August 3, 2021

Krystal Kalbol, P.Eng.
Corporate Leader - Operations
The Municipality of Lakeshore
419 Notre Dame St.
Belle River, ON
N0R 1A0

Dear Ms. Kalbol:

Re: Rainfall and Flood Event in the Municipality of Lakeshore on July 16, 2021

On July 16, 2021, the Municipality of Lakeshore along with the Town of LaSalle, City of Windsor, and Town of Tecumseh, received significant rainfall that resulted in flooding across the northern area of the County of Essex. The rainfall event that occurred began in the early hours of the morning on July 16 (approximately 5:00 AM). ERCA received notification of a possible strong thunderstorm at approximately 9:15 AM. These messages are received often throughout the course of a year between spring and fall and form part of ERCA's flood advisory program, administered on behalf of the Province of Ontario. Responsible ERCA Flood Duty staff typically assess field conditions along with weather forecasts and make decisions regarding the Flood Advisory Status. Based on the field conditions at that time along with the predicted rainfall event, ERCA released a Flood Watch at 9:45 AM with the potential for flooding across the Essex Region. The actual storm event surpassed both the predicted intensity and volume of the rainfall causing more severe widespread flooding than anticipated.

The various municipalities and ERCA own and operate approximately 31 climate stations across the region. From the available data, it can be seen that areas between the Town of LaSalle and Lakeshore received rainfall that exceeds typical design standards. On the western limit of Lakeshore, near Pike Creek, available climate station data indicates that roughly 81.5 mm of rain fell by 11:59 PM on July 16, with an additional 8 mm received by 8:00 AM on July 17 for a total of almost 90 mm in that time span. The majority of the rain came within a 6 hour span where the area near Pike Creek saw approximately 75 mm fall within that timeframe. Based on these amounts, the event was roughly equivalent to a 1:25 year storm event (i.e. 4% chance of occurrence in a given year) and a 1:50 year event (i.e. 2% chance of occurrence in a given year), respectively. Much of the existing storm infrastructure throughout Lakeshore was designed for a 1:2 year standard (50% chance of occurrence in any given year), a typical design standard until recently. Even at modern standards, the storm event of July 16 far exceeded the capacity of much of the existing infrastructure within the municipality of Lakeshore. It should also be noted that there were additional rainfall events (albeit minor by comparison) that occurred earlier in the same week as well as the week prior to that which provided some wet antecedent ground conditions. The wet ground along with high lake levels would have impacts on many of the drainage systems across Lakeshore.

It can be seen from the attached figures that the majority of the climate stations across the region capture the storms as they approach Lakeshore from the west. The closest station to one of the more affected areas is the Brighton Pump Station climate station which is situated close to Pike Creek and the County Road 19 (Manning Road) area. Without any stations on the east end of Lakeshore, volumes and intensities are unknown for this area; however, the storm tracked westerly across the County impacting the majority of Lakeshore. ERCA recommends that there be some additional climate stations installed at key locations within the Town east of Belle River to capture real time rainfall data. ERCA is prepared to collaborate with Lakeshore on future installations.

Sincerely,

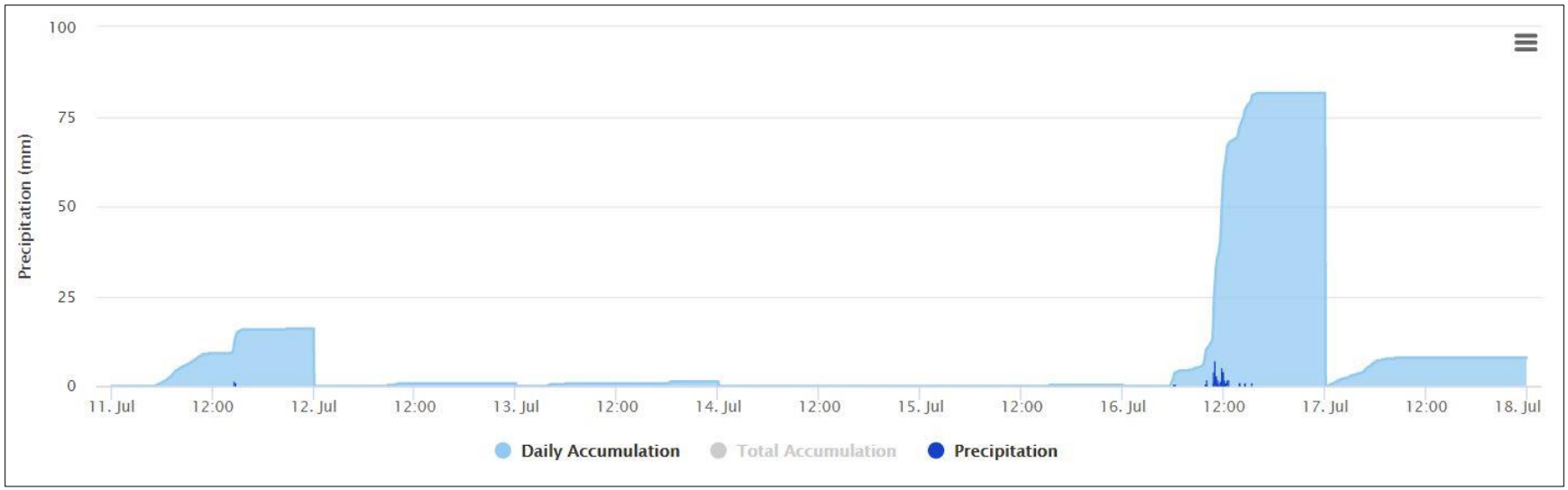
James Bryant, P.Eng.
Director, Watershed Management Services
Essex Region Conservation Authority

Cc: Tim Byrne, Chief Administrative Officer (ERCA)

Attachments:

1) Rainfall - Week of July 12, 2021
2) Rainfall Accumulation - July 16, 2021
3) Intensity-Duration-Frequency - July 16, 2021

Attachment 1: Rainfall - Week of July 12, 2021



Attachment 2: Rainfall Accumulation - July 16, 2021

Attachment 3: Intensity-Duration-Frequency - July 16, 2021