11.06	84.32	21.16	84.91	28.54	85.20	36.33	85.44
	Reach1	1315	11.06	84.41	21.16	85.00	28.54	85.29	36.33	85.53
	Reach1	1316	11.06	84.44	21.16	85.04	28.54	85.33	36.33	85.58
	Reach1	1320	11.06	84.46	21.16	85.06	28.54	85.36	36.33	85.61
	Reach1	1325	11.06	84.48	21.16	85.08	28.54	85.38	36.33	85.62
	Reach1	1330	11.06	84.61	21.16	85.18	28.54	85.48	36.33	85.72
	Reach1	1331	11.06	84.65	21.16	85.20	28.54	85.49	36.33	85.72
	Reach1	1335	11.06	84.74	21.16	85.25	28.54	85.54	36.33	85.77
	Reach1	1340	11.06	85.00	21.16	85.48	28.54	85.71	36.33	85.91
	Reach1	1345	11.06	85.07	21.16	85.55	28.54	85.78	36.33	85.98
	Reach1	1350	11.06	85.22	21.16	85.66	28.54	85.89	36.33	86.07
	Reach1	1353	Revell Drive Pedestrian Bridge							
	Reach1	1355	11.06	85.27	21.16	85.70	28.54	85.92	36.33	86.11
	Reach1	1360	11.06	85.45	21.16	85.80	28.54	86.03	36.33	86.22
	Reach1	1365	11.06	85.95	21.16	86.30	28.54	86.47	36.33	86.62
	Reach1	1370	11.06	85.99	21.16	86.33	28.54	86.49	36.33	86.64
	Reach1	1375	11.06	86.15	21.16	86.51	28.54	86.68	36.33	86.82
	Reach1	1380	11.06	86.20	21.16	86.56	28.54	86.72	36.33	86.87
	Reach1	1385	11.06	86.20	21.16	86.57	28.54	86.74	36.33	86.89
	Reach1	1390	11.06	86.24	21.16	86.62	28.54	86.79	36.33	86.94
	Reach1	1395	11.06	86.29	21.16	86.68	28.54	86.86	36.33	87.01
	Reach1	1400	11.06	86.33	21.16	86.74	28.54	86.93	36.33	87.08
	Reach1	1405	8.91	86.37	16.95	86.79	22.84	86.98	29.18	87.15
	Reach1	1410	8.91	86.49	16.95	86.91	22.84	87.10	29.18	87.25
	Reach1	1415	8.91	86.52	16.95	86.97	22.84	87.17	29.18	87.34
	Reach1	1416	8.91	86.56	16.95	86.98	22.84	87.18	29.18	87.34
	Reach1	1420	8.91	86.59	16.95	87.01	22.84	87.20	29.18	87.36
	Reach1	1425	8.91	86.66	16.95	87.08	22.84	87.28	29.18	87.44
	Reach1	1430	8.91	86.71	16.95	87.13	22.84	87.32	29.18	87.47
	Reach1	1433	Farm Driveway							
	Reach1	1435	8.91	86.80	16.95	87.35	22.84	87.65	29.18	88.30
	Reach1	1440	8.91	86.85	16.95	87.37	22.84	87.68	29.18	88.31
	Reach1	1445	8.91	86.91	16.95	87.41	22.84	87.71	29.18	88.31
	Reach1	1450	8.91	86.97	16.95	87.45	22.84	87.73	29.18	88.31
	Reach1	1455	8.91	87.00	16.95	87.47	22.84	87.74	29.18	88.31
	Reach1	1458	First Line Road							
	Reach1	1460	8.91	87.07	16.95	87.59	22.84	87.91	29.18	88.46
	Reach1	1465	8.91	87.08	16.95	87.61	22.84	87.93	29.18	88.49
	Reach1	1470	8.91	87.11	16.95	87.65	22.84	87.96	29.18	88.51
	Reach1	1471	8.91	87.12	16.95	87.65	22.84	87.96	29.18	88.51
	Reach1	1475	8.91	87.15	16.95	87.68	22.84	87.98	29.18	88.52
	Reach1	1480	8.91	87.21	16.95	87.75	22.84	88.04	29.18	88.53
	Reach1	1481	8.91	87.27	16.95	87.82	22.84	88.12	29.18	88.59
	Reach1	1485	8.91	87.28	16.95	87.84	22.84	88.14	29.18	88.61
	Reach1	1490	8.91	87.28	16.95	87.84	22.84	88.14	29.18	88.62
	Reach1	1495	8.91	87.34	16.95	87.90	22.84	88.19	29.18	88.63
	Reach1	1500	8.91	87.39	16.95	87.94	22.84	88.22	29.18	88.64
	Reach1	1503	Century Road East							
	Reach1	1505	8.91	87.42	16.95	88.02	22.84	88.33	29.18	88.79
	Reach1	1506	8.91	87.44	16.95	88.03	22.84	88.35	29.18	88.81
	Reach1	1510	8.91	87.47	16.95	88.06	22.84	88.38	29.18	88.84
	Reach1	1511	8.91	87.54	16.95	88.09	22.84	88.39	29.18	88.86

River	Reach	Xsec ID	Flow (m^3/s) and Computed WSEL (m) for Different Flood Events							
			Q2	WL2	Q5	WL5	Q10	WL10	Q20	WL20
Mud Creek	Reach1	1515	8.91	87.6	16.95	88.15	22.84	88.45	29.18	88.88
	Reach1	1520	8.91	87.62	16.95	88.17	22.84	88.47	29.18	88.88
	Reach1	1525	8.91	87.66	16.95	88.21	22.84	88.48	29.18	88.87
	Reach1	1530	8.91	87.72	16.95	88.27	22.84	88.55	29.18	88.94
	Reach1	1535	8.91	87.81	16.95	88.36	22.84	88.63	29.18	88.99
	Reach1	1540	8.91	87.88	16.95	88.41	22.84	88.66	29.18	89
	Reach1	1545	8.91	88.08	16.95	88.56	22.84	88.79	29.18	89.1
	Reach1	1550	8.91	88.21	16.95	88.65	22.84	88.86	29.18	89.14
	Reach1	1551	8.91	88.24	16.95	88.69	22.84	88.92	29.18	89.21
	Reach1	1555	8.91	88.28	16.95	88.74	22.84	88.97	29.18	89.24
	Reach1	1556	8.91	88.32	16.95	88.77	22.84	88.99	29.18	89.25
	Reach1	1560	8.91	88.36	16.95	88.81	22.84	89.04	29.18	89.29
	Reach1	1561	8.91	88.45	16.95	88.89	22.84	89.11	29.18	89.34
	Reach1	1565	8.91	88.54	16.95	88.95	22.84	89.16	29.18	89.38
	Reach1	1570	8.91	88.59	16.95	89.03	22.84	89.25	29.18	89.48
	Reach1	1575	8.91	88.61	16.95	89.04	22.84	89.27	29.18	89.5
	Reach1	1580	8.91	88.63	16.95	89.08	22.84	89.3	29.18	89.53
	Reach1	1585	8.91	88.64	16.95	89.1	22.84	89.34	29.18	89.57
	Reach1	1590	8.91	88.67	16.95	89.14	22.84	89.38	29.18	89.61
	Reach1	1595	8.91	88.75	16.95	89.21	22.84	89.43	29.18	89.66
	Reach1	1600	8.91	88.8	16.95	89.28	22.84	89.51	29.18	89.74
	Reach1	1605	8.91	88.82	16.95	89.31	22.84	89.55	29.18	89.78
	Reach1	1610	8.91	88.86	16.95	89.36	22.84	89.6	29.18	89.84
	Reach1	1615	8.91	88.92	16.95	89.41	22.84	89.65	29.18	89.89
	Reach1	1620	8.91	88.94	16.95	89.43	22.84	89.67	29.18	89.9
	Reach1	1625	8.91	88.97	16.95	89.45	22.84	89.69	29.18	89.92
	Reach1	1630	8.91	89	16.95	89.5	22.84	89.74	29.18	89.97
	Reach1	1633	Second Line Road South							
	Reach1	1635	8.91	89.02	16.95	89.52	22.84	89.77	29.18	90
	Reach1	1640	8.91	89.04	16.95	89.56	22.84	89.82	29.18	90.06
	Reach1	1645	8.91	89.04	16.95	89.55	22.84	89.82	29.18	90.06
	Reach1	1648	Highway 416 Northbound							
	Reach1	1650	8.91	89.04	16.95	89.56	22.84	89.82	29.18	90.06
	Reach1	1655	8.91	89.04	16.95	89.56	22.84	89.82	29.18	90.06
	Reach1	1660	8.91	89.03	16.95	89.55	22.84	89.81	29.18	90.05
	Reach1	1663	Highway 416 Southbound							
	Reach1	1665	7.86	89.05	14.7	89.56	19.67	89.83	24.97	90.07
	Reach1	1670	7.86	89.06	14.7	89.58	19.67	89.85	24.97	90.1
	Reach1	1671	7.86	89.07	14.7	89.59	19.67	89.85	24.97	90.1
	Reach1	1675	7.86	89.09	14.7	89.61	19.67	89.87	24.97	90.12
	Reach1	1680	7.86	89.21	14.7	89.74	19.67	89.98	24.97	90.21
	Reach1	1685	7.86	89.29	14.7	89.81	19.67	90.05	24.97	90.27
	Reach1	1686	7.86	89.32	14.7	89.82	19.67	90.05	24.97	90.27
	Reach1	1690	7.86	89.33	14.7	89.84	19.67	90.07	24.97	90.29
	Reach1	1693	Prince of Wales Drive							
	Reach1	1695	7.86	89.36	14.7	89.86	19.67	90.1	24.97	90.31
	Reach1	1696	7.86	89.43	14.7	89.95	19.67	90.2	24.97	90.42
	Reach1	1700	7.86	89.44	14.7	89.96	19.67	90.21	24.97	90.43
	Reach1	1705	6.98	89.52	13.03	90.04	17.42	90.27	22.09	90.48
	Reach1	1710	6.98	89.58	13.03	90.08	17.42	90.29	22.09	90.49
	Reach1	1715	6.98	89.73	13.03	90.21	17.42	90.42	22.09	90.58
	Reach1	1716	6.98	89.82	13.03	90.27	17.42	90.46	22.09	90.61

River	Reach	Xsec ID	Flow (m^3/s) and Computed WSEL (m) for Different Flood Events							
			Q2	WL2	Q5	WL5	Q10	WL10	Q20	WL20
Mud Creek	Reach1	1717	6.98	89.91	13.03	90.36	17.42	90.53	22.09	90.67
	Reach1	1720	6.98	89.93	13.03	90.38	17.42	90.55	22.09	90.69
	Reach1	1725	6.98	89.95	13.03	90.39	17.42	90.57	22.09	90.71
	Reach2	1730	3.89	89.96	7.19	90.4	9.57	90.58	12.1	90.73
	Reach2	1735	3.89	89.96	7.19	90.4	9.57	90.58	12.1	90.73
	Reach2	1740	3.89	90.05	7.19	90.46	9.57	90.63	12.1	90.78
	Reach2	1745	3.89	90.08	7.19	90.48	9.57	90.66	12.1	90.8
	Reach2	1746	3.89	90.12	7.19	90.52	9.57	90.7	12.1	90.85
	Reach2	1750	3.89	90.16	7.19	90.56	9.57	90.74	12.1	90.89
	Reach2	1755	3.89	90.2	7.19	90.6	9.57	90.77	12.1	90.91
	Reach2	1760	3.89	90.29	7.19	90.67	9.57	90.85	12.1	90.99
	Reach2	1765	3.89	90.32	7.19	90.7	9.57	90.87	12.1	91.01
	Reach2	1770	3.89	90.35	7.19	90.74	9.57	90.91	12.1	91.03
	Reach2	1771	3.89	90.38	7.19	90.75	9.57	90.92	12.1	91.04
	Reach2	1775	3.89	90.4	7.19	90.77	9.57	90.94	12.1	91.06
	Reach2	1778	Century Road West and Third Line Road North							
	Reach2	1780	2.67	90.41	4.95	90.8	6.59	90.97	8.34	91.11
	Reach2	1781	2.67	90.42	4.95	90.8	6.59	90.98	8.34	91.12
	Reach2	1785	2.67	90.42	4.95	90.81	6.59	90.98	8.34	91.12
	Reach2	1790	2.67	90.43	4.95	90.81	6.59	90.99	8.34	91.13
Tributary C	Reach1	3100	2.42	89.95	4.59	90.4	6.17	90.58	7.87	90.73
	Reach1	3101	2.42	89.96	4.59	90.41	6.17	90.59	7.87	90.74
	Reach1	3105	2.42	89.97	4.59	90.41	6.17	90.6	7.87	90.74
	Reach1	3110	2.42	89.97	4.59	90.42	6.17	90.6	7.87	90.74
	Reach1	3113	Third Line Road North							
	Reach1	3115	2.42	90	4.59	90.48	6.17	90.69	7.87	90.87
	Reach1	3120	2.42	90.03	4.59	90.5	6.17	90.72	7.87	90.9
	Reach1	3125	2.42	90.07	4.59	90.53	6.17	90.75	7.87	90.93

Table 15 Flows and computed water levels for the 50, 100, 200, 350, and 500 year flood events

River	Reach	Xsec ID	Flow (m^3/s) and Computed WSEL (m) for Different Flood Events									
			Q50	WL50	Q100	WL100	Q200	WL200	Q350	WL350	Q500	WL500
Mud Creek	Reach1	1085	50.66	82.22	59.75	82.22	68.93	82.22	76.77	82.22	82.25	82.22
	Reach1	1090	50.66	82.22	59.75	82.22	68.93	82.22	76.77	82.22	82.25	82.22
	Reach1	1095	50.66	82.22	59.75	82.22	68.93	82.22	76.77	82.22	82.25	82.22
	Reach1	1100	50.66	82.22	59.75	82.22	68.93	82.23	76.77	82.23	82.25	82.23
	Reach1	1105	50.66	82.18	59.75	82.17	68.93	82.15	76.77	82.13	82.25	82.11
	Reach1	1108	Rideau Valley Drive									
	Reach1	1110	50.66	82.18	59.75	82.18	68.93	82.19	76.77	82.34	82.25	82.49
	Reach1	1111	50.66	82.33	59.75	82.40	68.93	82.52	76.77	82.66	82.25	82.78
	Reach1	1115	50.66	82.35	59.75	82.44	68.93	82.58	76.77	82.76	82.25	82.90
	Reach1	1120	50.66	82.45	59.75	82.57	68.93	82.71	76.77	82.87	82.25	82.99
	Reach1	1125	50.66	82.52	59.75	82.65	68.93	82.79	76.77	82.93	82.25	83.04
	Reach1	1130	50.66	82.78	59.75	82.95	68.93	83.11	76.77	83.24	82.25	83.33
	Reach1	1135	50.66	82.89	59.75	83.05	68.93	83.19	76.77	83.31	82.25	83.40
	Reach1	1140	46.92	83.12	55.42	83.29	64.01	83.44	71.32	83.56	76.44	83.65
	Reach1	1145	46.92	83.24	55.42	83.39	64.01	83.52	71.32	83.63	76.44	83.70
	Reach1	1150	46.92	83.29	55.42	83.43	64.01	83.56	71.32	83.67	76.44	83.75
	Reach1	1155	46.92	83.52	55.42	83.67	64.01	83.79	71.32	83.89	76.44	83.96
	Reach1	1160	46.92	83.64	55.42	83.78	64.01	83.91	71.32	84.01	76.44	84.07
	Reach1	1165	46.92	83.68	55.42	83.83	64.01	83.95	71.32	84.05	76.44	84.11
	Reach1	1170	46.92	83.85	55.42	84.01	64.01	84.15	71.32	84.26	76.44	84.33
	Reach1	1175	46.92	83.96	55.42	84.11	64.01	84.25	71.32	84.36	76.44	84.43
	Reach1	1180	46.92	84.05	55.42	84.22	64.01	84.37	71.32	84.49	76.44	84.57
	Reach1	1185	46.92	84.09	55.42	84.26	64.01	84.41	71.32	84.53	76.44	84.61
	Reach1	1190	46.92	84.15	55.42	84.32	64.01	84.46	71.32	84.58	76.44	84.65
	Reach1	1195	46.92	84.21	55.42	84.38	64.01	84.53	71.32	84.65	76.44	84.73
	Reach1	1200	46.92	84.21	55.42	84.38	64.01	84.53	71.32	84.65	76.44	84.73
	Reach1	1205	46.92	84.23	55.42	84.40	64.01	84.55	71.32	84.67	76.44	84.75
	Reach1	1210	46.92	84.26	55.42	84.43	64.01	84.58	71.32	84.70	76.44	84.78
	Reach1	1215	46.92	84.40	55.42	84.58	64.01	84.73	71.32	84.85	76.44	84.93
	Reach1	1220	46.92	84.51	55.42	84.68	64.01	84.84	71.32	84.96	76.44	85.04
	Reach1	1225	46.92	84.58	55.42	84.75	64.01	84.91	71.32	85.03	76.44	85.11
	Reach1	1226	46.92	84.59	55.42	84.76	64.01	84.91	71.32	85.04	76.44	85.12
	Reach1	1230	46.92	84.57	55.42	84.75	64.01	84.90	71.32	85.02	76.44	85.10
	Reach1	1235	46.92	84.67	55.42	84.84	64.01	85.00	71.32	85.12	76.44	85.20
	Reach1	1236	46.92	84.66	55.42	84.83	64.01	84.98	71.32	85.11	76.44	85.19
	Reach1	1240	46.92	84.63	55.42	84.79	64.01	84.94	71.32	85.05	76.44	85.13
	Reach1	1245	46.92	84.75	55.42	84.93	64.01	85.09	71.32	85.22	76.44	85.30
	Reach1	1250	46.92	84.80	55.42	84.98	64.01	85.14	71.32	85.27	76.44	85.35
	Reach1	1255	46.92	84.77	55.42	84.94	64.01	85.09	71.32	85.21	76.44	85.29
	Reach1	1258	Bankfield Road									
	Reach1	1260	46.92	84.77	55.42	84.93	64.01	85.07	71.32	85.18	76.44	85.25
	Reach1	1265	46.92	85.18	55.42	85.42	64.01	85.64	71.32	85.82	76.44	85.94
	Reach1	1270	46.92	85.19	55.42	85.42	64.01	85.63	71.32	85.81	76.44	85.92
	Reach1	1275	46.92	85.21	55.42	85.46	64.01	85.68	71.32	85.85	76.44	85.97
	Reach1	1280	46.92	85.45	55.42	85.66	64.01	85.86	71.32	86.02	76.44	86.13
	Reach1	1285	46.92	85.48	55.42	85.69	64.01	85.88	71.32	86.04	76.44	86.15
	Reach1	1290	46.92	85.50	55.42	85.70	64.01	85.89	71.32	86.04	76.44	86.15
	Reach1	1295	46.92	85.56	55.42	85.76	64.01	85.95	71.32	86.10	76.44	86.21
	Reach1	1296	46.92	85.55	55.42	85.75	64.01	85.94	71.32	86.09	76.44	86.20
	Reach1	1300	46.92	85.57	55.42	85.76	64.01	85.95	71.32	86.10	76.44	86.21
	Reach1	1305	46.92	85.66	55.42	85.85	64.01	86.03	71.32	86.17	76.44	86.27
	Reach1	1310	46.92	85.71	55.42	85.90	64.01	86.08	71.32	86.23	76.44	86.33
	Reach1	1315	46.92	85.79	55.42	85.98	64.01	86.15	71.32	86.30	76.44	86.40
	Reach1	1316	46.92	85.84	55.42	86.03	64.01	86.21	71.32	86.35	76.44	86.45
	Reach1	1320	46.92	85.88	55.42	86.07	64.01	86.25	71.32	86.40	76.44	86.50
	Reach1	1325	46.92	85.89	55.42	86.08	64.01	86.26	71.32	86.41	76.44	86.51
	Reach1	1330	46.92	85.98	55.42	86.16	64.01	86.34	71.32	86.48	76.44	86.58
	Reach1	1331	46.92	85.98	55.42	86.16	64.01	86.34	71.32	86.49	76.44	86.59
	Reach1	1335	46.92	86.03	55.42	86.21	64.01	86.39	71.32	86.53	76.44	86.63

River	Reach	Xsec ID	Flow (m^3/s) and Computed WSEL (m) for Different Flood Events									
			Q50	WL50	Q100	WL100	Q200	WL200	Q350	WL350	Q500	WL500
Mud Creek	Reach1	1340	46.92	86.14	55.42	86.31	64.01	86.46	71.32	86.60	76.44	86.69
	Reach1	1345	46.92	86.21	55.42	86.37	64.01	86.54	71.32	86.67	76.44	86.76
	Reach1	1350	46.92	86.29	55.42	86.45	64.01	86.60	71.32	86.74	76.44	86.82
	Reach1	1353	Revell Drive Pedestrian Bridge									
	Reach1	1355	46.92	86.34	55.42	86.51	64.01	86.71	71.32	86.88	76.44	87.00
	Reach1	1360	46.92	86.45	55.42	86.62	64.01	86.81	71.32	86.96	76.44	87.07
	Reach1	1365	46.92	86.79	55.42	86.92	64.01	87.06	71.32	87.18	76.44	87.28
	Reach1	1370	46.92	86.80	55.42	86.93	64.01	87.07	71.32	87.19	76.44	87.28
	Reach1	1375	46.92	86.97	55.42	87.09	64.01	87.22	71.32	87.33	76.44	87.41
	Reach1	1380	46.92	87.03	55.42	87.15	64.01	87.27	71.32	87.38	76.44	87.46
	Reach1	1385	46.92	87.06	55.42	87.19	64.01	87.32	71.32	87.43	76.44	87.51
	Reach1	1390	46.92	87.11	55.42	87.24	64.01	87.36	71.32	87.48	76.44	87.56
	Reach1	1395	46.92	87.18	55.42	87.31	64.01	87.43	71.32	87.54	76.44	87.61
	Reach1	1400	46.92	87.26	55.42	87.39	64.01	87.52	71.32	87.62	76.44	87.70
	Reach1	1405	37.70	87.34	44.55	87.48	51.40	87.61	57.24	87.72	61.33	87.80
	Reach1	1410	37.70	87.43	44.55	87.56	51.40	87.68	57.24	87.78	61.33	87.86
	Reach1	1415	37.70	87.54	44.55	87.68	51.40	87.81	57.24	87.92	61.33	88.00
	Reach1	1416	37.70	87.54	44.55	87.67	51.40	87.81	57.24	87.92	61.33	87.99
	Reach1	1420	37.70	87.54	44.55	87.67	51.40	87.80	57.24	87.90	61.33	87.98
	Reach1	1425	37.70	87.62	44.55	87.75	51.40	87.87	57.24	87.97	61.33	88.04
	Reach1	1430	37.70	87.62	44.55	87.73	51.40	87.82	57.24	87.89	61.33	87.94
	Reach1	1433	Farm Driveway									
	Reach1	1435	37.70	88.49	44.55	88.59	51.40	88.68	57.24	88.75	61.33	88.80
	Reach1	1440	37.70	88.49	44.55	88.60	51.40	88.69	57.24	88.76	61.33	88.80
	Reach1	1445	37.70	88.50	44.55	88.60	51.40	88.70	57.24	88.77	61.33	88.81
	Reach1	1450	37.70	88.49	44.55	88.60	51.40	88.69	57.24	88.76	61.33	88.80
	Reach1	1455	37.70	88.48	44.55	88.58	51.40	88.66	57.24	88.72	61.33	88.75
	Reach1	1458	First Line Road									
	Reach1	1460	37.70	88.71	44.55	89.15	51.40	89.26	57.24	89.38	61.33	89.49
	Reach1	1465	37.70	88.75	44.55	89.19	51.40	89.31	57.24	89.45	61.33	89.56
	Reach1	1470	37.70	88.77	44.55	89.21	51.40	89.33	57.24	89.47	61.33	89.58
	Reach1	1471	37.70	88.77	44.55	89.21	51.40	89.33	57.24	89.47	61.33	89.58
	Reach1	1475	37.70	88.78	44.55	89.21	51.40	89.34	57.24	89.47	61.33	89.58
	Reach1	1480	37.70	88.79	44.55	89.22	51.40	89.35	57.24	89.48	61.33	89.60
	Reach1	1481	37.70	88.86	44.55	89.27	51.40	89.40	57.24	89.53	61.33	89.65
	Reach1	1485	37.70	88.89	44.55	89.30	51.40	89.43	57.24	89.57	61.33	89.68
	Reach1	1490	37.70	88.90	44.55	89.31	51.40	89.45	57.24	89.59	61.33	89.70
	Reach1	1495	37.70	88.90	44.55	89.31	51.40	89.44	57.24	89.58	61.33	89.69
	Reach1	1500	37.70	88.91	44.55	89.31	51.40	89.44	57.24	89.57	61.33	89.68
	Reach1	1503	Century Road East									
	Reach1	1505	37.7	89.13	44.55	89.62	51.4	89.86	57.24	90.11	61.33	90.31
	Reach1	1506	37.7	89.17	44.55	89.66	51.4	89.92	57.24	90.18	61.33	90.39
	Reach1	1510	37.7	89.21	44.55	89.69	51.4	89.95	57.24	90.21	61.33	90.41
	Reach1	1511	37.7	89.22	44.55	89.7	51.4	89.96	57.24	90.22	61.33	90.42
	Reach1	1515	37.7	89.23	44.55	89.71	51.4	89.97	57.24	90.22	61.33	90.43
	Reach1	1520	37.7	89.24	44.55	89.71	51.4	89.97	57.24	90.23	61.33	90.43
	Reach1	1525	37.7	89.22	44.55	89.69	51.4	89.95	57.24	90.2	61.33	90.41
	Reach1	1530	37.7	89.29	44.55	89.75	51.4	90	57.24	90.25	61.33	90.45
	Reach1	1535	37.7	89.33	44.55	89.77	51.4	90.02	57.24	90.27	61.33	90.47
	Reach1	1540	37.7	89.33	44.55	89.77	51.4	90.02	57.24	90.27	61.33	90.47
	Reach1	1545	37.7	89.41	44.55	89.83	51.4	90.07	57.24	90.32	61.33	90.51
	Reach1	1550	37.7	89.44	44.55	89.84	51.4	90.08	57.24	90.32	61.33	90.52
	Reach1	1551	37.7	89.51	44.55	89.9	51.4	90.14	57.24	90.38	61.33	90.57
	Reach1	1555	37.7	89.54	44.55	89.92	51.4	90.16	57.24	90.39	61.33	90.58
	Reach1	1556	37.7	89.55	44.55	89.92	51.4	90.16	57.24	90.39	61.33	90.58
	Reach1	1560	37.7	89.58	44.55	89.94	51.4	90.18	57.24	90.41	61.33	90.59
	Reach1	1561	37.7	89.62	44.55	89.96	51.4	90.2	57.24	90.42	61.33	90.60
	Reach1	1565	37.7	89.64	44.55	89.97	51.4	90.19	57.24	90.41	61.33	90.59
	Reach1	1570	37.7	89.75	44.55	90.07	51.4	90.3	57.24	90.52	61.33	90.69
	Reach1	1575	37.7	89.77	44.55	90.09	51.4	90.31	57.24	90.53	61.33	90.71

River	Reach	Xsec ID	Flow (m^3/s) and Computed WSEL (m) for Different Flood Events									
			Q50	WL50	Q100	WL100	Q200	WL200	Q350	WL350	Q500	WL500
Mud Creek	Reach1	1580	37.7	89.8	44.55	90.11	51.4	90.33	57.24	90.55	61.33	90.72
	Reach1	1585	37.7	89.85	44.55	90.15	51.4	90.38	57.24	90.59	61.33	90.76
	Reach1	1590	37.7	89.89	44.55	90.19	51.4	90.41	57.24	90.62	61.33	90.79
	Reach1	1595	37.7	89.93	44.55	90.22	51.4	90.43	57.24	90.64	61.33	90.80
	Reach1	1600	37.7	90.01	44.55	90.28	51.4	90.5	57.24	90.7	61.33	90.86
	Reach1	1605	37.7	90.06	44.55	90.33	51.4	90.54	57.24	90.74	61.33	90.90
	Reach1	1610	37.7	90.12	44.55	90.38	51.4	90.6	57.24	90.79	61.33	90.95
	Reach1	1615	37.7	90.16	44.55	90.42	51.4	90.63	57.24	90.82	61.33	90.97
	Reach1	1620	37.7	90.17	44.55	90.43	51.4	90.64	57.24	90.83	61.33	90.98
	Reach1	1625	37.7	90.18	44.55	90.44	51.4	90.65	57.24	90.83	61.33	90.98
	Reach1	1630	37.7	90.23	44.55	90.47	51.4	90.67	57.24	90.85	61.33	90.99
	Reach1	1633	Second Line Road South									
	Reach1	1635	37.7	90.28	44.55	90.53	51.4	90.73	57.24	90.92	61.33	91.06
	Reach1	1640	37.7	90.35	44.55	90.61	51.4	90.82	57.24	91.01	61.33	91.17
	Reach1	1645	37.7	90.34	44.55	90.6	51.4	90.81	57.24	91.01	61.33	91.15
	Reach1	1648	Highway 416 Northbound									
	Reach1	1650	37.7	90.35	44.55	90.61	51.4	90.82	57.24	91.01	61.33	91.15
	Reach1	1655	37.7	90.35	44.55	90.6	51.4	90.82	57.24	91.01	61.33	91.16
	Reach1	1660	37.7	90.34	44.55	90.59	51.4	90.8	57.24	90.99	61.33	91.14
	Reach1	1663	Highway 416 Southbound									
	Reach1	1665	32.18	90.37	37.93	90.62	43.65	90.84	48.48	91.03	51.87	91.18
	Reach1	1670	32.18	90.39	37.93	90.65	43.65	90.87	48.48	91.07	51.87	91.22
	Reach1	1671	32.18	90.39	37.93	90.66	43.65	90.88	48.48	91.07	51.87	91.22
	Reach1	1675	32.18	90.41	37.93	90.67	43.65	90.88	48.48	91.08	51.87	91.22
	Reach1	1680	32.18	90.48	37.93	90.72	43.65	90.92	48.48	91.1	51.87	91.25
	Reach1	1685	32.18	90.54	37.93	90.76	43.65	90.96	48.48	91.14	51.87	91.28
	Reach1	1686	32.18	90.53	37.93	90.75	43.65	90.95	48.48	91.13	51.87	91.27
	Reach1	1690	32.18	90.55	37.93	90.76	43.65	90.96	48.48	91.13	51.87	91.27
	Reach1	1693	Prince of Wales Drive									
	Reach1	1695	32.18	90.59	37.93	90.82	43.65	91.03	48.48	91.22	51.87	91.36
	Reach1	1696	32.18	90.68	37.93	90.9	43.65	91.1	48.48	91.27	51.87	91.41
	Reach1	1700	32.18	90.7	37.93	90.91	43.65	91.11	48.48	91.28	51.87	91.41
	Reach1	1705	28.42	90.73	33.48	90.94	38.5	91.13	42.72	91.3	45.72	91.43
	Reach1	1710	28.42	90.74	33.48	90.94	38.5	91.13	42.72	91.3	45.72	91.43
	Reach1	1715	28.42	90.78	33.48	90.97	38.5	91.15	42.72	91.32	45.72	91.44
	Reach1	1716	28.42	90.8	33.48	90.98	38.5	91.16	42.72	91.32	45.72	91.45
	Reach1	1717	28.42	90.85	33.48	91.02	38.5	91.18	42.72	91.34	45.72	91.46
	Reach1	1720	28.42	90.87	33.48	91.04	38.5	91.2	42.72	91.36	45.72	91.47
	Reach1	1725	28.42	90.89	33.48	91.05	38.5	91.22	42.72	91.37	45.72	91.48
	Reach2	1730	15.55	90.91	18.27	91.07	20.98	91.23	23.28	91.38	24.82	91.50
	Reach2	1735	15.55	90.91	18.27	91.07	20.98	91.24	23.28	91.39	24.82	91.50
	Reach2	1740	15.55	90.95	18.27	91.1	20.98	91.25	23.28	91.4	24.82	91.51
	Reach2	1745	15.55	90.97	18.27	91.11	20.98	91.26	23.28	91.4	24.82	91.51
	Reach2	1746	15.55	91.02	18.27	91.16	20.98	91.29	23.28	91.43	24.82	91.53
	Reach2	1750	15.55	91.04	18.27	91.17	20.98	91.31	23.28	91.44	24.82	91.54
	Reach2	1755	15.55	91.07	18.27	91.19	20.98	91.32	23.28	91.45	24.82	91.55
	Reach2	1760	15.55	91.13	18.27	91.25	20.98	91.37	23.28	91.49	24.82	91.58
	Reach2	1765	15.55	91.15	18.27	91.26	20.98	91.38	23.28	91.49	24.82	91.58
	Reach2	1770	15.55	91.17	18.27	91.28	20.98	91.39	23.28	91.5	24.82	91.59
	Reach2	1771	15.55	91.17	18.27	91.28	20.98	91.39	23.28	91.5	24.82	91.59
	Reach2	1775	15.55	91.19	18.27	91.3	20.98	91.4	23.28	91.51	24.82	91.59
	Reach2	1778	Century Road West and Third Line Road North									
	Reach2	1780	10.7	91.27	12.58	91.39	14.44	91.52	16.03	91.64	17.15	91.71
	Reach2	1781	10.7	91.28	12.58	91.41	14.44	91.53	16.03	91.65	17.15	91.72
	Reach2	1785	10.7	91.28	12.58	91.41	14.44	91.54	16.03	91.66	17.15	91.72
	Reach2	1790	10.7	91.29	12.58	91.41	14.44	91.54	16.03	91.66	17.15	91.72

River	Reach	Xsec ID	Flow (m^3/s) and Computed WSEL (m) for Different Flood Events									
			Q50	WL50	Q100	WL100	Q200	WL200	Q350	WL350	Q500	WL500
Tributary C	Reach1	3100	10.19	90.92	12.05	91.07	13.89	91.23	15.48	91.38	16.59	91.50
	Reach1	3101	10.19	90.92	12.05	91.08	13.89	91.24	15.48	91.38	16.59	91.50
	Reach1	3105	10.19	90.92	12.05	91.08	13.89	91.23	15.48	91.38	16.59	91.50
	Reach1	3110	10.19	90.92	12.05	91.07	13.89	91.22	15.48	91.37	16.59	91.50
	Reach1	3113	Third Line Road North									
	Reach1	3115	10.19	91.12	12.05	91.33	13.89	91.56	15.48	91.64	16.59	91.67
	Reach1	3120	10.19	91.14	12.05	91.35	13.89	91.57	15.48	91.64	16.59	91.67
	Reach1	3125	10.19	91.17	12.05	91.36	13.89	91.57	15.48	91.65	16.59	91.68

Table 16 List of RVCA Regulation Permit Files (2010 to 31 Oct, 2018)

RVCA File #	Location	Year of Application	Flood Line Change Required?	Breif Description
RV3-6118	CENTURY RD W	2018	No	ALTERWATER. MUNICIPAL DRAIN MAINTENANCE
RV3-4118	CENTURY ROAD W	2018	No	ALTERATION TO AN EXISTING WATERCOURSE DRAINAGE MAINTENANCE
RV3-4018	4TH LINE ROAD	2018	No	ALTERATION TO AN EXISTING WATERCOURSE DRAIN MAINTENANCE
RV3-6316	4244 RIDEAU VALLEY DR	2016	No	ALTERATION TO AN EXISTING WATERCOURSE NATURALIZE SHORELINE AND EROSION CONTROL AT OUTLETS
RV3-3115	CRAWFORD BRANCH, MUD CREEK (DFO DRAIN # 98222)	2015	No	ALTERATION TO AN EXISTING WATERCOURSE DRAIN MAINTENANCE/REPAIR
RV3-2315	WRIGHT-EASTMAN MUNICIPAL DRAIN	2015	No	ALTERATION TO AN EXISTING WATERCOURSE DRAIN MAINTENANCE/REPAIR
RV3-9014	5656 FIRST LINE RD	2014	No	ALTERATION TO AN EXISTING WATERCOURSE PLACE CULVERT FOR NEW HOUSE
RV3-3114	MUD CREEK MUNICIPAL DRAIN	2014	No	ALTERATION TO AN EXISTING WATERCOURSE DRAIN MAINTENANCE
RV3-6113	FIRST LINE & CENTURY ROAD	2013	No	ALTERATION TO AN EXISTING WATERCOURSE RENEWAL OF EXISTING APP RV3-05/11T, CONSTRUCT & CONVERSION OF A TRIB OF MUD CREEK TO MUNC. DRAIN
RV3-1613	BEAMISH BRANCH, MUD CREEK MUNICIPAL DRAIN	2013	No	ALTERATION TO AN EXISTING WATERCOURSE DRAIN MAINTENANCE OR REPAIR
RV3-1513	BROWNLEE BRANCH, MUD CREEK MUNICIPAL DRAIN	2013	No	ALTERATION TO AN EXISTING WATERCOURSE DRAIN MAINTENANCE OR REPAIR
RV3-4012T	NORTH GOWER LOT 8+ CON 2++	2012	No	MUNICIPAL DRAIN CLEAN OUT (SECTION 35) BOTTOM ONLY CLEANOUT AND BRUSHING OF TOP BANK
RV3-3912T	NORTH GOWER LOT 5 CON 3	2012	No	MUNICIPAL DRAIN CLEAN OUT (SECTION 35) BOTTOM ONLY CLEANOUT AND BRUSHING OF TOP BANK
RV3-4211T	MCCORDICK RD	2011	No	ALTER, REPAIR, OR REPLACE EXISTING STRUCTURE REPLACE EXISTING CULVERT -COMMENTS FIELD FROM OLD DATABASE: CULVERT
RV3-3511T	NORTH GOWER LOT 1++ CON 2+	2011	No	MUNICIPAL DRAIN CLEAN OUT (SECTION 35) BOTTOM CLEAN OUT AND VEGETATION REMOVAL ON ALTERNATE SIDES ON SCOBIE BRANCH OF MUD CREEK MUNICIPAL DRAIN
RV3-3411T	NORTH GOWER LOT 1 CON 3	2011	No	MUNICIPAL DRAIN CLEAN OUT (SECTION 35) BOTTOM CLEAN OUT AND VEGETATION REMOVAL ON ALTERNATE SIDES ON BEAMISH BRANCH OF MUD CREEK MUNICIPAL DRAIN
RV3-1711	5402 MANSEL CRES	2011	No	SWIMMING POOL IN-GROUND SWIMMING POOL -COMMENTS FIELD FROM OLD DATABASE: STAMP
RV3-0511T	FIRST LINE RD	2011	No	ALTERATION TO WATERWAYS OTHER CONVERSION OF NATURAL WATERCOURSE TO MUNICIPAL DRAIN - LONG STANDING ISSUE REGARDING MAN MADE OBSTRUCTION PROCESS BEGAN UNDER DRAINAGE ACT 2007 BUT RECORDS OF COMPLAINTS PRIOR -COMMENTS FIELD FROM OLD DATABASE: ADAMS
RV3-7710T	5599 FIRST LINE RD	2010	No	BRIDGE, CULVERT, ROAD CROSSING, MAJOR WORKS CONSTRUCT PEDESTRIAN BRIDGE - RELATED SUBDIVISION APPLICATION -COMMENTS FIELD FROM OLD DATABASE: BRIDGE
RV3-7610T	5983 FOURTH LINE	2010	No	BRIDGE, CULVERT, ROAD CROSSING, MAJOR WORKS FARM DRAIN CLEAN OUT (NOT MUNICIPAL) -COMMENTS FIELD FROM OLD DATABASE: DRAIN
RV3-4310T	5631 FIRST LINE RD	2010	No	BRIDGE, CULVERT, ROAD CROSSING, MAJOR WORKS STORMWATER OUTLET FOR SUBDIVISION
RV3-2310T	NORTH GOWER LOT 2++ CON 1+	2010	No	MUNICIPAL DRAIN CLEAN OUT (SECTION 35) MUNICIPAL DRAIN CLEAN OUT -COMMENTS FIELD FROM OLD DATABASE: DRAIN
RV3-2210T	NORTH GOWER LOT 2+ CON 3+	2010	No	MUNICIPAL DRAIN CLEAN OUT (SECTION 35) MUNICIPAL DRAIN CLEAN OUT -COMMENTS FIELD FROM OLD DATABASE: DRAIN

Appendix A

Buildings and Islands in Floodplain – RVCA Policy

Ferdous Ahmed

From: Ewan Hardie
Sent: Wednesday, June 29, 2016 10:35 AM
To: Ferdous Ahmed
Subject: Buildings in the Floodplain Guidelines

Hi Ferdous,
As discussed at recent meetings please consider the following guidelines when undertaking floodplain mapping projects

Effective June 13th 2016, when plotting floodlines RVCA staff will use the following guidelines in order to apply a conservative approach to the delineation of the regulatory floodplain, specifically in areas that have buildings that are in the floodplain or affected by the floodplain:

1. Include any buildings in the floodplain that have any part of the footprint touching the floodplain. This is done to be conservative based on the lack of knowledge on the conditions around the buildings: soil conditions, window wells, walk out doors, building egress are all not known at the time of a floodplain mapping study so it is wise to adopt a conservative approach and include building footprints in the floodplain.
2. With regards to dry islands in and around buildings, islands will be removed if they did not meet the minimum mapping unit acceptable for the data. An envelope of 2 metres around building footprints is to be considered. If the floodplain comes close to or is in this 2m building envelope the entire envelope should be included in the floodplain. This approach is also consistent with the above approach (building footprints) in that the lack of knowledge of the conditions around the building forces the uses of a conservative approach, which is to remove the islands
3. In cases where a building has been included in the floodplain (because of the above criteria), the adjacent building will need to be included in the floodplain as well because of a lack of data in between the buildings and/or the 2m building envelope rule.
4. In the case of townhome or connected type buildings and the floodplain touching the foundations, the building footprint should be included up to the next visible unit partition where the elevation changes

Thanks

Ewan Hardie

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Watershed Science and Engineering Services
Rideau Valley Conservation Authority
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Fax: 613 692-0334

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K4M 1A5
www.rvca.ca

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Ferdous Ahmed

From: Ewan Hardie
Sent: Thursday, July 6, 2017 5:12 PM
To: Ferdous Ahmed
Cc: Brian Stratton
Subject: Floodplain delineation guidance

Good Afternoon Ferdous,

As discussed here is the documentation of the guidance that was given to RVCA staff when it comes to plotting floodlines using LiDAR data for this most recent project.

Guidance:

When delineating the regulatory flood water levels, RVCA staff will follow a precautionary principle to include island areas in the floodplain that are up to 1000 square metres.

Ewan Hardie

Director
Watershed Science and Engineering Services
Rideau Valley Conservation Authority
ewan.hardie@rvca.ca
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Fax: 613 692-0334

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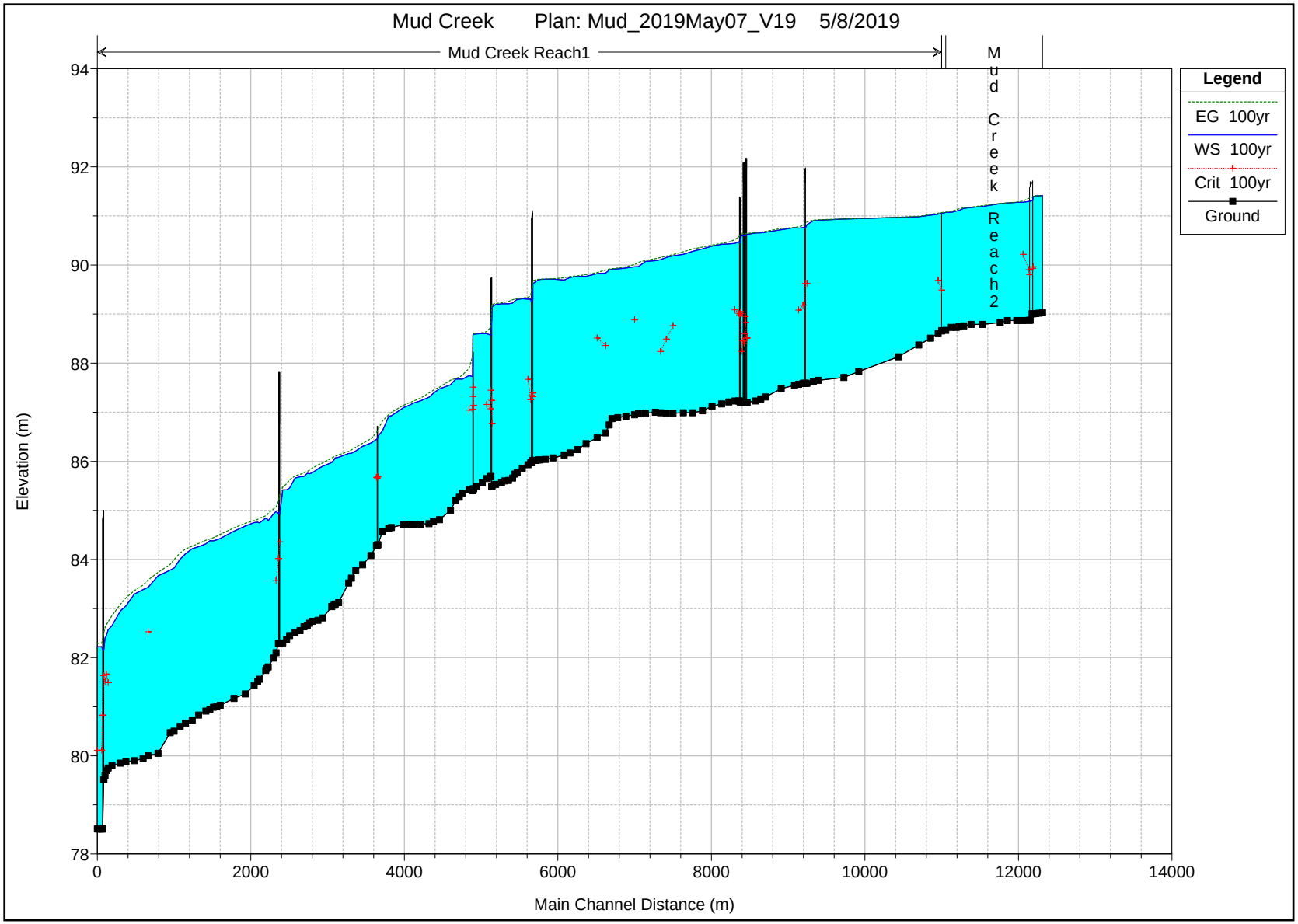
Appendix B

HEC-RAS Profiles and Cross-Sections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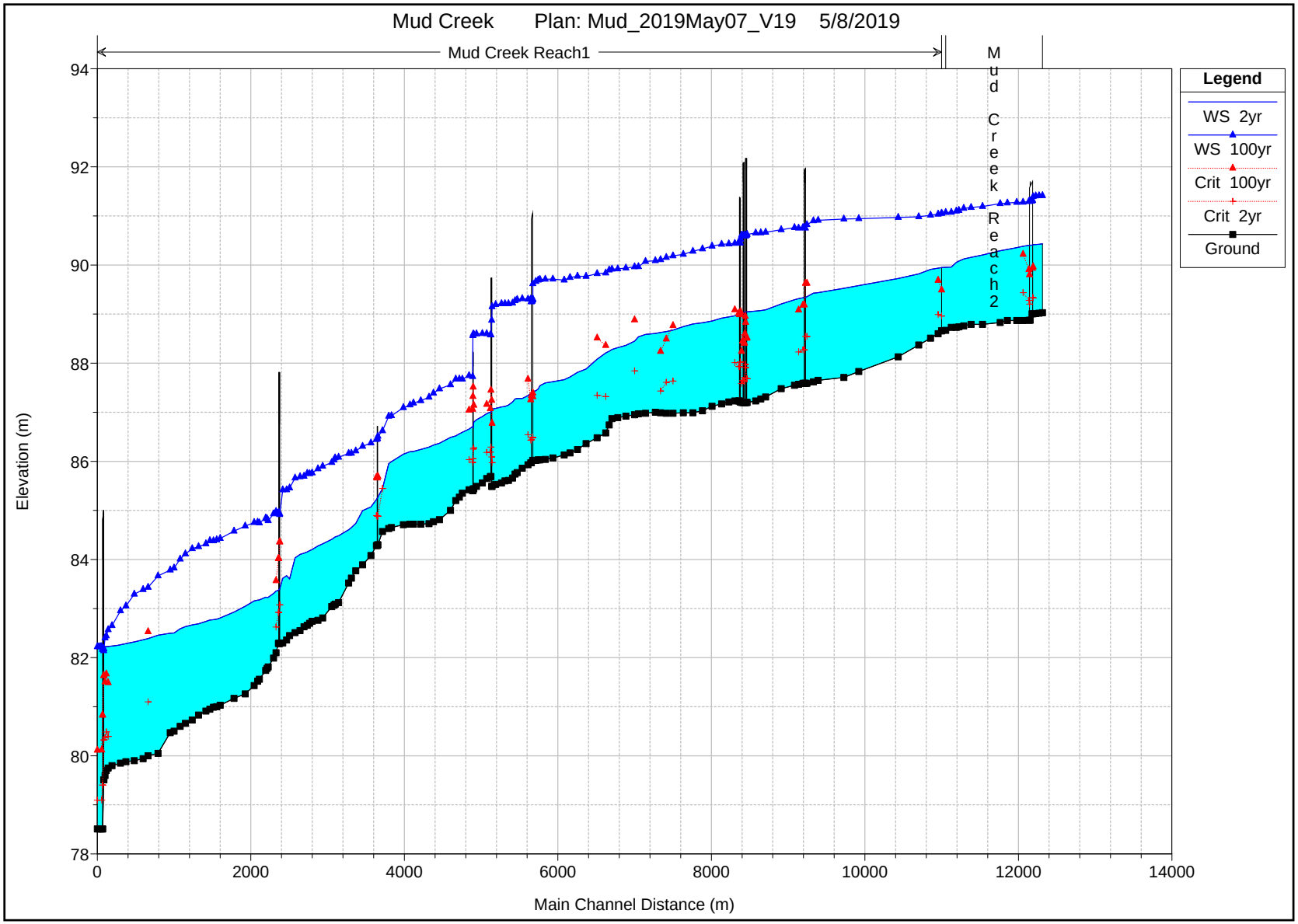
Mud Creek Reach1
Mud Creek Reach2
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Elevation (m)
Main Channel Distance (m)
94
92
90
88
86
84
82
80
78
0
2000
4000
6000
8000
10000
12000
14000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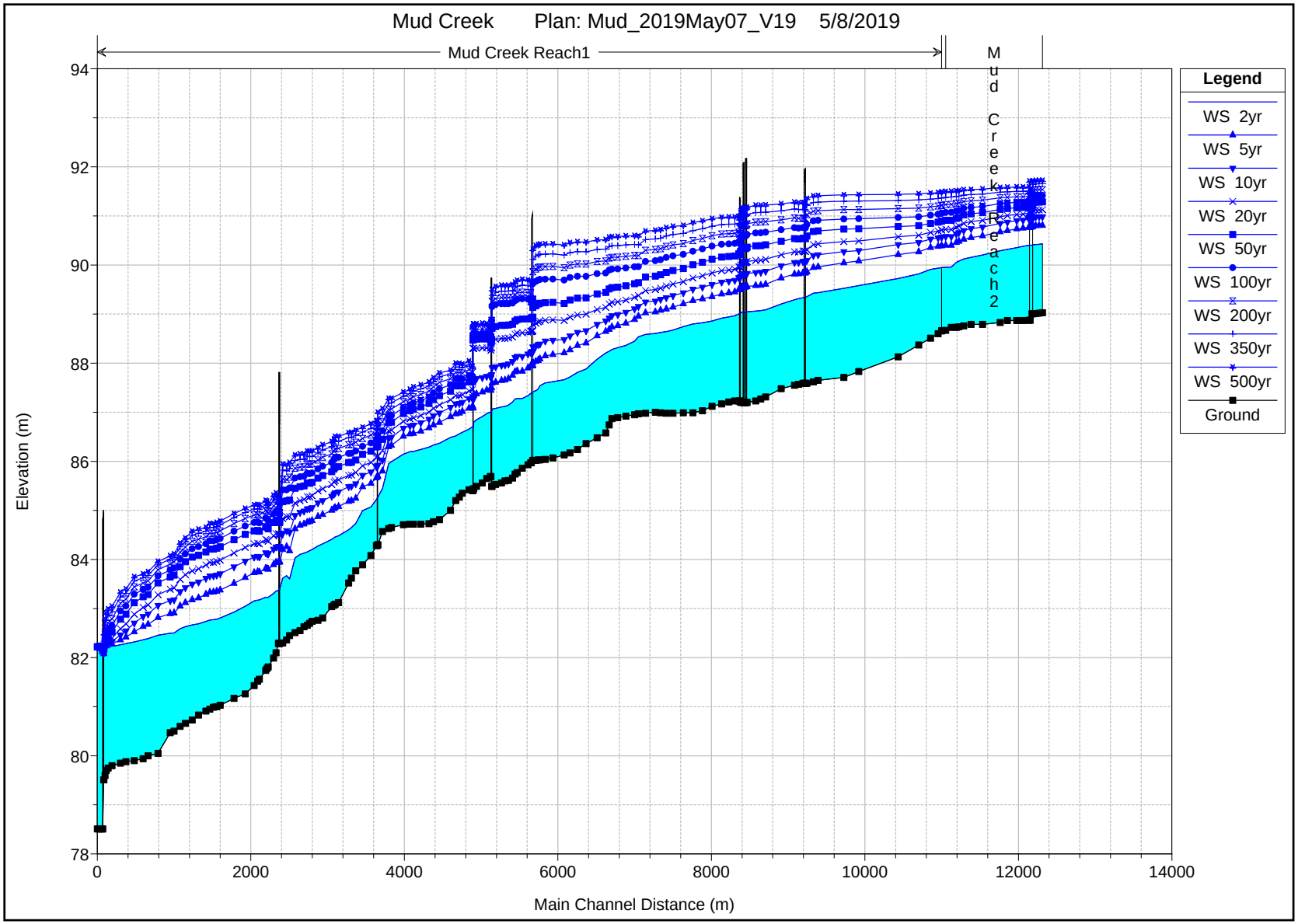
Mud Creek Reach1
Mud Creek Reach2
Legend
WS 2yr
WS 100yr
Crit 100yr
Crit 2yr
Ground
Elevation (m)
Main Channel Distance (m)
94
92
90
88
86
84
82
80
78
0
2000
4000
6000
8000
10000
12000
14000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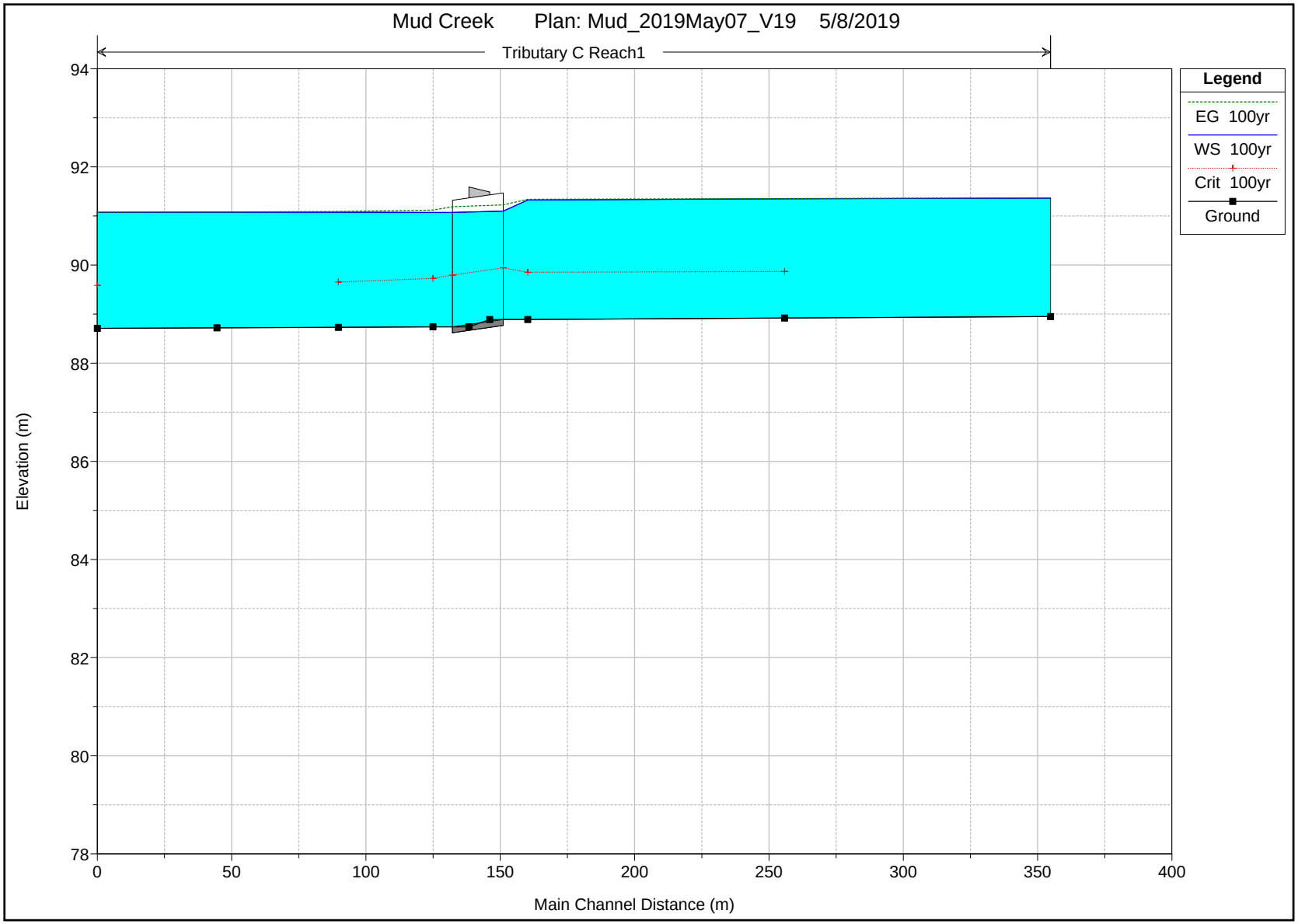
Mud Creek Reach1
Mud Creek Reach2
Legend
WS 2yr
WS 5yr
WS 10yr
WS 20yr
WS 50yr
WS 100yr
WS 200yr
WS 350yr
WS 500yr
Ground
Elevation (m)
Main Channel Distance (m)
94
92
90
88
86
84
82
80
78
0
2000
4000
6000
8000
10000
12000
14000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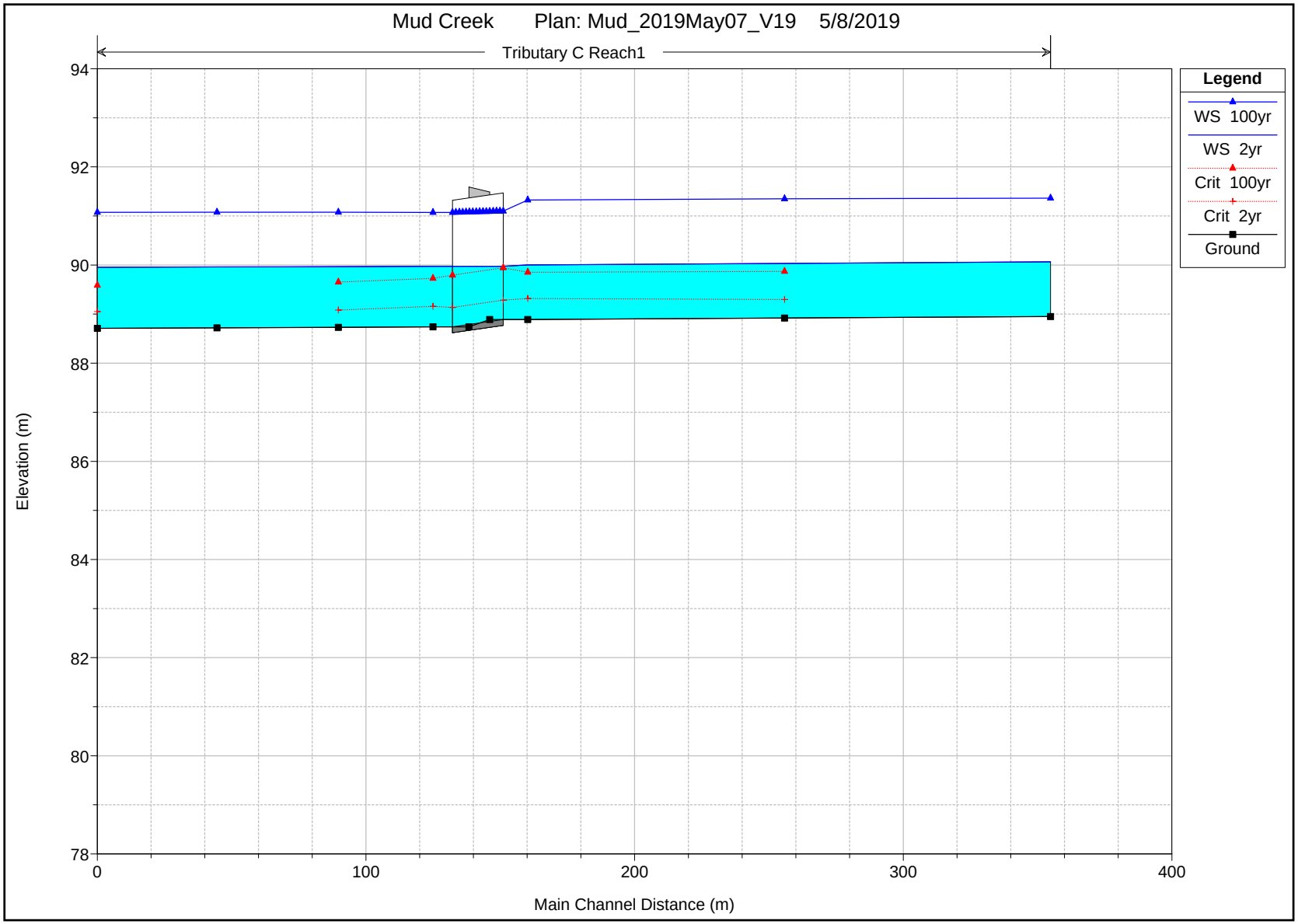
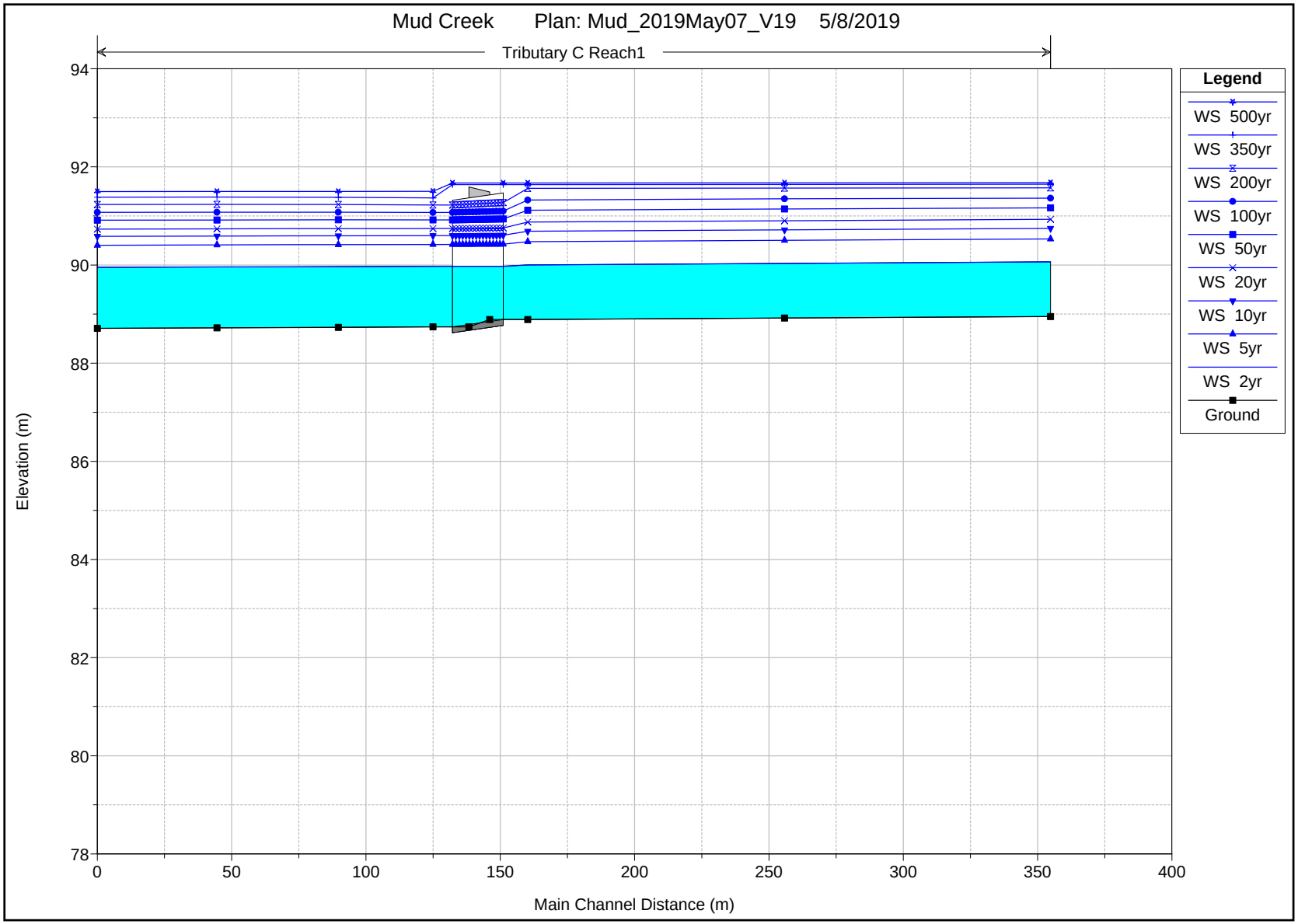
Tributary C Reach1
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Elevation (m)
Main Channel Distance (m)
94
92
90
88
86
84
82
80
78
0
50
100
150
200
250
300
350
400


Mud Creek Plan: Mud_2019May07_V19 5/8/2019
Tributary C Reach1
Legend
WS 100yr
WS 2yr
Crit 100yr
Crit 2yr
Ground
Elevation (m)
94
92
90
88
86
84
82
80
78
0
100
200
300
400
Main Channel Distance (m)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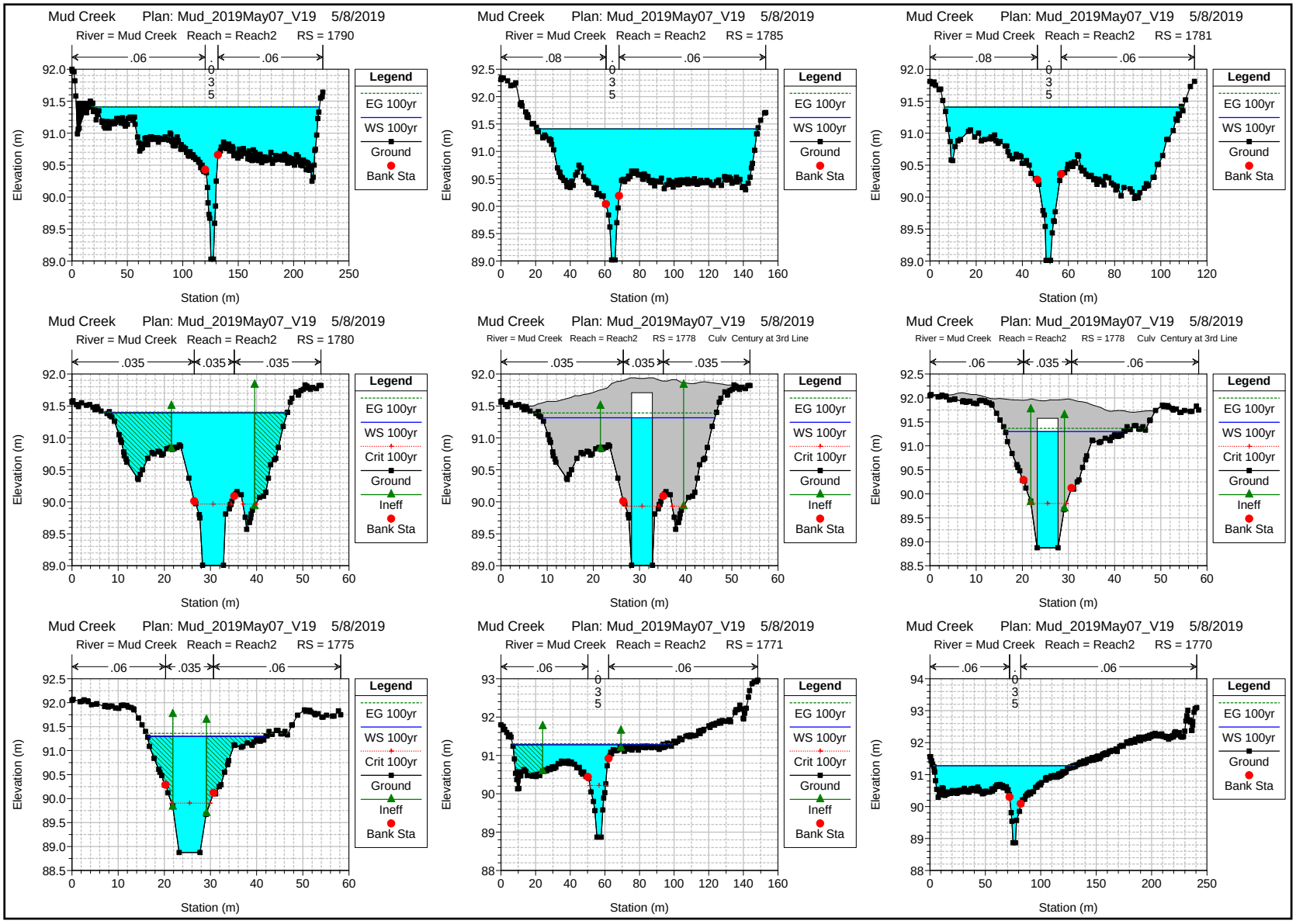
Tributary C Reach1
Elevation (m)
Main Channel Distance (m)
94
92
90
88
86
84
82
80
78
0
50
100
150
200
250
300
350
400
Legend
WS 500yr
WS 350yr
WS 200yr
WS 100yr
WS 50yr
WS 20yr
WS 10yr
WS 5yr
WS 2yr
Ground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Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1785
.08 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1781
.08 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1780
.035 .035 .035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1778 Culv Century at 3rd Line
.035 .035 .035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1778 Culv Century at 3rd Line
.06 .035 .06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1775
.06 .035 .06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1771
.06 .035 .06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
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.06 .035 .06
Legend
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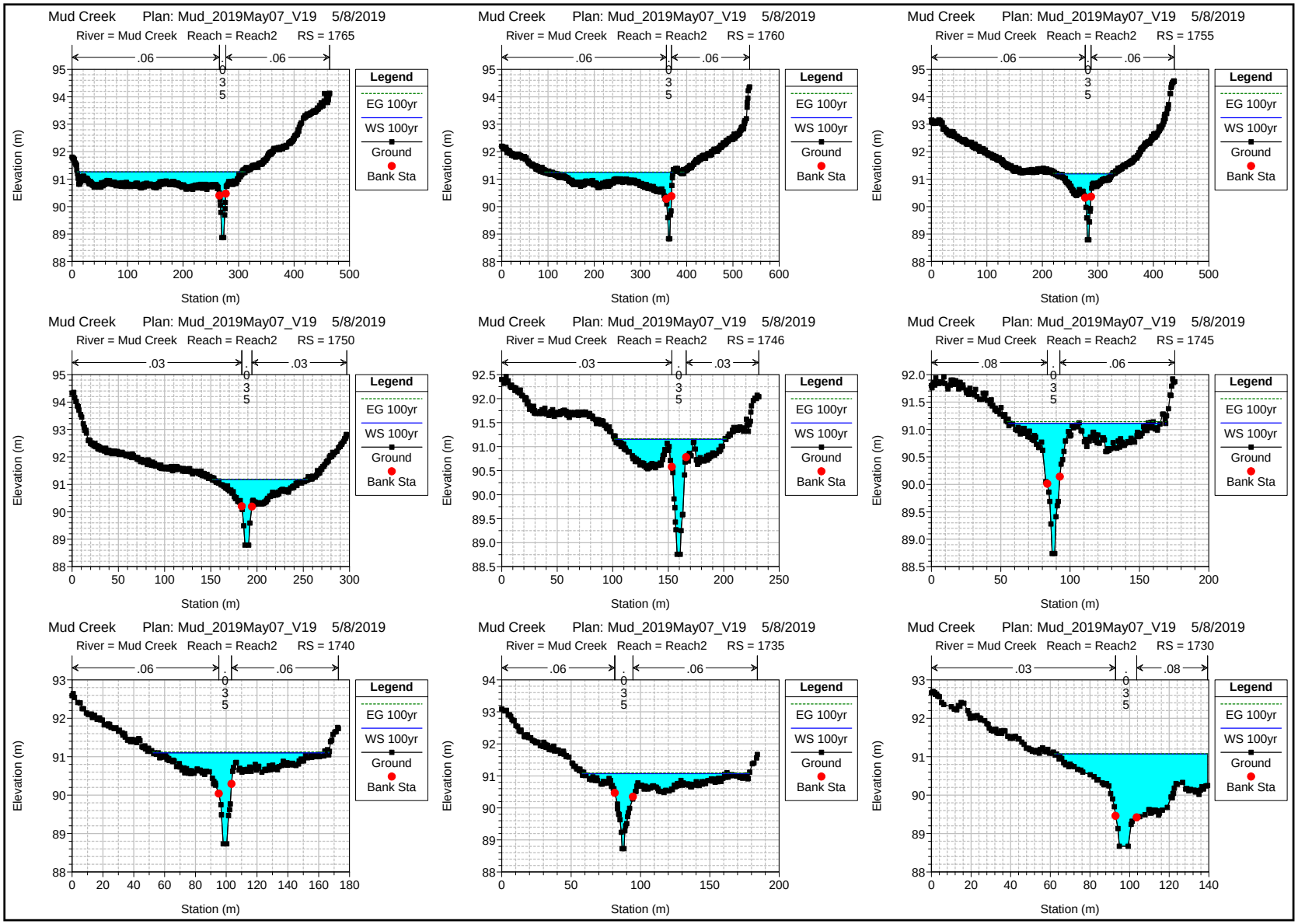
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)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.06
.06
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
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.06
.06
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
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.06
.06
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
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.03
.03
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
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.03
.03
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
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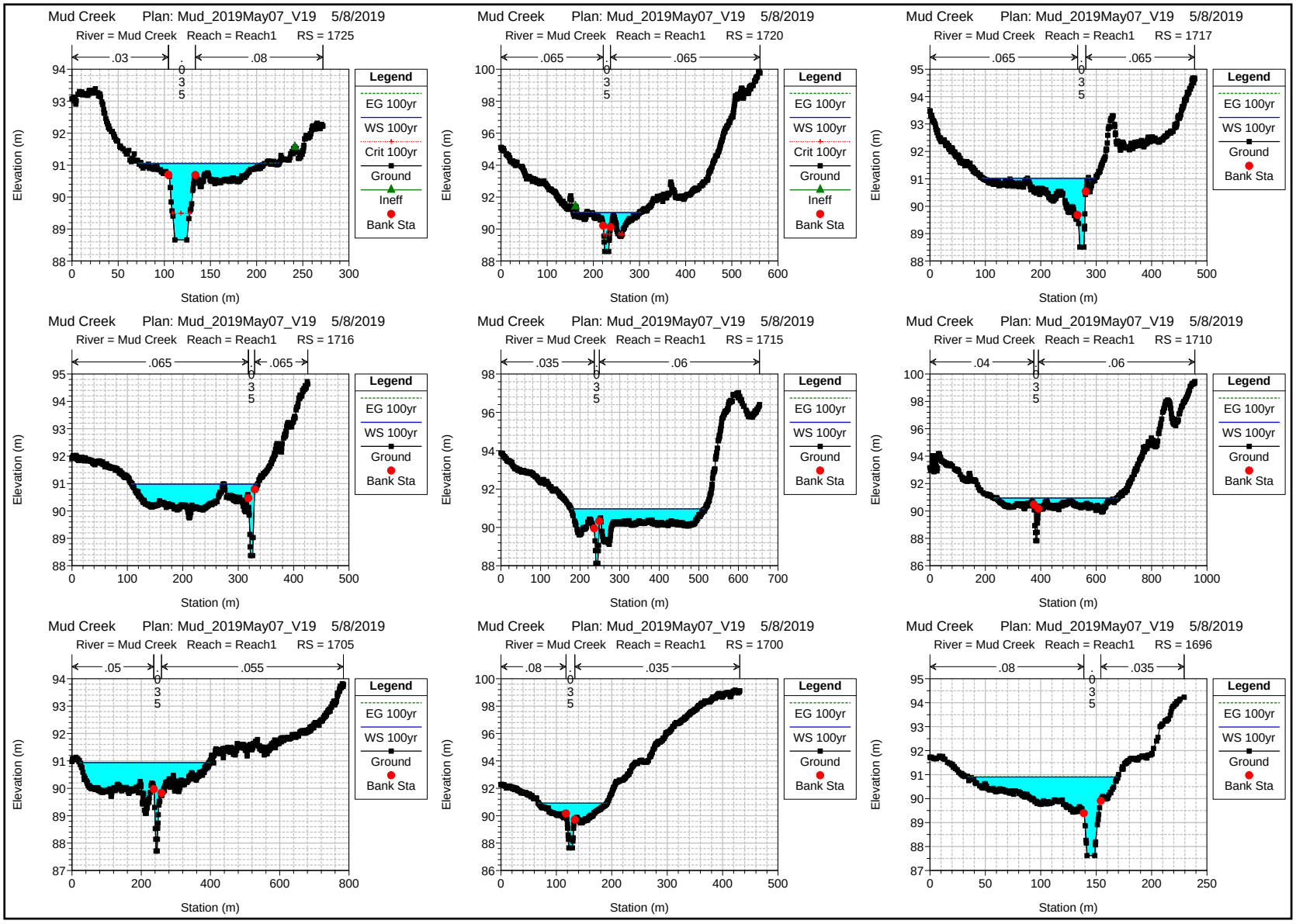
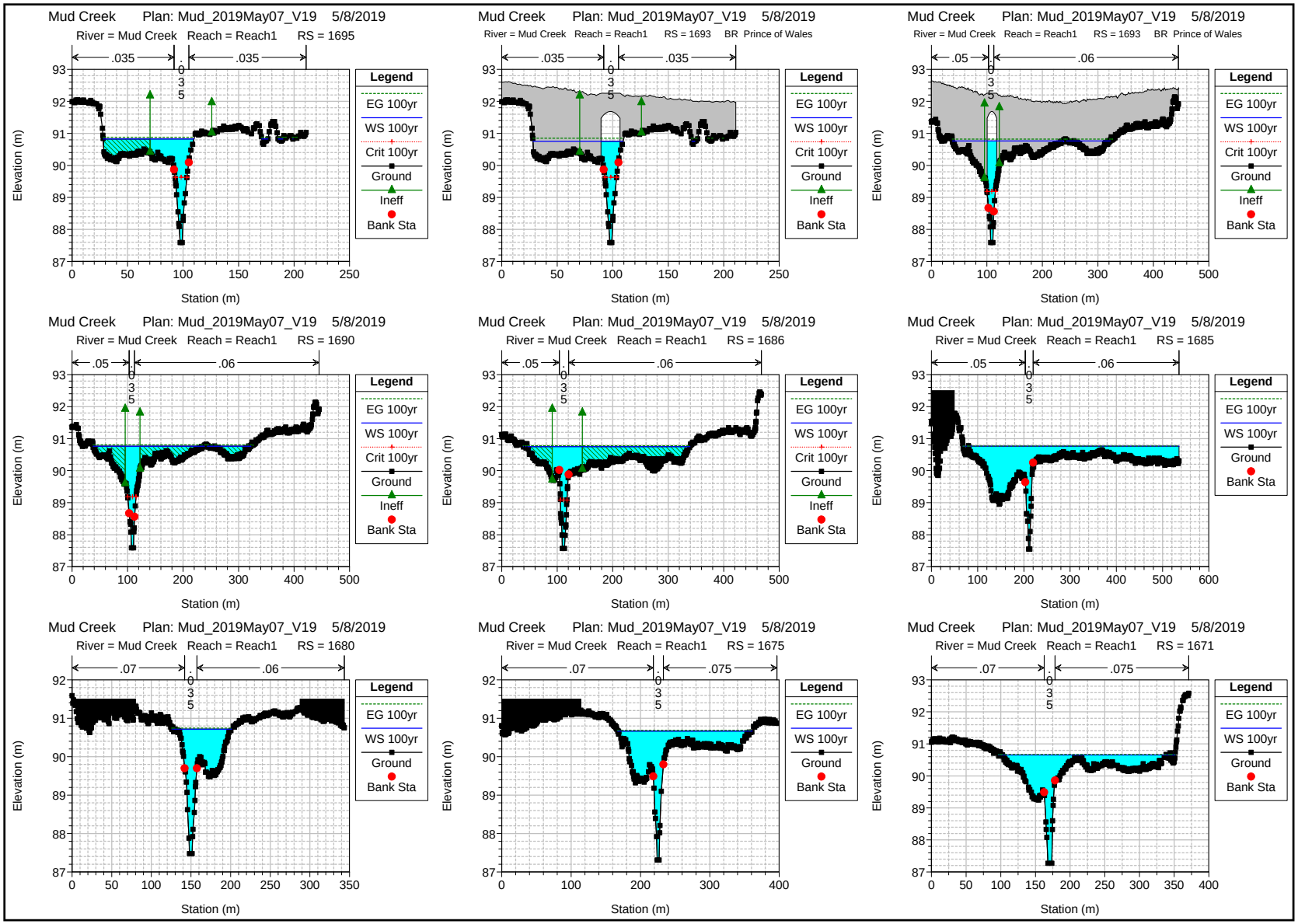
.08
.06
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1740
.06
.06
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1735
.06
.06
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach2 RS = 1730
.03
.08
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)


Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1725
.03
.035
.08
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1720
.065
.035
.065
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1717
.065
.035
.065
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1716
.065
.035
.065
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1715
.035
.035
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1710
.04
.035
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1705
.05
.035
.055
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1700
.08
.035
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1696
.08
.035
.035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)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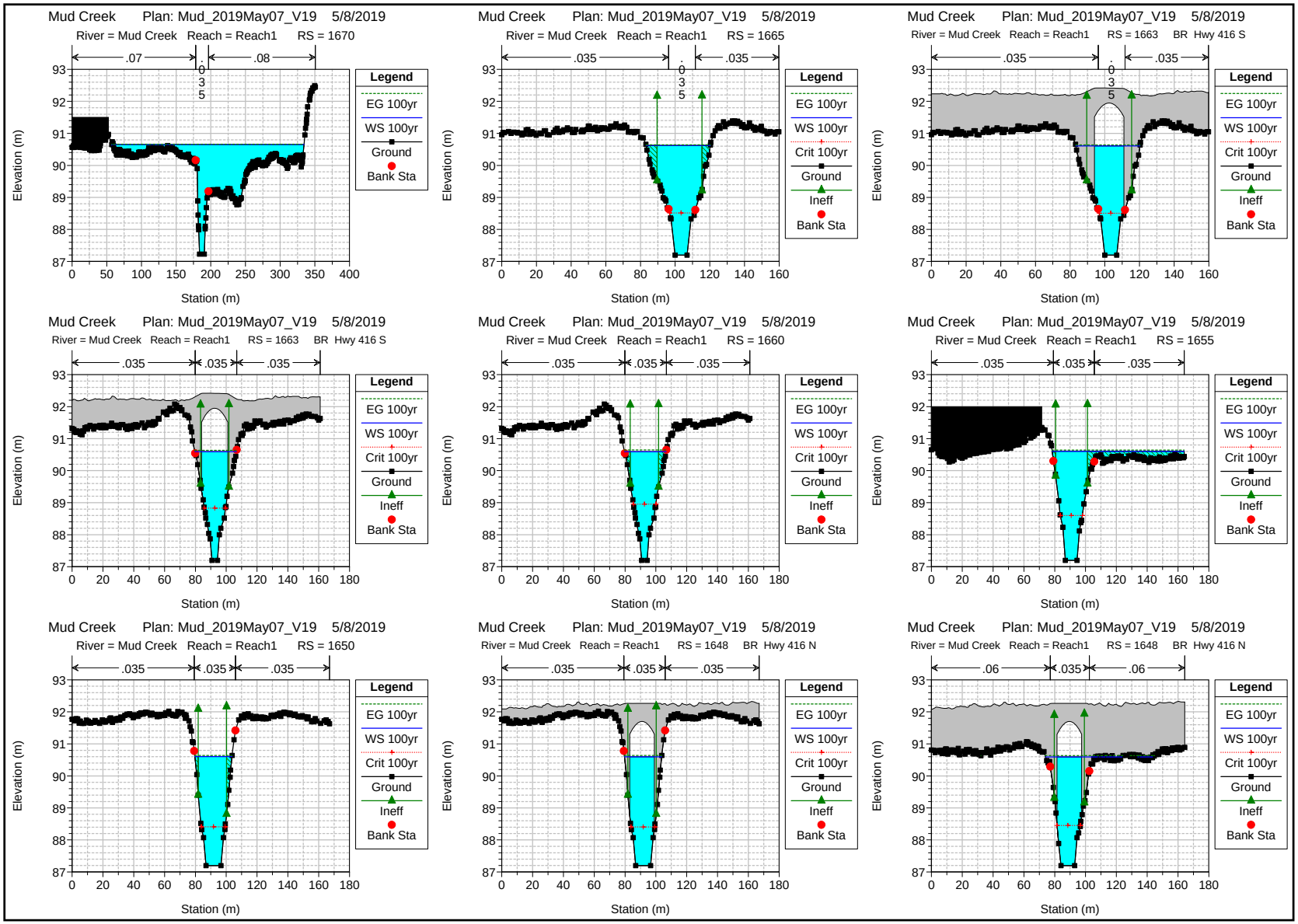
River = Mud Creek Reach = Reach1 RS = 1695
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1693 BR Prince of Wales
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1693 BR Prince of Wales
.05
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1690
.05
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1686
.05
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1685
.05
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1680
.07
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1675
.07
.075
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1671
.07
.075
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)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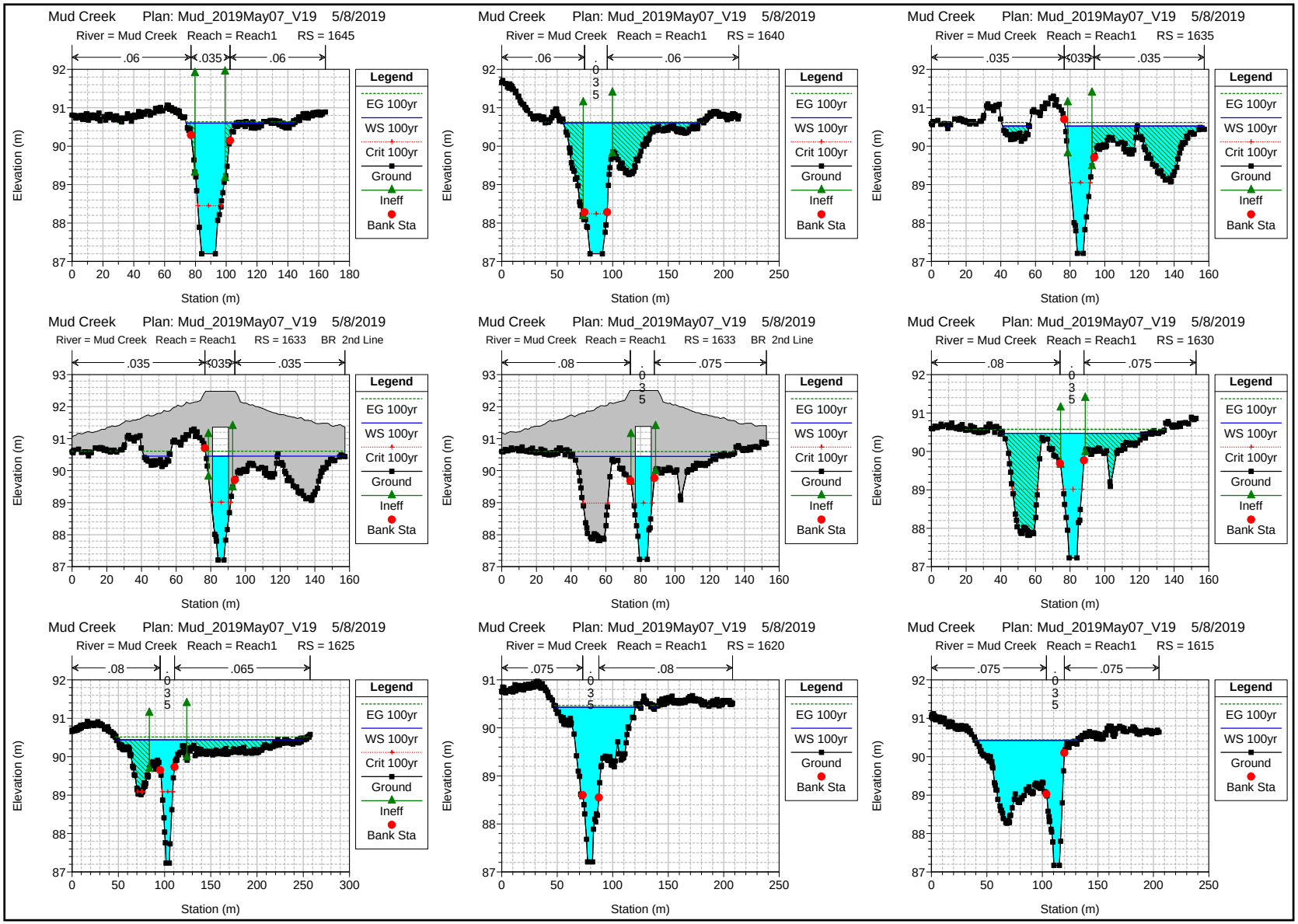
River = Mud Creek Reach = Reach1 RS = 1670
.07
.035
.08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1665
.035
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1663 BR Hwy 416 S
.035
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1663 BR Hwy 416 S
.035
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1660
.035
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1655
.035
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1650
.035
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1648 BR Hwy 416 N
.035
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1648 BR Hwy 416 N
.06
.035
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)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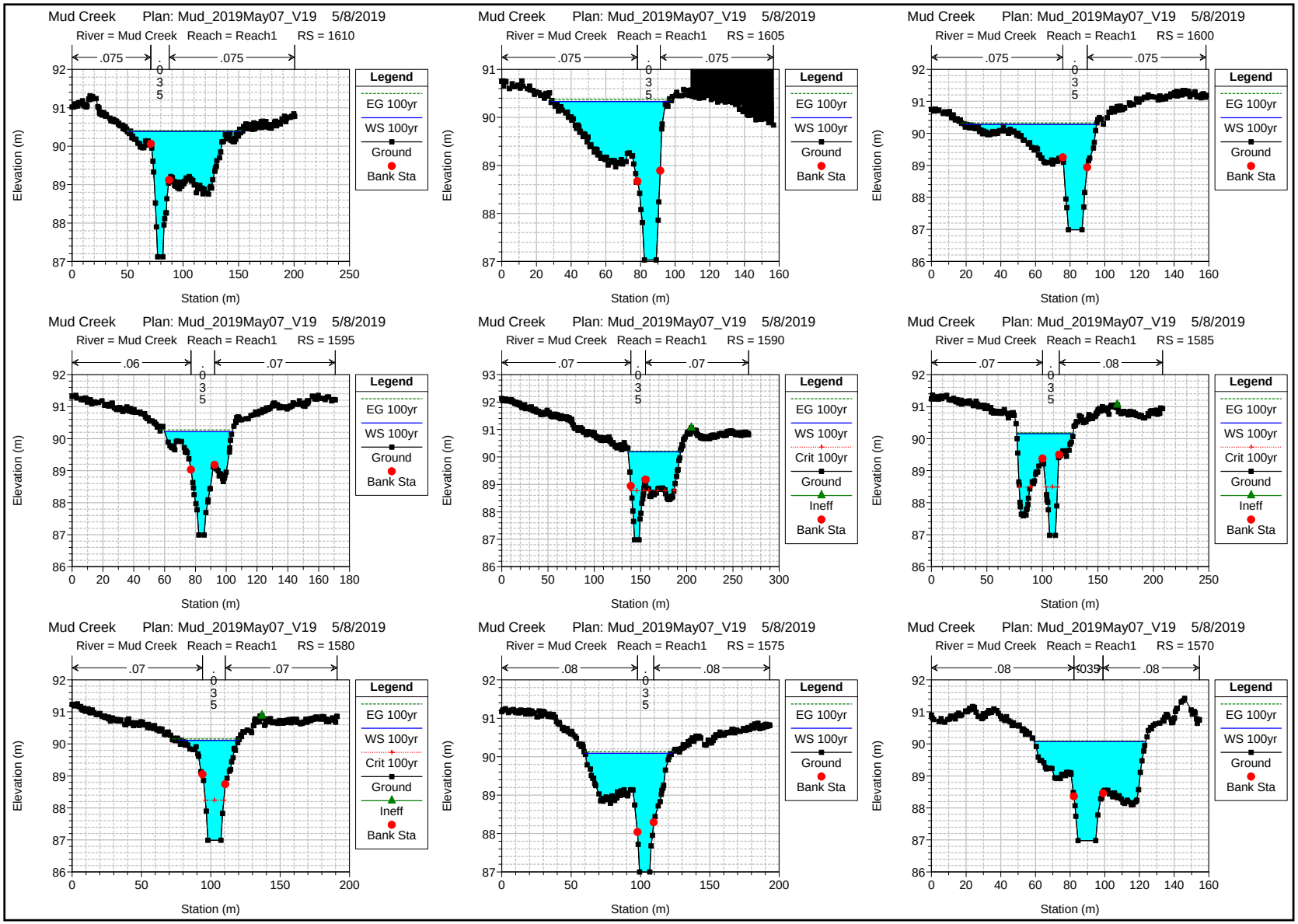
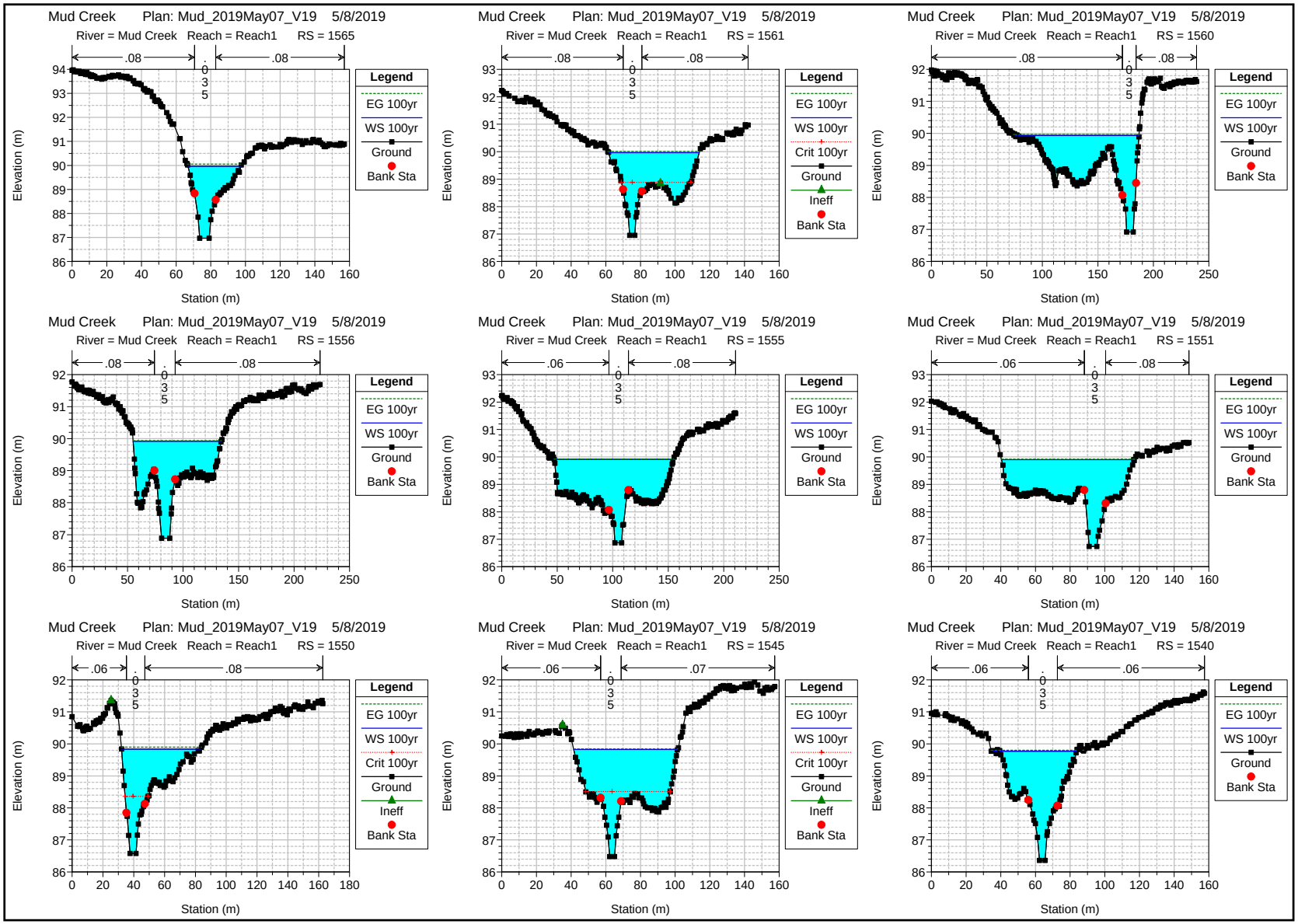
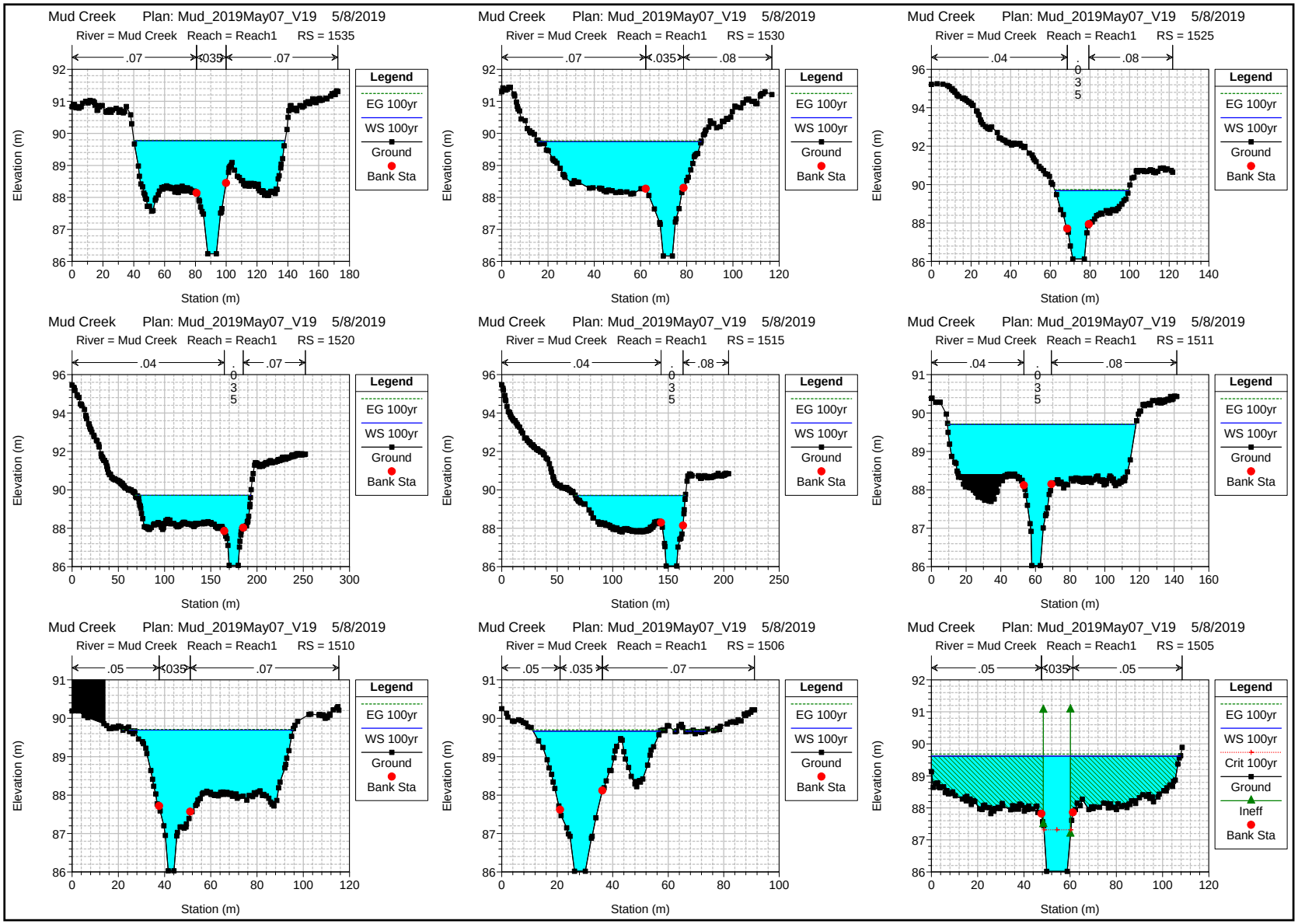
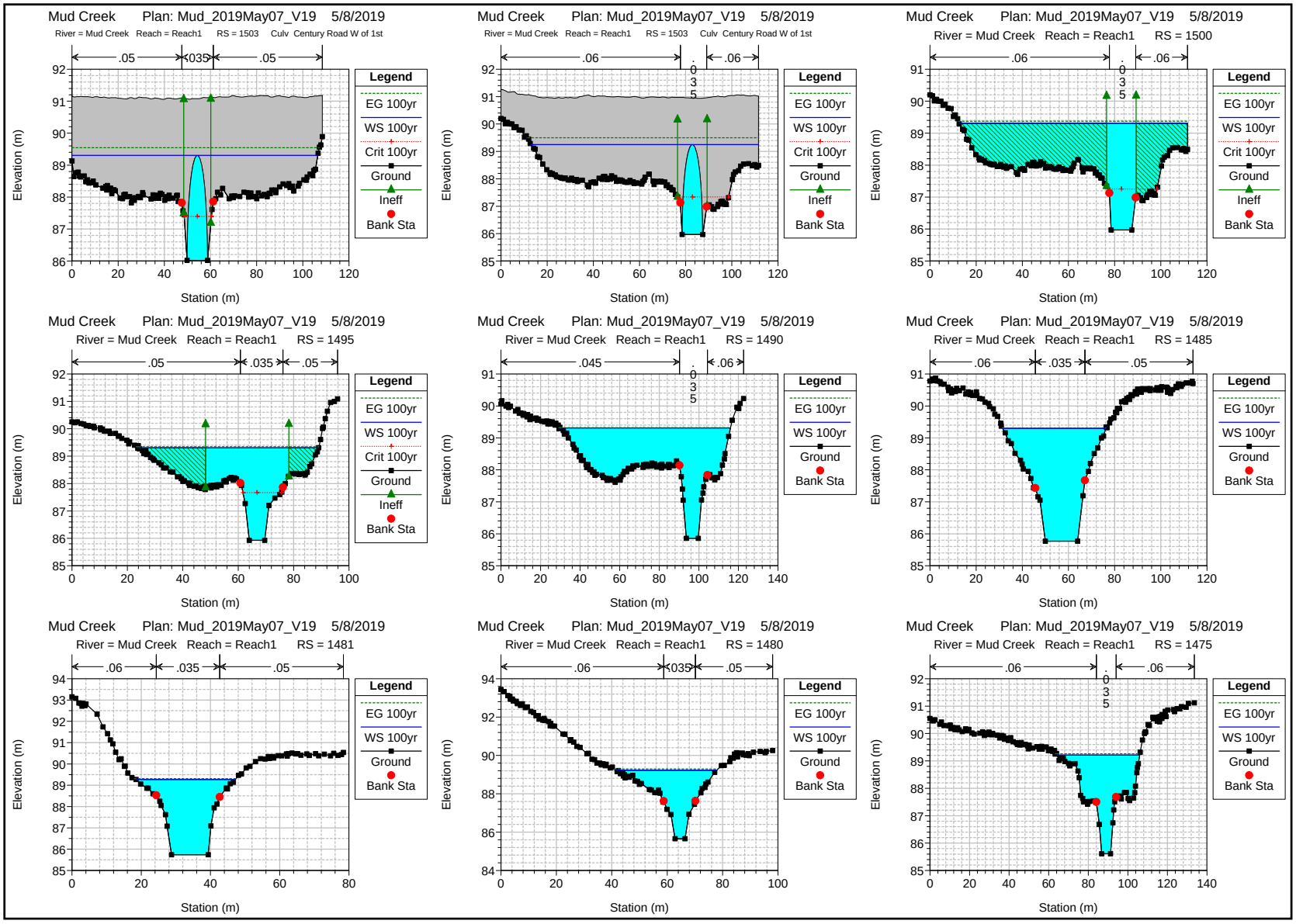
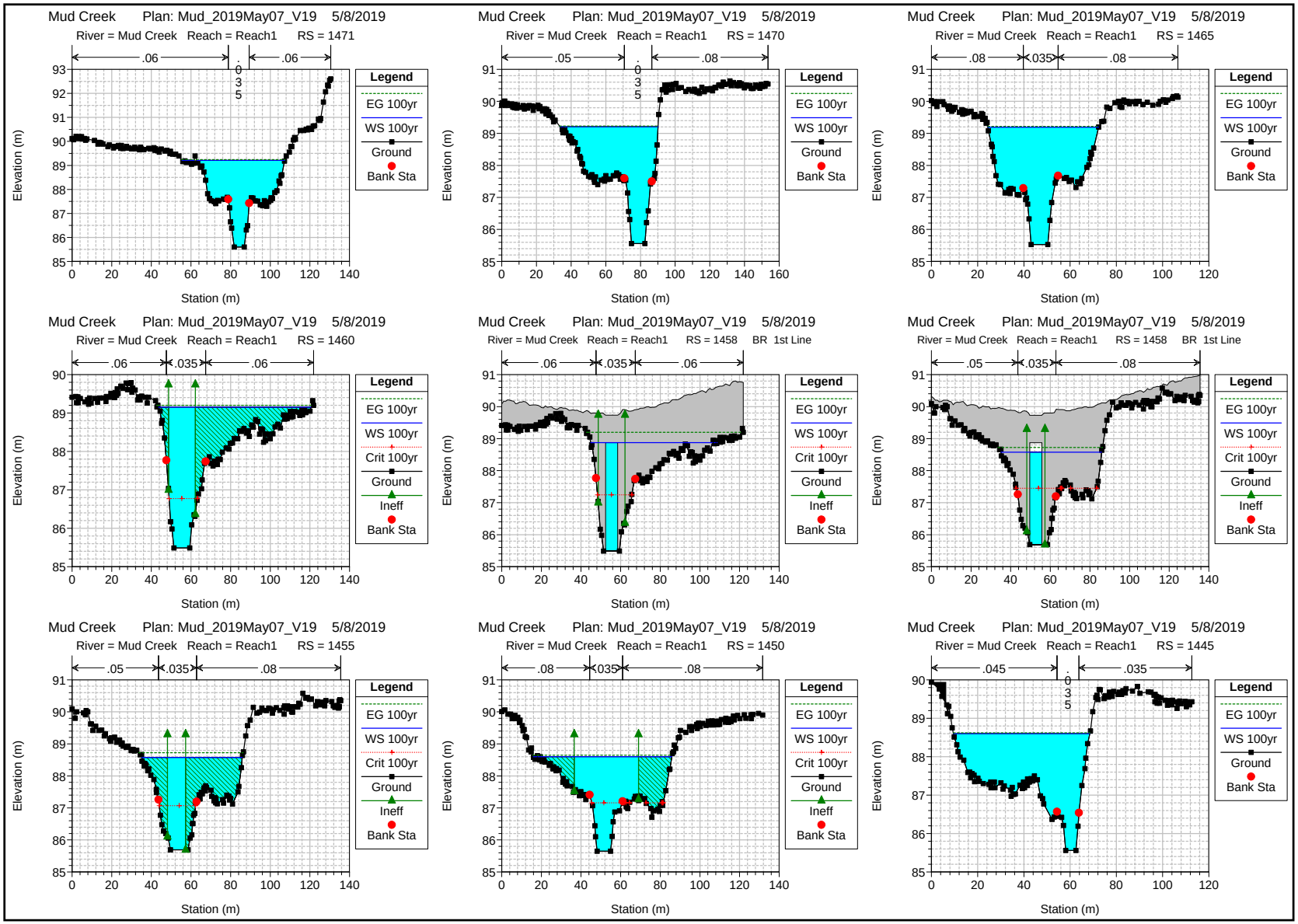
River = Mud Creek Reach = Reach1 RS = 1645
.06 .035 .06
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1640
.06 .035 .06
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1635
.035 .035 .035
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1633 BR 2nd Line
.035 .035 .035
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1633 BR 2nd Line
.08 .035 .075
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1630
.08 .035 .075
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1625
.08 .035 .065
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1620
.075 .035 .08
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1615
.075 .035 .075
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

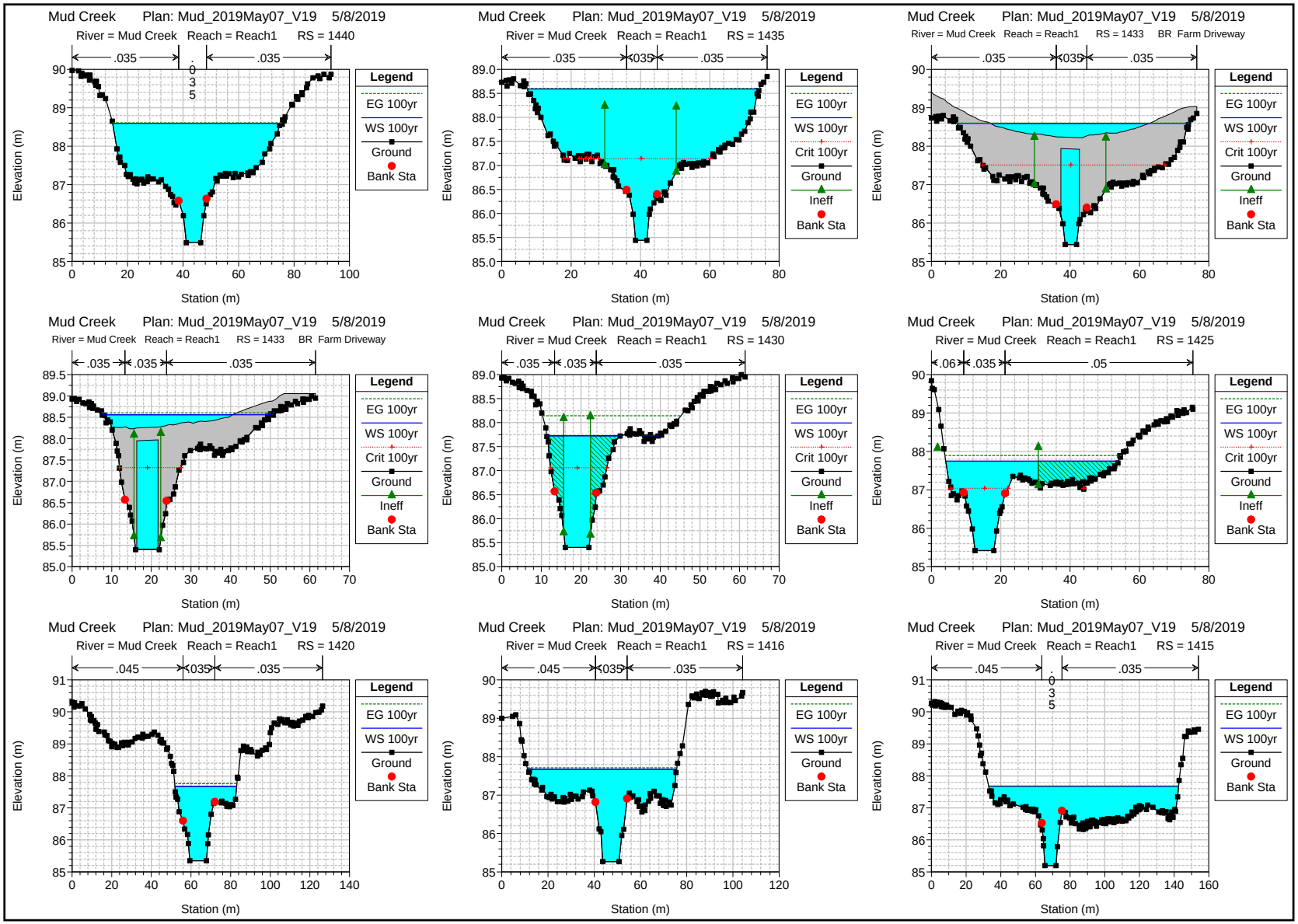

Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1610
.075 .035 .075
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1605
.075 .035 .075
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1600
.075 .035 .075
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1595
.06 .035 .07
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1590
.07 .035 .07
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1585
.07 .035 .08
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1580
.07 .035 .07
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1575
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1570
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)

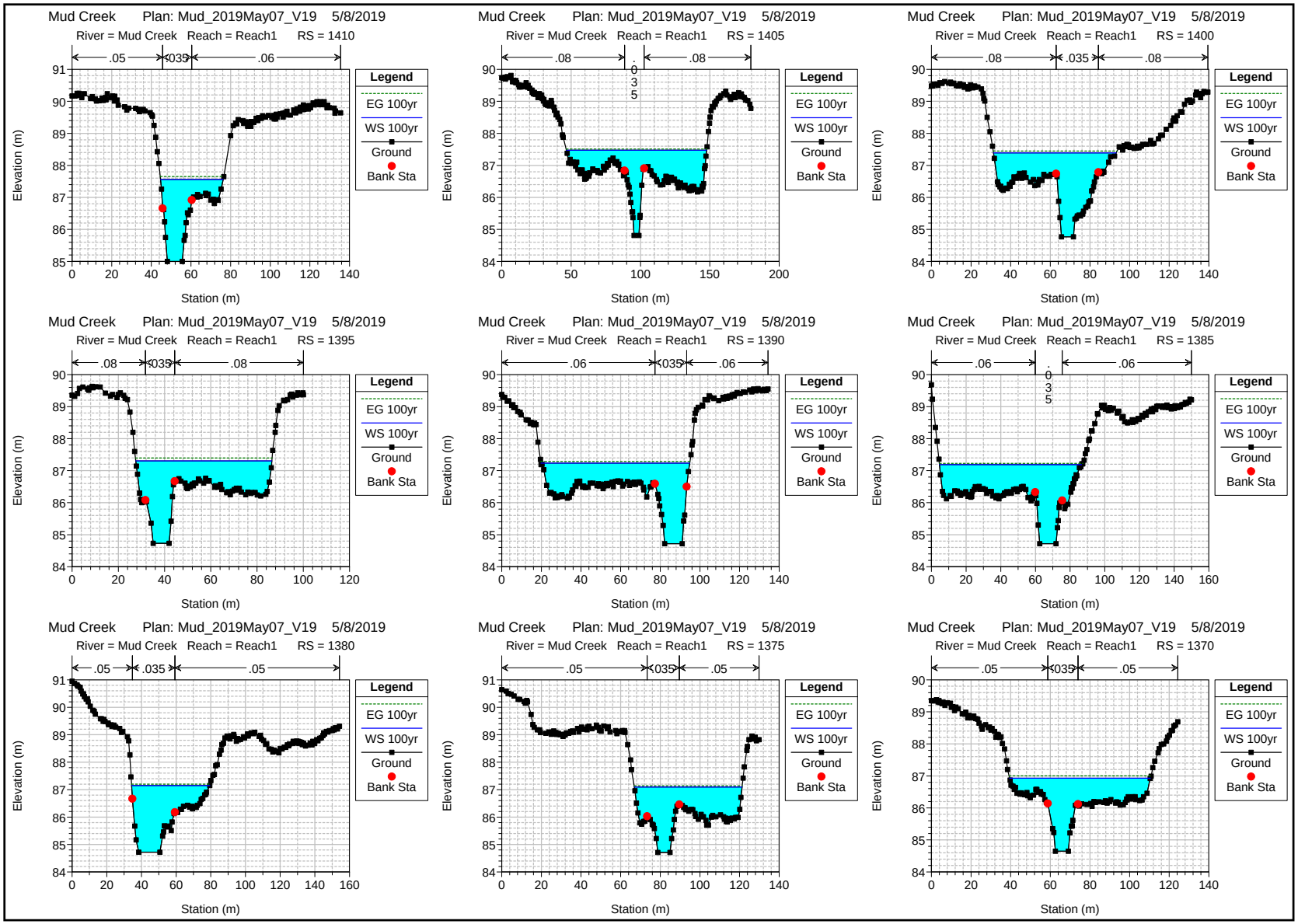

Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1565
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1561
.08 .035 .08
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1560
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1556
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1555
.06 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1551
.06 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1550
.06 .035 .08
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1545
.06 .035 .07
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1540
.06 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)


Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1535
.07 .035 .07
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1530
.07 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1525
.04 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1520
.04 .035 .07
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1515
.04 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1511
.04 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1510
.05 .035 .07
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1506
.05 .035 .07
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1505
.05 .035 .05
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)


Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1503 Culv Century Road W of 1st
.05 .035 .05
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1503 Culv Century Road W of 1st
.06 .035 .06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1500
.06 .035 .06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1495
.05 .035 .05
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1490
.045 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1485
.06 .035 .05
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1481
.06 .035 .05
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1480
.06 .035 .05
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1475
.06 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)


Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1471
.06 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1470
.05 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1465
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1460
.06 .035 .06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1458 BR 1st Line
.06 .035 .06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1458 BR 1st Line
.05 .035 .08
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1455
.05 .035 .08
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1450
.08 .035 .08
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1445
.045 .035 .035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)


Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1440
.035 .035 .035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1435
.035 .035 .035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1433 BR Farm Driveway
.035 .035 .035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1433 BR Farm Driveway
.035 .035 .035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1430
.035 .035 .035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1425
.06 .035 .05
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1420
.045 .035 .035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1416
.045 .035 .035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1415
.045 .035
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)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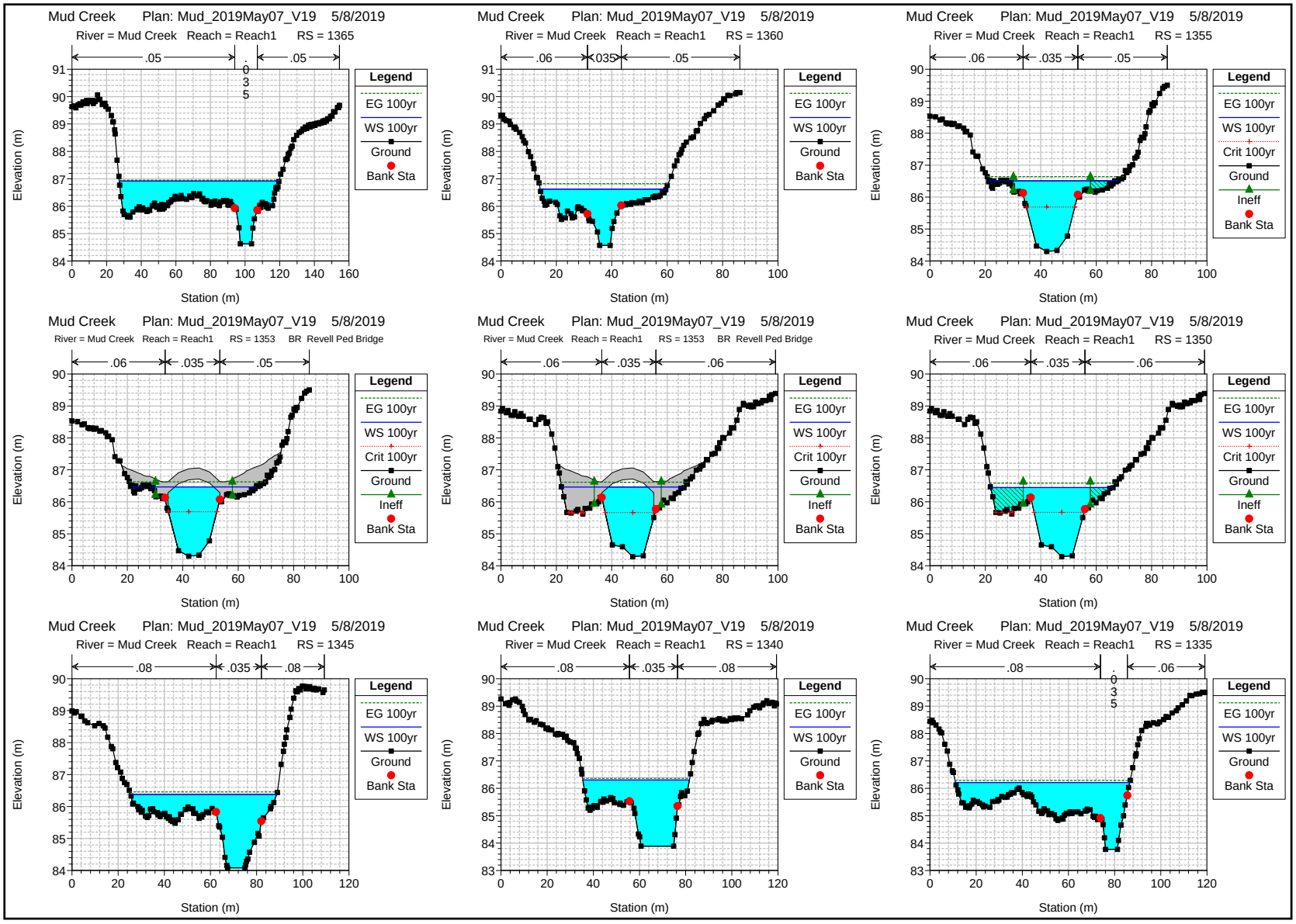
River = Mud Creek Reach = Reach1 RS = 1410
.05 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1405
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1400
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1395
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1390
.06 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1385
.06 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1380
.05 .035 .05
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1375
.05 .035 .05
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1370
.05 .035 .05
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)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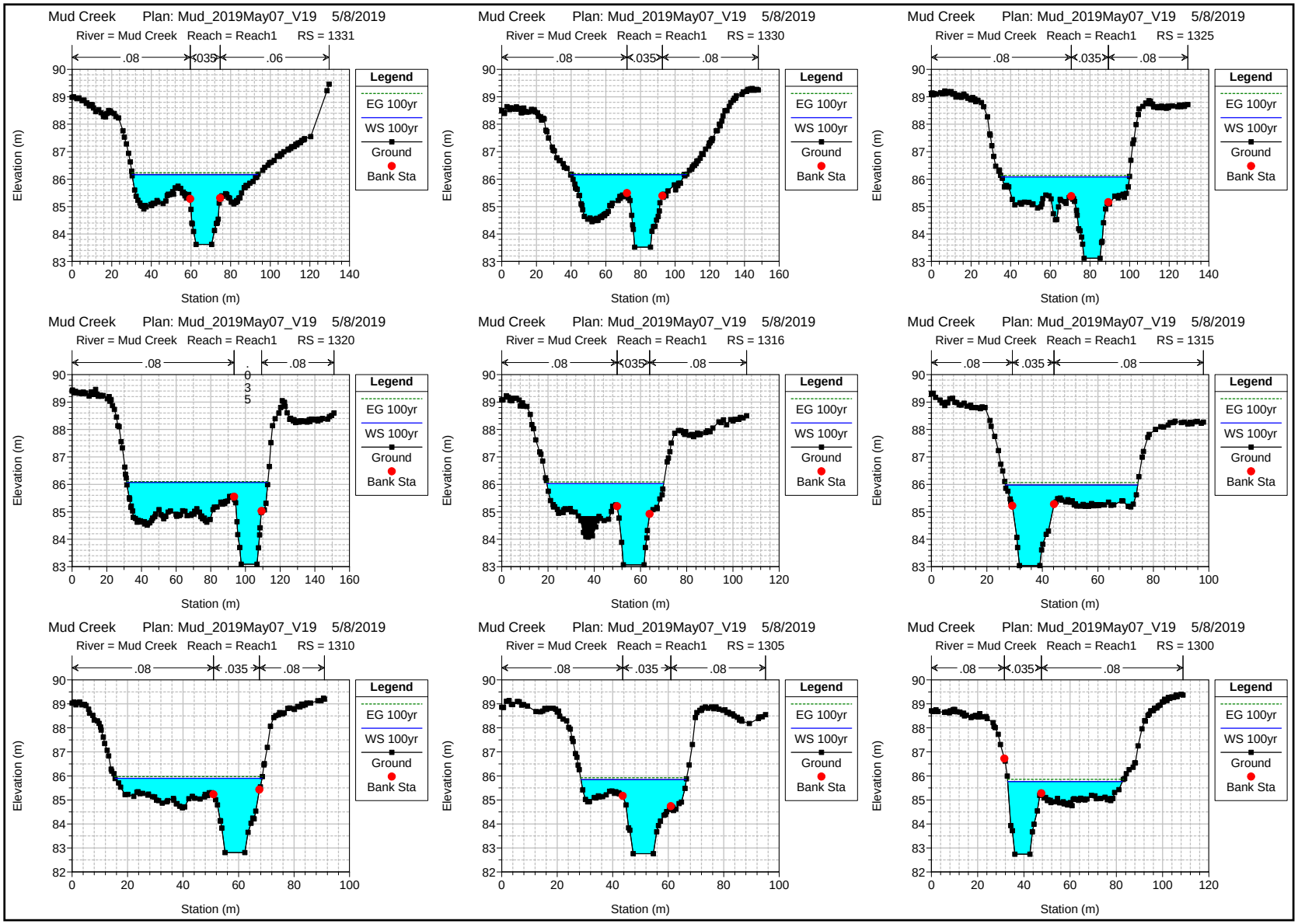
River = Mud Creek Reach = Reach1 RS = 1365
.05 .035 .05
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1360
.06 .035 .05
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1355
.06 .035 .05
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1353 BR Revell Ped Bridge
.06 .035 .05
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1353 BR Revell Ped Bridge
.06 .035 .06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1350
.06 .035 .06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1345
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1340
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1335
.08 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)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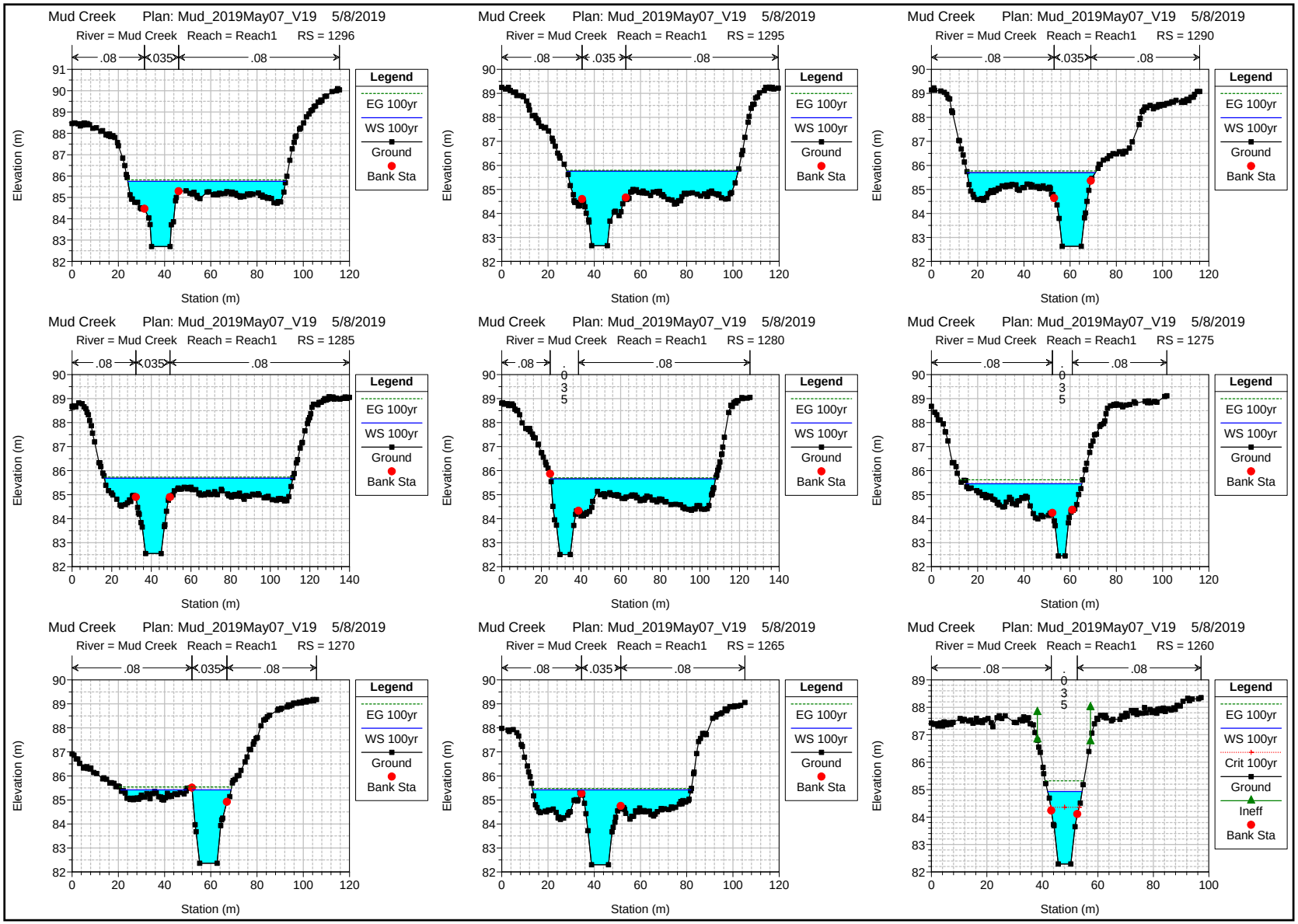
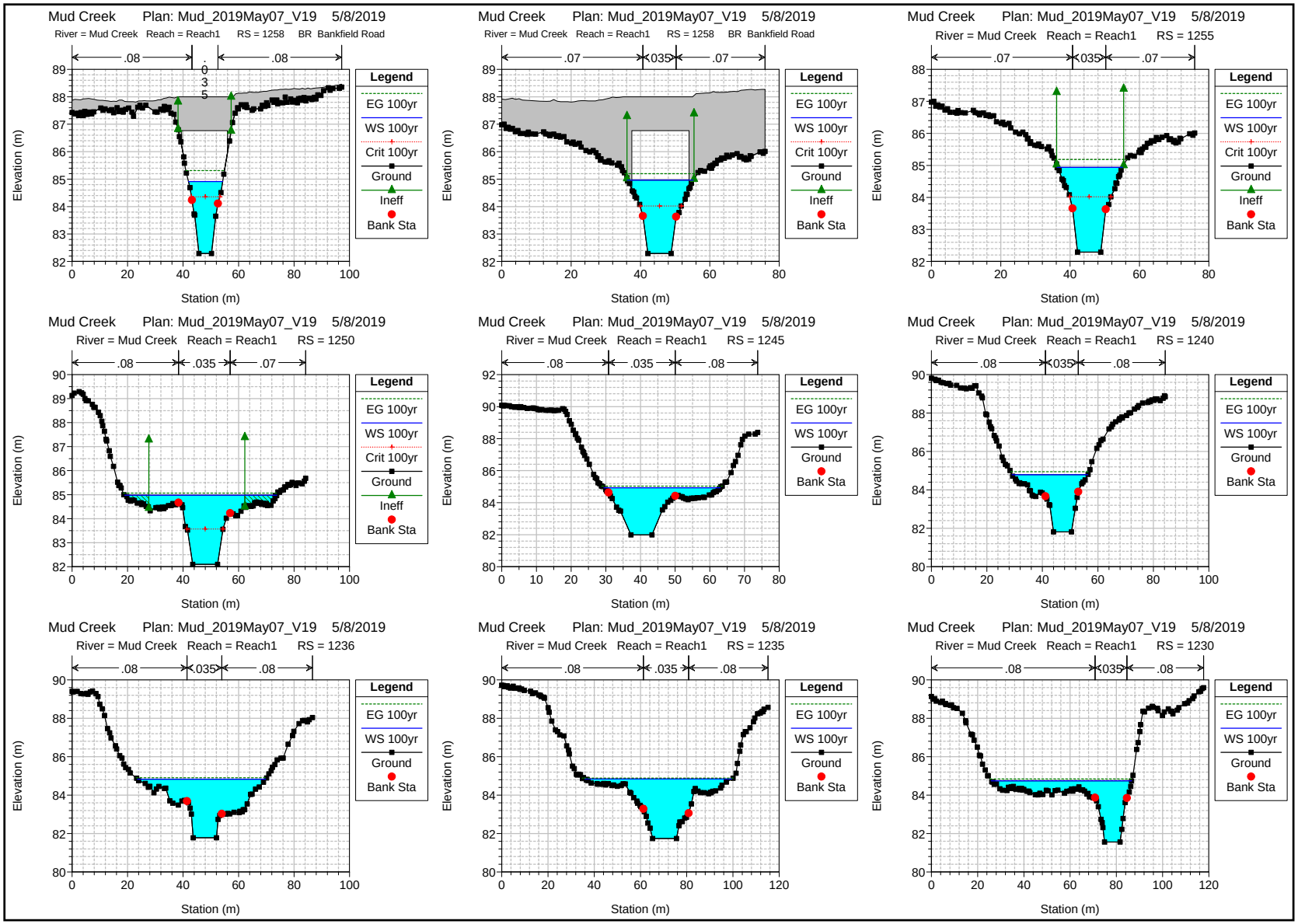
River = Mud Creek Reach = Reach1 RS = 1331
.08 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1330
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1325
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1320
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1316
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1315
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1310
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1305
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1300
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)


Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1296
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1295
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1290
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1285
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1280
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1275
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1270
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1265
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1260
.08 .035 .08
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)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River = Mud Creek Reach = Reach1 RS = 1258 BR Bankfield Road
.08 .035 .08
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1258 BR Bankfield Road
.07 .035 .07
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1255
.07 .035 .07
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1250
.08 .035 .07
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1245
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1240
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1236
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1235
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1230
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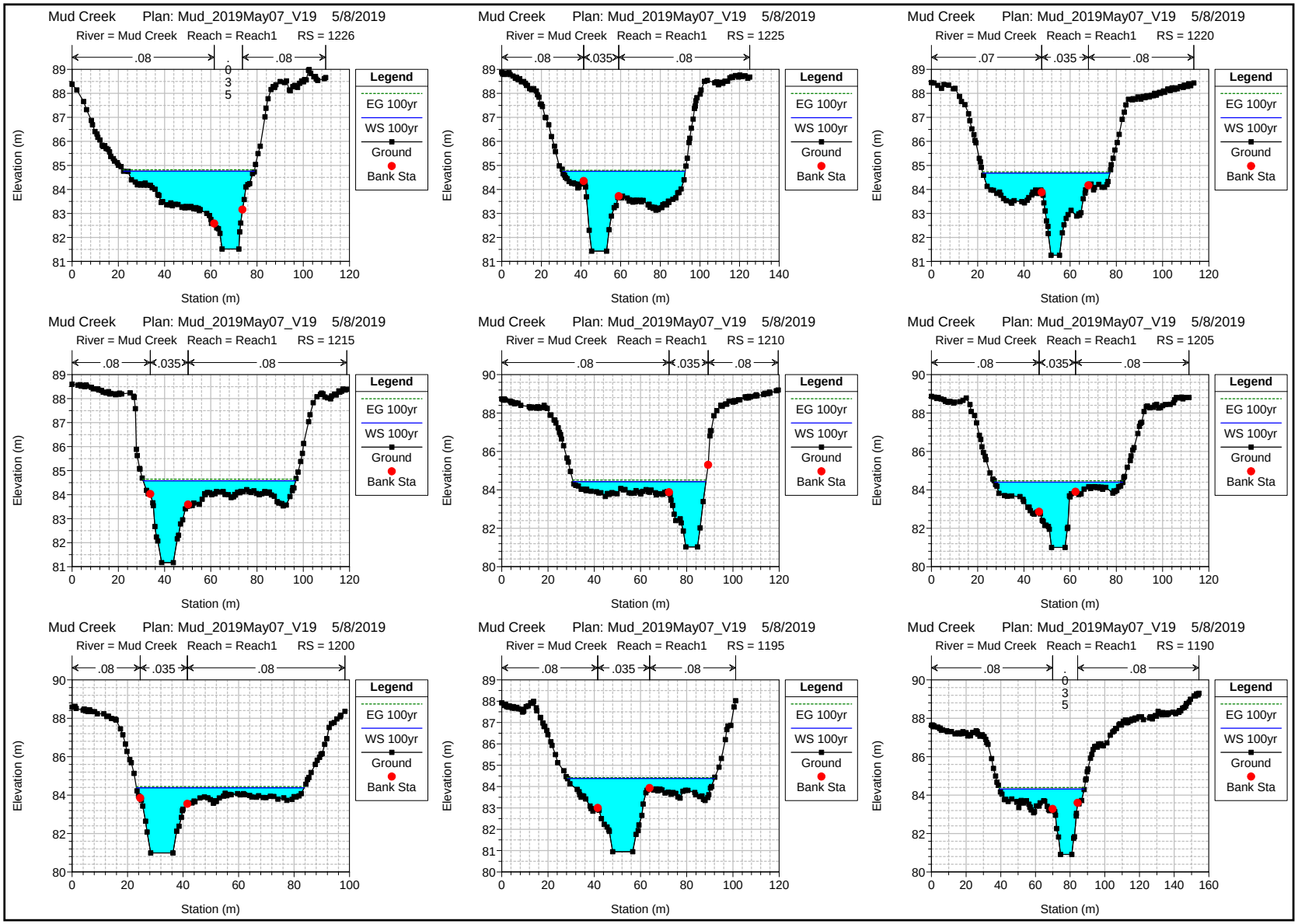
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)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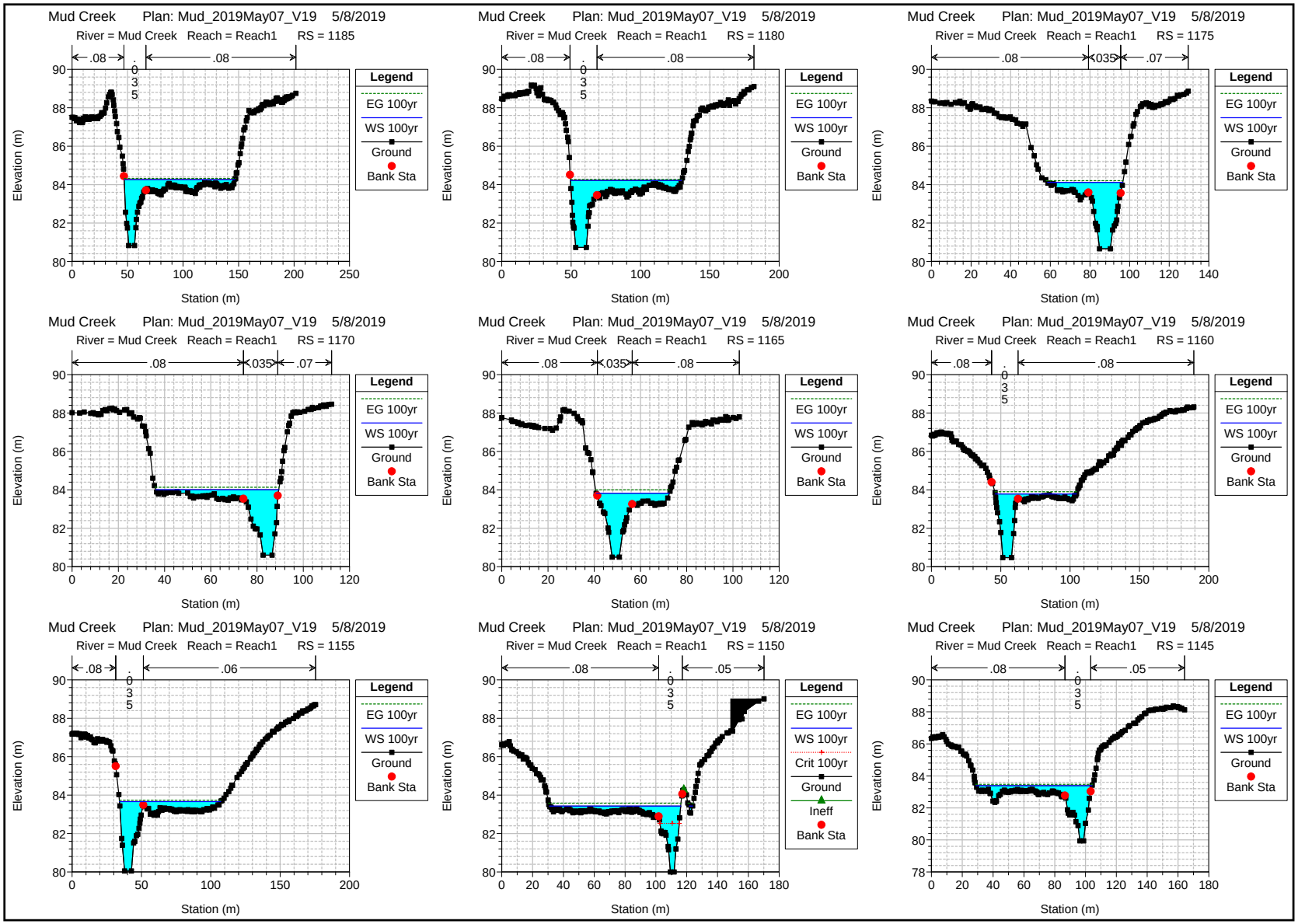
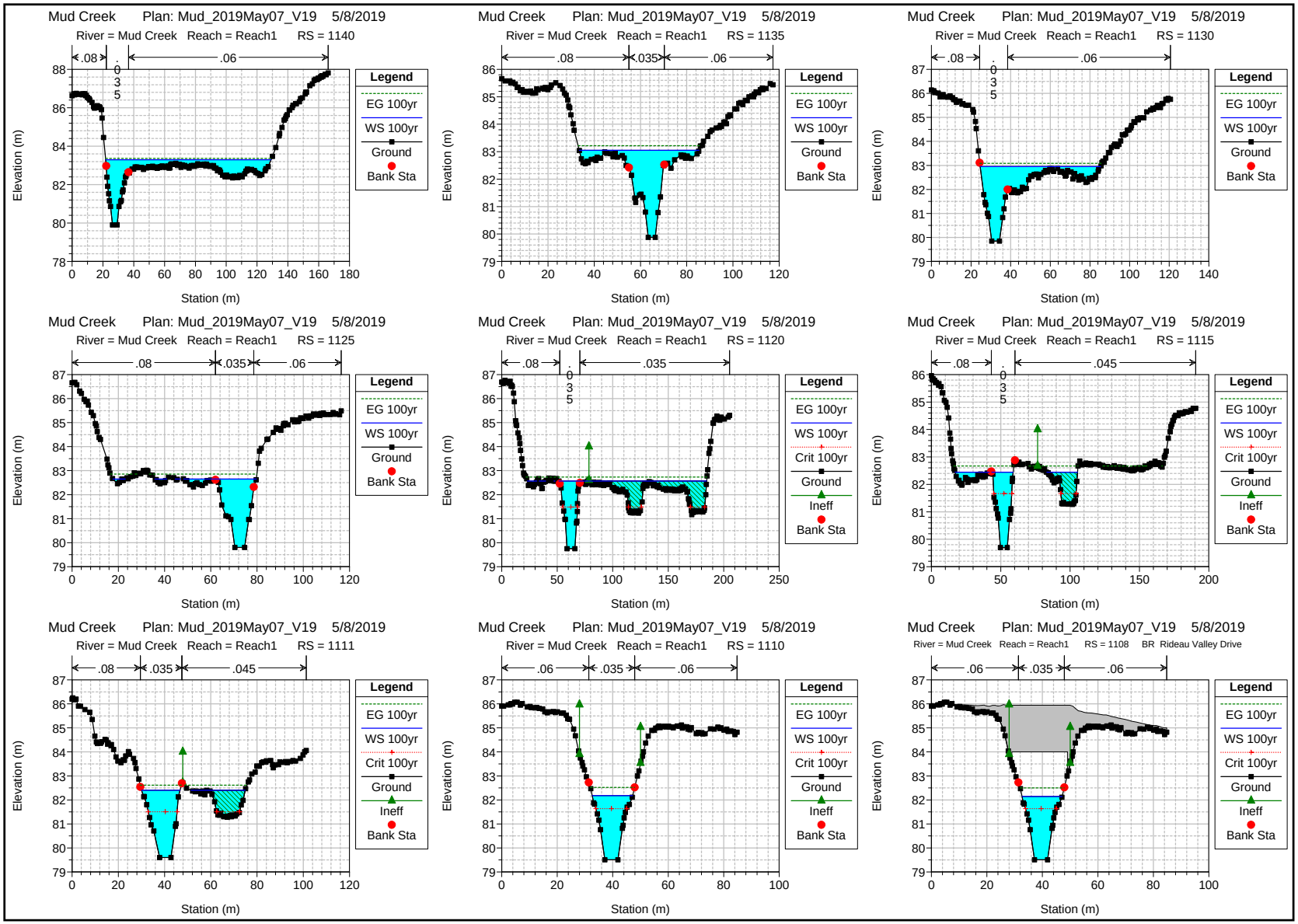
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1225
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1220
.07 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1215
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1210
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1205
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1200
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1195
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1190
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)


Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1185
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1180
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1175
.08 .035 .07
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1170
.08 .035 .07
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1165
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1160
.08 .035 .08
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1155
.08 .035 .06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1150
.08 .035 .05
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1145
.08 .035 .05
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)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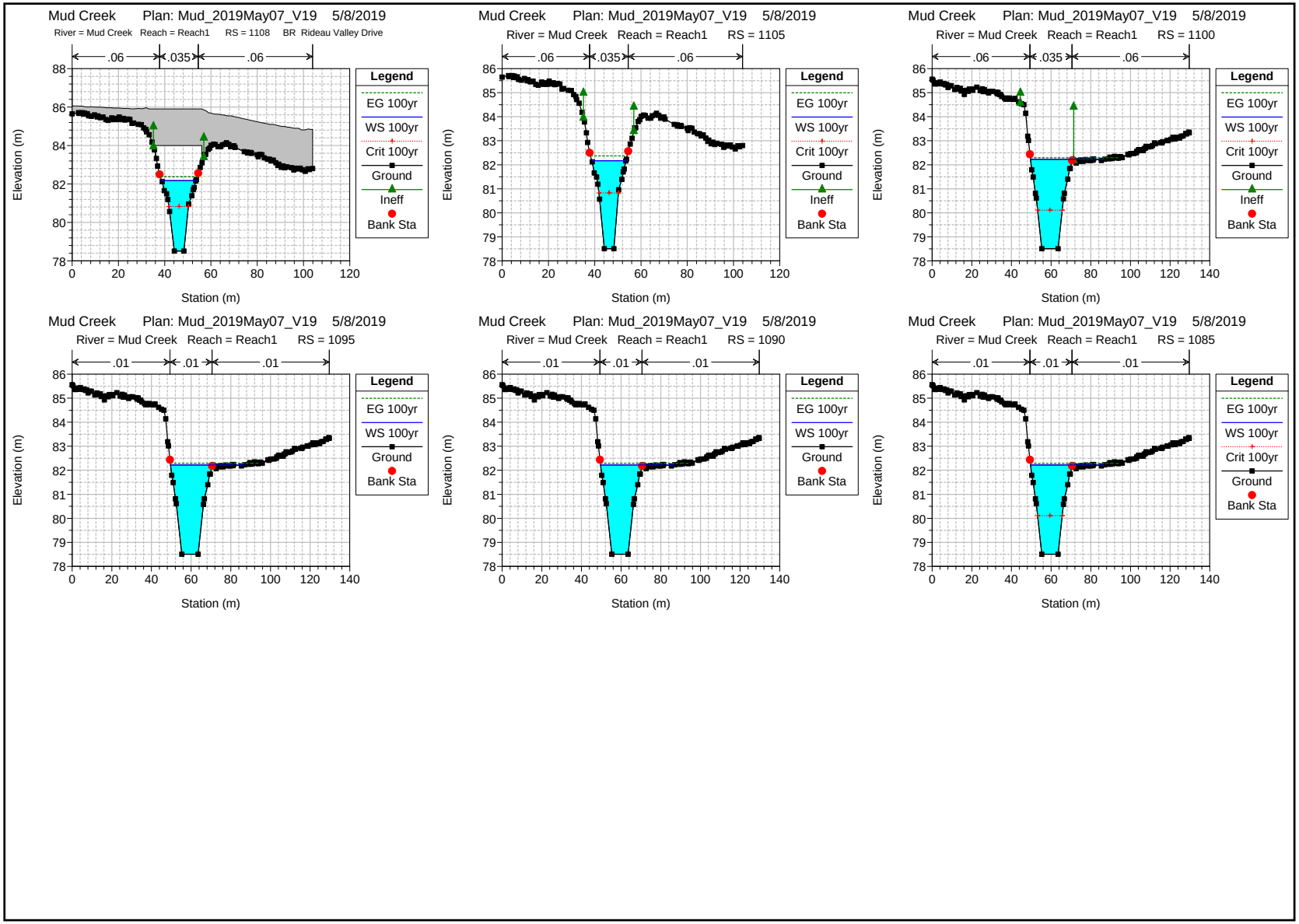
River = Mud Creek Reach = Reach1 RS = 1140
.08
.035
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1135
.08
.035
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1130
.08
.035
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1125
.08
.035
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1120
.08
.035
.035
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1115
.08
.035
.045
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1111
.08
.035
.045
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1110
.06
.035
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1108 BR Rideau Valley Drive
.06
.035
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)


Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1108 BR Rideau Valley Drive
.06 .035 .06
Elevation (m)
Station (m)
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1105
.06 .035 .06
Elevation (m)
Station (m)
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1100
.06 .035 .06
Elevation (m)
Station (m)
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1095
.01 .01 .01
Elevation (m)
Station (m)
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1090
.01 .01 .01
Elevation (m)
Station (m)
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Mud Creek Reach = Reach1 RS = 1085
.01 .01 .01
Elevation (m)
Station (m)
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Bank Sta

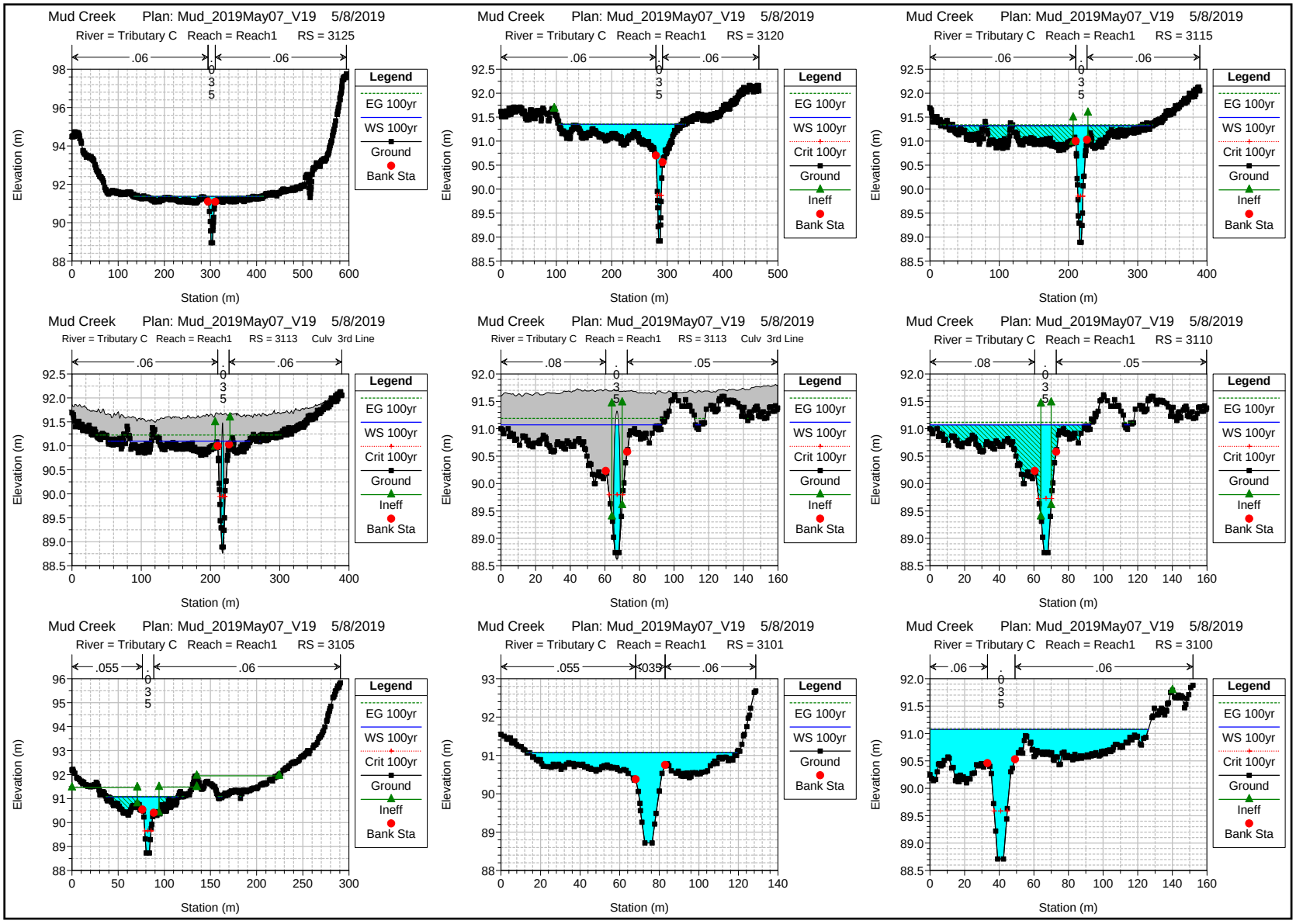

Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Tributary C Reach = Reach1 RS = 3125
.06
.035
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Tributary C Reach = Reach1 RS = 3120
.06
.035
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Tributary C Reach = Reach1 RS = 3115
.06
.035
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Tributary C Reach = Reach1 RS = 3113 Culv 3rd Line
.06
.035
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Tributary C Reach = Reach1 RS = 3113 Culv 3rd Line
.08
.035
.05
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Tributary C Reach = Reach1 RS = 3110
.08
.035
.05
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Tributary C Reach = Reach1 RS = 3105
.055
.035
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Tributary C Reach = Reach1 RS = 3101
.055
.035
.06
Legend
EG 100yr
WS 100yr
Ground
Bank Sta
Elevation (m)
Station (m)
Mud Creek Plan: Mud_2019May07_V19 5/8/2019
River = Tributary C Reach = Reach1 RS = 3100
.06
.035
.06
Legend
EG 100yr
WS 100yr
Crit 100yr
Ground
Ineff
Bank Sta
Elevation (m)
Station (m)

Table B1 Manning n values

River	Reach	Xsec ID #	Left Bank		Channel		Right Bank	
			n	Description	n	Description	n	Description
Mud Creek	Reach1	1085	0.010	virtual cross section	0.010	virtual XS	0.010	virtual cross section
	Reach1	1090	0.010	virtual cross section	0.010	virtual XS	0.010	virtual cross section
	Reach1	1095	0.010	virtual cross section	0.010	virtual XS	0.010	virtual cross section
	Reach1	1100	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1105	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1108	Rideau Valley Drive					
	Reach1	1110	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1111	0.080	Med brush - summer	0.035	Standard	0.045	pasture/brush
	Reach1	1115	0.080	Med brush - summer	0.035	Standard	0.045	pasture/brush
	Reach1	1120	0.080	Med brush - summer	0.035	Standard	0.035	pasture
	Reach1	1125	0.080	Med brush - summer	0.035	Standard	0.060	crops/light brush
	Reach1	1130	0.080	Med brush - summer	0.035	Standard	0.060	crops/light brush
	Reach1	1135	0.080	Med brush - summer	0.035	Standard	0.060	row crops
	Reach1	1140	0.080	Med brush - summer	0.035	Standard	0.060	crops/light brush
	Reach1	1145	0.080	Med brush - summer	0.035	Standard	0.050	scattered brush
	Reach1	1150	0.080	Med brush - summer	0.035	Standard	0.050	scattered brush
	Reach1	1155	0.080	Med brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1160	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1165	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1170	0.080	Med brush - summer	0.035	Standard	0.070	light/med brush
	Reach1	1175	0.080	Med brush - summer	0.035	Standard	0.070	light/med brush
	Reach1	1180	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1185	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1190	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1195	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1200	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1205	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1210	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1215	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1220	0.070	light/med brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1225	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1226	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1230	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1235	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1236	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1240	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1245	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1250	0.080	Med brush - summer	0.035	Standard	0.070	light/med brush
	Reach1	1255	0.070	light/med brush	0.035	Standard	0.070	light/med brush
	Reach1	1258	Bankfield Road					
	Reach1	1260	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1265	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1270	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1275	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1280	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1285	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1290	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1295	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1296	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1300	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1305	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1310	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1315	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1316	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1320	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1325	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1330	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1331	0.080	Med brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1335	0.080	Med brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1340	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1345	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer

River	Reach	Xsec ID #	Left Bank		Channel		Right Bank	
			n	Description	n	Description	n	Description
Mud Creek	Reach1	1350	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1353	Revell Drive Pedestrian Bridge					
	Reach1	1355	0.060	light brush - summer	0.035	Standard	0.050	scattered brush
	Reach1	1360	0.060	light brush - summer	0.035	Standard	0.050	scattered brush
	Reach1	1365	0.050	scattered brush	0.035	Standard	0.050	scattered brush
	Reach1	1370	0.050	scattered brush	0.035	Standard	0.050	scattered brush
	Reach1	1375	0.050	scattered brush	0.035	Standard	0.050	scattered brush
	Reach1	1380	0.050	scattered brush	0.035	Standard	0.050	scattered brush
	Reach1	1385	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1390	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1395	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1400	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1405	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1410	0.050	pasture/brush	0.035	Standard	0.060	pasture/brush
	Reach1	1415	0.045	pasture/brush	0.035	Standard	0.035	pasture
	Reach1	1416	0.045	pasture/brush	0.035	Standard	0.035	pasture
	Reach1	1420	0.045	pasture/brush	0.035	Standard	0.035	pasture
	Reach1	1425	0.060	light brush - summer	0.035	Standard	0.050	scattered brush
	Reach1	1430	0.035	pasture	0.035	Standard	0.035	pasture
	Reach1	1433	Farm Driveway					
	Reach1	1435	0.035	pasture	0.035	Standard	0.035	pasture
	Reach1	1440	0.035	pasture	0.035	Standard	0.035	pasture
	Reach1	1445	0.045	pasture/brush	0.035	Standard	0.035	pasture
	Reach1	1450	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1455	0.050	scattered brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1458	First Line Road					
	Reach1	1460	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1465	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1470	0.050	scattered brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1471	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1475	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1480	0.060	light brush - summer	0.035	Standard	0.050	scattered brush
	Reach1	1481	0.060	light brush - summer	0.035	Standard	0.050	scattered brush
	Reach1	1485	0.060	light brush - summer	0.035	Standard	0.050	scattered brush
	Reach1	1490	0.045	pasture/brush	0.035	Standard	0.060	light brush - summer
	Reach1	1495	0.050	crops/pasture	0.035	Standard	0.050	scattered brush
	Reach1	1500	0.060	crops/brush	0.035	Standard	0.060	light brush - summer
	Reach1	1503	Century Road East					
	Reach1	1505	0.050	scattered brush	0.035	Standard	0.050	scattered brush
	Reach1	1506	0.050	scattered brush	0.035	Standard	0.070	light/med brush
	Reach1	1510	0.050	scattered brush	0.035	Standard	0.070	light/med brush
	Reach1	1511	0.040	grass/brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1515	0.040	grass/brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1520	0.040	grass/brush	0.035	Standard	0.070	light/med brush
	Reach1	1525	0.040	grass/brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1530	0.070	light/med brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1535	0.070	light/med brush	0.035	Standard	0.070	light/med brush
	Reach1	1540	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1545	0.060	light brush - summer	0.035	Standard	0.070	light/med brush
	Reach1	1550	0.060	light brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1551	0.060	light brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1555	0.060	light brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1556	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1560	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1561	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1565	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1570	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1575	0.080	Med brush - summer	0.035	Standard	0.080	Med brush - summer
	Reach1	1580	0.070	Mature row crop / brush	0.035	Standard	0.070	light/med brush
	Reach1	1585	0.070	light/med brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1590	0.070	light/med brush	0.035	Standard	0.070	light/med brush
	Reach1	1595	0.060	light brush - summer	0.035	Standard	0.070	light/med brush

River	Reach	Xsec ID #	Left Bank		Channel		Right Bank	
			n	Description	n	Description	n	Description
Mud Creek	Reach1	1600	0.075	crops/med brush	0.035	Standard	0.075	crops/med brush
	Reach1	1605	0.075	crops/med brush	0.035	Standard	0.075	crops/med brush
	Reach1	1610	0.075	crops/med brush	0.035	Standard	0.075	crops/med brush
	Reach1	1615	0.075	crops/med brush	0.035	Standard	0.075	crops/med brush
	Reach1	1620	0.075	crops/med brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1625	0.080	Med brush - summer	0.035	Standard	0.065	crops/med brush
	Reach1	1630	0.080	Med brush - summer	0.035	Standard	0.075	crops/med brush
	Reach1	1633	Second Line Road South					
	Reach1	1635	0.035	high grass	0.035	Standard	0.035	high grass
	Reach1	1640	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1645	0.060	light brush - summer	0.035	Standard	0.060	light brush - summer
	Reach1	1648	Highway 416 Northbound					
	Reach1	1650	0.035	high grass	0.035	Standard	0.035	high grass
	Reach1	1655	0.035	high grass	0.035	Standard	0.035	high grass
	Reach1	1660	0.035	high grass	0.035	Standard	0.035	high grass
	Reach1	1663	Highway 416 Southbound					
	Reach1	1665	0.035	high grass	0.035	Standard	0.035	high grass
	Reach1	1670	0.070	Mature row crop / brush	0.035	Standard	0.080	Med brush - summer
	Reach1	1671	0.070	Mature row crop / brush	0.035	Standard	0.075	Mature row crop / brush
	Reach1	1675	0.070	Mature row crop / brush	0.035	Standard	0.075	Mature row crop / brush
	Reach1	1680	0.070	light/med brush	0.035	Standard	0.060	Mature row crop
	Reach1	1685	0.050	Scattered brush	0.035	Standard	0.060	Mature row crop
	Reach1	1686	0.050	Scattered brush	0.035	Standard	0.060	Mature row crop
	Reach1	1690	0.050	Scattered brush	0.035	Standard	0.060	Mature row crop
	Reach1	1693	Prince of Wales Drive					
	Reach1	1695	0.035	high grass	0.035	Standard	0.035	high grass
	Reach1	1696	0.080	Med brush - summer	0.035	Standard	0.035	grass/light brush
	Reach1	1700	0.080	Med brush - summer	0.035	Standard	0.035	grass/light brush
	Reach1	1705	0.050	light brush - summer	0.035	Standard	0.055	Mature row crop/light B
	Reach1	1710	0.040	grass/light brush	0.035	Standard	0.060	Mature row crop
	Reach1	1715	0.035	grass/light brush	0.035	Standard	0.060	Mature row crop
	Reach1	1716	0.065	grass/med brush	0.035	Standard	0.065	grass/med brush
	Reach1	1717	0.065	grass/med brush	0.035	Standard	0.065	grass/med brush
	Reach1	1720	0.065	grass/med brush	0.035	Standard	0.065	grass/med brush
	Reach1	1725	0.030	short grass	0.035	Standard	0.080	Med brush - summer
	Reach2	1730	0.030	short grass	0.035	Standard	0.080	Med brush - summer
	Reach2	1735	0.060	Mature row crop	0.035	Standard	0.060	light brush - summer
	Reach2	1740	0.060	Mature row crop	0.035	Standard	0.060	Mature row crop
	Reach2	1745	0.080	Med brush - summer	0.035	Standard	0.060	light brush - summer
	Reach2	1746	0.030	short grass	0.035	Standard	0.030	short grass
	Reach2	1750	0.030	short grass	0.035	Standard	0.030	short grass
	Reach2	1755	0.060	Mature row crop	0.035	Standard	0.060	Mature row crop
	Reach2	1760	0.060	Mature row crop	0.035	Standard	0.060	Mature row crop
	Reach2	1765	0.060	Mature row crop	0.035	Standard	0.060	Mature row crop
	Reach2	1770	0.060	Mature row crop	0.035	Standard	0.060	Mature row crop
	Reach2	1771	0.060	Mature row crop	0.035	Standard	0.060	Mature row crop
	Reach2	1775	0.060	Mature row crop	0.035	Standard	0.060	Mature row crop
	Reach2	1778	Century Road West and Third Line Road North					
	Reach2	1780	0.035	high grass	0.035	Standard	0.035	high grass
	Reach2	1781	0.080	Med brush - summer	0.035	Standard	0.060	light brush - summer
	Reach2	1785	0.080	Med brush - summer	0.035	Standard	0.060	light brush - summer
	Reach2	1790	0.060	Mature row crop	0.035	Standard	0.060	Mature row crop
Tributary C	Reach 1	3100	0.060	brush/grass	0.035	Standard	0.060	brush/grass
	Reach1	3101	0.055	brush/grass	0.035	Standard	0.060	brush/grass
	Reach1	3105	0.055	brush/grass	0.035	Standard	0.060	brush/grass
	Reach1	3110	0.080	Med brush - summer	0.035	Standard	0.050	brush/grass
	Reach1	3113	Third Line Road North					
	Reach1	3115	0.060	light brush	0.035	Standard	0.060	light brush
	Reach1	3120	0.060	row crops	0.035	Standard	0.060	row crops
	Reach1	3125	0.060	row crops	0.035	Standard	0.060	row crops

Table B2 HEC-RAS Detailed Output

HEC-RAS Plan: V19 Profile: 100yr

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)	
Mud Creek	Reach1	1085	100yr	59.75	78.51	82.22	80.11	82.29	0.000048	1.17	51.60	35.39	0.24
Mud Creek	Reach1	1090	100yr	59.75	78.51	82.22		82.29	0.000048	1.17	51.63	35.53	0.24
Mud Creek	Reach1	1095	100yr	59.75	78.51	82.22		82.29	0.000047	1.17	51.67	35.66	0.24
Mud Creek	Reach1	1100	100yr	59.75	78.51	82.22	80.11	82.29	0.000582	1.17	51.11	35.91	0.24
Mud Creek	Reach1	1105	100yr	59.75	78.51	82.17	80.83	82.37	0.002388	2.01	29.80	14.62	0.45
Mud Creek	Reach1	1108		Bridge									
Mud Creek	Reach1	1110	100yr	59.75	79.51	82.18	81.63	82.52	0.005151	2.60	22.98	14.55	0.66
Mud Creek	Reach1	1111	100yr	59.75	79.60	82.40	81.50	82.61	0.002704	2.04	29.25	40.11	0.49
Mud Creek	Reach1	1115	100yr	59.75	79.70	82.44	81.67	82.67	0.002954	2.13	32.95	62.18	0.51
Mud Creek	Reach1	1120	100yr	59.75	79.75	82.57	81.49	82.73	0.001990	1.79	35.65	147.29	0.42
Mud Creek	Reach1	1125	100yr	59.75	79.80	82.65		82.86	0.002660	2.03	32.55	44.26	0.49
Mud Creek	Reach1	1130	100yr	59.75	79.85	82.95		83.09	0.001561	1.74	51.35	60.72	0.38
Mud Creek	Reach1	1135	100yr	59.75	79.88	83.05		83.22	0.001873	1.84	41.56	51.77	0.41
Mud Creek	Reach1	1140	100yr	55.42	79.90	83.29		83.36	0.000952	1.35	75.31	107.32	0.30
Mud Creek	Reach1	1145	100yr	55.42	79.94	83.39		83.48	0.001054	1.42	59.85	75.28	0.31
Mud Creek	Reach1	1150	100yr	55.42	80.00	83.43	82.53	83.58	0.001962	1.80	48.31	87.46	0.41
Mud Creek	Reach1	1155	100yr	55.42	80.05	83.67		83.74	0.000777	1.26	63.30	72.99	0.27
Mud Creek	Reach1	1160	100yr	55.42	80.47	83.78		83.90	0.001234	1.54	43.48	58.50	0.33
Mud Creek	Reach1	1165	100yr	55.42	80.50	83.83		84.00	0.002204	1.89	35.85	31.64	0.44
Mud Creek	Reach1	1170	100yr	55.42	80.60	84.01		84.13	0.001320	1.60	44.85	53.16	0.34
Mud Creek	Reach1	1175	100yr	55.42	80.66	84.11		84.21	0.000887	1.40	47.62	37.99	0.29
Mud Creek	Reach1	1180	100yr	55.42	80.73	84.22		84.27	0.000539	1.09	76.73	80.17	0.23
Mud Creek	Reach1	1185	100yr	55.42	80.83	84.26		84.33	0.000781	1.21	74.13	99.69	0.27
Mud Creek	Reach1	1190	100yr	55.42	80.91	84.32		84.39	0.000643	1.29	62.91	48.83	0.25
Mud Creek	Reach1	1195	100yr	55.42	80.95	84.38		84.42	0.000298	0.89	86.30	63.56	0.18
Mud Creek	Reach1	1200	100yr	55.42	80.99	84.38		84.45	0.000563	1.19	64.74	60.42	0.24
Mud Creek	Reach1	1205	100yr	55.42	81.00	84.40		84.47	0.000732	1.28	63.14	55.36	0.26
Mud Creek	Reach1	1210	100yr	55.42	81.03	84.43		84.51	0.000868	1.36	58.53	57.44	0.28
Mud Creek	Reach1	1215	100yr	55.42	81.17	84.58		84.64	0.000640	1.23	69.60	65.90	0.25
Mud Creek	Reach1	1220	100yr	55.42	81.26	84.68		84.74	0.000649	1.12	69.72	54.90	0.25
Mud Creek	Reach1	1225	100yr	55.42	81.43	84.75		84.79	0.000410	0.99	88.60	61.82	0.20
Mud Creek	Reach1	1226	100yr	55.42	81.52	84.76		84.82	0.000457	1.18	82.98	56.58	0.22
Mud Creek	Reach1	1230	100yr	55.42	81.56	84.75		84.84	0.000882	1.45	58.71	60.77	0.29
Mud Creek	Reach1	1235	100yr	55.42	81.74	84.84		84.89	0.000325	0.98	76.44	63.54	0.19
Mud Creek	Reach1	1236	100yr	55.42	81.78	84.83		84.91	0.000697	1.35	65.21	46.25	0.26
Mud Creek	Reach1	1240	100yr	55.42	81.81	84.79		84.94	0.001364	1.78	39.00	27.38	0.36
Mud Creek	Reach1	1245	100yr	55.42	81.99	84.93		85.03	0.001097	1.43	44.52	33.50	0.33
Mud Creek	Reach1	1250	100yr	55.42	82.10	84.98	83.57	85.07	0.000917	1.35	48.10	54.84	0.30
Mud Creek	Reach1	1255	100yr	55.42	82.29	84.94	84.02	85.19	0.002171	2.25	29.21	18.88	0.46
Mud Creek	Reach1	1258		Bridge									
Mud Creek	Reach1	1260	100yr	55.42	82.29	84.93	84.36	85.32	0.004196	2.78	20.96	12.40	0.61
Mud Creek	Reach1	1265	100yr	55.42	82.30	85.42		85.48	0.000707	1.19	78.20	68.48	0.26
Mud Creek	Reach1	1270	100yr	55.42	82.36	85.42		85.54	0.001181	1.57	41.88	45.24	0.33
Mud Creek	Reach1	1275	100yr	55.42	82.45	85.46		85.62	0.002172	2.08	50.96	49.99	0.44
Mud Creek	Reach1	1280	100yr	55.42	82.51	85.66		85.70	0.000582	1.13	97.75	83.13	0.24
Mud Creek	Reach1	1285	100yr	55.42	82.55	85.69		85.73	0.000465	1.06	95.69	94.98	0.22
Mud Creek	Reach1	1290	100yr	55.42	82.63	85.70		85.77	0.000706	1.28	64.71	55.41	0.26
Mud Creek	Reach1	1295	100yr	55.42	82.66	85.76		85.79	0.000423	0.98	96.29	74.09	0.21
Mud Creek	Reach1	1296	100yr	55.42	82.70	85.75		85.82	0.000762	1.30	71.17	68.28	0.27
Mud Creek	Reach1	1300	100yr	55.42	82.74	85.76		85.86	0.001062	1.46	57.28	49.63	0.31
Mud Creek	Reach1	1305	100yr	55.42	82.76	85.85		85.92	0.000724	1.28	55.08	37.98	0.27
Mud Creek	Reach1	1310	100yr	55.42	82.81	85.90		85.97	0.000703	1.25	65.94	53.00	0.26
Mud Creek	Reach1	1315	100yr	55.42	83.04	85.98		86.07	0.000902	1.42	55.88	47.71	0.30
Mud Creek	Reach1	1316	100yr	55.42	83.07	86.03		86.09	0.000612	1.24	72.08	50.51	0.25
Mud Creek	Reach1	1320	100yr	55.42	83.09	86.07		86.10	0.000375	0.96	109.97	81.34	0.19
Mud Creek	Reach1	1325	100yr	55.42	83.12	86.08		86.13	0.000568	1.11	79.18	64.56	0.24
Mud Creek	Reach1	1330	100yr	55.42	83.52	86.16		86.20	0.000544	1.03	84.04	66.33	0.23
Mud Creek	Reach1	1331	100yr	55.42	83.62	86.16		86.23	0.000780	1.30	70.48	63.53	0.28
Mud Creek	Reach1	1335	100yr	55.42	83.77	86.21		86.29	0.001340	1.53	75.24	75.47	0.35
Mud Creek	Reach1	1340	100yr	55.42	83.89	86.31		86.37	0.000625	1.15	63.26	46.15	0.25
Mud Creek	Reach1	1345	100yr	55.42	84.08	86.37		86.46	0.001087	1.37	59.72	63.23	0.33
Mud Creek	Reach1	1350	100yr	55.42	84.28	86.45	85.67	86.58	0.001765	1.66	35.09	44.23	0.41
Mud Creek	Reach1	1353		Bridge									
Mud Creek	Reach1	1355	100yr	55.42	84.30	86.51	85.69	86.64	0.001667	1.63	36.29	45.03	0.40
Mud Creek	Reach1	1360	100yr	55.42	84.57	86.62		86.82	0.003981	2.27	36.65	45.40	0.60
Mud Creek	Reach1	1365	100yr	55.42	84.63	86.92		86.95	0.000662	1.08	89.21	92.18	0.25
Mud Creek	Reach1	1370	100yr	55.42	84.65	86.93		87.00	0.001215	1.40	61.39	70.95	0.34
Mud Creek	Reach1	1375	100yr	55.42	84.71	87.09		87.14	0.000835	1.17	67.06	54.36	0.28
Mud Creek	Reach1	1380	100yr	55.42	84.72	87.15		87.20	0.000533	1.03	62.94	45.09	0.23
Mud Creek	Reach1	1385	100yr	55.42	84.72	87.19		87.23	0.000570	1.08	89.02	81.92	0.24
Mud Creek	Reach1	1390	100yr	55.42	84.72	87.24		87.29	0.000759	1.21	75.33	75.13	0.27
Mud Creek	Reach1	1395	100yr	55.42	84.73	87.31		87.39	0.001131	1.51	65.89	58.84	0.33
Mud Creek	Reach1	1400	100yr	55.42	84.77	87.39		87.45	0.000781	1.17	69.27	61.91	0.27
Mud Creek	Reach1	1405	100yr	44.55	84.81	87.48		87.51	0.000734	1.05	90.69	101.12	0.26
Mud Creek	Reach1	1410	100yr	44.55	85.00	87.56		87.65	0.001033	1.40	38.40	31.60	0.31
Mud Creek	Reach1	1415	100yr	44.55	85.20	87.68		87.69	0.000207	0.64	106.25	109.50	0.14
Mud Creek	Reach1	1416	100yr	44.55	85.27	87.67		87.71	0.000566	1.03	62.24	64.33	0.23
Mud Creek	Reach1	1420	100yr	44.55	85.35	87.67		87.76	0.001056	1.35	37.85	31.16	0.32
Mud Creek	Reach1	1425	100yr	44.55	85.42	87.75	87.04	87.89	0.001846	1.79	31.01	49.80	0.42
Mud Creek	Reach1	1430	100yr	44.55	85.40	87.73	87.06	88.14	0.003386	2.85	15.62	22.61	0.60
Mud Creek	Reach1	1433		Bridge									
Mud Creek	Reach1	1435	100yr	44.55	85.44	88.59	87.14	88.60	0.000128	0.61	101.39	66.88	0.12
Mud Creek	Reach1	1440	100yr	44.55	85.49	88.60		88.61	0.000144	0.66	93.07	61.16	0.13
Mud Creek	Reach1	1445	100yr	44.55	85.56	88.60		88.62	0.000216	0.78	89.00	59.01	0.15
Mud Creek	Reach1	1450	100yr	44.55	85.65	88.60	87.16	88.64	0.000427	1.00	58.59	69.34	0.21
Mud Creek	Reach1	1455	100yr	44.55	85.69	88.58	87.07	88.72	0.000890	1.70	26.13	50.70	0.32

HEC-RAS Plan: V19 Profile: 100yr (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)	
Mud Creek	Reach1	1458		Bridge									
Mud Creek	Reach1	1460	100yr	44.55	85.49	89.15	86.77	89.20	0.000240	0.97	45.85	76.93	0.17
Mud Creek	Reach1	1465	100yr	44.55	85.53	89.19		89.22	0.000177	0.75	94.37	47.91	0.14
Mud Creek	Reach1	1470	100yr	44.55	85.56	89.21		89.23	0.000138	0.67	96.77	56.57	0.12
Mud Creek	Reach1	1471	100yr	44.55	85.60	89.21		89.24	0.000252	0.90	79.51	50.63	0.16
Mud Creek	Reach1	1475	100yr	44.55	85.61	89.21		89.26	0.000422	1.11	62.72	41.70	0.21
Mud Creek	Reach1	1480	100yr	44.55	85.66	89.22		89.29	0.000564	1.24	48.73	36.44	0.24
Mud Creek	Reach1	1481	100yr	44.55	85.74	89.27		89.31	0.000273	0.86	54.81	28.69	0.17
Mud Creek	Reach1	1485	100yr	44.55	85.77	89.30		89.31	0.000101	0.60	88.64	44.66	0.11
Mud Creek	Reach1	1490	100yr	44.55	85.86	89.31		89.32	0.000126	0.59	121.64	86.21	0.11
Mud Creek	Reach1	1495	100yr	44.55	85.93	89.31	87.67	89.34	0.000343	0.94	57.66	65.06	0.19
Mud Creek	Reach1	1500	100yr	44.55	85.97	89.31	87.25	89.37	0.000393	1.17	39.62	98.97	0.21
Mud Creek	Reach1	1503		Culvert									
Mud Creek	Reach1	1505	100yr	44.55	86.02	89.62	87.32	89.68	0.000327	1.11	40.18	107.70	0.19
Mud Creek	Reach1	1506	100yr	44.55	86.02	89.66		89.70	0.000254	0.89	69.15	52.77	0.17
Mud Creek	Reach1	1510	100yr	44.55	86.03	89.69		89.71	0.000154	0.68	117.83	70.99	0.13
Mud Creek	Reach1	1511	100yr	44.55	86.03	89.70		89.71	0.000080	0.48	166.72	108.64	0.09
Mud Creek	Reach1	1515	100yr	44.55	86.04	89.71		89.71	0.000042	0.37	170.72	99.20	0.07
Mud Creek	Reach1	1520	100yr	44.55	86.07	89.71		89.72	0.000031	0.32	208.96	124.66	0.06
Mud Creek	Reach1	1525	100yr	44.55	86.13	89.69		89.74	0.000355	1.08	61.48	37.16	0.19
Mud Creek	Reach1	1530	100yr	44.55	86.17	89.75		89.77	0.000205	0.73	103.86	70.30	0.15
Mud Creek	Reach1	1535	100yr	44.55	86.24	89.77		89.78	0.000090	0.51	161.12	97.97	0.10
Mud Creek	Reach1	1540	100yr	44.55	86.36	89.77		89.80	0.000319	0.90	68.12	45.95	0.18
Mud Creek	Reach1	1545	100yr	44.55	86.48	89.83	88.51	89.85	0.000259	0.82	97.39	59.82	0.16
Mud Creek	Reach1	1550	100yr	44.55	86.58	89.84	88.36	89.90	0.000519	1.19	62.01	51.18	0.23
Mud Creek	Reach1	1551	100yr	44.55	86.74	89.90		89.92	0.000230	0.77	107.36	76.72	0.15
Mud Creek	Reach1	1555	100yr	44.55	86.87	89.92		89.92	0.000106	0.51	164.14	107.68	0.11
Mud Creek	Reach1	1556	100yr	44.55	86.89	89.92		89.94	0.000215	0.71	112.17	79.40	0.15
Mud Creek	Reach1	1560	100yr	44.55	86.92	89.94		89.96	0.000281	0.88	117.76	110.83	0.17
Mud Creek	Reach1	1561	100yr	44.55	86.95	89.96	88.88	90.01	0.000604	1.15	71.73	52.17	0.24
Mud Creek	Reach1	1565	100yr	44.55	86.97	89.97		90.06	0.000795	1.38	43.12	30.60	0.28
Mud Creek	Reach1	1570	100yr	44.55	86.98	90.07		90.09	0.000172	0.72	104.83	64.40	0.14
Mud Creek	Reach1	1575	100yr	44.55	87.00	90.09		90.13	0.000338	1.02	82.04	62.99	0.19
Mud Creek	Reach1	1580	100yr	44.55	86.99	90.11	88.24	90.15	0.000349	0.98	54.87	42.99	0.19
Mud Creek	Reach1	1585	100yr	44.55	86.98	90.15	88.49	90.18	0.000354	0.87	78.69	50.80	0.19
Mud Creek	Reach1	1590	100yr	44.55	86.98	90.19	88.77	90.21	0.000276	0.80	89.23	56.56	0.17
Mud Creek	Reach1	1595	100yr	44.55	86.99	90.22		90.27	0.000543	1.11	54.96	43.89	0.23
Mud Creek	Reach1	1600	100yr	44.55	86.99	90.28		90.33	0.000345	1.00	72.28	76.22	0.19
Mud Creek	Reach1	1605	100yr	44.55	87.03	90.33		90.37	0.000312	0.96	80.12	67.45	0.18
Mud Creek	Reach1	1610	100yr	44.55	87.12	90.38		90.41	0.000310	0.80	105.01	102.00	0.17
Mud Creek	Reach1	1615	100yr	44.55	87.17	90.42		90.44	0.000211	0.71	117.35	92.17	0.15
Mud Creek	Reach1	1620	100yr	44.55	87.21	90.43		90.47	0.000312	0.94	82.66	74.95	0.18
Mud Creek	Reach1	1625	100yr	44.55	87.23	90.44	89.09	90.52	0.000795	1.27	45.20	198.10	0.28
Mud Creek	Reach1	1630	100yr	44.55	87.23	90.47	89.02	90.57	0.000893	1.41	32.05	85.39	0.29
Mud Creek	Reach1	1633		Bridge									
Mud Creek	Reach1	1635	100yr	44.55	87.21	90.53	89.05	90.62	0.000786	1.35	33.03	96.17	0.28
Mud Creek	Reach1	1640	100yr	44.55	87.20	90.61	88.24	90.63	0.000117	0.66	73.33	122.21	0.12
Mud Creek	Reach1	1645	100yr	44.55	87.20	90.60	88.45	90.63	0.000221	0.82	54.50	56.39	0.16
Mud Creek	Reach1	1648		Bridge									
Mud Creek	Reach1	1650	100yr	44.55	87.20	90.61	88.41	90.64	0.000212	0.83	53.91	24.13	0.15
Mud Creek	Reach1	1655	100yr	44.55	87.20	90.60	88.60	90.64	0.000280	0.86	52.05	85.66	0.17
Mud Creek	Reach1	1660	100yr	44.55	87.20	90.59	88.95	90.64	0.000440	1.03	43.36	27.01	0.21
Mud Creek	Reach1	1663		Bridge									
Mud Creek	Reach1	1665	100yr	37.93	87.20	90.62	88.51	90.64	0.000137	0.67	61.94	37.08	0.12
Mud Creek	Reach1	1670	100yr	37.93	87.23	90.65		90.66	0.000092	0.48	204.21	275.11	0.10
Mud Creek	Reach1	1671	100yr	37.93	87.27	90.66		90.67	0.000185	0.67	142.06	250.08	0.14
Mud Creek	Reach1	1675	100yr	37.93	87.31	90.67		90.69	0.000251	0.74	121.94	193.80	0.16
Mud Creek	Reach1	1680	100yr	37.93	87.48	90.72		90.74	0.000309	0.82	74.00	74.27	0.18
Mud Creek	Reach1	1685	100yr	37.93	87.55	90.76		90.77	0.000056	0.33	278.15	466.40	0.07
Mud Creek	Reach1	1686	100yr	37.93	87.57	90.75	89.08	90.78	0.000286	0.79	68.32	293.62	0.17
Mud Creek	Reach1	1690	100yr	37.93	87.59	90.76	89.18	90.81	0.000356	1.03	50.79	277.00	0.20
Mud Creek	Reach1	1693		Bridge									
Mud Creek	Reach1	1695	100yr	37.93	87.59	90.82	89.63	90.88	0.000679	1.13	41.48	91.65	0.25
Mud Creek	Reach1	1696	100yr	37.93	87.62	90.90		90.91	0.000143	0.62	133.58	135.59	0.12
Mud Creek	Reach1	1700	100yr	37.93	87.65	90.91		90.92	0.000124	0.55	117.44	123.70	0.11
Mud Creek	Reach1	1705	100yr	33.48	87.71	90.94		90.94	0.000023	0.21	334.55	374.47	0.05
Mud Creek	Reach1	1710	100yr	33.48	87.83	90.94		90.95	0.000067	0.37	246.42	444.69	0.08
Mud Creek	Reach1	1715	100yr	33.48	88.13	90.97		90.97	0.000036	0.27	289.30	338.12	0.06
Mud Creek	Reach1	1716	100yr	33.48	88.37	90.98		90.99	0.000178	0.53	163.88	226.99	0.12
Mud Creek	Reach1	1717	100yr	33.48	88.51	91.02		91.03	0.000237	0.68	109.25	202.54	0.15
Mud Creek	Reach1	1720	100yr	33.48	88.60	91.04	89.69	91.06	0.000277	0.75	88.67	136.05	0.17
Mud Creek	Reach1	1725	100yr	33.48	88.66	91.05	89.49	91.07	0.000193	0.57	88.01	140.97	0.14
Mud Creek	Reach2	1730	100yr	18.27	88.67	91.07		91.08	0.000087	0.43	80.92	77.27	0.09
Mud Creek	Reach2	1735	100yr	18.27	88.73	91.07		91.09	0.000445	0.72	49.14	119.39	0.20
Mud Creek	Reach2	1740	100yr	18.27	88.73	91.10		91.12	0.000442	0.83	49.65	111.69	0.20
Mud Creek	Reach2	1745	100yr	18.27	88.74	91.11		91.14	0.000530	0.91	42.59	107.91	0.22
Mud Creek	Reach2	1746	100yr	18.27	88.76	91.16		91.17	0.000220	0.54	50.00	98.82	0.14
Mud Creek	Reach2	1750	100yr	18.27	88.79	91.17		91.18	0.000123	0.46	60.86	101.50	0.11
Mud Creek	Reach2	1755	100yr	18.27	88.79	91.19		91.21	0.000319	0.70	52.15	101.90	0.17
Mud Creek	Reach2	1760	100yr	18.27	88.83	91.25		91.26	0.000122	0.45	118.60	274.15	0.11
Mud Creek	Reach2	1765	100yr	18.27	88.87	91.26		91.27	0.000078	0.36	147.99	299.19	0.09
Mud Creek	Reach2	1770	100yr	18.27	88.87	91.28		91.28	0.000121	0.44	92.58	128.29	0.11
Mud Creek	Reach2	1771	100yr	18.27	88.87	91.28	90.22	91.30	0.000446	0.77	35.04	89.86	0.20
Mud Creek	Reach2	1775	100yr	18.27	88.88	91.30	89.91	91.36	0.000563	1.11	16.43	25.62	0.24
Mud Creek	Reach2	1778		Culvert									
Mud Creek	Reach2	1780	100yr	12.58	89.01	91.39	89.97	91.40	0.000138	0.50	27.80	39.18	0.11

HEC-RAS Plan: V19 Profile: 100yr (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)	
Mud Creek	Reach2	1781	100yr	12.58	89.01	91.41		91.41	0.000049	0.28	94.97	103.44	0.07
Mud Creek	Reach2	1785	100yr	12.58	89.02	91.41		91.41	0.000037	0.25	118.53	127.79	0.06
Mud Creek	Reach2	1790	100yr	12.58	89.03	91.41		91.41	0.000033	0.22	136.32	204.48	0.06
Tributary C	Reach1	3100	100yr	12.05	88.71	91.07	89.59	91.08	0.000070	0.30	77.83	126.13	0.08
Tributary C	Reach1	3101	100yr	12.05	88.72	91.08		91.08	0.000105	0.38	57.30	106.43	0.10
Tributary C	Reach1	3105	100yr	12.05	88.73	91.08	89.65	91.09	0.000234	0.56	25.59	83.04	0.14
Tributary C	Reach1	3110	100yr	12.05	88.74	91.07	89.73	91.12	0.000463	0.97	12.39	95.69	0.21
Tributary C	Reach1	3113		Culvert									
Tributary C	Reach1	3115	100yr	12.05	88.89	91.33	89.85	91.34	0.000228	0.52	24.30	287.80	0.14
Tributary C	Reach1	3120	100yr	12.05	88.92	91.35	89.87	91.36	0.000105	0.40	76.06	222.47	0.10
Tributary C	Reach1	3125	100yr	12.05	88.95	91.36		91.37	0.000196	0.45	60.81	273.68	0.13

Appendix C

Field Verification of LIDAR Data

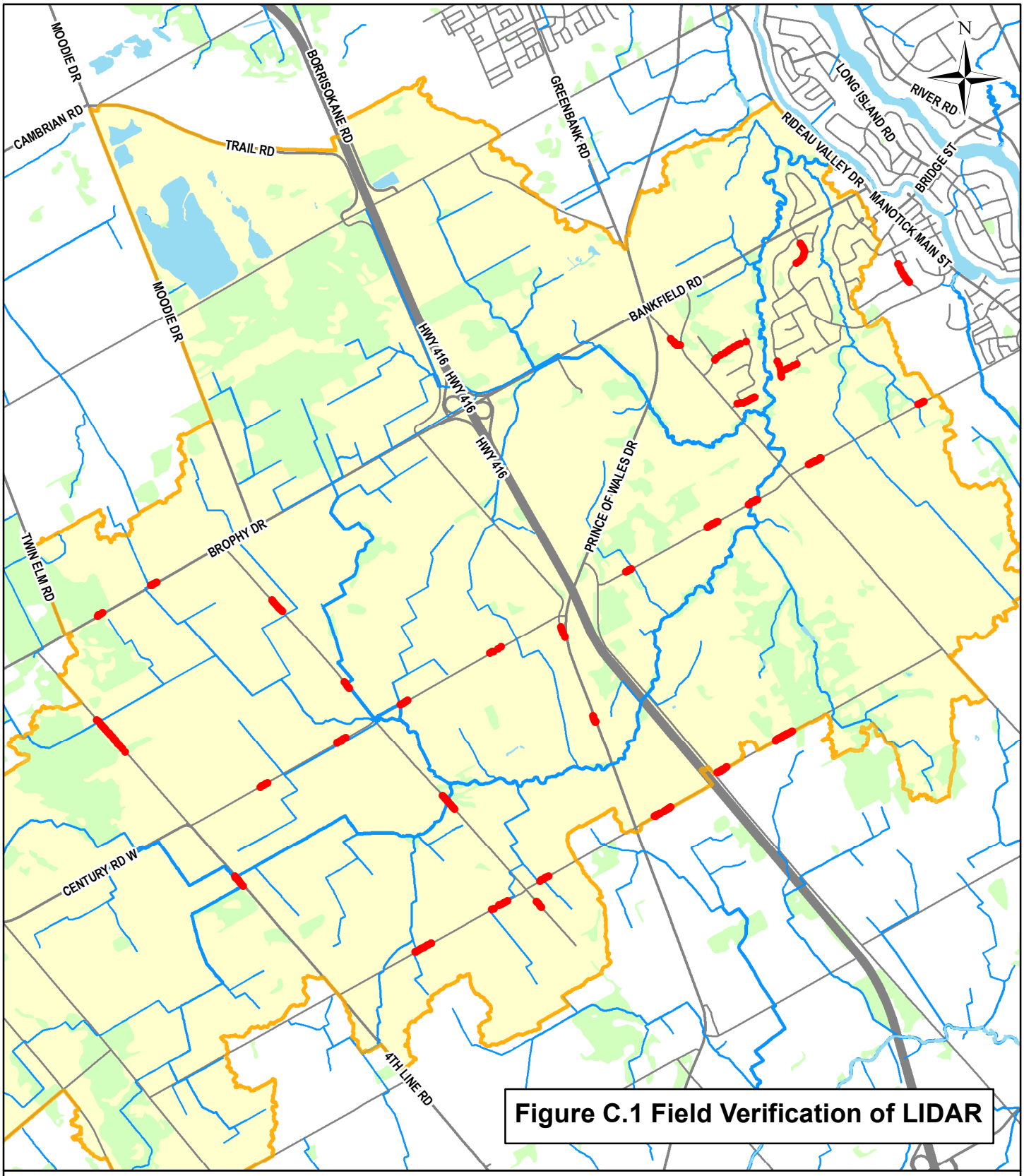


Figure C.1 Field Verification of LIDAR

RIDEAU VALLEY CONSERVATION AUTHORITY

Trimble Points

Wetlands

0 0.5 1 2 Kilometers

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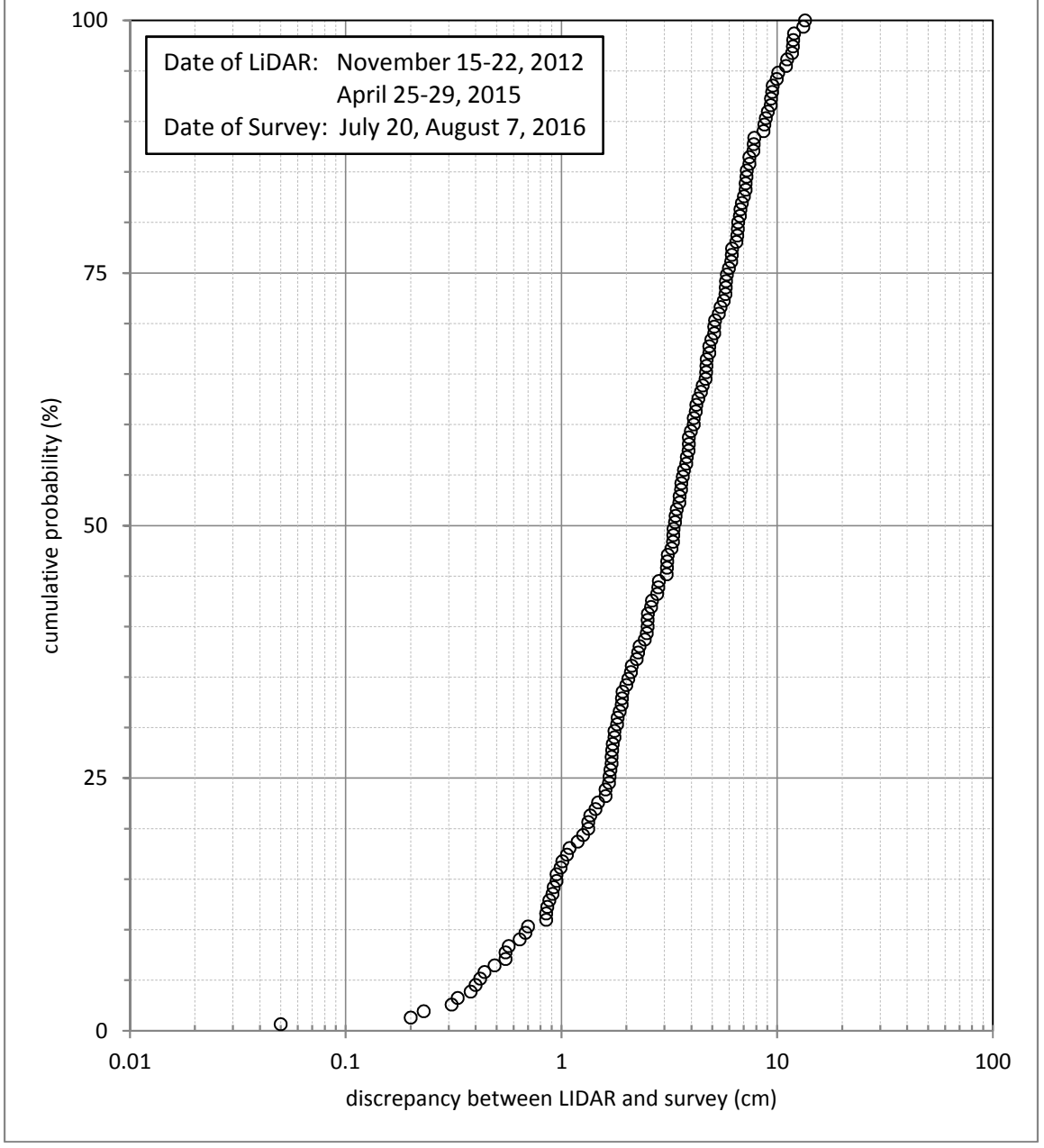
Map Scale: 1:50,000

Date Modified: 23/Nov/2018

Figure C.2 Field verification of LIDAR data
(Mud Creek)



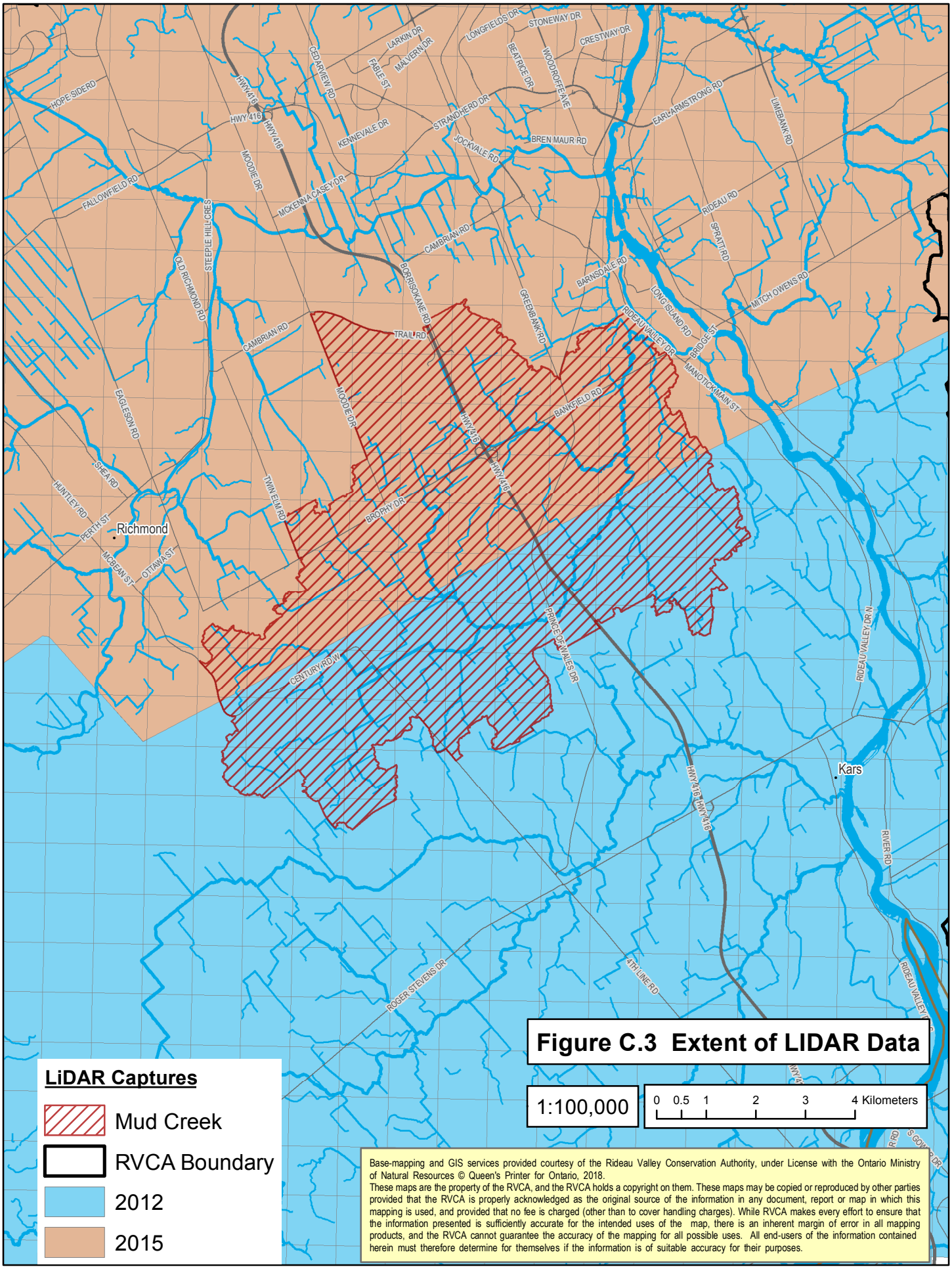


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Table C.1 Field verification of LIDAR data (spot heights)

	RVCA Field Survey (July 20, August 7, 2016)							Nearest Lidar Point	Comparison		
Location ID	X (m)	Y (m)	Z (m)	Horizontal Accuracy (m)	Veritcal Accuracy (m)	Date/Time	Field Observations	Z (m)	△Z (m)	|△Z | (cm)	|△Z| > 0.33m
4thline-2	438736.807	5003484.97	93.293	0.009	0.016	8/7/2016 9:18	Road	93.3352	0.042	4.2	
4thline-3	438732.287	5003490.07	93.268	0.01	0.017	8/7/2016 9:19	Road	93.3033	0.035	3.5	
4thline-4	438723.745	5003499.67	93.311	0.01	0.018	8/7/2016 9:20	Road	93.3283	0.017	1.7	
4thline-5	438711.516	5003513.6	93.377	0.01	0.018	8/7/2016 9:20	Road	93.3946	0.018	1.8	
4thline-6	438704.721	5003521.24	93.437	0.011	0.017	8/7/2016 9:21	Road	93.4574	0.020	2.0	
4thline-7	438696.591	5003530.44	93.436	0.01	0.018	8/7/2016 9:21	Road	93.4719	0.036	3.6	
4thline-8	438685.387	5003543.03	93.434	0.01	0.018	8/7/2016 9:22	Road	93.4651	0.031	3.1	
4thline-9	438671.516	5003558.64	93.556	0.009	0.016	8/7/2016 9:22	Road	93.5583	0.002	0.2	
4thline-10	438653.1	5003579.62	93.84	0.008	0.014	8/7/2016 9:23	Road	93.8495	0.009	0.9	
4thline-11	438754.456	5003465.34	93.33	0.012	0.019	8/7/2016 9:26	Road	93.3679	0.038	3.8	
4thline-12	438769.614	5003448.54	93.266	0.013	0.02	8/7/2016 9:27	Road	93.2751	0.009	0.9	
4thline-13	438779.462	5003437.58	93.287	0.012	0.019	8/7/2016 9:28	Road	93.3208	0.034	3.4	
4thline-14	438798.493	5003416.51	93.384	0.013	0.017	8/7/2016 9:28	Road	93.4311	0.047	4.7	
4thline-15	438814.7	5003398.6	93.399	0.012	0.02	8/7/2016 9:29	Road	93.4241	0.025	2.5	
4thline-16	438830.312	5003381.28	93.419	0.012	0.02	8/7/2016 9:31	Road	93.4675	0.048	4.8	
4thline-17	438847.343	5003362.31	93.555	0.013	0.02	8/7/2016 9:32	Road	93.5892	0.034	3.4	
4thline-18	438870.252	5003336.92	93.689	0.012	0.02	8/7/2016 9:33	Road	93.7565	0.068	6.8	
4thline-19	438891.76	5003312.79	93.907	0.01	0.02	8/7/2016 9:35	Road	93.944	0.037	3.7	
4thline-20	438918.005	5003282.62	94.104	0.01	0.02	8/7/2016 9:43	Road	94.0991	-0.005	0.5	
4thline-21	439947.322	5002113.12	93.366	0.009	0.016	8/7/2016 9:55	Road	93.3145	-0.052	5.2	
4thline-22	439953.08	5002105.63	93.388	0.009	0.016	8/7/2016 9:56	Road	93.3016	-0.086	8.6	
4thline-23	439960.594	5002098.02	93.447	0.009	0.016	8/7/2016 9:56	Road	93.3857	-0.061	6.1	
4thline-24	439968.845	5002088.52	93.488	0.011	0.02	8/7/2016 9:56	Road	93.4097	-0.078	7.8	
4thline-25	439978.795	5002077.24	93.479	0.011	0.02	8/7/2016 9:57	Road	93.4047	-0.074	7.4	
4thline-26	439983.891	5002071.33	93.453	0.011	0.02	8/7/2016 9:58	Road	93.3932	-0.060	6.0	
4thline-27	439995.57	5002058.03	93.408	0.011	0.02	8/7/2016 9:58	Road	93.3408	-0.067	6.7	
4thline-28	440008.841	5002042.76	93.476	0.011	0.02	8/7/2016 9:59	Road	93.4059	-0.070	7.0	
4thline-29	440024.479	5002024.8	93.496	0.011	0.02	8/7/2016 9:59	Road	93.4005	-0.095	9.5	
bankfield-1	439214.863	5004868.62	92.893	0.008	0.012	8/7/2016 12:22	Road	93.0042	0.111	11.1	
bankfield-2	439201.465	5004860.91	92.9	0.008	0.013	8/7/2016 12:23	Road	93.0199	0.120	12.0	
bankfield-3	439186.545	5004852.34	92.928	0.011	0.017	8/7/2016 12:23	Road	93.0602	0.132	13.2	
bankfield-4	439171.412	5004843.78	92.972	0.012	0.018	8/7/2016 12:23	Road	93.0903	0.118	11.8	
bankfield-5	439160.464	5004837.51	92.997	0.011	0.017	8/7/2016 12:24	Road	93.1142	0.117	11.7	
bankfield-6	438669.368	5004558.01	93.177	0.013	0.02	8/7/2016 12:28	Road	93.2704	0.093	9.3	
bankfield-7	438676.664	5004561.91	93.2	0.012	0.02	8/7/2016 12:29	Road	93.2948	0.095	9.5	

Table C.1 Field verification of LIDAR data (spot heights)

	RVCA Field Survey (July 20, August 7, 2016)							Nearest Lidar Point	Comparison		
Location ID	X (m)	Y (m)	Z (m)	Horizontal Accuracy (m)	Veritcal Accuracy (m)	Date/Time	Field Observations	Z (m)	△Z (m)	|△Z | (cm)	|△Z| > 0.33m
bankfield-8	438690.207	5004569.44	93.172	0.012	0.02	8/7/2016 12:30	Road	93.273	0.101	10.1	
bankfield-9	438707.137	5004579.35	93.19	0.012	0.02	8/7/2016 12:31	Road	93.3244	0.134	13.4	
bankfield-10	438660.91	5004553.19	93.152	0.01	0.018	8/7/2016 12:38	Road	93.2708	0.119	11.9	
princewales-1	443299.013	5003617.91	93.789	0.011	0.016	8/7/2016 14:05	Road	93.7501	-0.039	3.9	
princewales-2	443303.001	5003607.76	93.724	0.011	0.017	8/7/2016 14:05	Road	93.6517	-0.072	7.2	
princewales-3	443306.705	5003597.38	93.632	0.013	0.019	8/7/2016 14:05	Road	93.5414	-0.091	9.1	
princewales-4	443310.374	5003589.35	93.619	0.013	0.019	8/7/2016 14:06	Road	93.5413	-0.078	7.8	
princewales-5	443314.983	5003576.94	93.535	0.013	0.019	8/7/2016 14:07	Road	93.4952	-0.040	4.0	
princewales-6	443318.282	5003567.94	93.526	0.012	0.019	8/7/2016 14:07	Road	93.493	-0.033	3.3	
princewales-7	443322.431	5003557.6	93.502	0.013	0.02	8/7/2016 14:07	Road	93.4404	-0.062	6.2	
princewales-8	443324.134	5003562.63	93.744	0.013	0.02	8/7/2016 14:10	Road	93.6725	-0.071	7.1	
princewales-9	443323.65	5003563.54	93.752	0.008	0.013	8/7/2016 14:12	Road	93.6523	-0.100	10.0	
centryn-1	443611.51	5004965.98	94.054	0.014	0.016	8/7/2016 14:21	Road	94.0072	-0.047	4.7	
centryn-2	443625.802	5004973.91	94	0.014	0.019	8/7/2016 14:21	Road	93.9914	-0.009	0.9	
centryn-3	443639.438	5004981.38	94.033	0.014	0.019	8/7/2016 14:23	Road	93.9712	-0.062	6.2	
centryn-4	443647.381	5004985.87	94.033	0.012	0.016	8/7/2016 14:24	Road	94.0139	-0.019	1.9	
centryn-5	443660.874	5004993.11	94.028	0.015	0.019	8/7/2016 14:25	Road	93.9622	-0.066	6.6	
centryn-6	444424.399	5005414.05	93.201	0.015	0.019	8/7/2016 14:30	Road	93.1138	-0.087	8.7	
centryn-7	444436.413	5005420.56	93.208	0.014	0.02	8/7/2016 14:32	Road	93.1909	-0.017	1.7	
centryn-8	444451.891	5005429.09	93.174	0.014	0.02	8/7/2016 14:32	Road	93.1404	-0.034	3.4	
centryn-9	444466.924	5005437.4	93.176	0.013	0.02	8/7/2016 14:33	Road	93.0874	-0.089	8.9	
centryn-10	444414.07	5005408.36	93.179	0.014	0.02	8/7/2016 14:34	Road	93.0854	-0.094	9.4	
centryn-11	444405.13	5005403.23	93.154	0.013	0.02	8/7/2016 14:35	Road	93.088	-0.066	6.6	
centryn-12	444394.825	5005397.53	93.195	0.013	0.02	8/7/2016 14:35	Road	93.1263	-0.069	6.9	
centryn-13	444381.891	5005390.37	93.182	0.013	0.02	8/7/2016 14:36	Road	93.1577	-0.024	2.4	
centryn-14	444372.031	5005385.08	93.225	0.013	0.02	8/7/2016 14:36	Road	93.1703	-0.055	5.5	
centryn-15	444842.891	5005644.62	91.212	0.014	0.02	8/7/2016 14:41	Road	91.1908	-0.021	2.1	
centryn-16	444830.505	5005637.84	91.211	0.013	0.019	8/7/2016 14:41	Road	91.1457	-0.065	6.5	
centryn-17	444816.258	5005629.85	91.157	0.014	0.019	8/7/2016 14:42	Road	91.134	-0.023	2.3	
centryn-18	444805.617	5005623.79	91.1	0.013	0.019	8/7/2016 14:43	Road	91.0463	-0.054	5.4	
centryn-19	444790.893	5005615.99	91.093	0.012	0.018	8/7/2016 14:43	Road	91.0499	-0.043	4.3	
centryn-20	444779.377	5005609.45	91.141	0.014	0.019	8/7/2016 14:44	Road	91.0835	-0.058	5.8	
centryn-21	444766.391	5005602.55	91.054	0.012	0.018	8/7/2016 14:45	Road	91.0313	-0.023	2.3	
centryn-22	444756.483	5005597.08	91.054	0.015	0.018	8/7/2016 14:46	Road	91.0175	-0.036	3.6	
centryn-23	445319.285	5005969.06	90.698	0.008	0.012	8/7/2016 14:55	Road	90.6671	-0.031	3.1	

Table C.1 Field verification of LIDAR data (spot heights)

	RVCA Field Survey (July 20, August 7, 2016)							Nearest Lidar Point	Comparison		
Location ID	X (m)	Y (m)	Z (m)	Horizontal Accuracy (m)	Veritcal Accuracy (m)	Date/Time	Field Observations	Z (m)	△Z (m)	|△Z | (cm)	|△Z| > 0.33m
centryn-24	445331.467	5005975.89	90.636	0.01	0.016	8/7/2016 14:55	Road	90.6224	-0.014	1.4	
centryn-25	445344.433	5005982.85	90.565	0.01	0.016	8/7/2016 14:56	Road	90.5551	-0.010	1.0	
centryn-26	445357.353	5005990.17	90.54	0.01	0.014	8/7/2016 14:56	Road	90.5369	-0.003	0.3	
centryn-27	445371.604	5005997.87	90.498	0.01	0.015	8/7/2016 14:57	Road	90.4811	-0.017	1.7	
centryn-28	445380.451	5006002.87	90.49	0.01	0.014	8/7/2016 14:57	Road	90.4815	-0.009	0.9	
centryn-29	445391.585	5006009.03	90.476	0.01	0.015	8/7/2016 14:57	Road	90.472	-0.004	0.4	
centryn-30	445415.761	5006022.13	90.431	0.01	0.015	8/7/2016 14:58	Road	90.4255	-0.006	0.6	
centryn-31	445426.378	5006028.39	90.372	0.01	0.016	8/7/2016 14:58	Road	90.3619	-0.010	1.0	
centryn-32	445435.76	5006033.55	90.309	0.011	0.017	8/7/2016 14:59	Road	90.3033	-0.006	0.6	
centryn-33	446344.107	5006531.23	90.052	0.009	0.014	8/7/2016 15:04	Road	90.0653	0.013	1.3	
centryn-34	446359.495	5006539.69	90.066	0.012	0.02	8/7/2016 15:05	Road	90.0484	-0.018	1.8	
centryn-35	446372.427	5006546.33	90.087	0.013	0.02	8/7/2016 15:05	Road	90.0562	-0.031	3.1	
centryn-36	446386.396	5006554.14	90.073	0.012	0.019	8/7/2016 15:06	Road	90.053	-0.020	2.0	
centryn-37	446399.416	5006561.05	90.019	0.011	0.018	8/7/2016 15:06	Road	90.0601	0.041	4.1	
pwales rd-1	443382.198	5005469.24	94.605	0.008	0.015	07/20/2016 09:38:18	Road Shoulder	94.6236	0.019	1.9	
pwales rd-2	443380.117	5005464.18	94.591	0.008	0.014	07/20/2016 09:38:44	Road Shoulder	94.5822	-0.009	0.9	
pwales rd-3	443376.638	5005455.4	94.577	0.009	0.015	07/20/2016 09:39:03	Road Shoulder	94.5942	0.017	1.7	
pwales rd-4	443373.771	5005448.68	94.551	0.009	0.016	07/20/2016 09:39:32	Road Shoulder	94.549	-0.002	0.2	
pwales rd-5	443369.647	5005438.25	94.532	0.008	0.015	07/20/2016 09:39:52	Road Shoulder	94.5446	0.013	1.3	
pwales rd-6	443365.584	5005428.47	94.533	0.01	0.018	07/20/2016 09:40:19	Road Shoulder	94.5372	0.004	0.4	
pwales rd-7	443385.481	5005477.62	94.655	0.011	0.019	07/20/2016 09:41:14	Road Shoulder	94.6645	0.009	0.9	
pwales rd-8	443388.903	5005486.56	94.687	0.01	0.018	07/20/2016 09:41:35	Road Shoulder	94.6934	0.006	0.6	
pwales rd-9	443391.508	5005492.69	94.693	0.009	0.016	07/20/2016 09:42:19	Road Shoulder	94.732	0.039	3.9	
pwales rd-10	443395.073	5005501.38	94.703	0.009	0.016	07/20/2016 09:42:51	Road Shoulder	94.7098	0.007	0.7	
elijah ct-1	444116.438	5007086.73	96.872	0.008	0.012	07/20/2016 09:56:03	Road	96.8839	0.012	1.2	
elijah ct-2	444105.94	5007088.22	97.071	0.008	0.012	07/20/2016 09:56:32	Road	97.0973	0.026	2.6	
elijah ct-3	444099.416	5007089	97.244	0.008	0.013	07/20/2016 09:56:52	Road	97.2549	0.011	1.1	
elijah ct-4	444092.86	5007090.41	97.337	0.011	0.017	07/20/2016 09:57:23	Road	97.3237	-0.013	1.3	
elijah ct-5	444084.087	5007093.36	97.456	0.009	0.015	07/20/2016 09:57:47	Road	97.4783	0.022	2.2	
elijah ct-6	444075.75	5007098.64	97.413	0.009	0.015	07/20/2016 09:58:07	Road	97.3959	-0.017	1.7	
elijah ct-7	444068.824	5007104.64	97.208	0.009	0.014	07/20/2016 09:58:27	Road	97.161	-0.047	4.7	
elijah ct-8	444063.075	5007111.21	97.111	0.011	0.018	07/20/2016 09:58:45	Road	97.069	-0.042	4.2	
elijah ct-9	444056.942	5007118.3	97.074	0.01	0.016	07/20/2016 09:59:04	Road	97.0289	-0.045	4.5	
elijah ct-10	444038.991	5007138.67	96.979	0.011	0.017	07/20/2016 09:59:40	Road	96.9512	-0.028	2.8	
elijah ct-11	444029.896	5007149.37	96.971	0.012	0.018	07/20/2016 10:00:03	Road	96.9244	-0.047	4.7	

Table C.1 Field verification of LIDAR data (spot heights)

	RVCA Field Survey (July 20, August 7, 2016)							Nearest Lidar Point	Comparison		
Location ID	X (m)	Y (m)	Z (m)	Horizontal Accuracy (m)	Veritcal Accuracy (m)	Date/Time	Field Observations	Z (m)	△Z (m)	|△Z | (cm)	|△Z| > 0.33m
maple ck-1	444582.864	5007049.14	91.157	0.008	0.012	07/20/2016 10:10:23	Road	91.15	-0.007	0.7	
maple ck-2	444615.721	5007069.92	90.901	0.01	0.014	07/20/2016 10:11:06	Road	90.8267	-0.074	7.4	
maple ck-3	444649.614	5007089.46	90.499	0.011	0.016	07/20/2016 10:11:53	Road	90.4659	-0.033	3.3	
maple ck-4	444678.848	5007102.23	90.218	0.011	0.017	07/20/2016 10:12:30	Road	90.1696	-0.048	4.8	
maple ck-5	444737.275	5007122.12	89.91	0.012	0.017	07/20/2016 10:13:36	Road	89.8589	-0.051	5.1	
maple ck-6	444567.134	5007037.64	91.257	0.014	0.02	07/20/2016 10:17:25	Road	91.2126	-0.044	4.4	
maple ck-7	444535.925	5007020.26	91.607	0.015	0.02	07/20/2016 10:18:15	Road	91.5821	-0.025	2.5	
maple ck-8	444500.362	5006997.25	91.857	0.014	0.02	07/20/2016 10:19:13	Road	91.8565	-0.001	0.1	
maple ck-9	444462.522	5006966.73	92.274	0.014	0.02	07/20/2016 10:20:17	Road	92.2573	-0.017	1.7	
maple ck-10	444441.914	5006950.45	92.578	0.015	0.019	07/20/2016 10:20:53	Road	92.5588	-0.019	1.9	
grey willow-1	444749.907	5006567.66	89.84	0.01	0.012	07/20/2016 10:29:36	Road	89.8977	0.058	5.8	
grey willow-2	444765.342	5006575.88	89.755	0.01	0.014	07/20/2016 10:30:03	Road	89.7594	0.004	0.4	
grey willow-3	444782.711	5006585.11	89.589	0.012	0.015	07/20/2016 10:30:35	Road	89.6214	0.032	3.2	
grey willow-4	444798.04	5006593.67	89.494	0.012	0.016	07/20/2016 10:31:01	Road	89.5525	0.059	5.9	
grey willow-5	444815.445	5006599.29	89.419	0.013	0.019	07/20/2016 10:31:30	Road	89.4471	0.028	2.8	
grey willow-6	444736.573	5006560.08	89.904	0.015	0.018	07/20/2016 10:33:13	Road	89.883	-0.021	2.1	
grey willow-7	444710.117	5006546.2	90.04	0.014	0.017	07/20/2016 10:34:34	Road	90.0582	0.018	1.8	
grey willow-8	444681.446	5006551.49	90.138	0.013	0.016	07/20/2016 10:35:15	Road	90.1761	0.038	3.8	
grey willow-9	444650.561	5006539.38	90.685	0.014	0.017	07/20/2016 10:36:01	Road	90.7157	0.031	3.1	
potter-1	445272.48	5007927.33	89.121	0.009	0.014	07/20/2016 10:46:04	Road	89.16	0.039	3.9	
potter-2	445259.013	5007901.44	88.984	0.012	0.02	07/20/2016 10:46:50	Road	89.035	0.051	5.1	
potter-3	445233.616	5007875.29	89.101	0.013	0.017	07/20/2016 10:48:15	Road	89.1789	0.078	7.8	
potter-4	445205.503	5007858.62	89.308	0.012	0.019	07/20/2016 10:48:57	Road	89.3246	0.017	1.7	
potter-5	445279.382	5007948.89	89.238	0.015	0.02	07/20/2016 10:51:25	Road	89.3095	0.072	7.2	
potter-6	445282.095	5007967.04	89.282	0.015	0.02	07/20/2016 10:52:02	Road	89.318	0.036	3.6	
potter-7	445273.04	5007992.46	89.461	0.015	0.02	07/20/2016 10:52:39	Road	89.4939	0.033	3.3	
potter-8	445265.522	5008009.67	89.516	0.015	0.02	07/20/2016 10:53:16	Road	89.5726	0.057	5.7	
potter-9	445252.523	5008027.94	89.367	0.014	0.019	07/20/2016 10:54:00	Road	89.408	0.041	4.1	
potter-10	445241.674	5008042.05	89.3	0.014	0.019	07/20/2016 10:54:29	Road	89.3352	0.035	3.5	
watterson -1	445083.214	5006848.92	89.496	0.008	0.012	07/20/2016 11:03:52	Road	89.515	0.019	1.9	
watterson -2	445112.3	5006861.99	89.484	0.01	0.015	07/20/2016 11:04:34	Road	89.51	0.026	2.6	
watterson -3	445140.724	5006876.13	89.306	0.01	0.015	07/20/2016 11:05:13	Road	89.3152	0.009	0.9	
watterson -4	445176.907	5006894.71	89.454	0.012	0.018	07/20/2016 11:06:00	Road	89.47	0.016	1.6	
watterson -5	445208.097	5006912.06	89.328	0.014	0.02	07/20/2016 11:06:46	Road	89.3174	-0.011	1.1	
watterson -6	445062.562	5006829.43	89.3	0.013	0.02	07/20/2016 11:10:19	Road	89.2852	-0.015	1.5	

Table C.1 Field verification of LIDAR data (spot heights)

	RVCA Field Survey (July 20, August 7, 2016)							Nearest Lidar Point	Comparison		
Location ID	**X (m)**	**Y (m)**	**Z (m)**	**Horizontal Accuracy (m)**	**Veritcal Accuracy (m)**	**Date/Time**	**Field Observations**	**Z (m)**	**△Z (m)**	**|△Z | (cm)**	**|△Z| > 0.33m**
watterson -7	445062.711	5006813.83	89.45	0.013	0.02	07/20/2016 11:12:14	Road	89.4249	-0.025	2.5	
watterson -8	445066.406	5006790.53	89.561	0.012	0.018	07/20/2016 11:12:50	Road	89.5466	-0.014	1.4	
watterson -9	445056.458	5006866.02	89.429	0.013	0.02	07/20/2016 11:14:31	Road	89.4205	-0.009	0.9	
watterson -10	445046.288	5006900.13	89.641	0.013	0.02	07/20/2016 11:15:33	Road	89.6662	0.025	2.5	
watterson -11	445027.907	5006938.59	89.962	0.013	0.02	07/20/2016 11:18:05	Road	90.0116	0.050	5.0	
dr leach-1	446207.912	5007750.26	90.402	0.008	0.012	07/20/2016 11:29:48	Road	90.3987	-0.003	0.3	
dr leach-2	446192.822	5007775.44	90.589	0.012	0.015	07/20/2016 11:30:31	Road	90.5607	-0.028	2.8	
dr leach-3	446180.525	5007803.49	90.413	0.012	0.017	07/20/2016 11:31:10	Road	90.355	-0.058	5.8	
dr leach-4	446162.251	5007840.29	90.191	0.013	0.018	07/20/2016 11:31:59	Road	90.1948	0.004	0.4	
dr leach-5	446156.523	5007851.18	90.22	0.013	0.018	07/20/2016 11:32:27	Road	90.2381	0.018	1.8	
dr leach-6	446213.028	5007743.37	90.309	0.009	0.012	07/20/2016 11:34:59	Road	90.199	-0.110	11.0	
dr leach-7	446226.203	5007720.64	90.207	0.014	0.019	07/20/2016 11:35:37	Road	90.135	-0.072	7.2	
dr leach-8	446237.377	5007703.73	90.128	0.012	0.019	07/20/2016 11:36:09	Road	90.112	-0.016	1.6	
dr leach-9	446251.821	5007689.27	89.979	0.013	0.019	07/20/2016 11:36:40	Road	89.9735	-0.006	0.6	
dr leach-10	446263.448	5007681.1	89.883	0.013	0.02	07/20/2016 11:37:20	Road	89.9478	0.065	6.5	
									Mean △Z :	4.1	0 Yes out of 155
									Median△Z :	3.4	
									Max △Z :	13.4	
									Min △Z :	0.1	

Discarded Points

century-1	440183.377	5002949.38	92.282	0.01	0.014	8/7/2016 12:45	Road Repaved	92.0206	-0.261	26.1	
century-2	440199.408	5002958.27	92.185	0.01	0.015	8/7/2016 12:46	Road Repaved	91.9351	-0.250	25.0	
century-3	440219.052	5002969.52	92.177	0.01	0.014	8/7/2016 12:46	Road Repaved	91.9439	-0.233	23.3	
century-4	440235.873	5002978.94	92.212	0.01	0.015	8/7/2016 12:47	Road Repaved	91.9339	-0.278	27.8	
century-5	440251.38	5002987.78	92.185	0.012	0.016	8/7/2016 12:47	Road Repaved	91.8703	-0.315	31.5	
century-6	441498.359	5003723.42	92.005	0.012	0.017	8/7/2016 12:52	Road Repaved	91.8918	-0.113	11.3	
century-7	441513.597	5003731.94	91.914	0.012	0.017	8/7/2016 12:53	Road Repaved	91.7941	-0.120	12.0	
century-8	441527.309	5003739.62	91.853	0.014	0.019	8/7/2016 12:53	Road Repaved	91.7721	-0.081	8.1	
century-9	441543.166	5003748.34	91.781	0.014	0.02	8/7/2016 12:55	Road Repaved	91.6663	-0.115	11.5	
century-10	441555.766	5003755.34	91.749	0.015	0.02	8/7/2016 12:57	Road Repaved	91.6749	-0.074	7.4	
century-11	441565.199	5003760.74	91.769	0.015	0.02	8/7/2016 12:58	Road Repaved	91.6039	-0.165	16.5	
century-12	440903.07	5003364.62	91.892	0.013	0.019	8/7/2016 13:12	Road Repaved	91.7126	-0.179	17.9	
century-13	440929.248	5003379.56	91.885	0.011	0.016	8/7/2016 13:13	Road Repaved	91.7125	-0.173	17.3	
century-14	440945.219	5003388.25	91.909	0.014	0.02	8/7/2016 13:16	Road Repaved	91.6578	-0.251	25.1	

Table C.1 Field verification of LIDAR data (spot heights)

	RVCA Field Survey (July 20, August 7, 2016)							Nearest Lidar Point	Comparison		
Location ID	X (m)	Y (m)	Z (m)	Horizontal Accuracy (m)	Veritcal Accuracy (m)	Date/Time	Field Observations	Z (m)	△Z (m)	|△Z | (cm)	|△Z| > 0.33m
century-15	440959.452	5003396.3	91.91	0.014	0.02	8/7/2016 13:18	Road Repaved	91.6729	-0.237	23.7	
century-16	440984.771	5003410.62	91.841	0.014	0.02	8/7/2016 13:19	Road Repaved	91.6522	-0.189	18.9	
century-17	442336.147	5004202.85	95.154	0.013	0.019	8/7/2016 13:30	Road Repaved	95.0161	-0.138	13.8	
century-18	442358.457	5004215.51	95.168	0.014	0.02	8/7/2016 13:31	Road Repaved	94.957	-0.211	21.1	
century-19	442371.045	5004222.48	95.224	0.014	0.02	8/7/2016 13:32	Road Repaved	95.0392	-0.185	18.5	
century-20	442411.24	5004245.13	95.278	0.013	0.019	8/7/2016 13:38	Road Repaved	95.2001	-0.078	7.8	
century-21	442442.309	5004262.77	95.153	0.013	0.02	8/7/2016 13:43	Road Repaved	94.9944	-0.159	15.9	

Appendix D

SWMHYMO Model Files

```
2     Metric units
*#*************************************************************************
*#  Project Name: [Mud]    Project Number: [10419]
*#  Date        : 15 Aug 2018
*#  Modeller    : [ Tyler Bauman ]
*#  Company     : Rideau Valley Conservation Authority
*#  License #   :  5329846
*#*************************************************************************
*% 100 Year 3 Hour Chicago Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[3]
*%                   ["100YC3H.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------|
READ STORM          STORM_FILENAME=["storm.001"]
*%-----------------|-------------------------------------------------------|
DEFAULT VALUES      ICASEdef=[1],  read and print values
                    DEFVAL_FILENAME=["mud_val.val"]
*%-----------------|-------------------------------------------------------|
*# Tributary C
CALIB NASHYD        ID=[5], NHYD=["TC1"], DT=[1]min, AREA=[1462.6](ha),
                    DWF=[0](cms),  CN/C=[67.4], IA=[6.15](mm),
                    N=[3], TP=[9.4]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[5],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for TC1"]
*%-----------------|-------------------------------------------------------|
*# Tributary B
CALIB NASHYD        ID=[6], NHYD=["TB1"], DT=[1]min, AREA=[283.3](ha),
                    DWF=[0](cms),  CN/C=[65.3], IA=[6.74](mm),
                    N=[3], TP=[4.47]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[6],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for TB1"]
*%-----------------|-------------------------------------------------------|
*# Tributary A
CALIB NASHYD        ID=[7], NHYD=["TA1"], DT=[1]min, AREA=[884.5](ha),
                    DWF=[0](cms),  CN/C=[66.3], IA=[6.47](mm),
                    N=[3], TP=[6.27]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[7],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for TA1"]
*%-----------------|-------------------------------------------------------|
*# Wilson-Cowan Drain
CALIB NASHYD        ID=[3], NHYD=["WC1"], DT=[1]min, AREA=[265.5](ha),
                    DWF=[0](cms),  CN/C=[68.5], IA=[5.84](mm),
                    N=[3], TP=[2.52]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[3],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for WC1"]
*%-----------------|-------------------------------------------------------|
ROUTE CHANNEL       IDout=[2], NHYD=["C7"], IDin=[3],
                    RDT=[1](min),
                    CHLGTH=[3280](m),  CHSLOPE=[0.23](%),
                                       FPSLOPE=[0.23](%),
                    SECNUM=[2305],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=[0.08, 213] NSEG times
                                            -0.035, 230
                                            0.08, 580
                    ( DISTANCE (m), ELEVATION (m))=[0.00, 98.52]
                                                   115, 92.41
                                                   213, 90.91
                                                   216, 90.37
                                                   218, 90.37
                                                   230, 91.09
                                                   448, 92.07
                                                   580, 98.2
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[2],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Routing Hydrograph for C7"]
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=[1], NHYD=["WC2"], DT=[1]min, AREA=[211.4](ha),
                    XIMP=[0.194], TIMP=[0.242], DWF=[0](cms),  LOSS=[2],
```

```
                    SCS curve number CN=[77.3],
                    Pervious Surfaces:   IAper=[4.67](mm), SLPP=[2](%)
                                         LGP=[90](m), MNP=[0.25], SCP=[0](min),
                    Impervious Surfaces: IAimp=[1.57](mm), SLPI=[0.5](%),
                                         LGI=[1187](m), MNI=[0.045], SCI=[0](min),
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[1],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for WC2"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[8], NHYD=["N11"], IDs to add=[1 + 2]
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[8],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Confluence Hydrograph for N11"]
*%-----------------|-------------------------------------------------------|
*# Main Channel
CALIB NASHYD        ID=[1], NHYD=["M1"], DT=[1]min, AREA=[1296.6](ha),
                    DWF=[0](cms),  CN/C=[64.9], IA=[6.86](mm),
                    N=[3], TP=[8.51]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[1],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for M1"]
*%-----------------|-------------------------------------------------------|
ROUTE CHANNEL       IDout=[2], NHYD=["C1"], IDin=[1],
                    RDT=[1](min),
                    CHLGTH=[1150](m),  CHSLOPE=[0.25](%),
                                       FPSLOPE=[0.25](%),
                    SECNUM=[1780],       NSEG=[3]
                    ( SEGROUGH, SEGDIST (m))=[0.08, 277.14] NSEG times
                                            -0.035, 288.99
                                            0.08, 437.66
                    ( DISTANCE (m), ELEVATION (m))=[0.00, 93.11]
                                                   219.93, 91.2
                                                   277.14, 90.32
                                                   281.14, 88.79
                                                   283.67, 88.79
                                                   288.99, 90.67
                                                   370.38, 91.77
                                                   437.66, 94.57
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[2],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Routing Hydrograph for C1"]
*%-----------------|-------------------------------------------------------|
CALIB NASHYD        ID=[1], NHYD=["M2"], DT=[1]min, AREA=[474.1](ha),
                    DWF=[0](cms),  CN/C=[73.1], IA=[4.68](mm),
                    N=[3], TP=[3.71]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[1],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for M2"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[4], NHYD=["N2"], IDs to add=[1 + 2]
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[4],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Confluence Hydrograph for N2"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[3], NHYD=["J1"], IDs to add=[4 + 5]
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[3],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Confluence Hydrograph for J1"]
*%-----------------|-------------------------------------------------------|
*% C2 was removed to improve model stability
*%-----------------|-------------------------------------------------------|
CALIB NASHYD        ID=[1], NHYD=["M3"], DT=[1]min, AREA=[339.8](ha),
                    DWF=[0](cms),  CN/C=[71.5], IA=[5.06](mm),
                    N=[3], TP=[4.81]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[1],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for M3"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[4], NHYD=["N3"], IDs to add=[1 + 3]
*%-----------------|-------------------------------------------------------|
SAVE HYD            ID=[4],   # OF PCYCLES=[1],  ICASEsh=[1]
```

```
                  HYD_COMMENT=["Confluence Hydrograph for N3"]
*%----------------|-------------------------------------------------------------|
ADD HYD           IDsum=[3], NHYD=["J2"], IDs to add=[4 + 6]
*%----------------|-------------------------------------------------------------|
SAVE HYD          ID=[3],   # OF PCYCLES=[1],  ICASEsh=[1]
                  HYD_COMMENT=["Confluence Hydrograph for J2"]
*%----------------|-------------------------------------------------------------|
*% C3 was removed to improve model stability
*%----------------|-------------------------------------------------------------|
CALIB NASHYD      ID=[1], NHYD=["M4"], DT=[1]min, AREA=[116.7](ha),
                  DWF=[0](cms),  CN/C=[75.8], IA=[4.06](mm),
                  N=[3], TP=[2.23]hrs,
                  RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%----------------|-------------------------------------------------------------|
SAVE HYD          ID=[1],   # OF PCYCLES=[1],  ICASEsh=[1]
                  HYD_COMMENT=["Runoff Hydrograph for M4"]
*%----------------|-------------------------------------------------------------|
ADD HYD           IDsum=[3], NHYD=["N4"], IDs to add=[1 + 3]
*%----------------|-------------------------------------------------------------|
SAVE HYD          ID=[3],   # OF PCYCLES=[1],  ICASEsh=[1]
                  HYD_COMMENT=["Confluence Hydrograph for N4"]
*%----------------|-------------------------------------------------------------|
ROUTE CHANNEL     IDout=[2], NHYD=["C4"], IDin=[3],
                  RDT=[1](min),
                  CHLGTH=[4040](m),  CHSLOPE=[0.14](%),
                                      FPSLOPE=[0.14](%),
                  SECNUM=[1665],       NSEG=[3]
                  ( SEGROUGH, SEGDIST (m))=[0.08, 40.99] NSEG times
                                           -0.035, 53.07
                                           0.08, 103.33
                  ( DISTANCE (m), ELEVATION (m))=[0.00, 90.78]
                                                 29.03, 88.71
                                                 40.99, 88.25
                                                 47.33, 86.36
                                                 50.58, 86.36
                                                 53.07, 87.51
                                                 68.46, 89.72
                                                 103.33, 90.75
*%----------------|-------------------------------------------------------------|
SAVE HYD          ID=[2],   # OF PCYCLES=[1],  ICASEsh=[1]
                  HYD_COMMENT=["Routing Hydrograph for C4"]
*%----------------|-------------------------------------------------------------|
CALIB NASHYD      ID=[1], NHYD=["M5"], DT=[1]min, AREA=[723.6](ha),
                  DWF=[0](cms),  CN/C=[64.1], IA=[7.1](mm),
                  N=[3], TP=[4.43]hrs,
                  RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%----------------|-------------------------------------------------------------|
SAVE HYD          ID=[1],   # OF PCYCLES=[1],  ICASEsh=[1]
                  HYD_COMMENT=["Runoff Hydrograph for M5"]
*%----------------|-------------------------------------------------------------|
ADD HYD           IDsum=[4], NHYD=["N5"], IDs to add=[1 + 2]
*%----------------|-------------------------------------------------------------|
SAVE HYD          ID=[4],   # OF PCYCLES=[1],  ICASEsh=[1]
                  HYD_COMMENT=["Confluence Hydrograph for N5"]
*%----------------|-------------------------------------------------------------|
ADD HYD           IDsum=[3], NHYD=["J3"], IDs to add=[4 + 7]
*%----------------|-------------------------------------------------------------|
SAVE HYD          ID=[3],   # OF PCYCLES=[1],  ICASEsh=[1]
                  HYD_COMMENT=["Confluence Hydrograph for J3"]
*%----------------|-------------------------------------------------------------|
ROUTE CHANNEL     IDout=[2], NHYD=["C5"], IDin=[3],
                  RDT=[1](min),
                  CHLGTH=[3980](m),  CHSLOPE=[0.14](%),
                                      FPSLOPE=[0.14](%),
                  SECNUM=[1405],       NSEG=[3]
                  ( SEGROUGH, SEGDIST (m))=[0.08, 46.71] NSEG times
                                           -0.035, 60.4
                                           0.08, 113.48
                  ( DISTANCE (m), ELEVATION (m))=[0.00, 88.45]
                                                 34.7, 83.43
                                                 46.71, 83.95
                                                 51.75, 81.26
                                                 55.41, 81.26
                                                 60.4, 83.13
                                                 89.32, 87.85
```

```
                                                  113.48, 88.43
*%-----------------|---------------------------------------------------------|
SAVE HYD            ID=[2],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Routing Hydrograph for C5"]
*%-----------------|---------------------------------------------------------|
CALIB NASHYD        ID=[1], NHYD=["M6"], DT=[1]min, AREA=[354.8](ha),
                    DWF=[0](cms),  CN/C=[75.1], IA=[4.22](mm),
                    N=[3], TP=[2.01]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|---------------------------------------------------------|
SAVE HYD            ID=[1],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for M6"]
*%-----------------|---------------------------------------------------------|
ADD HYD             IDsum=[4], NHYD=["N6"], IDs to add=[1 + 2]
*%-----------------|---------------------------------------------------------|
SAVE HYD            ID=[4],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Confluence Hydrograph for N6"]
*%-----------------|---------------------------------------------------------|
ADD HYD             IDsum=[3], NHYD=["J4"], IDs to add=[4 + 8]
*%-----------------|---------------------------------------------------------|
SAVE HYD            ID=[3],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Confluence Hydrograph for J4"]
*%-----------------|---------------------------------------------------------|
*% C6 was removed to improve model stability
*%-----------------|---------------------------------------------------------|
CALIB NASHYD        ID=[1], NHYD=["M7"], DT=[1]min, AREA=[11](ha),
                    DWF=[0](cms),  CN/C=[70.9], IA=[5.21](mm),
                    N=[3], TP=[1.38]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|---------------------------------------------------------|
SAVE HYD            ID=[1],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Runoff Hydrograph for M7"]
*%-----------------|---------------------------------------------------------|
ADD HYD             IDsum=[3], NHYD=["N12"], IDs to add=[1 + 3]
*%-----------------|---------------------------------------------------------|
SAVE HYD            ID=[3],   # OF PCYCLES=[1],  ICASEsh=[1]
                    HYD_COMMENT=["Confluence Hydrograph for N12"]
*%-----------------|---------------------------------------------------------|
*% 100 Year 3 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[4]
*%                   ["100YS3.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|---------------------------------------------------------|
*% 100 Year 6 Hour Chicago Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[6]
*%                   ["100YC6H.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|---------------------------------------------------------|
*% 100 Year 6 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[7]
*%                   ["100YS6.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|---------------------------------------------------------|
*% 100 Year 12 Hour Chicago Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[12]
*%                   ["100YC12H.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|---------------------------------------------------------|
*% 100 Year 12 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[13]
*%                   ["100YS12.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|---------------------------------------------------------|
*% 100 Year 24 Hour Chicago Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[24]
*%                   ["100YC24H.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|---------------------------------------------------------|
*% 100 Year 24 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[25]
*%                   ["100YS24.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|---------------------------------------------------------|
*% 2 Year 24 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[240]
*%                   ["2YS24.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|---------------------------------------------------------|
*% 5 Year 24 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[241]
*%                   ["5YS24.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|---------------------------------------------------------|
*% 10 Year 24 Hour SCS Design Storm
```

```
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[242]
*%                   ["10YS24.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
*% 20 Year 24 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[243]
*%                   ["20YS24.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
*% 50 Year 24 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[244]
*%                   ["50YS24.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
*% 200 Year 24 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[245]
*%                   ["200YS24.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
*% 350 Year 24 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[246]
*%                   ["350YS24.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
*% 500 Year 24 Hour SCS Design Storm
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[247]
*%                   ["500YS24.stm"] <--storm filename, one per line for NSTORM time
*%-----------------|-------------------------------------------------------------|
FINISH
```

```
================================================================================

   SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO       999    999    =========
   S      W W W  MM MM  H   H   Y Y   MM MM  O   O     9   9  9   9
   SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9   Ver  4.05
      S   W W W  M   M  H   H    Y    M   M  O   O       9999   9999   Sept 2011
   SSSSS   W W   M   M  H   H    Y    M   M   OOO          9      9    =========
                                                        9   9  9   9   # 5329846
        StormWater Management HYdrologic Model           999    999    =========

 ********************************************************************************
 ************************** SWMHYMO Ver/4.05  ***********************************
 *********  A single event and continuous hydrologic simulation model  *********
 *********     based on the principles of HYMO and its successors      *********
 *********                  OTTHYMO-83 and OTTHYMO-89.                  *********
 ********************************************************************************
 ********* Distributed by:  J.F. Sabourin and Associates Inc.           *********
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 *********                  E-Mail: swmhymo@jfsa.Com                    *********
 ********************************************************************************

 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 +++++++++ Licensed user: Rideau Valley Conservation Authority          +++++++++
 +++++++++                Manotick              SERIAL#:5329846        +++++++++
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 ********************************************************************************
 *********           ++++++ PROGRAM ARRAY DIMENSIONS ++++++             *********
 *********           Maximum value for ID numbers  :     10            *********
 *********           Max. number of rainfall points: 105408            *********
 *********           Max. number of flow points    : 105408            *********
 ********************************************************************************

 ***** DESCRIPTION SUMMARY TABLE HEADERS (units depend on METOUT in START) *****
 *****-------------------------------------------------------------------*****
 *****    ID:  Hydrograph IDentification numbers, (1-10).                *****
 *****  NHYD:  Hydrograph reference numbers, (6 digits or characters).   *****
 *****  AREA:  Drainage area associated with hydrograph, (ac.) or (ha.).  *****
 ***** QPEAK:  Peak flow of simulated hydrograph, (ft^3/s) or (m^3/s).   *****
 ***** TpeakDate_hh:mm is the date and time of the peak flow.            *****
 *****  R.V.:  Runoff Volume of simulated hydrograph, (in) or (mm).      *****
 *****  R.C.:  Runoff Coefficient of simulated hydrograph, (ratio).      *****
 *****     *:  see WARNING or NOTE message printed at end of run.        *****
 *****    **:  see  ERROR  message printed at end of run.                *****
 ********************************************************************************
 ********************************************************************************

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

 ********************************************************************************

 **********************   S U M M A R Y   O U T P U T   **********************
 ********************************************************************************
 *         DATE: 2018-08-15     TIME: 10:24:29     RUN COUNTER: 000273         *
 ********************************************************************************
 * Input   filename: R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud.dat              *
 * Output  filename: R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud.out              *
 * Summary filename: R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud.sum              *
 * User comments:                                                               *
 * 1:_____________________________________________________________________      *
 * 2:_____________________________________________________________________      *
 * 3:_____________________________________________________________________      *
 ********************************************************************************


#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
  ** END OF RUN :   2

********************************************************************************




 RUN:COMMAND#
 003:0001--------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on       0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   3 ]
#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
 003:0002--------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=10.00:SDUR=   3.00:PTOT=  74.43]
 003:0003--------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 003:0004---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60    5.898 No_date   10:50   24.39 .328
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 003:0005---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60    5.898 No_date   10:50   24.39  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.003
      remark:Runoff Hydrograph for TC1
# Tributary B
 003:0006---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    2.152 No_date    5:57   22.61 .304
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 003:0007---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    2.152 No_date    5:57   22.61  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.003
      remark:Runoff Hydrograph for TB1
# Tributary A
 003:0008---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    5.047 No_date    7:44   23.44 .315
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 003:0009---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    5.047 No_date    7:44   23.44  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.003
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 003:0010---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    3.821 No_date    4:02   25.38 .341
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 003:0011---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    3.821 No_date    4:02   25.38  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.003
      remark:Runoff Hydrograph for WC1
 003:0012---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    3.821 No_date    4:02   25.38  n/a
      [RDT= 1.00] out<- 02:C7           265.50    3.158 No_date    5:21   25.38  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .620:Dmax=  .582}
 003:0013---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7           265.50    3.158 No_date    5:21   25.38  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.003
      remark:Routing Hydrograph for C7
 003:0014---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   12.890 No_date    1:45   42.34 .569
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 003:0015---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   12.890 No_date    1:45   42.34  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.003
      remark:Runoff Hydrograph for WC2
 003:0016---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   12.890 No_date    1:45   42.34  n/a
                      + 02:C7           265.50    3.158 No_date    5:21   25.38  n/a
      [DT= 1.00]  SUM=  08:N11          476.90   13.011 No_date    1:46   32.89  n/a
 003:0017---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90   13.011 No_date    1:46   32.89  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.003
      remark:Confluence Hydrograph for N11
# Main Channel
 003:0018---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    5.251 No_date    9:58   22.28 .299
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 003:0019---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60    5.251 No_date    9:58   22.28  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.003
      remark:Runoff Hydrograph for M1
 003:0020---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    5.251 No_date    9:58   22.28  n/a
      [RDT= 1.00] out<- 02:C1          1296.60    5.245 No_date   10:12   22.28  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.027:Dmax=  .969}
 003:0021---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60    5.245 No_date   10:12   22.28  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.003
      remark:Routing Hydrograph for C1
 003:0022---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    5.655 No_date    5:10   29.81 .400
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 003:0023---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    5.655 No_date    5:10   29.81  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.003
      remark:Runoff Hydrograph for M2
 003:0024---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10    5.655 No_date    5:10   29.81  n/a
                      + 02:C1          1296.60    5.245 No_date   10:12   22.28  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70    9.127 No_date    6:31   24.29  n/a
 003:0025---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2          1770.70    9.127 No_date    6:31   24.29  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.003
      remark:Confluence Hydrograph for N2
 003:0026---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2          1770.70    9.127 No_date    6:31   24.29  n/a
                      + 05:TC1         1462.60    5.898 No_date   10:50   24.39  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   13.943 No_date    7:59   24.34  n/a
 003:0027---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1          3233.30   13.943 No_date    7:59   24.34  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.003
      remark:Confluence Hydrograph for J1
 003:0028---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    3.005 No_date    6:16   28.20 .379
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 003:0029---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    3.005 No_date    6:16   28.20  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.003
      remark:Runoff Hydrograph for M3
 003:0030---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M3           339.80    3.005 No_date    6:16   28.20  n/a
                      + 03:J1          3233.30   13.943 No_date    7:59   24.34  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10   16.738 No_date    7:27   24.71  n/a
 003:0031---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N3          3573.10   16.738 No_date    7:27   24.71  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.003
      remark:Confluence Hydrograph for N3
 003:0032---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N3          3573.10   16.738 No_date    7:27   24.71  n/a
                      + 06:TB1          283.30    2.152 No_date    5:57   22.61  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40   18.739 No_date    7:07   24.55  n/a
 003:0033---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J2          3856.40   18.739 No_date    7:07   24.55  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.003
      remark:Confluence Hydrograph for J2
 003:0034---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M4           116.70    2.404 No_date    3:43   32.69 .439
      [CN= 75.8: N= 3.00]
```

```
     [Tp= 2.23:DT= 1.00]
 003:0035---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            01:M4           116.70    2.404 No_date    3:43   32.69  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.003
      remark:Runoff Hydrograph for M4
 003:0036---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD             01:M4           116.70    2.404 No_date    3:43   32.69  n/a
                       + 03:N4          3856.40   18.739 No_date    7:07   24.55  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10   19.612 No_date    6:35   24.79  n/a
 003:0037---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            03:N4          3973.10   19.612 No_date    6:35   24.79  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.003
      remark:Confluence Hydrograph for N4
 003:0038---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10   19.612 No_date    6:35   24.79  n/a
      [RDT= 1.00] out<- 02:C4          3973.10   19.048 No_date    7:45   24.79  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax= 1.116:Dmax= 1.894}
 003:0039---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            02:C4          3973.10   19.048 No_date    7:45   24.79  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.003
      remark:Routing Hydrograph for C4
 003:0040---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        01:M5           723.60    5.302 No_date    5:55   21.63 .291
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
 003:0041---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            01:M5           723.60    5.302 No_date    5:55   21.63  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.003
      remark:Runoff Hydrograph for M5
 003:0042---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD             01:M5           723.60    5.302 No_date    5:55   21.63  n/a
                       + 02:C4          3973.10   19.048 No_date    7:45   24.79  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70   23.868 No_date    7:12   24.30  n/a
 003:0043---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            04:N5          4696.70   23.868 No_date    7:12   24.30  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.003
      remark:Confluence Hydrograph for N5
 003:0044---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD             04:N5          4696.70   23.868 No_date    7:12   24.30  n/a
                       + 07:TA1          884.50    5.047 No_date    7:44   23.44  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   28.884 No_date    7:17   24.17  n/a
 003:0045---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            03:J3          5581.20   28.884 No_date    7:17   24.17  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.003
      remark:Confluence Hydrograph for J3
 003:0046---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   28.884 No_date    7:17   24.17  n/a
      [RDT= 1.00] out<- 02:C5          5581.20   28.253 No_date    8:14   24.17  n/a
      [L/S/n= 3980./ .140/.035]
      {Vmax= 1.312:Dmax= 2.329}
 003:0047---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            02:C5          5581.20   28.253 No_date    8:14   24.17  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.003
      remark:Routing Hydrograph for C5
 003:0048---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        01:M6           354.80    7.767 No_date    3:31   31.92 .429
      [CN= 75.1: N= 3.00]
      [Tp= 2.01:DT= 1.00]
 003:0049---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            01:M6           354.80    7.767 No_date    3:31   31.92  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.003
      remark:Runoff Hydrograph for M6
 003:0050---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD             01:M6           354.80    7.767 No_date    3:31   31.92  n/a
                       + 02:C5          5581.20   28.253 No_date    8:14   24.17  n/a
      [DT= 1.00]  SUM=  04:N6          5936.00   29.304 No_date    7:41   24.63  n/a
 003:0051---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            04:N6          5936.00   29.304 No_date    7:41   24.63  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.003
      remark:Confluence Hydrograph for N6
 003:0052---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD             04:N6          5936.00   29.304 No_date    7:41   24.63  n/a
                       + 08:N11          476.90   13.011 No_date    1:46   32.89  n/a
      [DT= 1.00]  SUM=  03:J4          6412.90   31.538 No_date    6:46   25.24  n/a
 003:0053---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            03:J4          6412.90   31.538 No_date    6:46   25.24  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.003
      remark:Confluence Hydrograph for J4
 003:0054---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        01:M7            11.00     .274 No_date    2:50   27.62 .371
      [CN= 70.9: N= 3.00]
      [Tp= 1.38:DT= 1.00]
 003:0055---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            01:M7            11.00     .274 No_date    2:50   27.62  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.003
      remark:Runoff Hydrograph for M7
 003:0056---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD             01:M7            11.00     .274 No_date    2:50   27.62  n/a
                       + 03:N12         6412.90   31.538 No_date    6:46   25.24  n/a
      [DT= 1.00]  SUM=  03:N12         6423.90   31.557 No_date    6:46   25.25  n/a
 003:0057---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            03:N12         6423.90   31.557 No_date    6:46   25.25  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.003
      remark:Confluence Hydrograph for N12
  ** END OF RUN :   3

************************************************************************************




 RUN:COMMAND#
 004:0001---------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   4 ]
#*************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*************************************************************************
 004:0002---------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=   3.00:PTOT=  74.46]
 004:0003---------------------------------------------------------------------------
      DEFAULT VALUES
       Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
       ICASEdv  = 1 (read and print data)
       FileTitle= File comment: [Mud Creek Default Value File]
                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
       Horton's infiltration equation parameters:
       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
       Parameters for PERVIOUS surfaces in STANDHYD:
       [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
       Parameters for IMPERVIOUS surfaces in STANDHYD:
       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
       Parameters used in NASHYD:
       [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 004:0004---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        05:TC1         1462.60    5.912 No_date   11:07   24.41 .328
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 004:0005---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            05:TC1         1462.60    5.912 No_date   11:07   24.41  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.004
      remark:Runoff Hydrograph for TC1
# Tributary B
 004:0006---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        06:TB1          283.30    2.168 No_date    6:13   22.63 .304
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 004:0007---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            06:TB1          283.30    2.168 No_date    6:13   22.63  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.004
      remark:Runoff Hydrograph for TB1
# Tributary A
 004:0008---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        07:TA1          884.50    5.069 No_date    8:00   23.46 .315
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 004:0009---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            07:TA1          884.50    5.069 No_date    8:00   23.46  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.004
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 004:0010---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        03:WC1          265.50    3.910 No_date    4:17   25.40 .341
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 004:0011---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            03:WC1          265.50    3.910 No_date    4:17   25.40  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.004
      remark:Runoff Hydrograph for WC1
 004:0012---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    3.910 No_date    4:17   25.40  n/a
      [RDT= 1.00] out<- 02:C7          265.50    3.199 No_date    5:37   25.40  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .619:Dmax=  .585}
 004:0013---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            02:C7          265.50    3.199 No_date    5:37   25.40  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.004
      remark:Routing Hydrograph for C7
 004:0014---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD      01:WC2          211.40   12.669 No_date    2:13   42.37 .569
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 004:0015---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            01:WC2          211.40   12.669 No_date    2:13   42.37  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.004
      remark:Runoff Hydrograph for WC2
 004:0016---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD             01:WC2          211.40   12.669 No_date    2:13   42.37  n/a
                       + 02:C7          265.50    3.199 No_date    5:37   25.40  n/a
      [DT= 1.00]  SUM=  08:N11          476.90   12.847 No_date    2:14   32.92  n/a
 004:0017---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            08:N11          476.90   12.847 No_date    2:14   32.92  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.004
      remark:Confluence Hydrograph for N11
# Main Channel
 004:0018---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        01:M1          1296.60    5.265 No_date   10:14   22.30 .299
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 004:0019---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            01:M1          1296.60    5.265 No_date   10:14   22.30  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.004
      remark:Runoff Hydrograph for M1
 004:0020---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    5.265 No_date   10:14   22.30  n/a
      [RDT= 1.00] out<- 02:C1          1296.60    5.259 No_date   10:28   22.30  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.028:Dmax=  .970}
 004:0021---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            02:C1          1296.60    5.259 No_date   10:28   22.30  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.004
      remark:Routing Hydrograph for C1
 004:0022---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        01:M2           474.10    5.714 No_date    5:26   29.83 .401
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 004:0023---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            01:M2           474.10    5.714 No_date    5:26   29.83  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.004
      remark:Runoff Hydrograph for M2
 004:0024---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD             01:M2           474.10    5.714 No_date    5:26   29.83  n/a
                       + 02:C1          1296.60    5.259 No_date   10:28   22.30  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70    9.172 No_date    6:47   24.31  n/a
 004:0025---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            04:N2          1770.70    9.172 No_date    6:47   24.31  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.004
      remark:Confluence Hydrograph for N2
 004:0026---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD             04:N2          1770.70    9.172 No_date    6:47   24.31  n/a
                       + 05:TC1         1462.60    5.912 No_date   11:07   24.41  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   13.984 No_date    8:15   24.36  n/a
 004:0027---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD            03:J1          3233.30   13.984 No_date    8:15   24.36  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.004
      remark:Confluence Hydrograph for J1
 004:0028---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD        01:M3           339.80    3.024 No_date    6:32   28.23 .379
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 004:0029---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
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    SAVE HYD           01:M3           339.80    3.024 No_date    6:32   28.23  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.004
     remark:Runoff Hydrograph for M3
004:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M3           339.80    3.024 No_date    6:32   28.23  n/a
                  +  03:J1          3233.30   13.984 No_date    8:15   24.36  n/a
     [DT= 1.00]  SUM=  04:N3          3573.10   16.797 No_date    7:43   24.73  n/a
004:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N3          3573.10   16.797 No_date    7:43   24.73  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.004
     remark:Confluence Hydrograph for N3
004:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N3          3573.10   16.797 No_date    7:43   24.73  n/a
                  +  06:TB1           283.30    2.168 No_date    6:13   22.63  n/a
     [DT= 1.00]  SUM=  03:J2          3856.40   18.814 No_date    7:22   24.57  n/a
004:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J2          3856.40   18.814 No_date    7:22   24.57  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.004
     remark:Confluence Hydrograph for J2
004:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M4           116.70    2.472 No_date    3:58   32.72 .439
     [CN= 75.8: N= 3.00]
     [Tp= 2.23:DT= 1.00]
004:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M4           116.70    2.472 No_date    3:58   32.72  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.004
     remark:Runoff Hydrograph for M4
004:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M4           116.70    2.472 No_date    3:58   32.72  n/a
                  +  03:N4          3856.40   18.814 No_date    7:22   24.57  n/a
     [DT= 1.00]  SUM=  03:N4          3973.10   19.694 No_date    6:51   24.81  n/a
004:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N4          3973.10   19.694 No_date    6:51   24.81  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.004
     remark:Confluence Hydrograph for N4
004:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:N4          3973.10   19.694 No_date    6:51   24.81  n/a
     [RDT= 1.00] out<- 02:C4          3973.10   19.120 No_date    8:01   24.81  n/a
     [L/S/n= 4040./ .140/.035]
     {Vmax= 1.117:Dmax= 1.897}
004:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C4          3973.10   19.120 No_date    8:01   24.81  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.004
     remark:Routing Hydrograph for C4
004:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M5           723.60    5.344 No_date    6:11   21.65 .291
     [CN= 64.1: N= 3.00]
     [Tp= 4.43:DT= 1.00]
004:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M5           723.60    5.344 No_date    6:11   21.65  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.004
     remark:Runoff Hydrograph for M5
004:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M5           723.60    5.344 No_date    6:11   21.65  n/a
                  +  02:C4          3973.10   19.120 No_date    8:01   24.81  n/a
     [DT= 1.00]  SUM=  04:N5          4696.70   23.976 No_date    7:27   24.32  n/a
004:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N5          4696.70   23.976 No_date    7:27   24.32  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.004
     remark:Confluence Hydrograph for N5
004:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N5          4696.70   23.976 No_date    7:27   24.32  n/a
                  +  07:TA1           884.50    5.069 No_date    8:00   23.46  n/a
     [DT= 1.00]  SUM=  03:J3          5581.20   29.011 No_date    7:33   24.19  n/a
004:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J3          5581.20   29.011 No_date    7:33   24.19  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.004
     remark:Confluence Hydrograph for J3
004:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:J3          5581.20   29.011 No_date    7:33   24.19  n/a
     [RDT= 1.00] out<- 02:C5          5581.20   28.377 No_date    8:30   24.19  n/a
     [L/S/n= 3980./ .140/.035]
     {Vmax= 1.312:Dmax= 2.333}
004:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C5          5581.20   28.377 No_date    8:30   24.19  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.004
     remark:Routing Hydrograph for C5
004:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M6           354.80    8.039 No_date    3:46   31.95 .429
     [CN= 75.1: N= 3.00]
     [Tp= 2.01:DT= 1.00]
004:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M6           354.80    8.039 No_date    3:46   31.95  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.004
     remark:Runoff Hydrograph for M6
004:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M6           354.80    8.039 No_date    3:46   31.95  n/a
                  +  02:C5          5581.20   28.377 No_date    8:30   24.19  n/a
     [DT= 1.00]  SUM=  04:N6          5936.00   29.414 No_date    7:54   24.65  n/a
004:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N6          5936.00   29.414 No_date    7:54   24.65  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.004
     remark:Confluence Hydrograph for N6
004:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N6          5936.00   29.414 No_date    7:54   24.65  n/a
                  +  08:N11           476.90   12.847 No_date    2:14   32.92  n/a
     [DT= 1.00]  SUM=  03:J4          6412.90   31.655 No_date    6:58   25.27  n/a
004:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J4          6412.90   31.655 No_date    6:58   25.27  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.004
     remark:Confluence Hydrograph for J4
004:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M7            11.00     .293 No_date    3:10   27.64 .371
     [CN= 70.9: N= 3.00]
     [Tp= 1.38:DT= 1.00]
004:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M7            11.00     .293 No_date    3:10   27.64  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.004
     remark:Runoff Hydrograph for M7
004:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M7            11.00     .293 No_date    3:10   27.64  n/a
                  +  03:N12         6412.90   31.655 No_date    6:58   25.27  n/a
     [DT= 1.00]  SUM=  03:N12         6423.90   31.675 No_date    6:58   25.27  n/a
004:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N12         6423.90   31.675 No_date    6:58   25.27  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.004
     remark:Confluence Hydrograph for N12
  ** END OF RUN :   5

********************************************************************************
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```
 RUN:COMMAND#
 006:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   6 ]
 #*******************************************************************************
 #  Project Name: [Mud]    Project Number: [10419]
 #  Date        : 15 Aug 2018
 #  Modeller    : [ Tyler Bauman ]
 #  Company     : Rideau Valley Conservation Authority
 #  License #   :  5329846
 #*******************************************************************************
 006:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=10.00:SDUR=   6.00:PTOT=  88.42]
 006:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
 # Tributary C
 006:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60    7.888 No_date   12:20   33.00 .373
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 006:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60    7.888 No_date   12:20   33.00  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.006
      remark:Runoff Hydrograph for TC1
 # Tributary B
 006:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    2.775 No_date    7:32   30.80 .348
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 006:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    2.775 No_date    7:32   30.80  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.006
      remark:Runoff Hydrograph for TB1
 # Tributary A
 006:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    6.671 No_date    9:16   31.82 .360
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 006:0009--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    6.671 No_date    9:16   31.82  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.006
      remark:Runoff Hydrograph for TA1
 # Wilson-Cowan Drain
 006:0010--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    4.444 No_date    5:20   34.21 .387
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 006:0011--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    4.444 No_date    5:20   34.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.006
      remark:Runoff Hydrograph for WC1
 006:0012--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    4.444 No_date    5:20   34.21  n/a
      [RDT= 1.00] out<- 02:C7          265.50    3.829 No_date    6:50   34.20  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .617:Dmax=  .605}
 006:0013--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7          265.50    3.829 No_date    6:50   34.20  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.006
      remark:Routing Hydrograph for C7
 006:0014--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   14.196 No_date    2:44   53.76 .608
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 006:0015--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   14.196 No_date    2:44   53.76  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.006
      remark:Runoff Hydrograph for WC2
 006:0016--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   14.196 No_date    2:44   53.76  n/a
                   +  02:C7          265.50    3.829 No_date    6:50   34.20  n/a
      [DT= 1.00]  SUM=  08:N11         476.90   14.340 No_date    2:44   42.87  n/a
 006:0017--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90   14.340 No_date    2:44   42.87  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.006
      remark:Confluence Hydrograph for N11
 # Main Channel
 006:0018--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    7.061 No_date   11:29   30.39 .344
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 006:0019--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60    7.061 No_date   11:29   30.39  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.006
      remark:Runoff Hydrograph for M1
 006:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    7.061 No_date   11:29   30.39  n/a
      [RDT= 1.00] out<- 02:C1          1296.60    7.053 No_date   11:43   30.39  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.118:Dmax= 1.123}
 006:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60    7.053 No_date   11:43   30.39  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.006
      remark:Routing Hydrograph for C1
 006:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    6.946 No_date    6:43   39.57 .448
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 006:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    6.946 No_date    6:43   39.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.006
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     remark:Runoff Hydrograph for M2
006:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M2          474.10    6.946 No_date    6:43   39.57  n/a
                   +  02:C1          1296.60    7.053 No_date   11:43   30.39  n/a
     [DT= 1.00]  SUM=  04:N2          1770.70   11.848 No_date    8:14   32.85  n/a
006:0025--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N2          1770.70   11.848 No_date    8:14   32.85  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.006
     remark:Confluence Hydrograph for N2
006:0026--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N2          1770.70   11.848 No_date    8:14   32.85  n/a
                   +  05:TC1          1462.60    7.888 No_date   12:20   33.00  n/a
     [DT= 1.00]  SUM=  03:J1          3233.30   18.527 No_date    9:36   32.91  n/a
006:0027--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J1          3233.30   18.527 No_date    9:36   32.91  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.006
     remark:Confluence Hydrograph for J1
006:0028--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M3           339.80    3.829 No_date    7:48   37.64 .426
     [CN= 71.5: N= 3.00]
     [Tp= 4.81:DT= 1.00]
006:0029--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M3           339.80    3.829 No_date    7:48   37.64  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.006
     remark:Runoff Hydrograph for M3
006:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M3           339.80    3.829 No_date    7:48   37.64  n/a
                   +  03:J1          3233.30   18.527 No_date    9:36   32.91  n/a
     [DT= 1.00]  SUM=  04:N3          3573.10   22.067 No_date    9:06   33.36  n/a
006:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N3          3573.10   22.067 No_date    9:06   33.36  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.006
     remark:Confluence Hydrograph for N3
006:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N3          3573.10   22.067 No_date    9:06   33.36  n/a
                   +  06:TB1           283.30    2.775 No_date    7:32   30.80  n/a
     [DT= 1.00]  SUM=  03:J2          3856.40   24.636 No_date    8:48   33.18  n/a
006:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J2          3856.40   24.636 No_date    8:48   33.18  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.006
     remark:Confluence Hydrograph for J2
006:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M4           116.70    2.709 No_date    4:52   43.02 .486
     [CN= 75.8: N= 3.00]
     [Tp= 2.23:DT= 1.00]
006:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M4           116.70    2.709 No_date    4:52   43.02  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.006
     remark:Runoff Hydrograph for M4
006:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M4           116.70    2.709 No_date    4:52   43.02  n/a
                   +  03:N4          3856.40   24.636 No_date    8:48   33.18  n/a
     [DT= 1.00]  SUM=  03:N4          3973.10   25.666 No_date    8:23   33.47  n/a
006:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N4          3973.10   25.666 No_date    8:23   33.47  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.006
     remark:Confluence Hydrograph for N4
006:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:N4          3973.10   25.666 No_date    8:23   33.47  n/a
     [RDT= 1.00] out<- 02:C4          3973.10   25.086 No_date    9:24   33.46  n/a
     [L/S/n= 4040./ .140/.035]
     {Vmax= 1.163:Dmax= 2.112}
006:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C4          3973.10   25.086 No_date    9:24   33.46  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.006
     remark:Routing Hydrograph for C4
006:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M5           723.60    6.858 No_date    7:30   29.58 .335
     [CN= 64.1: N= 3.00]
     [Tp= 4.43:DT= 1.00]
006:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M5           723.60    6.858 No_date    7:30   29.58  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.006
     remark:Runoff Hydrograph for M5
006:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M5           723.60    6.858 No_date    7:30   29.58  n/a
                   +  02:C4          3973.10   25.086 No_date    9:24   33.46  n/a
     [DT= 1.00]  SUM=  04:N5          4696.70   31.329 No_date    8:50   32.87  n/a
006:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N5          4696.70   31.329 No_date    8:50   32.87  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.006
     remark:Confluence Hydrograph for N5
006:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N5          4696.70   31.329 No_date    8:50   32.87  n/a
                   +  07:TA1           884.50    6.671 No_date    9:16   31.82  n/a
     [DT= 1.00]  SUM=  03:J3          5581.20   37.971 No_date    8:51   32.70  n/a
006:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J3          5581.20   37.971 No_date    8:51   32.70  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.006
     remark:Confluence Hydrograph for J3
006:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:J3          5581.20   37.971 No_date    8:51   32.70  n/a
     [RDT= 1.00] out<- 02:C5          5581.20   37.091 No_date    9:46   32.70  n/a
     [L/S/n= 3980./ .140/.035]
     {Vmax= 1.295:Dmax= 2.624}
006:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C5          5581.20   37.091 No_date    9:46   32.70  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.006
     remark:Routing Hydrograph for C5
006:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M6           354.80    8.684 No_date    4:35   42.10 .476
     [CN= 75.1: N= 3.00]
     [Tp= 2.01:DT= 1.00]
006:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M6           354.80    8.684 No_date    4:35   42.10  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.006
     remark:Runoff Hydrograph for M6
006:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M6           354.80    8.684 No_date    4:35   42.10  n/a
                   +  02:C5          5581.20   37.091 No_date    9:46   32.70  n/a
     [DT= 1.00]  SUM=  04:N6          5936.00   38.496 No_date    9:13   33.26  n/a
006:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N6          5936.00   38.496 No_date    9:13   33.26  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.006
     remark:Confluence Hydrograph for N6
006:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N6          5936.00   38.496 No_date    9:13   33.26  n/a
                   +  08:N11           476.90   14.340 No_date    2:44   42.87  n/a
     [DT= 1.00]  SUM=  03:J4          6412.90   41.312 No_date    8:45   33.98  n/a
006:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J4          6412.90   41.312 No_date    8:45   33.98  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.006
     remark:Confluence Hydrograph for J4
006:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M7            11.00     .307 No_date    3:47   36.94 .418
     [CN= 70.9: N= 3.00]
     [Tp= 1.38:DT= 1.00]
006:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M7            11.00     .307 No_date    3:47   36.94  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.006
     remark:Runoff Hydrograph for M7
006:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M7            11.00     .307 No_date    3:47   36.94  n/a
                   +  03:N12         6412.90   41.312 No_date    8:45   33.98  n/a
     [DT= 1.00]  SUM=  03:N12         6423.90   41.336 No_date    8:35   33.98  n/a
006:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N12         6423.90   41.336 No_date    8:35   33.98  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.006
     remark:Confluence Hydrograph for N12
 ** END OF RUN :   6

*******************************************************************************




 RUN:COMMAND#
 007:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =   7 ]
 #*******************************************************************************
 #  Project Name: [Mud]    Project Number: [10419]
 #  Date        : 15 Aug 2018
 #  Modeller    : [ Tyler Bauman ]
 #  Company     : Rideau Valley Conservation Authority
 #  License #   :  5329846
 #*******************************************************************************
 007:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=   6.00:PTOT=  88.43]
 007:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
 # Tributary C
 007:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60    7.944 No_date   12:51   33.01 .373
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 007:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60    7.944 No_date   12:51   33.01  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.007
      remark:Runoff Hydrograph for TC1
 # Tributary B
 007:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    2.866 No_date    8:01   30.80 .348
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 007:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    2.866 No_date    8:01   30.80  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.007
      remark:Runoff Hydrograph for TB1
 # Tributary A
 007:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    6.779 No_date    9:46   31.83 .360
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 007:0009--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    6.779 No_date    9:46   31.83  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.007
      remark:Runoff Hydrograph for TA1
 # Wilson-Cowan Drain
 007:0010--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    4.808 No_date    6:02   34.21 .387
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 007:0011--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    4.808 No_date    6:02   34.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.007
      remark:Runoff Hydrograph for WC1
 007:0012--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    4.808 No_date    6:02   34.21  n/a
      [RDT= 1.00] out<- 02:C7          265.50    4.045 No_date    7:24   34.21  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .616:Dmax=  .619}
 007:0013--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7          265.50    4.045 No_date    7:24   34.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.007
      remark:Routing Hydrograph for C7
 007:0014--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   14.340 No_date    3:39   53.77 .608
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 007:0015--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   14.340 No_date    3:39   53.77  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.007
      remark:Runoff Hydrograph for WC2
 007:0016--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   14.340 No_date    3:39   53.77  n/a
                    +  02:C7          265.50    4.045 No_date    7:24   34.21  n/a
      [DT= 1.00]  SUM=  08:N11          476.90   14.562 No_date    3:40   42.88  n/a
 007:0017--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90   14.562 No_date    3:40   42.88  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.007
      remark:Confluence Hydrograph for N11
 # Main Channel
 007:0018--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    7.122 No_date   11:59   30.39 .344
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     [CN= 64.9: N= 3.00]
     [Tp= 8.51:DT= 1.00]
007:0019--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M1          1296.60    7.122 No_date   11:59   30.39  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.007
     remark:Runoff Hydrograph for M1
007:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 01:M1          1296.60    7.122 No_date   11:59   30.39  n/a
     [RDT= 1.00] out<- 02:C1          1296.60    7.115 No_date   12:13   30.39  n/a
     [L/S/n= 1150./ .250/.035]
     {Vmax= 1.120:Dmax= 1.127}
007:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C1          1296.60    7.115 No_date   12:13   30.39  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.007
     remark:Routing Hydrograph for C1
007:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M2           474.10    7.265 No_date    7:13   39.58 .448
     [CN= 73.1: N= 3.00]
     [Tp= 3.71:DT= 1.00]
007:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M2           474.10    7.265 No_date    7:13   39.58  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.007
     remark:Runoff Hydrograph for M2
007:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M2           474.10    7.265 No_date    7:13   39.58  n/a
                     + 02:C1          1296.60    7.115 No_date   12:13   30.39  n/a
     [DT= 1.00]  SUM=  04:N2          1770.70   12.081 No_date    8:42   32.85  n/a
007:0025--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N2          1770.70   12.081 No_date    8:42   32.85  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.007
     remark:Confluence Hydrograph for N2
007:0026--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N2          1770.70   12.081 No_date    8:42   32.85  n/a
                     + 05:TC1         1462.60    7.944 No_date   12:51   33.01  n/a
     [DT= 1.00]  SUM=  03:J1          3233.30   18.711 No_date   10:05   32.92  n/a
007:0027--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J1          3233.30   18.711 No_date   10:05   32.92  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.007
     remark:Confluence Hydrograph for J1
007:0028--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M3           339.80    3.934 No_date    8:18   37.65 .426
     [CN= 71.5: N= 3.00]
     [Tp= 4.81:DT= 1.00]
007:0029--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M3           339.80    3.934 No_date    8:18   37.65  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.007
     remark:Runoff Hydrograph for M3
007:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M3           339.80    3.934 No_date    8:18   37.65  n/a
                     + 03:J1          3233.30   18.711 No_date   10:05   32.92  n/a
     [DT= 1.00]  SUM=  04:N3          3573.10   22.356 No_date    9:31   33.37  n/a
007:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N3          3573.10   22.356 No_date    9:31   33.37  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.007
     remark:Confluence Hydrograph for N3
007:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N3          3573.10   22.356 No_date    9:31   33.37  n/a
                     + 06:TB1          283.30    2.866 No_date    8:01   30.80  n/a
     [DT= 1.00]  SUM=  03:J2          3856.40   25.009 No_date    9:14   33.18  n/a
007:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J2          3856.40   25.009 No_date    9:14   33.18  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.007
     remark:Confluence Hydrograph for J2
007:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M4           116.70    2.926 No_date    5:37   43.02 .487
     [CN= 75.8: N= 3.00]
     [Tp= 2.23:DT= 1.00]
007:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M4           116.70    2.926 No_date    5:37   43.02  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.007
     remark:Runoff Hydrograph for M4
007:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M4           116.70    2.926 No_date    5:37   43.02  n/a
                     + 03:N4          3856.40   25.009 No_date    9:14   33.18  n/a
     [DT= 1.00]  SUM=  03:N4          3973.10   26.077 No_date    8:46   33.47  n/a
007:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N4          3973.10   26.077 No_date    8:46   33.47  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.007
     remark:Confluence Hydrograph for N4
007:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:N4          3973.10   26.077 No_date    8:46   33.47  n/a
     [RDT= 1.00] out<- 02:C4          3973.10   25.440 No_date    9:52   33.47  n/a
     [L/S/n= 4040./ .140/.035]
     {Vmax= 1.163:Dmax= 2.124}
007:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C4          3973.10   25.440 No_date    9:52   33.47  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.007
     remark:Routing Hydrograph for C4
007:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M5           723.60    7.088 No_date    7:59   29.59 .335
     [CN= 64.1: N= 3.00]
     [Tp= 4.43:DT= 1.00]
007:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M5           723.60    7.088 No_date    7:59   29.59  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.007
     remark:Runoff Hydrograph for M5
007:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M5           723.60    7.088 No_date    7:59   29.59  n/a
                     + 02:C4          3973.10   25.440 No_date    9:52   33.47  n/a
     [DT= 1.00]  SUM=  04:N5          4696.70   31.877 No_date    9:17   32.87  n/a
007:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N5          4696.70   31.877 No_date    9:17   32.87  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.007
     remark:Confluence Hydrograph for N5
007:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N5          4696.70   31.877 No_date    9:17   32.87  n/a
                     + 07:TA1          884.50    6.779 No_date    9:46   31.83  n/a
     [DT= 1.00]  SUM=  03:J3          5581.20   38.615 No_date    9:17   32.71  n/a
007:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J3          5581.20   38.615 No_date    9:17   32.71  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.007
     remark:Confluence Hydrograph for J3
007:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:J3          5581.20   38.615 No_date    9:17   32.71  n/a
     [RDT= 1.00] out<- 02:C5          5581.20   37.663 No_date   10:23   32.71  n/a
     [L/S/n= 3980./ .140/.035]
     {Vmax= 1.294:Dmax= 2.639}
007:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C5          5581.20   37.663 No_date   10:23   32.71  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.007
     remark:Routing Hydrograph for C5
007:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M6           354.80    9.422 No_date    5:21   42.11 .476
     [CN= 75.1: N= 3.00]
     [Tp= 2.01:DT= 1.00]
007:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M6           354.80    9.422 No_date    5:21   42.11  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.007
     remark:Runoff Hydrograph for M6
007:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M6           354.80    9.422 No_date    5:21   42.11  n/a
                     + 02:C5          5581.20   37.663 No_date   10:23   32.71  n/a
     [DT= 1.00]  SUM=  04:N6          5936.00   38.985 No_date    9:55   33.27  n/a
007:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N6          5936.00   38.985 No_date    9:55   33.27  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.007
     remark:Confluence Hydrograph for N6
007:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N6          5936.00   38.985 No_date    9:55   33.27  n/a
                     + 08:N11          476.90   14.562 No_date    3:40   42.88  n/a
     [DT= 1.00]  SUM=  03:J4          6412.90   41.874 No_date    9:13   33.98  n/a
007:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J4          6412.90   41.874 No_date    9:13   33.98  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.007
     remark:Confluence Hydrograph for J4
007:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M7            11.00     .338 No_date    4:37   36.95 .418
     [CN= 70.9: N= 3.00]
     [Tp= 1.38:DT= 1.00]
007:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M7            11.00     .338 No_date    4:37   36.95  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.007
     remark:Runoff Hydrograph for M7
007:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M7            11.00     .338 No_date    4:37   36.95  n/a
                     + 03:N12         6412.90   41.874 No_date    9:13   33.98  n/a
     [DT= 1.00]  SUM=  03:N12         6423.90   41.893 No_date    9:13   33.99  n/a
007:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N12         6423.90   41.893 No_date    9:13   33.99  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.007
     remark:Confluence Hydrograph for N12
  ** END OF RUN :  11

********************************************************************************




 RUN:COMMAND#
 012:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =  12 ]
#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
 012:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=10.00:SDUR=  12.00:PTOT= 104.44]
 012:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 012:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60    9.957 No_date   15:25   43.69 .418
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 012:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60    9.957 No_date   15:25   43.69  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.012
      remark:Runoff Hydrograph for TC1
# Tributary B
 012:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    3.147 No_date    9:54   41.02 .393
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 012:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    3.147 No_date    9:54   41.02  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.012
      remark:Runoff Hydrograph for TB1
# Tributary A
 012:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    7.965 No_date   12:16   42.27 .405
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 012:0009--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    7.965 No_date   12:16   42.27  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.012
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 012:0010--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    4.939 No_date    7:14   45.13 .432
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 012:0011--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    4.939 No_date    7:14   45.13  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.012
      remark:Runoff Hydrograph for WC1
 012:0012--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    4.939 No_date    7:14   45.13  n/a
      [RDT= 1.00] out<- 02:C7          265.50    4.237 No_date    8:48   45.13  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .616:Dmax=  .624}
 012:0013--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7          265.50    4.237 No_date    8:48   45.13  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.012
```

```
     remark:Routing Hydrograph for C7
 012:0014--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   15.372 No_date    4:43   67.36 .645
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 012:0015--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   15.372 No_date    4:43   67.36  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.012
      remark:Runoff Hydrograph for WC2
 012:0016--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   15.372 No_date    4:43   67.36  n/a
                    +  02:C7           265.50    4.237 No_date    8:48   45.13  n/a
      [DT= 1.00]  SUM=  08:N11          476.90   15.568 No_date    4:44   54.99  n/a
 012:0017--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90   15.568 No_date    4:44   54.99  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.012
      remark:Confluence Hydrograph for N11
# Main Channel
 012:0018--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    8.878 No_date   14:36   40.53 .388
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 012:0019--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60    8.878 No_date   14:36   40.53  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.012
      remark:Runoff Hydrograph for M1
 012:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    8.878 No_date   14:36   40.53  n/a
      [RDT= 1.00] out<- 02:C1          1296.60    8.874 No_date   14:45   40.53  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.185:Dmax= 1.250}
 012:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60    8.874 No_date   14:45   40.53  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.012
      remark:Routing Hydrograph for C1
 012:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    7.667 No_date    8:45   51.50 .493
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 012:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    7.667 No_date    8:45   51.50  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.012
      remark:Runoff Hydrograph for M2
 012:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10    7.667 No_date    8:45   51.50  n/a
                    +  02:C1          1296.60    8.874 No_date   14:45   40.53  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70   13.797 No_date   11:29   43.47  n/a
 012:0025--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2          1770.70   13.797 No_date   11:29   43.47  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.012
      remark:Confluence Hydrograph for N2
 012:0026--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2          1770.70   13.797 No_date   11:29   43.47  n/a
                    +  05:TC1         1462.60    9.957 No_date   15:25   43.69  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   22.818 No_date   13:17   43.57  n/a
 012:0027--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1          3233.30   22.818 No_date   13:17   43.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.012
      remark:Confluence Hydrograph for J1
 012:0028--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    4.332 No_date   10:13   49.23 .471
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 012:0029--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    4.332 No_date   10:13   49.23  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.012
      remark:Runoff Hydrograph for M3
 012:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M3           339.80    4.332 No_date   10:13   49.23  n/a
                    +  03:J1          3233.30   22.818 No_date   13:17   43.57  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10   26.594 No_date   12:40   44.10  n/a
 012:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N3          3573.10   26.594 No_date   12:40   44.10  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.012
      remark:Confluence Hydrograph for N3
 012:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N3          3573.10   26.594 No_date   12:40   44.10  n/a
                    +  06:TB1          283.30    3.147 No_date    9:54   41.02  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40   29.349 No_date   12:15   43.88  n/a
 012:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J2          3856.40   29.349 No_date   12:15   43.88  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.012
      remark:Confluence Hydrograph for J2
 012:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M4           116.70    2.986 No_date    6:47   55.52 .532
      [CN= 75.8: N= 3.00]
      [Tp= 2.23:DT= 1.00]
 012:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M4           116.70    2.986 No_date    6:47   55.52  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.012
      remark:Runoff Hydrograph for M4
 012:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M4           116.70    2.986 No_date    6:47   55.52  n/a
                    +  03:N4          3856.40   29.349 No_date   12:15   43.88  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10   30.338 No_date   11:56   44.22  n/a
 012:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N4          3973.10   30.338 No_date   11:56   44.22  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.012
      remark:Confluence Hydrograph for N4
 012:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10   30.338 No_date   11:56   44.22  n/a
      [RDT= 1.00] out<- 02:C4          3973.10   29.995 No_date   12:52   44.22  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax= 1.169:Dmax= 2.255}
 012:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C4          3973.10   29.995 No_date   12:52   44.22  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.012
      remark:Routing Hydrograph for C4
 012:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M5           723.60    7.786 No_date    9:52   39.55 .379
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
 012:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M5           723.60    7.786 No_date    9:52   39.55  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.012
      remark:Runoff Hydrograph for M5
 012:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M5           723.60    7.786 No_date    9:52   39.55  n/a
                    +  02:C4          3973.10   29.995 No_date   12:52   44.22  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70   36.814 No_date   12:04   43.50  n/a
 012:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N5          4696.70   36.814 No_date   12:04   43.50  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.012
      remark:Confluence Hydrograph for N5
 012:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N5          4696.70   36.814 No_date   12:04   43.50  n/a
                    +  07:TA1          884.50    7.965 No_date   12:16   42.27  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   44.775 No_date   12:05   43.30  n/a
 012:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J3          5581.20   44.775 No_date   12:05   43.30  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.012
      remark:Confluence Hydrograph for J3
 012:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   44.775 No_date   12:05   43.30  n/a
      [RDT= 1.00] out<- 02:C5          5581.20   44.199 No_date   13:04   43.30  n/a
      [L/S/n= 3980./ .140/.035]
      {Vmax= 1.287:Dmax= 2.778}
 012:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C5          5581.20   44.199 No_date   13:04   43.30  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.012
      remark:Routing Hydrograph for C5
 012:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M6           354.80    9.595 No_date    6:30   54.46 .521
      [CN= 75.1: N= 3.00]
      [Tp= 2.01:DT= 1.00]
 012:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M6           354.80    9.595 No_date    6:30   54.46  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.012
      remark:Runoff Hydrograph for M6
 012:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M6           354.80    9.595 No_date    6:30   54.46  n/a
                    +  02:C5          5581.20   44.199 No_date   13:04   43.30  n/a
      [DT= 1.00]  SUM=  04:N6          5936.00   46.485 No_date   12:33   43.97  n/a
 012:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N6          5936.00   46.485 No_date   12:33   43.97  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.012
      remark:Confluence Hydrograph for N6
 012:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N6          5936.00   46.485 No_date   12:33   43.97  n/a
                    +  08:N11          476.90   15.568 No_date    4:44   54.99  n/a
      [DT= 1.00]  SUM=  03:J4          6412.90   50.318 No_date   12:03   44.79  n/a
 012:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J4          6412.90   50.318 No_date   12:03   44.79  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.012
      remark:Confluence Hydrograph for J4
 012:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M7            11.00     .343 No_date    5:43   48.39 .463
      [CN= 70.9: N= 3.00]
      [Tp= 1.38:DT= 1.00]
 012:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M7            11.00     .343 No_date    5:43   48.39  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.012
      remark:Runoff Hydrograph for M7
 012:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M7            11.00     .343 No_date    5:43   48.39  n/a
                    +  03:N12         6412.90   50.318 No_date   12:03   44.79  n/a
      [DT= 1.00]  SUM=  03:N12         6423.90   50.376 No_date   12:03   44.80  n/a
 012:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N12         6423.90   50.376 No_date   12:03   44.80  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.012
      remark:Confluence Hydrograph for N12
  ** END OF RUN :  12

********************************************************************************




 RUN:COMMAND#
 013:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =  13 ]
#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
 013:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  12.00:PTOT= 104.44]
 013:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 013:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60   10.249 No_date   16:26   43.69 .418
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 013:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60   10.249 No_date   16:26   43.69  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.013
      remark:Runoff Hydrograph for TC1
# Tributary B
 013:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    3.431 No_date   11:24   41.03 .393
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 013:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    3.431 No_date   11:24   41.03  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.013
      remark:Runoff Hydrograph for TB1
# Tributary A
 013:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    8.487 No_date   13:23   42.27 .405
      [CN= 66.3: N= 3.00]
```

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     [Tp= 6.27:DT= 1.00]
 013:0009---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    8.487 No_date   13:23   42.27  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.013
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 013:0010---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    5.469 No_date    8:55   45.14 .432
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 013:0011---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    5.469 No_date    8:55   45.14  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.013
      remark:Runoff Hydrograph for WC1
 013:0012---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    5.469 No_date    8:55   45.14  n/a
      [RDT= 1.00] out<- 02:C7           265.50    4.649 No_date   10:27   45.14  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .614:Dmax=  .644}
 013:0013---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7           265.50    4.649 No_date   10:27   45.14  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.013
      remark:Routing Hydrograph for C7
 013:0014---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   16.241 No_date    6:33   67.36 .645
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 013:0015---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   16.241 No_date    6:33   67.36  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.013
      remark:Runoff Hydrograph for WC2
 013:0016---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   16.241 No_date    6:33   67.36  n/a
                    +  02:C7           265.50    4.649 No_date   10:27   45.14  n/a
      [DT= 1.00]  SUM=  08:N11          476.90   16.561 No_date    6:34   54.99  n/a
 013:0017---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90   16.561 No_date    6:34   54.99  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.013
      remark:Confluence Hydrograph for N11
# Main Channel
 013:0018---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    9.202 No_date   15:36   40.53 .388
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 013:0019---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60    9.202 No_date   15:36   40.53  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.013
      remark:Runoff Hydrograph for M1
 013:0020---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    9.202 No_date   15:36   40.53  n/a
      [RDT= 1.00] out<- 02:C1           1296.60    9.195 No_date   15:47   40.53  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.197:Dmax= 1.272}
 013:0021---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1           1296.60    9.195 No_date   15:47   40.53  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.013
      remark:Routing Hydrograph for C1
 013:0022---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    8.351 No_date   10:20   51.51 .493
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 013:0023---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    8.351 No_date   10:20   51.51  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.013
      remark:Runoff Hydrograph for M2
 013:0024---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10    8.351 No_date   10:20   51.51  n/a
                    +  02:C1          1296.60    9.195 No_date   15:47   40.53  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70   14.785 No_date   12:35   43.47  n/a
 013:0025---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2           1770.70   14.785 No_date   12:35   43.47  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.013
      remark:Confluence Hydrograph for N2
 013:0026---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2           1770.70   14.785 No_date   12:35   43.47  n/a
                    +  05:TC1          1462.60   10.249 No_date   16:26   43.69  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   23.789 No_date   14:04   43.57  n/a
 013:0027---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1           3233.30   23.789 No_date   14:04   43.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.013
      remark:Confluence Hydrograph for J1
 013:0028---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    4.682 No_date   11:43   49.23 .471
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 013:0029---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    4.682 No_date   11:43   49.23  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.013
      remark:Runoff Hydrograph for M3
 013:0030---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M3           339.80    4.682 No_date   11:43   49.23  n/a
                    +  03:J1          3233.30   23.789 No_date   14:04   43.57  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10   28.028 No_date   13:26   44.11  n/a
 013:0031---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N3           3573.10   28.028 No_date   13:26   44.11  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.013
      remark:Confluence Hydrograph for N3
 013:0032---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N3           3573.10   28.028 No_date   13:26   44.11  n/a
                    +  06:TB1           283.30    3.431 No_date   11:24   41.03  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40   31.146 No_date   13:11   43.88  n/a
 013:0033---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J2           3856.40   31.146 No_date   13:11   43.88  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.013
      remark:Confluence Hydrograph for J2
 013:0034---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M4           116.70    3.278 No_date    8:29   55.53 .532
      [CN= 75.8: N= 3.00]
      [Tp= 2.23:DT= 1.00]
 013:0035---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M4           116.70    3.278 No_date    8:29   55.53  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.013
      remark:Runoff Hydrograph for M4
 013:0036---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M4           116.70    3.278 No_date    8:29   55.53  n/a
                    +  03:N4          3856.40   31.146 No_date   13:11   43.88  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10   32.293 No_date   12:46   44.22  n/a
 013:0037---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N4           3973.10   32.293 No_date   12:46   44.22  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.013
      remark:Confluence Hydrograph for N4
 013:0038---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10   32.293 No_date   12:46   44.22  n/a
      [RDT= 1.00] out<- 02:C4           3973.10   31.698 No_date   13:45   44.22  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax= 1.171:Dmax= 2.313}
 013:0039---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C4           3973.10   31.698 No_date   13:45   44.22  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.013
      remark:Routing Hydrograph for C4
 013:0040---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M5           723.60    8.500 No_date   11:22   39.55 .379
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
 013:0041---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M5           723.60    8.500 No_date   11:22   39.55  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.013
      remark:Runoff Hydrograph for M5
 013:0042---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M5           723.60    8.500 No_date   11:22   39.55  n/a
                    +  02:C4          3973.10   31.698 No_date   13:45   44.22  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70   39.313 No_date   13:08   43.50  n/a
 013:0043---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N5           4696.70   39.313 No_date   13:08   43.50  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.013
      remark:Confluence Hydrograph for N5
 013:0044---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N5           4696.70   39.313 No_date   13:08   43.50  n/a
                    +  07:TA1           884.50    8.487 No_date   13:23   42.27  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   47.791 No_date   13:11   43.31  n/a
 013:0045---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J3           5581.20   47.791 No_date   13:11   43.31  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.013
      remark:Confluence Hydrograph for J3
 013:0046---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   47.791 No_date   13:11   43.31  n/a
      [RDT= 1.00] out<- 02:C5           5581.20   46.927 No_date   14:06   43.31  n/a
      [L/S/n= 3980./ .140/.035]
      {Vmax= 1.284:Dmax= 2.847}
 013:0047---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C5           5581.20   46.927 No_date   14:06   43.31  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.013
      remark:Routing Hydrograph for C5
 013:0048---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M6           354.80   10.567 No_date    8:13   54.46 .521
      [CN= 75.1: N= 3.00]
      [Tp= 2.01:DT= 1.00]
 013:0049---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M6           354.80   10.567 No_date    8:13   54.46  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.013
      remark:Runoff Hydrograph for M6
 013:0050---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M6           354.80   10.567 No_date    8:13   54.46  n/a
                    +  02:C5          5581.20   46.927 No_date   14:06   43.31  n/a
      [DT= 1.00]  SUM=  04:N6          5936.00   48.971 No_date   13:26   43.97  n/a
 013:0051---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N6           5936.00   48.971 No_date   13:26   43.97  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.013
      remark:Confluence Hydrograph for N6
 013:0052---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N6           5936.00   48.971 No_date   13:26   43.97  n/a
                    +  08:N11           476.90   16.561 No_date    6:34   54.99  n/a
      [DT= 1.00]  SUM=  03:J4          6412.90   52.861 No_date   12:42   44.79  n/a
 013:0053---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J4           6412.90   52.861 No_date   12:42   44.79  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.013
      remark:Confluence Hydrograph for J4
 013:0054---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M7            11.00     .383 No_date    7:29   48.39 .463
      [CN= 70.9: N= 3.00]
      [Tp= 1.38:DT= 1.00]
 013:0055---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M7            11.00     .383 No_date    7:29   48.39  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.013
      remark:Runoff Hydrograph for M7
 013:0056---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M7            11.00     .383 No_date    7:29   48.39  n/a
                    +  03:N12          6412.90   52.861 No_date   12:42   44.79  n/a
      [DT= 1.00]  SUM=  03:N12          6423.90   52.918 No_date   12:42   44.80  n/a
 013:0057---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N12          6423.90   52.918 No_date   12:42   44.80  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.013
      remark:Confluence Hydrograph for N12
  ** END OF RUN :  23

********************************************************************************



 RUN:COMMAND#
 024:0001---------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =  24 ]
#*****************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*****************************************************************************
 024:0002---------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=10.00:SDUR=  24.00:PTOT= 123.02]
 024:0003---------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
```

```
# Tributary C
 024:0004---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60   11.208 No_date   20:11   56.97 .463
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 024:0005---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60   11.208 No_date   20:11   56.97  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.024
      remark:Runoff Hydrograph for TC1
# Tributary B
 024:0006---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    3.493 No_date   13:44   53.81 .437
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 024:0007---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    3.493 No_date   13:44   53.81  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.024
      remark:Runoff Hydrograph for TB1
# Tributary A
 024:0008---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    8.785 No_date   16:05   55.29 .449
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 024:0009---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    8.785 No_date   16:05   55.29  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.024
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 024:0010---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    5.495 No_date   11:09   58.68 .477
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 024:0011---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    5.495 No_date   11:09   58.68  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.024
      remark:Runoff Hydrograph for WC1
 024:0012---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    5.495 No_date   11:09   58.68  n/a
      [RDT= 1.00] out<- 02:C7           265.50    4.691 No_date   12:42   58.68  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .614:Dmax=  .645}
 024:0013---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7           265.50    4.691 No_date   12:42   58.68  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.024
      remark:Routing Hydrograph for C7
 024:0014---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   16.646 No_date    8:42   83.64 .680
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 024:0015---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   16.646 No_date    8:42   83.64  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.024
      remark:Runoff Hydrograph for WC2
 024:0016---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   16.646 No_date    8:42   83.64  n/a
                      +  02:C7           265.50    4.691 No_date   12:42   58.68  n/a
      [DT= 1.00]  SUM=  08:N11          476.90   16.933 No_date    8:43   69.75  n/a
 024:0017---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90   16.933 No_date    8:43   69.75  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.024
      remark:Confluence Hydrograph for N11
# Main Channel
 024:0018---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    9.928 No_date   19:05   53.22 .433
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 024:0019---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60    9.928 No_date   19:05   53.22  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.024
      remark:Runoff Hydrograph for M1
 024:0020---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    9.928 No_date   19:05   53.22  n/a
      [RDT= 1.00] out<- 02:C1           1296.60    9.923 No_date   19:17   53.22  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.224:Dmax= 1.321}
 024:0021---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60    9.923 No_date   19:17   53.22  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.024
      remark:Routing Hydrograph for C1
 024:0022---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    8.442 No_date   12:37   66.11 .537
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 024:0023---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    8.442 No_date   12:37   66.11  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.024
      remark:Runoff Hydrograph for M2
 024:0024---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10    8.442 No_date   12:37   66.11  n/a
                      +  02:C1          1296.60    9.923 No_date   19:17   53.22  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70   15.194 No_date   15:16   56.67  n/a
 024:0025---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2          1770.70   15.194 No_date   15:16   56.67  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.024
      remark:Confluence Hydrograph for N2
 024:0026---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2          1770.70   15.194 No_date   15:16   56.67  n/a
                      +  05:TC1         1462.60   11.208 No_date   20:11   56.97  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   25.195 No_date   17:34   56.81  n/a
 024:0027---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1          3233.30   25.195 No_date   17:34   56.81  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.024
      remark:Confluence Hydrograph for J1
 024:0028---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    4.766 No_date   14:04   63.47 .516
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 024:0029---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    4.766 No_date   14:04   63.47  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.024
      remark:Runoff Hydrograph for M3
 024:0030---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M3           339.80    4.766 No_date   14:04   63.47  n/a
                      +  03:J1          3233.30   25.195 No_date   17:34   56.81  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10   29.237 No_date   16:33   57.44  n/a
 024:0031---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N3          3573.10   29.237 No_date   16:33   57.44  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.024
      remark:Confluence Hydrograph for N3
 024:0032---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N3          3573.10   29.237 No_date   16:33   57.44  n/a
                      +  06:TB1          283.30    3.493 No_date   13:44   53.81  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40   32.275 No_date   16:05   57.17  n/a
 024:0033---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J2          3856.40   32.275 No_date   16:05   57.17  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.024
      remark:Confluence Hydrograph for J2
 024:0034---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M4           116.70    3.284 No_date   10:42   70.73 .575
      [CN= 75.8: N= 3.00]
      [Tp= 2.23:DT= 1.00]
 024:0035---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M4           116.70    3.284 No_date   10:42   70.73  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.024
      remark:Runoff Hydrograph for M4
 024:0036---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M4           116.70    3.284 No_date   10:42   70.73  n/a
                      +  03:N4          3856.40   32.275 No_date   16:05   57.17  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10   33.354 No_date   15:42   57.57  n/a
 024:0037---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N4          3973.10   33.354 No_date   15:42   57.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.024
      remark:Confluence Hydrograph for N4
 024:0038---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10   33.354 No_date   15:42   57.57  n/a
      [RDT= 1.00] out<- 02:C4           3973.10   32.982 No_date   16:47   57.57  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax= 1.170:Dmax= 2.341}
 024:0039---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C4          3973.10   32.982 No_date   16:47   57.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.024
      remark:Routing Hydrograph for C4
 024:0040---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M5           723.60    8.653 No_date   13:42   52.04 .423
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
 024:0041---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M5           723.60    8.653 No_date   13:42   52.04  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.024
      remark:Runoff Hydrograph for M5
 024:0042---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M5           723.60    8.653 No_date   13:42   52.04  n/a
                      +  02:C4          3973.10   32.982 No_date   16:47   57.57  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70   40.521 No_date   15:47   56.72  n/a
 024:0043---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N5          4696.70   40.521 No_date   15:47   56.72  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.024
      remark:Confluence Hydrograph for N5
 024:0044---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N5          4696.70   40.521 No_date   15:47   56.72  n/a
                      +  07:TA1          884.50    8.785 No_date   16:05   55.29  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   49.294 No_date   15:47   56.49  n/a
 024:0045---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J3          5581.20   49.294 No_date   15:47   56.49  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.024
      remark:Confluence Hydrograph for J3
 024:0046---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   49.294 No_date   15:47   56.49  n/a
      [RDT= 1.00] out<- 02:C5           5581.20   48.676 No_date   16:56   56.49  n/a
      [L/S/n= 3980./ .140/.035]
      {Vmax= 1.282:Dmax= 2.880}
 024:0047---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C5          5581.20   48.676 No_date   16:56   56.49  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.024
      remark:Routing Hydrograph for C5
 024:0048---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M6           354.80   10.568 No_date   10:26   69.51 .565
      [CN= 75.1: N= 3.00]
      [Tp= 2.01:DT= 1.00]
 024:0049---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M6           354.80   10.568 No_date   10:26   69.51  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.024
      remark:Runoff Hydrograph for M6
 024:0050---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M6           354.80   10.568 No_date   10:26   69.51  n/a
                      +  02:C5          5581.20   48.676 No_date   16:56   56.49  n/a
      [DT= 1.00]  SUM=  04:N6          5936.00   51.088 No_date   16:30   57.27  n/a
 024:0051---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N6          5936.00   51.088 No_date   16:30   57.27  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.024
      remark:Confluence Hydrograph for N6
 024:0052---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N6          5936.00   51.088 No_date   16:30   57.27  n/a
                      +  08:N11          476.90   16.933 No_date    8:43   69.75  n/a
      [DT= 1.00]  SUM=  03:J4          6412.90   55.261 No_date   15:44   58.20  n/a
 024:0053---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J4          6412.90   55.261 No_date   15:44   58.20  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.024
      remark:Confluence Hydrograph for J4
 024:0054---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M7            11.00     .381 No_date    9:40   62.50 .508
      [CN= 70.9: N= 3.00]
      [Tp= 1.38:DT= 1.00]
 024:0055---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M7            11.00     .381 No_date    9:40   62.50  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.024
      remark:Runoff Hydrograph for M7
 024:0056---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M7            11.00     .381 No_date    9:40   62.50  n/a
                      +  03:N12         6412.90   55.261 No_date   15:44   58.20  n/a
      [DT= 1.00]  SUM=  03:N12         6423.90   55.324 No_date   15:44   58.21  n/a
 024:0057---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N12         6423.90   55.324 No_date   15:44   58.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.024
      remark:Confluence Hydrograph for N12
  ** END OF RUN :  24

 ************************************************************************




 RUN:COMMAND#
 025:0001---------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  =  25 ]
 #************************************************************************
 #  Project Name: [Mud]    Project Number: [10419]
 #  Date        : 15 Aug 2018
 #  Modeller    : [ Tyler Bauman ]
```

```
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
 025:0002--------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  24.00:PTOT= 123.01]
 025:0003--------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 025:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60   12.046 No_date   23:16   56.97 .463
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 025:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60   12.046 No_date   23:16   56.97  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.025
      remark:Runoff Hydrograph for TC1
# Tributary B
 025:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    3.870 No_date   17:08   53.81 .437
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 025:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    3.870 No_date   17:08   53.81  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.025
      remark:Runoff Hydrograph for TB1
# Tributary A
 025:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    9.582 No_date   19:20   55.29 .449
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 025:0009--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    9.582 No_date   19:20   55.29  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.025
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 025:0010--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    6.178 No_date   14:43   58.68 .477
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 025:0011--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    6.178 No_date   14:43   58.68  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.025
      remark:Runoff Hydrograph for WC1
 025:0012--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    6.178 No_date   14:43   58.68  n/a
      [RDT= 1.00] out<- 02:C7           265.50    5.210 No_date   16:14   58.68  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .611:Dmax=  .670}
 025:0013--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7           265.50    5.210 No_date   16:14   58.68  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.025
      remark:Routing Hydrograph for C7
 025:0014--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   18.356 No_date   12:29   83.64 .680
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 025:0015--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   18.356 No_date   12:29   83.64  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.025
      remark:Runoff Hydrograph for WC2
 025:0016--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   18.356 No_date   12:29   83.64  n/a
                    +  02:C7           265.50    5.210 No_date   16:14   58.68  n/a
      [DT= 1.00]  SUM=  08:N11          476.90   18.921 No_date   12:29   69.74  n/a
 025:0017--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90   18.921 No_date   12:29   69.74  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.025
      remark:Confluence Hydrograph for N11
# Main Channel
 025:0018--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60   10.731 No_date   22:13   53.21 .433
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 025:0019--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60   10.731 No_date   22:13   53.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.025
      remark:Runoff Hydrograph for M1
 025:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60   10.731 No_date   22:13   53.21  n/a
      [RDT= 1.00] out<- 02:C1          1296.60   10.725 No_date   22:25   53.21  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.246:Dmax= 1.366}
 025:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60   10.725 No_date   22:25   53.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.025
      remark:Routing Hydrograph for C1
 025:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    9.285 No_date   16:07   66.11 .537
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 025:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    9.285 No_date   16:07   66.11  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.025
      remark:Runoff Hydrograph for M2
 025:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10    9.285 No_date   16:07   66.11  n/a
                    +  02:C1          1296.60   10.725 No_date   22:25   53.21  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70   16.592 No_date   18:20   56.67  n/a
 025:0025--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2          1770.70   16.592 No_date   18:20   56.67  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.025
      remark:Confluence Hydrograph for N2
 025:0026--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2          1770.70   16.592 No_date   18:20   56.67  n/a
                    +  05:TC1         1462.60   12.046 No_date   23:16   56.97  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   27.194 No_date   20:44   56.80  n/a
 025:0027--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1          3233.30   27.194 No_date   20:44   56.80  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.025
      remark:Confluence Hydrograph for J1
 025:0028--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    5.219 No_date   17:27   63.47 .516
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 025:0029--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    5.219 No_date   17:27   63.47  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.025
      remark:Runoff Hydrograph for M3
 025:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M3           339.80    5.219 No_date   17:27   63.47  n/a
                    +  03:J1          3233.30   27.194 No_date   20:44   56.80  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10   31.659 No_date   19:40   57.44  n/a
 025:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N3          3573.10   31.659 No_date   19:40   57.44  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.025
      remark:Confluence Hydrograph for N3
 025:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N3          3573.10   31.659 No_date   19:40   57.44  n/a
                    +  06:TB1          283.30    3.870 No_date   17:08   53.81  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40   35.077 No_date   19:11   57.17  n/a
 025:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J2          3856.40   35.077 No_date   19:11   57.17  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.025
      remark:Confluence Hydrograph for J2
 025:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M4           116.70    3.641 No_date   14:20   70.73 .575
      [CN= 75.8: N= 3.00]
      [Tp= 2.23:DT= 1.00]
 025:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M4           116.70    3.641 No_date   14:20   70.73  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.025
      remark:Runoff Hydrograph for M4
 025:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M4           116.70    3.641 No_date   14:20   70.73  n/a
                    +  03:N4          3856.40   35.077 No_date   19:11   57.17  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10   36.267 No_date   18:44   57.57  n/a
 025:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N4          3973.10   36.267 No_date   18:44   57.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.025
      remark:Confluence Hydrograph for N4
 025:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10   36.267 No_date   18:44   57.57  n/a
      [RDT= 1.00] out<- 02:C4          3973.10   35.758 No_date   19:57   57.57  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax= 1.168:Dmax= 2.416}
 025:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C4          3973.10   35.758 No_date   19:57   57.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.025
      remark:Routing Hydrograph for C4
 025:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M5           723.60    9.609 No_date   17:06   52.04 .423
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
 025:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M5           723.60    9.609 No_date   17:06   52.04  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.025
      remark:Runoff Hydrograph for M5
 025:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M5           723.60    9.609 No_date   17:06   52.04  n/a
                    +  02:C4          3973.10   35.758 No_date   19:57   57.57  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70   44.172 No_date   19:04   56.72  n/a
 025:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N5          4696.70   44.172 No_date   19:04   56.72  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.025
      remark:Confluence Hydrograph for N5
 025:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N5          4696.70   44.172 No_date   19:04   56.72  n/a
                    +  07:TA1          884.50    9.582 No_date   19:20   55.29  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   53.744 No_date   19:07   56.49  n/a
 025:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J3          5581.20   53.744 No_date   19:07   56.49  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.025
      remark:Confluence Hydrograph for J3
 025:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   53.744 No_date   19:07   56.49  n/a
 *    [RDT= 1.00] out<- 02:C5          5581.20   52.940 No_date   20:09   56.49  n/a
      [L/S/n= 3980./ .140/.035]
      {Vmax= 1.277:Dmax= 2.981}
 025:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C5          5581.20   52.940 No_date   20:09   56.49  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.025
      remark:Routing Hydrograph for C5
 025:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M6           354.80   11.763 No_date   14:05   69.51 .565
      [CN= 75.1: N= 3.00]
      [Tp= 2.01:DT= 1.00]
 025:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M6           354.80   11.763 No_date   14:05   69.51  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.025
      remark:Runoff Hydrograph for M6
 025:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M6           354.80   11.763 No_date   14:05   69.51  n/a
                    +  02:C5          5581.20   52.940 No_date   20:09   56.49  n/a
      [DT= 1.00]  SUM=  04:N6          5936.00   55.379 No_date   19:49   57.27  n/a
 025:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N6          5936.00   55.379 No_date   19:49   57.27  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.025
      remark:Confluence Hydrograph for N6
 025:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N6          5936.00   55.379 No_date   19:49   57.27  n/a
                    +  08:N11          476.90   18.921 No_date   12:29   69.74  n/a
      [DT= 1.00]  SUM=  03:J4          6412.90   59.916 No_date   19:04   58.20  n/a
 025:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J4          6412.90   59.916 No_date   19:04   58.20  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.025
      remark:Confluence Hydrograph for J4
 025:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M7            11.00     .432 No_date   13:23   62.49 .508
      [CN= 70.9: N= 3.00]
      [Tp= 1.38:DT= 1.00]
 025:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M7            11.00     .432 No_date   13:23   62.49  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.025
      remark:Runoff Hydrograph for M7
 025:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M7            11.00     .432 No_date   13:23   62.49  n/a
                    +  03:N12         6412.90   59.916 No_date   19:04   58.20  n/a
      [DT= 1.00]  SUM=  03:N12         6423.90   59.974 No_date   19:04   58.20  n/a
 025:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
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    SAVE HYD          03:N12        6423.90   59.974 No_date   19:04   58.20  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.025
     remark:Confluence Hydrograph for N12
  ** END OF RUN : 239

**********************************************************************************




 RUN:COMMAND#
 240:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on       0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  = 240 ]
#**********************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#**********************************************************************************
 240:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  24.00:PTOT=  50.07]
 240:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 240:0004---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60    2.422 No_date   24:02   11.57 .231
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 240:0005---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60    2.422 No_date   24:02   11.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.240
      remark:Runoff Hydrograph for TC1
# Tributary B
 240:0006---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30     .728 No_date   17:29   10.53 .210
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 240:0007---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30     .728 No_date   17:29   10.53  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.240
      remark:Runoff Hydrograph for TB1
# Tributary A
 240:0008---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    1.856 No_date   19:52   11.01 .220
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 240:0009---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    1.856 No_date   19:52   11.01  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.240
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 240:0010---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    1.220 No_date   14:53   12.15 .243
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 240:0011---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    1.220 No_date   14:53   12.15  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.240
      remark:Runoff Hydrograph for WC1
 240:0012---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    1.220 No_date   14:53   12.15  n/a
      [RDT= 1.00] out<- 02:C7           265.50     .947 No_date   16:46   12.15  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .465:Dmax=  .353}
 240:0013---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7           265.50     .947 No_date   16:46   12.15  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.240
      remark:Routing Hydrograph for C7
 240:0014---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40    3.360 No_date   13:01   23.93 .478
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 240:0015---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40    3.360 No_date   13:01   23.93  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.240
      remark:Runoff Hydrograph for WC2
 240:0016---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40    3.360 No_date   13:01   23.93  n/a
                    +   02:C7           265.50     .947 No_date   16:46   12.15  n/a
      [DT= 1.00]  SUM=  08:N11          476.90    3.526 No_date   13:06   17.37  n/a
 240:0017---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90    3.526 No_date   13:06   17.37  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.240
      remark:Confluence Hydrograph for N11
# Main Channel
 240:0018---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    2.054 No_date   22:56   10.34 .207
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 240:0019---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60    2.054 No_date   22:56   10.34  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.240
      remark:Runoff Hydrograph for M1
 240:0020---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    2.054 No_date   22:56   10.34  n/a
      [RDT= 1.00] out<- 02:C1          1296.60    2.053 No_date   23:11   10.34  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax=  .788:Dmax=  .603}
 240:0021---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60    2.053 No_date   23:11   10.34  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.240
      remark:Routing Hydrograph for C1
 240:0022---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    2.014 No_date   16:23   14.84 .296
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 240:0023---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    2.014 No_date   16:23   14.84  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.240
      remark:Runoff Hydrograph for M2
 240:0024---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10    2.014 No_date   16:23   14.84  n/a
                    +   02:C1          1296.60    2.053 No_date   23:11   10.34  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70    3.321 No_date   18:38   11.55  n/a
 240:0025---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2          1770.70    3.321 No_date   18:38   11.55  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.240
      remark:Confluence Hydrograph for N2
 240:0026---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2          1770.70    3.321 No_date   18:38   11.55  n/a
                    +   05:TC1         1462.60    2.422 No_date   24:02   11.57  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30    5.445 No_date   21:19   11.56  n/a
 240:0027---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1          3233.30    5.445 No_date   21:19   11.56  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.240
      remark:Confluence Hydrograph for J1
 240:0028---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    1.104 No_date   17:46   13.85 .277
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 240:0029---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    1.104 No_date   17:46   13.85  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.240
      remark:Runoff Hydrograph for M3
 240:0030---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M3           339.80    1.104 No_date   17:46   13.85  n/a
                    +   03:J1          3233.30    5.445 No_date   21:19   11.56  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10    6.385 No_date   20:18   11.77  n/a
 240:0031---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N3          3573.10    6.385 No_date   20:18   11.77  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.240
      remark:Confluence Hydrograph for N3
 240:0032---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N3          3573.10    6.385 No_date   20:18   11.77  n/a
                    +   06:TB1          283.30     .728 No_date   17:29   10.53  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40    7.024 No_date   19:44   11.68  n/a
 240:0033---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J2          3856.40    7.024 No_date   19:44   11.68  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.240
      remark:Confluence Hydrograph for J2
 240:0034---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M4           116.70     .826 No_date   14:28   16.66 .333
      [CN= 75.8: N= 3.00]
      [Tp= 2.23:DT= 1.00]
 240:0035---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M4           116.70     .826 No_date   14:28   16.66  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.240
      remark:Runoff Hydrograph for M4
 240:0036---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M4           116.70     .826 No_date   14:28   16.66  n/a
                    +   03:N4          3856.40    7.024 No_date   19:44   11.68  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10    7.299 No_date   19:11   11.83  n/a
 240:0037---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N4          3973.10    7.299 No_date   19:11   11.83  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.240
      remark:Confluence Hydrograph for N4
 240:0038---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10    7.299 No_date   19:11   11.83  n/a
      [RDT= 1.00] out<- 02:C4          3973.10    7.185 No_date   20:31   11.83  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax=  .898:Dmax= 1.212}
 240:0039---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C4          3973.10    7.185 No_date   20:31   11.83  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.240
      remark:Routing Hydrograph for C4
 240:0040---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M5           723.60    1.766 No_date   17:27    9.97 .199
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
 240:0041---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M5           723.60    1.766 No_date   17:27    9.97  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.240
      remark:Runoff Hydrograph for M5
 240:0042---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M5           723.60    1.766 No_date   17:27    9.97  n/a
                    +   02:C4          3973.10    7.185 No_date   20:31   11.83  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70    8.727 No_date   19:37   11.54  n/a
 240:0043---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N5          4696.70    8.727 No_date   19:37   11.54  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.240
      remark:Confluence Hydrograph for N5
 240:0044---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N5          4696.70    8.727 No_date   19:37   11.54  n/a
                    +   07:TA1          884.50    1.856 No_date   19:52   11.01  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   10.581 No_date   19:37   11.46  n/a
 240:0045---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J3          5581.20   10.581 No_date   19:37   11.46  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.240
      remark:Confluence Hydrograph for J3
 240:0046---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   10.581 No_date   19:37   11.46  n/a
      [RDT= 1.00] out<- 02:C5          5581.20   10.422 No_date   20:40   11.46  n/a
      [L/S/n= 3980./ .140/.035]
      {Vmax= 1.022:Dmax= 1.470}
 240:0047---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C5          5581.20   10.422 No_date   20:40   11.46  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.240
      remark:Routing Hydrograph for C5
 240:0048---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M6           354.80    2.632 No_date   14:13   16.17 .323
      [CN= 75.1: N= 3.00]
      [Tp= 2.01:DT= 1.00]
 240:0049---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M6           354.80    2.632 No_date   14:13   16.17  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.240
      remark:Runoff Hydrograph for M6
 240:0050---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M6           354.80    2.632 No_date   14:13   16.17  n/a
                    +   02:C5          5581.20   10.422 No_date   20:40   11.46  n/a
      [DT= 1.00]  SUM=  04:N6          5936.00   11.030 No_date   20:13   11.74  n/a
 240:0051---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N6          5936.00   11.030 No_date   20:13   11.74  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.240
```

```
     remark:Confluence Hydrograph for N6
 240:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           04:N6          5936.00   11.030 No_date   20:13   11.74  n/a
                   +  08:N11          476.90    3.526 No_date   13:06   17.37  n/a
      [DT= 1.00]  SUM=  03:J4          6412.90   12.107 No_date   19:38   12.16  n/a
 240:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          03:J4          6412.90   12.107 No_date   19:38   12.16  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.240
      remark:Confluence Hydrograph for J4
 240:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      01:M7            11.00     .089 No_date   13:28   13.50 .270
      [CN= 70.9: N= 3.00]
      [Tp= 1.38:DT= 1.00]
 240:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          01:M7            11.00     .089 No_date   13:28   13.50  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.240
      remark:Runoff Hydrograph for M7
 240:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           01:M7            11.00     .089 No_date   13:28   13.50  n/a
                   +  03:N12         6412.90   12.107 No_date   19:38   12.16  n/a
      [DT= 1.00]  SUM=  03:N12         6423.90   12.121 No_date   19:38   12.16  n/a
 240:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          03:N12         6423.90   12.121 No_date   19:38   12.16  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.240
      remark:Confluence Hydrograph for N12
  ** END OF RUN : 240

********************************************************************************




 RUN:COMMAND#
 241:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on       0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  = 241 ]
#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
 241:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  24.00:PTOT=  70.01]
 241:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 241:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      05:TC1         1462.60    4.590 No_date   23:42   21.84 .312
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 241:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          05:TC1         1462.60    4.590 No_date   23:42   21.84  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.241
      remark:Runoff Hydrograph for TC1
# Tributary B
 241:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      06:TB1          283.30    1.420 No_date   17:20   20.19 .288
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 241:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          06:TB1          283.30    1.420 No_date   17:20   20.19  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.241
      remark:Runoff Hydrograph for TB1
# Tributary A
 241:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      07:TA1          884.50    3.575 No_date   19:39   20.95 .299
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 241:0009--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          07:TA1          884.50    3.575 No_date   19:39   20.95  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.241
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 241:0010--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      03:WC1          265.50    2.333 No_date   14:49   22.75 .325
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 241:0011--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          03:WC1          265.50    2.333 No_date   14:49   22.75  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.241
      remark:Runoff Hydrograph for WC1
 241:0012--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    2.333 No_date   14:49   22.75  n/a
      [RDT= 1.00] out<- 02:C7           265.50    1.899 No_date   16:15   22.75  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .575:Dmax=  .494}
 241:0013--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          02:C7           265.50    1.899 No_date   16:15   22.75  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.241
      remark:Routing Hydrograph for C7
 241:0014--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD    01:WC2          211.40    6.484 No_date   12:47   38.84 .555
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 241:0015--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          01:WC2          211.40    6.484 No_date   12:47   38.84  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.241
      remark:Runoff Hydrograph for WC2
 241:0016--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           01:WC2          211.40    6.484 No_date   12:47   38.84  n/a
                   +  02:C7           265.50    1.899 No_date   16:15   22.75  n/a
      [DT= 1.00]  SUM=  08:N11          476.90    6.739 No_date   12:50   29.88  n/a
 241:0017--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          08:N11          476.90    6.739 No_date   12:50   29.88  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.241
      remark:Confluence Hydrograph for N11
# Main Channel
 241:0018--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      01:M1          1296.60    3.975 No_date   22:38   19.89 .284
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 241:0019--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          01:M1          1296.60    3.975 No_date   22:38   19.89  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.241
      remark:Runoff Hydrograph for M1
 241:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    3.975 No_date   22:38   19.89  n/a
      [RDT= 1.00] out<- 02:C1          1296.60    3.973 No_date   22:49   19.89  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax=  .957:Dmax=  .849}
 241:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          02:C1          1296.60    3.973 No_date   22:49   19.89  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.241
      remark:Routing Hydrograph for C1
 241:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      01:M2           474.10    3.701 No_date   16:16   26.87 .384
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 241:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          01:M2           474.10    3.701 No_date   16:16   26.87  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.241
      remark:Runoff Hydrograph for M2
 241:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           01:M2           474.10    3.701 No_date   16:16   26.87  n/a
                   +  02:C1          1296.60    3.973 No_date   22:49   19.89  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70    6.308 No_date   18:32   21.76  n/a
 241:0025--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          04:N2          1770.70    6.308 No_date   18:32   21.76  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.241
      remark:Confluence Hydrograph for N2
 241:0026--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           04:N2          1770.70    6.308 No_date   18:32   21.76  n/a
                   +  05:TC1         1462.60    4.590 No_date   23:42   21.84  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   10.340 No_date   21:02   21.79  n/a
 241:0027--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          03:J1          3233.30   10.340 No_date   21:02   21.79  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.241
      remark:Confluence Hydrograph for J1
 241:0028--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      01:M3           339.80    2.050 No_date   17:38   25.38 .363
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 241:0029--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          01:M3           339.80    2.050 No_date   17:38   25.38  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.241
      remark:Runoff Hydrograph for M3
 241:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           01:M3           339.80    2.050 No_date   17:38   25.38  n/a
                   +  03:J1          3233.30   10.340 No_date   21:02   21.79  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10   12.088 No_date   20:01   22.14  n/a
 241:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          04:N3          3573.10   12.088 No_date   20:01   22.14  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.241
      remark:Confluence Hydrograph for N3
 241:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           04:N3          3573.10   12.088 No_date   20:01   22.14  n/a
                   +  06:TB1          283.30    1.420 No_date   17:20   20.19  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40   13.335 No_date   19:27   21.99  n/a
 241:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          03:J2          3856.40   13.335 No_date   19:27   21.99  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.241
      remark:Confluence Hydrograph for J2
 241:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      01:M4           116.70    1.491 No_date   14:25   29.58 .422
      [CN= 75.8: N= 3.00]
      [Tp= 2.23:DT= 1.00]
 241:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          01:M4           116.70    1.491 No_date   14:25   29.58  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.241
      remark:Runoff Hydrograph for M4
 241:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           01:M4           116.70    1.491 No_date   14:25   29.58  n/a
                   +  03:N4          3856.40   13.335 No_date   19:27   21.99  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10   13.828 No_date   19:00   22.21  n/a
 241:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          03:N4          3973.10   13.828 No_date   19:00   22.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.241
      remark:Confluence Hydrograph for N4
 241:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10   13.828 No_date   19:00   22.21  n/a
      [RDT= 1.00] out<- 02:C4          3973.10   13.657 No_date   20:11   22.21  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax= 1.052:Dmax= 1.626}
 241:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          02:C4          3973.10   13.657 No_date   20:11   22.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.241
      remark:Routing Hydrograph for C4
 241:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      01:M5           723.60    3.480 No_date   17:18   19.29 .276
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
 241:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          01:M5           723.60    3.480 No_date   17:18   19.29  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.241
      remark:Runoff Hydrograph for M5
 241:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           01:M5           723.60    3.480 No_date   17:18   19.29  n/a
                   +  02:C4          3973.10   13.657 No_date   20:11   22.21  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70   16.734 No_date   19:14   21.76  n/a
 241:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          04:N5          4696.70   16.734 No_date   19:14   21.76  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.241
      remark:Confluence Hydrograph for N5
 241:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD           04:N5          4696.70   16.734 No_date   19:14   21.76  n/a
                   +  07:TA1          884.50    3.575 No_date   19:39   20.95  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   20.300 No_date   19:17   21.64  n/a
 241:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          03:J3          5581.20   20.300 No_date   19:17   21.64  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.241
      remark:Confluence Hydrograph for J3
 241:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   20.300 No_date   19:17   21.64  n/a
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     [RDT= 1.00] out<- 02:C5          5581.20   20.055 No_date   20:13   21.64  n/a
     [L/S/n= 3980./ .140/.035]
     {Vmax= 1.213:Dmax= 1.996}
241:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C5          5581.20   20.055 No_date   20:13   21.64  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.241
     remark:Routing Hydrograph for C5
241:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M6           354.80    4.778 No_date   14:10   28.85 .412
     [CN= 75.1: N= 3.00]
     [Tp= 2.01:DT= 1.00]
241:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M6           354.80    4.778 No_date   14:10   28.85  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.241
     remark:Runoff Hydrograph for M6
241:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M6           354.80    4.778 No_date   14:10   28.85  n/a
                     + 02:C5          5581.20   20.055 No_date   20:13   21.64  n/a
     [DT= 1.00]  SUM=  04:N6          5936.00   21.161 No_date   19:46   22.07  n/a
241:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N6          5936.00   21.161 No_date   19:46   22.07  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.241
     remark:Confluence Hydrograph for N6
241:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N6          5936.00   21.161 No_date   19:46   22.07  n/a
                     + 08:N11          476.90    6.739 No_date   12:50   29.88  n/a
     [DT= 1.00]  SUM=  03:J4          6412.90   23.059 No_date   19:24   22.65  n/a
241:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J4          6412.90   23.059 No_date   19:24   22.65  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.241
     remark:Confluence Hydrograph for J4
241:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M7            11.00     .167 No_date   13:26   24.84 .355
     [CN= 70.9: N= 3.00]
     [Tp= 1.38:DT= 1.00]
241:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M7            11.00     .167 No_date   13:26   24.84  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.241
     remark:Runoff Hydrograph for M7
241:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M7            11.00     .167 No_date   13:26   24.84  n/a
                     + 03:N12         6412.90   23.059 No_date   19:24   22.65  n/a
     [DT= 1.00]  SUM=  03:N12         6423.90   23.083 No_date   19:24   22.65  n/a
241:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N12         6423.90   23.083 No_date   19:24   22.65  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.241
     remark:Confluence Hydrograph for N12
  ** END OF RUN : 241

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 RUN:COMMAND#
 242:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on       0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  = 242 ]
#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
 242:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  24.00:PTOT=  82.59]
 242:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 242:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60    6.174 No_date   23:34   29.32 .355
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 242:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60    6.174 No_date   23:34   29.32  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.242
      remark:Runoff Hydrograph for TC1
# Tributary B
 242:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    1.933 No_date   17:16   27.29 .330
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 242:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    1.933 No_date   17:16   27.29  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.242
      remark:Runoff Hydrograph for TB1
# Tributary A
 242:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    4.840 No_date   19:33   28.23 .342
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 242:0009--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    4.840 No_date   19:33   28.23  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.242
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 242:0010--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    3.147 No_date   14:47   30.43 .368
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 242:0011--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    3.147 No_date   14:47   30.43  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.242
      remark:Runoff Hydrograph for WC1
 242:0012--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    3.147 No_date   14:47   30.43  n/a
      [RDT= 1.00] out<- 02:C7          265.50    2.732 No_date   16:09   30.43  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .622:Dmax=  .557}
 242:0013--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7          265.50    2.732 No_date   16:09   30.43  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.242
      remark:Routing Hydrograph for C7
 242:0014--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40    8.876 No_date   12:41   48.94 .593
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 242:0015--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40    8.876 No_date   12:41   48.94  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.242
      remark:Runoff Hydrograph for WC2
 242:0016--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40    8.876 No_date   12:41   48.94  n/a
                      + 02:C7          265.50    2.732 No_date   16:09   30.43  n/a
      [DT= 1.00]  SUM=  08:N11         476.90    9.191 No_date   12:43   38.64  n/a
 242:0017--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90    9.191 No_date   12:43   38.64  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.242
      remark:Confluence Hydrograph for N11
# Main Channel
 242:0018--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    5.395 No_date   22:30   26.91 .326
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 242:0019--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60    5.395 No_date   22:30   26.91  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.242
      remark:Runoff Hydrograph for M1
 242:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    5.395 No_date   22:30   26.91  n/a
      [RDT= 1.00] out<- 02:C1          1296.60    5.392 No_date   22:43   26.91  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.035:Dmax=  .982}
 242:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60    5.392 No_date   22:43   26.91  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.242
      remark:Routing Hydrograph for C1
 242:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    4.908 No_date   16:13   35.42 .429
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 242:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    4.908 No_date   16:13   35.42  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.242
      remark:Runoff Hydrograph for M2
 242:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10    4.908 No_date   16:13   35.42  n/a
                      + 02:C1          1296.60    5.392 No_date   22:43   26.91  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70    8.493 No_date   18:10   29.19  n/a
 242:0025--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2          1770.70    8.493 No_date   18:10   29.19  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.242
      remark:Confluence Hydrograph for N2
 242:0026--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2          1770.70    8.493 No_date   18:10   29.19  n/a
                      + 05:TC1         1462.60    6.174 No_date   23:34   29.32  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   13.914 No_date   20:57   29.25  n/a
 242:0027--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1          3233.30   13.914 No_date   20:57   29.25  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.242
      remark:Confluence Hydrograph for J1
 242:0028--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    2.731 No_date   17:35   33.62 .407
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 242:0029--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    2.731 No_date   17:35   33.62  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.242
      remark:Runoff Hydrograph for M3
 242:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M3           339.80    2.731 No_date   17:35   33.62  n/a
                      + 03:J1          3233.30   13.914 No_date   20:57   29.25  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10   16.242 No_date   19:56   29.66  n/a
 242:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N3          3573.10   16.242 No_date   19:56   29.66  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.242
      remark:Confluence Hydrograph for N3
 242:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N3          3573.10   16.242 No_date   19:56   29.66  n/a
                      + 06:TB1          283.30    1.933 No_date   17:16   27.29  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40   17.938 No_date   19:22   29.49  n/a
 242:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J2          3856.40   17.938 No_date   19:22   29.49  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.242
      remark:Confluence Hydrograph for J2
 242:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M4           116.70    1.961 No_date   14:23   38.64 .468
      [CN= 75.8: N= 3.00]
      [Tp= 2.23:DT= 1.00]
 242:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M4           116.70    1.961 No_date   14:23   38.64  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.242
      remark:Runoff Hydrograph for M4
 242:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M4           116.70    1.961 No_date   14:23   38.64  n/a
                      + 03:N4          3856.40   17.938 No_date   19:22   29.49  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10   18.586 No_date   18:49   29.76  n/a
 242:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N4          3973.10   18.586 No_date   18:49   29.76  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.242
      remark:Confluence Hydrograph for N4
 242:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10   18.586 No_date   18:49   29.76  n/a
      [RDT= 1.00] out<- 02:C4          3973.10   18.363 No_date   20:01   29.76  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax= 1.107:Dmax= 1.856}
 242:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C4          3973.10   18.363 No_date   20:01   29.76  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.242
      remark:Routing Hydrograph for C4
 242:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M5           723.60    4.757 No_date   17:14   26.17 .317
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
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 242:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M5           723.60    4.757 No_date   17:14   26.17  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.242
      remark:Runoff Hydrograph for M5
 242:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M5           723.60    4.757 No_date   17:14   26.17  n/a
                    +  02:C4          3973.10   18.363 No_date   20:01   29.76  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70   22.570 No_date   19:13   29.21  n/a
 242:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N5          4696.70   22.570 No_date   19:13   29.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.242
      remark:Confluence Hydrograph for N5
 242:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N5          4696.70   22.570 No_date   19:13   29.21  n/a
                    +  07:TA1          884.50    4.840 No_date   19:33   28.23  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   27.403 No_date   19:13   29.05  n/a
 242:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J3          5581.20   27.403 No_date   19:13   29.05  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.242
      remark:Confluence Hydrograph for J3
 242:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   27.403 No_date   19:13   29.05  n/a
      [RDT= 1.00] out<- 02:C5          5581.20   27.112 No_date   20:09   29.05  n/a
      [L/S/n= 3980./ .140/.035]
      {Vmax= 1.315:Dmax= 2.281}
 242:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C5          5581.20   27.112 No_date   20:09   29.05  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.242
      remark:Routing Hydrograph for C5
 242:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M6           354.80    6.300 No_date   14:08   37.78 .457
      [CN= 75.1: N= 3.00]
      [Tp= 2.01:DT= 1.00]
 242:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M6           354.80    6.300 No_date   14:08   37.78  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.242
      remark:Runoff Hydrograph for M6
 242:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M6           354.80    6.300 No_date   14:08   37.78  n/a
                    +  02:C5          5581.20   27.112 No_date   20:09   29.05  n/a
      [DT= 1.00]  SUM=  04:N6          5936.00   28.564 No_date   19:36   29.57  n/a
 242:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N6          5936.00   28.564 No_date   19:36   29.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.242
      remark:Confluence Hydrograph for N6
 242:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N6          5936.00   28.564 No_date   19:36   29.57  n/a
                    +  08:N11          476.90    9.191 No_date   12:43   38.64  n/a
      [DT= 1.00]  SUM=  03:J4          6412.90   31.015 No_date   19:02   30.25  n/a
 242:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J4          6412.90   31.015 No_date   19:02   30.25  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.242
      remark:Confluence Hydrograph for J4
 242:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M7            11.00     .224 No_date   13:25   32.97 .399
      [CN= 70.9: N= 3.00]
      [Tp= 1.38:DT= 1.00]
 242:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M7            11.00     .224 No_date   13:25   32.97  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.242
      remark:Runoff Hydrograph for M7
 242:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M7            11.00     .224 No_date   13:25   32.97  n/a
                    +  03:N12         6412.90   31.015 No_date   19:02   30.25  n/a
      [DT= 1.00]  SUM=  03:N12         6423.90   31.048 No_date   18:58   30.25  n/a
 242:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N12         6423.90   31.048 No_date   18:58   30.25  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.242
      remark:Confluence Hydrograph for N12
  ** END OF RUN : 242

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 RUN:COMMAND#
 243:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on       0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  = 243 ]
#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date       : 15 Aug 2018
#  Modeller   : [ Tyler Bauman ]
#  Company    : Rideau Valley Conservation Authority
#  License #  :  5329846
#*******************************************************************************
 243:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  24.00:PTOT=  95.06]
 243:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 243:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60    7.874 No_date   23:27   37.33 .393
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 243:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60    7.874 No_date   23:27   37.33  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.243
      remark:Runoff Hydrograph for TC1
# Tributary B
 243:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    2.490 No_date   17:13   34.93 .367
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 243:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    2.490 No_date   17:13   34.93  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.243
      remark:Runoff Hydrograph for TB1
# Tributary A
 243:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    6.207 No_date   19:28   36.05 .379
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 243:0009--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    6.207 No_date   19:28   36.05  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.243
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 243:0010--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    4.025 No_date   14:46   38.64 .406
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 243:0011--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    4.025 No_date   14:46   38.64  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.243
      remark:Runoff Hydrograph for WC1
 243:0012--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    4.025 No_date   14:46   38.64  n/a
      [RDT= 1.00] out<- 02:C7          265.50    3.432 No_date   16:15   38.64  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .619:Dmax=  .590}
 243:0013--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7          265.50    3.432 No_date   16:15   38.64  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.243
      remark:Routing Hydrograph for C7
 243:0014--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   11.503 No_date   12:36   59.34 .624
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 243:0015--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   11.503 No_date   12:36   59.34  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.243
      remark:Runoff Hydrograph for WC2
 243:0016--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   11.503 No_date   12:36   59.34  n/a
                    +  02:C7          265.50    3.432 No_date   16:15   38.64  n/a
      [DT= 1.00]  SUM=  08:N11         476.90   11.889 No_date   12:38   47.81  n/a
 243:0017--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11         476.90   11.889 No_date   12:38   47.81  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.243
      remark:Confluence Hydrograph for N11
# Main Channel
 243:0018--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    6.929 No_date   22:24   34.49 .363
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 243:0019--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60    6.929 No_date   22:24   34.49  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.243
      remark:Runoff Hydrograph for M1
 243:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    6.929 No_date   22:24   34.49  n/a
      [RDT= 1.00] out<- 02:C1          1296.60    6.925 No_date   22:38   34.49  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.113:Dmax= 1.113}
 243:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60    6.925 No_date   22:38   34.49  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.243
      remark:Routing Hydrograph for C1
 243:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    6.191 No_date   16:11   44.43 .467
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 243:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    6.191 No_date   16:11   44.43  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.243
      remark:Runoff Hydrograph for M2
 243:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10    6.191 No_date   16:11   44.43  n/a
                    +  02:C1          1296.60    6.925 No_date   22:38   34.49  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70   10.836 No_date   18:26   37.15  n/a
 243:0025--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2          1770.70   10.836 No_date   18:26   37.15  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.243
      remark:Confluence Hydrograph for N2
 243:0026--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2          1770.70   10.836 No_date   18:26   37.15  n/a
                    +  05:TC1         1462.60    7.874 No_date   23:27   37.33  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   17.755 No_date   20:53   37.23  n/a
 243:0027--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1          3233.30   17.755 No_date   20:53   37.23  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.243
      remark:Confluence Hydrograph for J1
 243:0028--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    3.457 No_date   17:32   42.35 .446
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 243:0029--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    3.457 No_date   17:32   42.35  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.243
      remark:Runoff Hydrograph for M3
 243:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M3           339.80    3.457 No_date   17:32   42.35  n/a
                    +  03:J1          3233.30   17.755 No_date   20:53   37.23  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10   20.718 No_date   19:50   37.72  n/a
 243:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N3          3573.10   20.718 No_date   19:50   37.72  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.243
      remark:Confluence Hydrograph for N3
 243:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N3          3573.10   20.718 No_date   19:50   37.72  n/a
                    +  06:TB1          283.30    2.490 No_date   17:13   34.93  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40   22.905 No_date   19:16   37.51  n/a
 243:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J2          3856.40   22.905 No_date   19:16   37.51  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.243
      remark:Confluence Hydrograph for J2
 243:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M4           116.70    2.457 No_date   14:22   48.12 .506
      [CN= 75.8: N= 3.00]
      [Tp= 2.23:DT= 1.00]
 243:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M4           116.70    2.457 No_date   14:22   48.12  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.243
```

```
     remark:Runoff Hydrograph for M4
 243:0036---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M4           116.70    2.457 No_date   14:22   48.12  n/a
                    +  03:N4          3856.40   22.905 No_date   19:16   37.51  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10   23.713 No_date   18:49   37.82  n/a
 243:0037---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N4          3973.10   23.713 No_date   18:49   37.82  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.243
      remark:Confluence Hydrograph for N4
 243:0038---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10   23.713 No_date   18:49   37.82  n/a
      [RDT= 1.00] out<- 02:C4          3973.10   23.437 No_date   19:52   37.82  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax= 1.154:Dmax= 2.047}
 243:0039---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C4          3973.10   23.437 No_date   19:52   37.82  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.243
      remark:Routing Hydrograph for C4
 243:0040---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M5           723.60    6.147 No_date   17:11   33.61 .354
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
 243:0041---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M5           723.60    6.147 No_date   17:11   33.61  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.243
      remark:Runoff Hydrograph for M5
 243:0042---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M5           723.60    6.147 No_date   17:11   33.61  n/a
                    +  02:C4          3973.10   23.437 No_date   19:52   37.82  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70   28.892 No_date   19:00   37.17  n/a
 243:0043---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N5          4696.70   28.892 No_date   19:00   37.17  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.243
      remark:Confluence Hydrograph for N5
 243:0044---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N5          4696.70   28.892 No_date   19:00   37.17  n/a
                    +  07:TA1          884.50    6.207 No_date   19:28   36.05  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   35.083 No_date   19:06   37.00  n/a
 243:0045---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J3          5581.20   35.083 No_date   19:06   37.00  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.243
      remark:Confluence Hydrograph for J3
 243:0046---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   35.083 No_date   19:06   37.00  n/a
      [RDT= 1.00] out<- 02:C5          5581.20   34.580 No_date   20:11   37.00  n/a
      [L/S/n= 3980./ .140/.035]
      {Vmax= 1.300:Dmax= 2.530}
 243:0047---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C5          5581.20   34.580 No_date   20:11   37.00  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.243
      remark:Routing Hydrograph for C5
 243:0048---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M6           354.80    7.910 No_date   14:07   47.14 .496
      [CN= 75.1: N= 3.00]
      [Tp= 2.01:DT= 1.00]
 243:0049---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M6           354.80    7.910 No_date   14:07   47.14  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.243
      remark:Runoff Hydrograph for M6
 243:0050---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M6           354.80    7.910 No_date   14:07   47.14  n/a
                    +  02:C5          5581.20   34.580 No_date   20:11   37.00  n/a
      [DT= 1.00]  SUM=  04:N6          5936.00   36.323 No_date   19:40   37.60  n/a
 243:0051---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N6          5936.00   36.323 No_date   19:40   37.60  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.243
      remark:Confluence Hydrograph for N6
 243:0052---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N6          5936.00   36.323 No_date   19:40   37.60  n/a
                    +  08:N11          476.90   11.889 No_date   12:38   47.81  n/a
      [DT= 1.00]  SUM=  03:J4          6412.90   39.235 No_date   19:11   38.36  n/a
 243:0053---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J4          6412.90   39.235 No_date   19:11   38.36  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.243
      remark:Confluence Hydrograph for J4
 243:0054---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M7            11.00     .284 No_date   13:24   41.59 .438
      [CN= 70.9: N= 3.00]
      [Tp= 1.38:DT= 1.00]
 243:0055---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M7            11.00     .284 No_date   13:24   41.59  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.243
      remark:Runoff Hydrograph for M7
 243:0056---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M7            11.00     .284 No_date   13:24   41.59  n/a
                    +  03:N12         6412.90   39.235 No_date   19:11   38.36  n/a
      [DT= 1.00]  SUM=  03:N12         6423.90   39.275 No_date   19:11   38.37  n/a
 243:0057---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N12         6423.90   39.275 No_date   19:11   38.37  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.243
      remark:Confluence Hydrograph for N12
  ** END OF RUN : 243

*******************************************************************************




 RUN:COMMAND#
 244:0001---------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on       0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  = 244 ]
#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
 244:0002---------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  24.00:PTOT= 110.93]
 244:0003---------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]

                THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 244:0004---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60   10.188 No_date   23:21   48.23 .435
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 244:0005---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60   10.188 No_date   23:21   48.23  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.244
      remark:Runoff Hydrograph for TC1
# Tributary B
 244:0006---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    3.253 No_date   17:10   45.39 .409
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 244:0007---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    3.253 No_date   17:10   45.39  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.244
      remark:Runoff Hydrograph for TB1
# Tributary A
 244:0008---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50    8.075 No_date   19:24   46.71 .421
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 244:0009---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50    8.075 No_date   19:24   46.71  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.244
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 244:0010---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    5.217 No_date   14:44   49.77 .449
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 244:0011---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    5.217 No_date   14:44   49.77  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.244
      remark:Runoff Hydrograph for WC1
 244:0012---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    5.217 No_date   14:44   49.77  n/a
      [RDT= 1.00] out<- 02:C7          265.50    4.415 No_date   16:15   49.77  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .615:Dmax=  .634}
 244:0013---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7          265.50    4.415 No_date   16:15   49.77  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.244
      remark:Routing Hydrograph for C7
 244:0014---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   15.305 No_date   12:31   72.99 .658
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 244:0015---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   15.305 No_date   12:31   72.99  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.244
      remark:Runoff Hydrograph for WC2
 244:0016---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   15.305 No_date   12:31   72.99  n/a
                    +  02:C7          265.50    4.415 No_date   16:15   49.77  n/a
      [DT= 1.00]  SUM=  08:N11         476.90   15.777 No_date   12:32   60.06  n/a
 244:0017---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11         476.90   15.777 No_date   12:32   60.06  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.244
      remark:Confluence Hydrograph for N11
# Main Channel
 244:0018---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60    9.033 No_date   22:18   44.85 .404
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 244:0019---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60    9.033 No_date   22:18   44.85  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.244
      remark:Runoff Hydrograph for M1
 244:0020---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60    9.033 No_date   22:18   44.85  n/a
      [RDT= 1.00] out<- 02:C1          1296.60    9.028 No_date   22:30   44.85  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.191:Dmax= 1.261}
 244:0021---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60    9.028 No_date   22:30   44.85  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.244
      remark:Routing Hydrograph for C1
 244:0022---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10    7.913 No_date   16:09   56.52 .510
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 244:0023---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10    7.913 No_date   16:09   56.52  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.244
      remark:Runoff Hydrograph for M2
 244:0024---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10    7.913 No_date   16:09   56.52  n/a
                    +  02:C1          1296.60    9.028 No_date   22:30   44.85  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70   14.015 No_date   18:22   47.98  n/a
 244:0025---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2          1770.70   14.015 No_date   18:22   47.98  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.244
      remark:Confluence Hydrograph for N2
 244:0026---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2          1770.70   14.015 No_date   18:22   47.98  n/a
                    +  05:TC1         1462.60   10.188 No_date   23:21   48.23  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   22.996 No_date   20:50   48.09  n/a
 244:0027---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1          3233.30   22.996 No_date   20:50   48.09  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.244
      remark:Confluence Hydrograph for J1
 244:0028---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    4.437 No_date   17:29   54.11 .488
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 244:0029---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    4.437 No_date   17:29   54.11  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.244
      remark:Runoff Hydrograph for M3
 244:0030---------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
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    ADD HYD            01:M3          339.80    4.437 No_date   17:29   54.11  n/a
                   +  03:J1          3233.30   22.996 No_date   20:50   48.09  n/a
     [DT= 1.00]  SUM=  04:N3          3573.10   26.784 No_date   19:47   48.66  n/a
244:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N3          3573.10   26.784 No_date   19:47   48.66  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.244
     remark:Confluence Hydrograph for N3
244:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N3          3573.10   26.784 No_date   19:47   48.66  n/a
                   +  06:TB1          283.30    3.253 No_date   17:10   45.39  n/a
     [DT= 1.00]  SUM=  03:J2          3856.40   29.640 No_date   19:13   48.42  n/a
244:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J2          3856.40   29.640 No_date   19:13   48.42  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.244
     remark:Confluence Hydrograph for J2
244:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M4          116.70    3.117 No_date   14:21   60.76 .548
     [CN= 75.8: N= 3.00]
     [Tp= 2.23:DT= 1.00]
244:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M4          116.70    3.117 No_date   14:21   60.76  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.244
     remark:Runoff Hydrograph for M4
244:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M4          116.70    3.117 No_date   14:21   60.76  n/a
                   +  03:N4          3856.40   29.640 No_date   19:13   48.42  n/a
     [DT= 1.00]  SUM=  03:N4          3973.10   30.660 No_date   18:46   48.78  n/a
244:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N4          3973.10   30.660 No_date   18:46   48.78  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.244
     remark:Confluence Hydrograph for N4
244:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:N4          3973.10   30.660 No_date   18:46   48.78  n/a
     [RDT= 1.00] out<- 02:C4          3973.10   30.267 No_date   19:57   48.78  n/a
     [L/S/n= 4040./ .140/.035]
     {Vmax= 1.169:Dmax= 2.265}
244:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C4          3973.10   30.267 No_date   19:57   48.78  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.244
     remark:Routing Hydrograph for C4
244:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M5          723.60    8.058 No_date   17:08   43.80 .395
     [CN= 64.1: N= 3.00]
     [Tp= 4.43:DT= 1.00]
244:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M5          723.60    8.058 No_date   17:08   43.80  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.244
     remark:Runoff Hydrograph for M5
244:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M5          723.60    8.058 No_date   17:08   43.80  n/a
                   +  02:C4          3973.10   30.267 No_date   19:57   48.78  n/a
     [DT= 1.00]  SUM=  04:N5          4696.70   37.353 No_date   19:03   48.02  n/a
244:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N5          4696.70   37.353 No_date   19:03   48.02  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.244
     remark:Confluence Hydrograph for N5
244:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N5          4696.70   37.353 No_date   19:03   48.02  n/a
                   +  07:TA1          884.50    8.075 No_date   19:24   46.71  n/a
     [DT= 1.00]  SUM=  03:J3          5581.20   45.415 No_date   19:05   47.81  n/a
244:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J3          5581.20   45.415 No_date   19:05   47.81  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.244
     remark:Confluence Hydrograph for J3
244:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:J3          5581.20   45.415 No_date   19:05   47.81  n/a
     [RDT= 1.00] out<- 02:C5          5581.20   44.759 No_date   20:11   47.81  n/a
     [L/S/n= 3980./ .140/.035]
     {Vmax= 1.286:Dmax= 2.793}
244:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C5          5581.20   44.759 No_date   20:11   47.81  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.244
     remark:Routing Hydrograph for C5
244:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M6          354.80   10.058 No_date   14:06   59.64 .538
     [CN= 75.1: N= 3.00]
     [Tp= 2.01:DT= 1.00]
244:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M6          354.80   10.058 No_date   14:06   59.64  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.244
     remark:Runoff Hydrograph for M6
244:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M6          354.80   10.058 No_date   14:06   59.64  n/a
                   +  02:C5          5581.20   44.759 No_date   20:11   47.81  n/a
     [DT= 1.00]  SUM=  04:N6          5936.00   46.895 No_date   19:36   48.52  n/a
244:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N6          5936.00   46.895 No_date   19:36   48.52  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.244
     remark:Confluence Hydrograph for N6
244:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N6          5936.00   46.895 No_date   19:36   48.52  n/a
                   +  08:N11          476.90    15.777 No_date   12:32   60.06  n/a
     [DT= 1.00]  SUM=  03:J4          6412.90   50.697 No_date   19:09   49.38  n/a
244:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J4          6412.90   50.697 No_date   19:09   49.38  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.244
     remark:Confluence Hydrograph for J4
244:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M7           11.00     .366 No_date   13:23   53.23 .480
     [CN= 70.9: N= 3.00]
     [Tp= 1.38:DT= 1.00]
244:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M7           11.00     .366 No_date   13:23   53.23  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.244
     remark:Runoff Hydrograph for M7
244:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M7           11.00     .366 No_date   13:23   53.23  n/a
                   +  03:N12         6412.90   50.697 No_date   19:09   49.38  n/a
     [DT= 1.00]  SUM=  03:N12         6423.90   50.747 No_date   19:09   49.38  n/a
244:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N12         6423.90   50.747 No_date   19:09   49.38  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.244
     remark:Confluence Hydrograph for N12
  ** END OF RUN : 244

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 RUN:COMMAND#
 245:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  = 245 ]
 #*******************************************************************************
 #  Project Name: [Mud]    Project Number: [10419]
 #  Date        : 15 Aug 2018
 #  Modeller    : [ Tyler Bauman ]
 #  Company     : Rideau Valley Conservation Authority
 #  License #   :  5329846
 #*******************************************************************************
 245:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  24.00:PTOT= 134.54]
 245:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
 # Tributary C
 245:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60   13.890 No_date   23:12   65.61 .488
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 245:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60   13.890 No_date   23:12   65.61  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.245
      remark:Runoff Hydrograph for TC1
 # Tributary B
 245:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    4.485 No_date   17:06   62.15 .462
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 245:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    4.485 No_date   17:06   62.15  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.245
      remark:Runoff Hydrograph for TB1
 # Tributary A
 245:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50   11.081 No_date   19:18   63.77 .474
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 245:0009--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50   11.081 No_date   19:18   63.77  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.245
      remark:Runoff Hydrograph for TA1
 # Wilson-Cowan Drain
 245:0010--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    7.130 No_date   14:42   67.47 .501
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 245:0011--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    7.130 No_date   14:42   67.47  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.245
      remark:Runoff Hydrograph for WC1
 245:0012--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    7.130 No_date   14:42   67.47  n/a
      [RDT= 1.00] out<- 02:C7          265.50    5.996 No_date   16:14   67.47  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .608:Dmax=  .706}
 245:0013--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7          265.50    5.996 No_date   16:14   67.47  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.245
      remark:Routing Hydrograph for C7
 245:0014--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   21.287 No_date   12:27   93.96 .698
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 245:0015--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   21.287 No_date   12:27   93.96  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.245
      remark:Runoff Hydrograph for WC2
 245:0016--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   21.287 No_date   12:27   93.96  n/a
                    +  02:C7          265.50    5.996 No_date   16:14   67.47  n/a
      [DT= 1.00]  SUM=  08:N11         476.90   21.958 No_date   12:28   79.21  n/a
 245:0017--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90   21.958 No_date   12:28   79.21  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.245
      remark:Confluence Hydrograph for N11
 # Main Channel
 245:0018--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60   12.423 No_date   22:10   61.50 .457
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 245:0019--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60   12.423 No_date   22:10   61.50  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.245
      remark:Runoff Hydrograph for M1
 245:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60   12.423 No_date   22:10   61.50  n/a
      [RDT= 1.00] out<- 02:C1          1296.60   12.417 No_date   22:21   61.50  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.294:Dmax= 1.462}
 245:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60   12.417 No_date   22:21   61.50  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.245
      remark:Routing Hydrograph for C1
 245:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10   10.635 No_date   16:06   75.51 .561
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 245:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10   10.635 No_date   16:06   75.51  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.245
      remark:Runoff Hydrograph for M2
 245:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10   10.635 No_date   16:06   75.51  n/a
                    +  02:C1          1296.60   12.417 No_date   22:21   61.50  n/a
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     [DT= 1.00]  SUM=  04:N2          1770.70   19.122 No_date   18:15   65.25  n/a
245:0025--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N2          1770.70   19.122 No_date   18:15   65.25  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.245
     remark:Confluence Hydrograph for N2
245:0026--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N2          1770.70   19.122 No_date   18:15   65.25  n/a
                   +  05:TC1          1462.60   13.890 No_date   23:12   65.61  n/a
     [DT= 1.00]  SUM=  03:J1          3233.30   31.378 No_date   20:43   65.41  n/a
245:0027--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J1          3233.30   31.378 No_date   20:43   65.41  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.245
     remark:Confluence Hydrograph for J1
245:0028--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M3           339.80    5.991 No_date   17:25   72.66 .540
     [CN= 71.5: N= 3.00]
     [Tp= 4.81:DT= 1.00]
245:0029--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M3           339.80    5.991 No_date   17:25   72.66  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.245
     remark:Runoff Hydrograph for M3
245:0030--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M3           339.80    5.991 No_date   17:25   72.66  n/a
                   +  03:J1          3233.30   31.378 No_date   20:43   65.41  n/a
     [DT= 1.00]  SUM=  04:N3          3573.10   36.499 No_date   19:40   66.10  n/a
245:0031--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N3          3573.10   36.499 No_date   19:40   66.10  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.245
     remark:Confluence Hydrograph for N3
245:0032--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N3          3573.10   36.499 No_date   19:40   66.10  n/a
                   +  06:TB1           283.30    4.485 No_date   17:06   62.15  n/a
     [DT= 1.00]  SUM=  03:J2          3856.40   40.438 No_date   19:08   65.81  n/a
245:0033--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J2          3856.40   40.438 No_date   19:08   65.81  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.245
     remark:Confluence Hydrograph for J2
245:0034--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M4           116.70    4.153 No_date   14:19   80.47 .598
     [CN= 75.8: N= 3.00]
     [Tp= 2.23:DT= 1.00]
245:0035--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M4           116.70    4.153 No_date   14:19   80.47  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.245
     remark:Runoff Hydrograph for M4
245:0036--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M4           116.70    4.153 No_date   14:19   80.47  n/a
                   +  03:N4          3856.40   40.438 No_date   19:08   65.81  n/a
     [DT= 1.00]  SUM=  03:N4          3973.10   41.794 No_date   18:40   66.24  n/a
245:0037--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N4          3973.10   41.794 No_date   18:40   66.24  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.245
     remark:Confluence Hydrograph for N4
245:0038--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:N4          3973.10   41.794 No_date   18:40   66.24  n/a
     [RDT= 1.00] out<- 02:C4          3973.10   41.203 No_date   19:56   66.24  n/a
     [L/S/n= 4040./ .140/.035]
     {Vmax= 1.166:Dmax= 2.555}
245:0039--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C4          3973.10   41.203 No_date   19:56   66.24  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.245
     remark:Routing Hydrograph for C4
245:0040--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M5           723.60   11.157 No_date   17:04   60.22 .448
     [CN= 64.1: N= 3.00]
     [Tp= 4.43:DT= 1.00]
245:0041--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M5           723.60   11.157 No_date   17:04   60.22  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.245
     remark:Runoff Hydrograph for M5
245:0042--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M5           723.60   11.157 No_date   17:04   60.22  n/a
                   +  02:C4          3973.10   41.203 No_date   19:56   66.24  n/a
     [DT= 1.00]  SUM=  04:N5          4696.70   50.952 No_date   19:02   65.31  n/a
245:0043--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N5          4696.70   50.952 No_date   19:02   65.31  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.245
     remark:Confluence Hydrograph for N5
245:0044--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N5          4696.70   50.952 No_date   19:02   65.31  n/a
                   +  07:TA1           884.50   11.081 No_date   19:18   63.77  n/a
     [DT= 1.00]  SUM=  03:J3          5581.20   62.023 No_date   19:05   65.07  n/a
245:0045--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J3          5581.20   62.023 No_date   19:05   65.07  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.245
     remark:Confluence Hydrograph for J3
245:0046--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:J3          5581.20   62.023 No_date   19:05   65.07  n/a
     [RDT= 1.00] out<- 02:C5          5581.20   61.121 No_date   20:04   65.07  n/a
     [L/S/n= 3980./ .140/.035]
     {Vmax= 1.283:Dmax= 3.136}
245:0047--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           02:C5          5581.20   61.121 No_date   20:04   65.07  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.245
     remark:Routing Hydrograph for C5
245:0048--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M6           354.80   13.433 No_date   14:05   79.16 .588
     [CN= 75.1: N= 3.00]
     [Tp= 2.01:DT= 1.00]
245:0049--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M6           354.80   13.433 No_date   14:05   79.16  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.245
     remark:Runoff Hydrograph for M6
245:0050--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M6           354.80   13.433 No_date   14:05   79.16  n/a
                   +  02:C5          5581.20   61.121 No_date   20:04   65.07  n/a
     [DT= 1.00]  SUM=  04:N6          5936.00   63.911 No_date   19:44   65.91  n/a
245:0051--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           04:N6          5936.00   63.911 No_date   19:44   65.91  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.245
     remark:Confluence Hydrograph for N6
245:0052--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            04:N6          5936.00   63.911 No_date   19:44   65.91  n/a
                   +  08:N11           476.90   21.958 No_date   12:28   79.21  n/a
     [DT= 1.00]  SUM=  03:J4          6412.90   69.167 No_date   19:03   66.90  n/a
245:0053--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:J4          6412.90   69.167 No_date   19:03   66.90  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.245
     remark:Confluence Hydrograph for J4
245:0054--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD       01:M7            11.00     .497 No_date   13:22   71.61 .532
     [CN= 70.9: N= 3.00]
     [Tp= 1.38:DT= 1.00]
245:0055--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           01:M7            11.00     .497 No_date   13:22   71.61  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.245
     remark:Runoff Hydrograph for M7
245:0056--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD            01:M7            11.00     .497 No_date   13:22   71.61  n/a
                   +  03:N12         6412.90   69.167 No_date   19:03   66.90  n/a
     [DT= 1.00]  SUM=  03:N12         6423.90   69.232 No_date   19:03   66.91  n/a
245:0057--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD           03:N12         6423.90   69.232 No_date   19:03   66.91  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.245
     remark:Confluence Hydrograph for N12
 ** END OF RUN : 245

*******************************************************************************




 RUN:COMMAND#
 246:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  = 246 ]
#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
 246:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  24.00:PTOT= 144.23]
 246:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 246:0004--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       05:TC1         1462.60   15.475 No_date   23:10   73.07 .507
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 246:0005--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           05:TC1         1462.60   15.475 No_date   23:10   73.07  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.246
      remark:Runoff Hydrograph for TC1
# Tributary B
 246:0006--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       06:TB1          283.30    5.014 No_date   17:05   69.38 .481
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 246:0007--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           06:TB1          283.30    5.014 No_date   17:05   69.38  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.246
      remark:Runoff Hydrograph for TB1
# Tributary A
 246:0008--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       07:TA1          884.50   12.369 No_date   19:16   71.11 .493
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 246:0009--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           07:TA1          884.50   12.369 No_date   19:16   71.11  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.246
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 246:0010--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       03:WC1          265.50    7.945 No_date   14:42   75.05 .520
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 246:0011--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:WC1          265.50    7.945 No_date   14:42   75.05  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.246
      remark:Runoff Hydrograph for WC1
 246:0012--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    7.945 No_date   14:42   75.05  n/a
      [RDT= 1.00] out<- 02:C7          265.50    6.668 No_date   16:14   75.04  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .605:Dmax=  .737}
 246:0013--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C7          265.50    6.668 No_date   16:14   75.04  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.246
      remark:Routing Hydrograph for C7
 246:0014--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD     01:WC2          211.40   23.713 No_date   12:26  102.73 .712
      [XIMP=.19:TIMP=.24]
      [LOSS= 2 :CN= 77.3]
      [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
      [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 246:0015--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   23.713 No_date   12:26  102.73  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.246
      remark:Runoff Hydrograph for WC2
 246:0016--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   23.713 No_date   12:26  102.73  n/a
                    +  02:C7          265.50    6.668 No_date   16:14   75.04  n/a
      [DT= 1.00]  SUM=  08:N11         476.90   24.489 No_date   12:27   87.32  n/a
 246:0017--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11         476.90   24.489 No_date   12:27   87.32  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.246
      remark:Confluence Hydrograph for N11
# Main Channel
 246:0018--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60   13.882 No_date   22:08   68.68 .476
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 246:0019--------------ID:NHYD-----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60   13.882 No_date   22:08   68.68  n/a
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     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.246
     remark:Runoff Hydrograph for M1
246:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 01:M1          1296.60   13.882 No_date   22:08   68.68  n/a
     [RDT= 1.00] out<- 02:C1          1296.60   13.874 No_date   22:21   68.68  n/a
     [L/S/n= 1150./ .250/.035]
     {Vmax= 1.330:Dmax= 1.541}
246:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          02:C1          1296.60   13.874 No_date   22:21   68.68  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.246
     remark:Routing Hydrograph for C1
246:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD      01:M2           474.10   11.785 No_date   16:05   83.57 .579
     [CN= 73.1: N= 3.00]
     [Tp= 3.71:DT= 1.00]
246:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          01:M2           474.10   11.785 No_date   16:05   83.57  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.246
     remark:Runoff Hydrograph for M2
246:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           01:M2           474.10   11.785 No_date   16:05   83.57  n/a
                  +  02:C1          1296.60   13.874 No_date   22:21   68.68  n/a
     [DT= 1.00]  SUM=  04:N2          1770.70   21.305 No_date   18:20   72.67  n/a
246:0025--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          04:N2          1770.70   21.305 No_date   18:20   72.67  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.246
     remark:Confluence Hydrograph for N2
246:0026--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           04:N2          1770.70   21.305 No_date   18:20   72.67  n/a
                  +  05:TC1         1462.60   15.475 No_date   23:10   73.07  n/a
     [DT= 1.00]  SUM=  03:J1          3233.30   34.973 No_date   20:42   72.85  n/a
246:0027--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          03:J1          3233.30   34.973 No_date   20:42   72.85  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.246
     remark:Confluence Hydrograph for J1
246:0028--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD      01:M3           339.80    6.650 No_date   17:24   80.56 .559
     [CN= 71.5: N= 3.00]
     [Tp= 4.81:DT= 1.00]
246:0029--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          01:M3           339.80    6.650 No_date   17:24   80.56  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.246
     remark:Runoff Hydrograph for M3
246:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           01:M3           339.80    6.650 No_date   17:24   80.56  n/a
                  +  03:J1          3233.30   34.973 No_date   20:42   72.85  n/a
     [DT= 1.00]  SUM=  04:N3          3573.10   40.661 No_date   19:39   73.58  n/a
246:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          04:N3          3573.10   40.661 No_date   19:39   73.58  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.246
     remark:Confluence Hydrograph for N3
246:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           04:N3          3573.10   40.661 No_date   19:39   73.58  n/a
                  +  06:TB1          283.30    5.014 No_date   17:05   69.38  n/a
     [DT= 1.00]  SUM=  03:J2          3856.40   45.064 No_date   19:06   73.27  n/a
246:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          03:J2          3856.40   45.064 No_date   19:06   73.27  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.246
     remark:Confluence Hydrograph for J2
246:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD      01:M4           116.70    4.587 No_date   14:19   88.79 .616
     [CN= 75.8: N= 3.00]
     [Tp= 2.23:DT= 1.00]
246:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          01:M4           116.70    4.587 No_date   14:19   88.79  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.246
     remark:Runoff Hydrograph for M4
246:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           01:M4           116.70    4.587 No_date   14:19   88.79  n/a
                  +  03:N4          3856.40   45.064 No_date   19:06   73.27  n/a
     [DT= 1.00]  SUM=  03:N4          3973.10   46.559 No_date   18:38   73.73  n/a
246:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          03:N4          3973.10   46.559 No_date   18:38   73.73  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.246
     remark:Confluence Hydrograph for N4
246:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:N4          3973.10   46.559 No_date   18:38   73.73  n/a
     [RDT= 1.00] out<- 02:C4          3973.10   45.880 No_date   19:55   73.73  n/a
     [L/S/n= 4040./ .140/.035]
     {Vmax= 1.166:Dmax= 2.661}
246:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          02:C4          3973.10   45.880 No_date   19:55   73.73  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.246
     remark:Routing Hydrograph for C4
246:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD      01:M5           723.60   12.490 No_date   17:03   67.30 .467
     [CN= 64.1: N= 3.00]
     [Tp= 4.43:DT= 1.00]
246:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          01:M5           723.60   12.490 No_date   17:03   67.30  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.246
     remark:Runoff Hydrograph for M5
246:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           01:M5           723.60   12.490 No_date   17:03   67.30  n/a
                  +  02:C4          3973.10   45.880 No_date   19:55   73.73  n/a
     [DT= 1.00]  SUM=  04:N5          4696.70   56.801 No_date   18:51   72.74  n/a
246:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          04:N5          4696.70   56.801 No_date   18:51   72.74  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.246
     remark:Confluence Hydrograph for N5
246:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           04:N5          4696.70   56.801 No_date   18:51   72.74  n/a
                  +  07:TA1          884.50   12.369 No_date   19:16   71.11  n/a
     [DT= 1.00]  SUM=  03:J3          5581.20   69.145 No_date   19:04   72.48  n/a
246:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          03:J3          5581.20   69.145 No_date   19:04   72.48  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.246
     remark:Confluence Hydrograph for J3
246:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ROUTE CHANNEL   -> 03:J3          5581.20   69.145 No_date   19:04   72.48  n/a
     [RDT= 1.00] out<- 02:C5          5581.20   68.166 No_date   20:01   72.48  n/a
     [L/S/n= 3980./ .140/.035]
     {Vmax= 1.290:Dmax= 3.264}
246:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          02:C5          5581.20   68.166 No_date   20:01   72.48  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.246
     remark:Routing Hydrograph for C5
246:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD      01:M6           354.80   14.851 No_date   14:04   87.42 .606
     [CN= 75.1: N= 3.00]
     [Tp= 2.01:DT= 1.00]
246:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          01:M6           354.80   14.851 No_date   14:04   87.42  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.246
     remark:Runoff Hydrograph for M6
246:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           01:M6           354.80   14.851 No_date   14:04   87.42  n/a
                  +  02:C5          5581.20   68.166 No_date   20:01   72.48  n/a
     [DT= 1.00]  SUM=  04:N6          5936.00   71.256 No_date   19:40   73.37  n/a
246:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          04:N6          5936.00   71.256 No_date   19:40   73.37  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.246
     remark:Confluence Hydrograph for N6
246:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           04:N6          5936.00   71.256 No_date   19:40   73.37  n/a
                  +  08:N11          476.90   24.489 No_date   12:27   87.32  n/a
     [DT= 1.00]  SUM=  03:J4          6412.90   77.086 No_date   19:11   74.41  n/a
246:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          03:J4          6412.90   77.086 No_date   19:11   74.41  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.246
     remark:Confluence Hydrograph for J4
246:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    CALIB NASHYD      01:M7            11.00     .552 No_date   13:22   79.44 .551
     [CN= 70.9: N= 3.00]
     [Tp= 1.38:DT= 1.00]
246:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          01:M7            11.00     .552 No_date   13:22   79.44  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.246
     remark:Runoff Hydrograph for M7
246:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    ADD HYD           01:M7            11.00     .552 No_date   13:22   79.44  n/a
                  +  03:N12         6412.90   77.086 No_date   19:11   74.41  n/a
     [DT= 1.00]  SUM=  03:N12         6423.90   77.156 No_date   19:11   74.42  n/a
246:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
    SAVE HYD          03:N12         6423.90   77.156 No_date   19:11   74.42  n/a
     fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.246
     remark:Confluence Hydrograph for N12
 ** END OF RUN : 246

************************************************************************************




 RUN:COMMAND#
 247:0001--------------------------------------------------------------------------------
     START
      [TZERO =    .00 hrs on        0]
      [METOUT=   2    (1=imperial, 2=metric output)]
      [NSTORM=   1 ]
      [NRUN  = 247 ]
#*******************************************************************************
#  Project Name: [Mud]    Project Number: [10419]
#  Date        : 15 Aug 2018
#  Modeller    : [ Tyler Bauman ]
#  Company     : Rideau Valley Conservation Authority
#  License #   :  5329846
#*******************************************************************************
 247:0002--------------------------------------------------------------------------------
     READ STORM
      Filename = storm.001
      Comment  =
      [SDT=30.00:SDUR=  24.00:PTOT= 150.87]
 247:0003--------------------------------------------------------------------------------
     DEFAULT VALUES
      Filename = R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\mud_val.val
      ICASEdv  = 1 (read and print data)
      FileTitle= File comment: [Mud Creek Default Value File]
                 THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
      Horton's infiltration equation parameters:
      [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
      Parameters for PERVIOUS surfaces in STANDHYD:
      [IAper=   4.67 mm] [LGP=90.00 m] [MNP= .250]
      Parameters for IMPERVIOUS surfaces in STANDHYD:
      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .045]
      Parameters used in NASHYD:
      [Ia=   1.50 mm] [N= 3.00]
# Tributary C
 247:0004--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      05:TC1         1462.60   16.585 No_date   23:08   78.27 .519
      [CN= 67.4: N= 3.00]
      [Tp= 9.40:DT= 1.00]
 247:0005--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          05:TC1         1462.60   16.585 No_date   23:08   78.27  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TC1.247
      remark:Runoff Hydrograph for TC1
# Tributary B
 247:0006--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      06:TB1          283.30    5.387 No_date   17:04   74.43 .493
      [CN= 65.3: N= 3.00]
      [Tp= 4.47:DT= 1.00]
 247:0007--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          06:TB1          283.30    5.387 No_date   17:04   74.43  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TB1.247
      remark:Runoff Hydrograph for TB1
# Tributary A
 247:0008--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      07:TA1          884.50   13.274 No_date   19:15   76.24 .505
      [CN= 66.3: N= 3.00]
      [Tp= 6.27:DT= 1.00]
 247:0009--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          07:TA1          884.50   13.274 No_date   19:15   76.24  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-TA1.247
      remark:Runoff Hydrograph for TA1
# Wilson-Cowan Drain
 247:0010--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD      03:WC1          265.50    8.518 No_date   14:41   80.33 .532
      [CN= 68.5: N= 3.00]
      [Tp= 2.52:DT= 1.00]
 247:0011--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          03:WC1          265.50    8.518 No_date   14:41   80.33  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC1.247
      remark:Runoff Hydrograph for WC1
 247:0012--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:WC1          265.50    8.518 No_date   14:41   80.33  n/a
      [RDT= 1.00] out<- 02:C7          265.50    7.140 No_date   16:14   80.33  n/a
      [L/S/n= 3280./ .230/.035]
      {Vmax=  .603:Dmax=  .758}
 247:0013--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD          02:C7          265.50    7.140 No_date   16:14   80.33  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C7.247
      remark:Routing Hydrograph for C7
 247:0014--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB STANDHYD    01:WC2          211.40   25.546 No_date   12:25  108.79 .721
      [XIMP=.19:TIMP=.24]
```

```
     [LOSS= 2 :CN= 77.3]
     [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  90.:MNP=.250:SCP=   .0]
     [Impervious   area: IAimp= 1.57:SLPI= .50:LGI=1187.:MNI=.045:SCI=   .0]
 247:0015--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:WC2          211.40   25.546 No_date   12:25  108.79  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-WC2.247
      remark:Runoff Hydrograph for WC2
 247:0016--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:WC2          211.40   25.546 No_date   12:25  108.79  n/a
                      +  02:C7           265.50    7.140 No_date   16:14   80.33  n/a
      [DT= 1.00]  SUM=  08:N11          476.90   26.401 No_date   12:26   92.95  n/a
 247:0017--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           08:N11          476.90   26.401 No_date   12:26   92.95  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N11.247
      remark:Confluence Hydrograph for N11
# Main Channel
 247:0018--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M1          1296.60   14.906 No_date   22:06   73.70 .489
      [CN= 64.9: N= 3.00]
      [Tp= 8.51:DT= 1.00]
 247:0019--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M1          1296.60   14.906 No_date   22:06   73.70  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M1.247
      remark:Runoff Hydrograph for M1
 247:0020--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 01:M1          1296.60   14.906 No_date   22:06   73.70  n/a
      [RDT= 1.00] out<- 02:C1          1296.60   14.897 No_date   22:20   73.70  n/a
      [L/S/n= 1150./ .250/.035]
      {Vmax= 1.329:Dmax= 1.582}
 247:0021--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C1          1296.60   14.897 No_date   22:20   73.70  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C1.247
      remark:Routing Hydrograph for C1
 247:0022--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M2           474.10   12.589 No_date   16:04   89.18 .591
      [CN= 73.1: N= 3.00]
      [Tp= 3.71:DT= 1.00]
 247:0023--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M2           474.10   12.589 No_date   16:04   89.18  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M2.247
      remark:Runoff Hydrograph for M2
 247:0024--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M2           474.10   12.589 No_date   16:04   89.18  n/a
                      +  02:C1          1296.60   14.897 No_date   22:20   73.70  n/a
      [DT= 1.00]  SUM=  04:N2          1770.70   22.844 No_date   18:18   77.85  n/a
 247:0025--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N2          1770.70   22.844 No_date   18:18   77.85  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N2.247
      remark:Confluence Hydrograph for N2
 247:0026--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N2          1770.70   22.844 No_date   18:18   77.85  n/a
                      +  05:TC1         1462.60   16.585 No_date   23:08   78.27  n/a
      [DT= 1.00]  SUM=  03:J1          3233.30   37.450 No_date   20:44   78.04  n/a
 247:0027--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J1          3233.30   37.450 No_date   20:44   78.04  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J1.247
      remark:Confluence Hydrograph for J1
 247:0028--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M3           339.80    7.111 No_date   17:23   86.06 .570
      [CN= 71.5: N= 3.00]
      [Tp= 4.81:DT= 1.00]
 247:0029--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M3           339.80    7.111 No_date   17:23   86.06  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M3.247
      remark:Runoff Hydrograph for M3
 247:0030--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M3           339.80    7.111 No_date   17:23   86.06  n/a
                      +  03:J1          3233.30   37.450 No_date   20:44   78.04  n/a
      [DT= 1.00]  SUM=  04:N3          3573.10   43.541 No_date   19:35   78.80  n/a
 247:0031--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N3          3573.10   43.541 No_date   19:35   78.80  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N3.247
      remark:Confluence Hydrograph for N3
 247:0032--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N3          3573.10   43.541 No_date   19:35   78.80  n/a
                      +  06:TB1          283.30    5.387 No_date   17:04   74.43  n/a
      [DT= 1.00]  SUM=  03:J2          3856.40   48.311 No_date   19:04   78.48  n/a
 247:0033--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J2          3856.40   48.311 No_date   19:04   78.48  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J2.247
      remark:Confluence Hydrograph for J2
 247:0034--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M4           116.70    4.891 No_date   14:18   94.57 .627
      [CN= 75.8: N= 3.00]
      [Tp= 2.23:DT= 1.00]
 247:0035--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M4           116.70    4.891 No_date   14:18   94.57  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M4.247
      remark:Runoff Hydrograph for M4
 247:0036--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M4           116.70    4.891 No_date   14:18   94.57  n/a
                      +  03:N4          3856.40   48.311 No_date   19:04   78.48  n/a
      [DT= 1.00]  SUM=  03:N4          3973.10   49.904 No_date   18:37   78.95  n/a
 247:0037--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N4          3973.10   49.904 No_date   18:37   78.95  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N4.247
      remark:Confluence Hydrograph for N4
 247:0038--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:N4          3973.10   49.904 No_date   18:37   78.95  n/a
      [RDT= 1.00] out<- 02:C4          3973.10   49.169 No_date   19:49   78.95  n/a
      [L/S/n= 4040./ .140/.035]
      {Vmax= 1.166:Dmax= 2.735}
 247:0039--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C4          3973.10   49.169 No_date   19:49   78.95  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C4.247
      remark:Routing Hydrograph for C4
 247:0040--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M5           723.60   13.430 No_date   17:02   72.27 .479
      [CN= 64.1: N= 3.00]
      [Tp= 4.43:DT= 1.00]
 247:0041--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M5           723.60   13.430 No_date   17:02   72.27  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M5.247
      remark:Runoff Hydrograph for M5
 247:0042--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M5           723.60   13.430 No_date   17:02   72.27  n/a
                      +  02:C4          3973.10   49.169 No_date   19:49   78.95  n/a
      [DT= 1.00]  SUM=  04:N5          4696.70   60.917 No_date   18:55   77.92  n/a
 247:0043--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N5          4696.70   60.917 No_date   18:55   77.92  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N5.247
      remark:Confluence Hydrograph for N5
 247:0044--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N5          4696.70   60.917 No_date   18:55   77.92  n/a
                      +  07:TA1          884.50   13.274 No_date   19:15   76.24  n/a
      [DT= 1.00]  SUM=  03:J3          5581.20   74.167 No_date   18:55   77.66  n/a
 247:0045--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J3          5581.20   74.167 No_date   18:55   77.66  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J3.247
      remark:Confluence Hydrograph for J3
 247:0046--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ROUTE CHANNEL   -> 03:J3          5581.20   74.167 No_date   18:55   77.66  n/a
      [RDT= 1.00] out<- 02:C5          5581.20   73.107 No_date   19:59   77.66  n/a
      [L/S/n= 3980./ .140/.035]
      {Vmax= 1.294:Dmax= 3.355}
 247:0047--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           02:C5          5581.20   73.107 No_date   19:59   77.66  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-C5.247
      remark:Routing Hydrograph for C5
 247:0048--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M6           354.80   15.842 No_date   14:04   93.16 .617
      [CN= 75.1: N= 3.00]
      [Tp= 2.01:DT= 1.00]
 247:0049--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M6           354.80   15.842 No_date   14:04   93.16  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M6.247
      remark:Runoff Hydrograph for M6
 247:0050--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M6           354.80   15.842 No_date   14:04   93.16  n/a
                      +  02:C5          5581.20   73.107 No_date   19:59   77.66  n/a
      [DT= 1.00]  SUM=  04:N6          5936.00   76.401 No_date   19:39   78.58  n/a
 247:0051--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           04:N6          5936.00   76.401 No_date   19:39   78.58  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N6.247
      remark:Confluence Hydrograph for N6
 247:0052--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            04:N6          5936.00   76.401 No_date   19:39   78.58  n/a
                      +  08:N11          476.90   26.401 No_date   12:26   92.95  n/a
      [DT= 1.00]  SUM=  03:J4          6412.90   82.632 No_date   19:10   79.65  n/a
 247:0053--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:J4          6412.90   82.632 No_date   19:10   79.65  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-J4.247
      remark:Confluence Hydrograph for J4
 247:0054--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     CALIB NASHYD       01:M7            11.00     .591 No_date   13:21   84.90 .563
      [CN= 70.9: N= 3.00]
      [Tp= 1.38:DT= 1.00]
 247:0055--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           01:M7            11.00     .591 No_date   13:21   84.90  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-M7.247
      remark:Runoff Hydrograph for M7
 247:0056--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     ADD HYD            01:M7            11.00     .591 No_date   13:21   84.90  n/a
                      +  03:N12         6412.90   82.632 No_date   19:10   79.65  n/a
      [DT= 1.00]  SUM=  03:N12         6423.90   82.706 No_date   19:10   79.66  n/a
 247:0057--------------ID:NHYD----------AREA----QPEAK-TpeakDate_hh:mm----R.V.-R.C.-
     SAVE HYD           03:N12         6423.90   82.706 No_date   19:10   79.66  n/a
      fname :R:\M800_C~2\MUD_M8~1\HYDROL~1\MUD_V7~1\H-N12.247
      remark:Confluence Hydrograph for N12
 247:0002--------------------------------------------------------------------------------
      FINISH
-------------------------------------------------------------------------------
*******************************************************************************
     WARNINGS / ERRORS / NOTES
     -------------------------
   Simulation ended on 2018-08-15     at 10:25:04
===============================================================================
```

Appendix E

Road Crossings - Photographs

Century Road at 3rd Line Road (Upstream)

Century Road at 3rd Line Road (Downstream)

Prince of Wales Drive (Upstream)

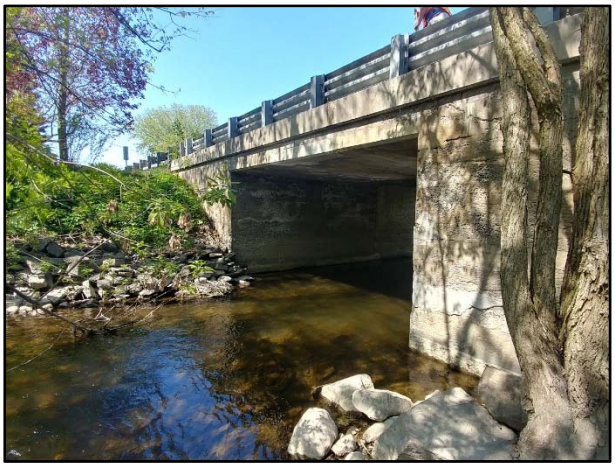
Prince of Wales Drive (Downstream)

2nd Line Road (Upstream)

2nd Line Road (Downstream)

Century Road west of 1st Line (Upstream)

Century Road west of 1st Line (Downstream)



1st Line Road (Upstream)

1st Line Road (Downstream)

Farm Driveway (Upstream)

Revell Pedestrian Bridge (Upstream)

Bankfield Road (Upstream)

Bankfield Road (Downstream)

Rideau Valley Drive (Upstream)

Rideau Valley Drive (Downstream)

3rd Line Road (Upstream)

3rd Line Road (Downstream)

Appendix F

Full-Size Drawings

(Drawings MD-1 and MD-2)

Drawing MD-1
Mud Creek
cross-sections and regulatory flood levels

Study Limit

Cross Section (XS ID : RFL)

1m LiDAR-derived contours

100yr Floodplain

100yr Floodline

24 MAY 2019

Rideau Valley Conservation Authority

Projection note: U.T.M. Zone 18 - NAD 83 Datum

N

File name: Drawing MD-1

Modified by: TB

Date Modified: 05/24/2019 11:55:34 AM

Location:
Z:\GIS_Data\CA_Data\FPM\RVCA\RV3\Mud2018\Drawing_MD-1.mxd

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Scale 1:10,000

0 500 1,000

Meters

Rideau River

Mud Creek

Wilson Cowan Drain

Tributary A (Thomas Baxter Drain)

Tributary B (McEwen Branch)

Mud Creek

David Adams Drain

Mud Creek

Tributary C (Brownlee Branch)

Wright-Eastman Drain

Study Limit

Study Limit Spill Section

Cross sections, floodline, and map layout created in ArcGIS 10.4.1.

The information in this drawing is for information purposes only. Authoritative information on flood hazard is maintained in RVCA's GIS system and is updated from time to time based on new data.

LiDAR captured by Airborne Imaging between November 15 - 22, 2012 and April 25 - 29, 2015.

Scale 1:2,500

0 100

Meters

Export Date: 24 MAY 2019 11:58:12 AM

Drawing MD-2
Mud Creek
flood hazard area

Study Limit

100yr Floodplain

100yr Floodline

24 MAY 2019

Rideau Valley Conservation Authority

Projection note: U.T.M. Zone 18 - NAD 83 Datum

N

File name: Drawing MD-2

Modified by: TB

Date Modified: 05/24/2019 12:01:07 PM

Location:
Z:\GIS_Data\CA_Data\FPM\RVCA\RV3\Mud2018\Drawing_MD-2.mxd

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Scale 1:10,000

0 500 1,000

Meters

Rideau River

Mud Creek

Study Limit

Wilson Cowan Drain

Tributary A
(Thomas Baxter Drain)

Tributary B
(McEwen Branch)

Mud Creek

David Adams Drain

Mud Creek

Study Limit

Study Limit
Spill Section

Study Limit
Spill Section

Study Limit
Spill Section

Tributary C
(Brownlee Branch)

Wright-Eastman Drain

Study Limit

Floodline and map layout created in ArcGIS 10.4.1.

The information in this drawing is for information purposes only. Authoritative information on flood hazard is maintained in RVCA's GIS system and is updated from time to time based on new data.

Aerial photography captured between May 16 - 20, 2017.

Study Limit

Scale 1:2,500

0 100

Meters

Export Date: 24 MAY 2019 12:03:11 PM