Conservation Halton

Flood Forecasting & Operations

WEATHER EVENT FACT SHEET

July 10 to July 16, 2024
Five Events in Six Days

WEATHER DETAILS

- Remnant Hurricane (Tropical Depression) Beryl was projected to track northerly from the United States toward Southern Ontario and arrive in the early hours of Wednesday, July 10, 2024.

- Rainfall started at approximately 4:00 a.m. EST[1] on Wednesday, July 10, and continued until approximately 7:00 a.m. EST on Thursday, July 11, with 40 to 70 mm of rainfall recorded at rain gauge stations within Conservation Halton's (CH) jurisdiction, consistent with the amounts forecasted by Environment Canada.

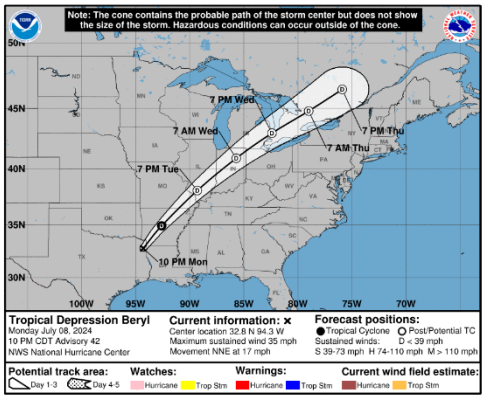
- On Friday, July 12, additional torrential rain fell in CH's jurisdiction, without any lead-up alerts issued by Environment Canada. Rain began at 3:00 p.m. EST and continued until approximately 7:00 p.m. EST with up to 52 mm of recorded rainfall.

- On Sunday, July 14, additional heavy rain fell in CH's jurisdiction; rain began at 12:00 p.m. EST and continued until approximately 2:00 p.m. EST with up to 28 mm of recorded rainfall.

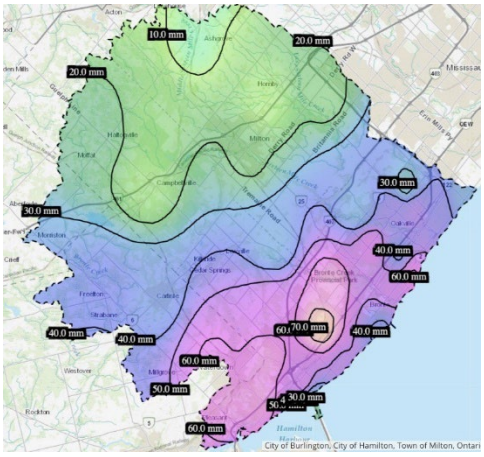
- On Monday, July 15, Environment Canada released a Rainfall Warning for the area. Rain began at 9:00 a.m. EST and continued until approximately 4:00 p.m. EST with 8 to 74 mm of recorded rainfall.

- On Tuesday, July 16, Environment Canada released a Severe Thunderstorm Warning followed by a Rainfall Warning for CH's jurisdiction. Rain began at 7:00 a.m. EST and continued off-and-on until approximately 11:00 p.m. EST with 13 to 79 mm of recorded rainfall.

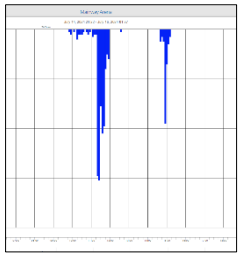
- Overall, between July 10 and July 16, CH's jurisdiction received between 100 and 220 mm of total rainfall from the five (5) weather events.



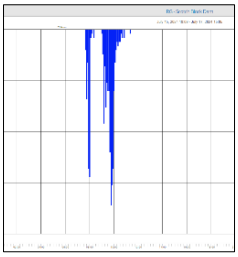
Probable Path of Beryl's Storm Centre to July 10, 2024 (NOAA)



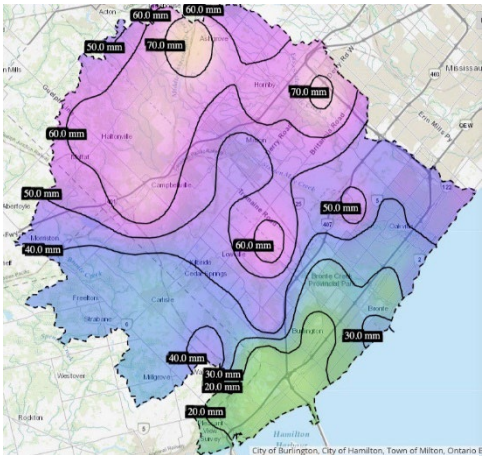
Total Precipitation Depth Map – July 15, 2024



Mainway Arena Rain Gauge
74.2 mm Recorded on July 15



Scotch Block Dam Rain Gauge
79.6 mm Recorded on July 16



Total Precipitation Depth Map – July 16, 2024

[1] Monitoring systems utilize Eastern Standard Time (EST), regardless of the time of year.

CONSERVATION HALTON ACTIONS

- CH issued a **Watershed Conditions Statement – Flood Outlook** on Tuesday, July 9, to provide early notice of the potential for riverine flooding based on the forecasted rainfall accumulation.

- CH extended the **Watershed Conditions Statement – Flood Outlook** on Saturday, July 13, given that upward of 100 mm of total rainfall was recorded from remnant Hurricane Beryl and subsequent thunderstorm activity.

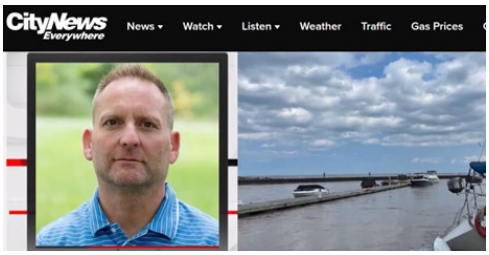
- CH issued a **Flood Watch – Message #1** on Monday, July 15, notifying emergency services (police, fire); school boards; Halton Region; local municipalities; and the public that watercourse flooding was likely. The Flood Watch Message advised that municipal emergency services and individual landowners in flood-prone areas should prepare for potential flooding.

- CH issued a **Flood Warning – Message #1** on Tuesday, July 16, magnifying the existing Flood Watch because of information gathered by staff circuiting the watershed.

- Staff monitored weather forecasts and the real-time watershed monitoring network, including flood control dams and channels, rain gauges, and stream gauges. Staff operated flood control dams to prevent further flooding in downstream areas and carried out flood observations throughout the watershed.

- Staff communicated with key personnel at local municipalities, Halton Region, and Peel Region to provide flood observation information and confirm municipal actions to date.

- Staff responded to requests from local media and provided local weather details and information relating to riverine flooding within CH's jurisdiction.



Telephone Interview with CityNews

- Staff continued to provide regular weather and watershed updates to the Halton Region Emergency Management Group, for inclusion in Situation Reports.

- Staff carried out follow-up field observations on Wednesday, July 17, to re-assess conditions in flood sensitive areas within the watershed.

- CH issued a **Termination of Flood Warning & Issuance of Watershed Condition Statement – Water Safety** on Wednesday, July 17, at 5:00 p.m., notifying emergency services (police, fire); school boards; Halton Region; local municipalities; and the public that water levels in streams had peaked and no further flooding was expected, however, high flows, unsafe banks, or other factors could still be dangerous to the public.

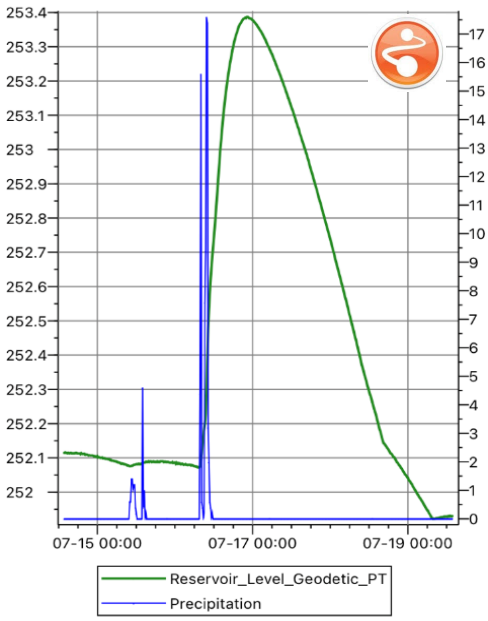
WATERSHED RESPONSE

Flood Control Dams

- Water levels within CH's flood control reservoirs increased significantly due to the large runoff volume and dam discharge operations were carried out to mitigate flooding of areas immediately downstream.

- Conditions were monitored using DataCurrent real-time monitoring software and the Campbell Scientific (CS) LoggerLink mobile application.

- Frequent visual observations of immediate downstream areas were completed to ensure there were no adverse impacts from dam operations.



Scotch Block Dam Reservoir Level and Hyetograph July 15-19, 2024

Flood Conveyance Channels

- Visual observations were completed along Milton and Hager-Rambo flood conveyance channels.

- Water levels were observed near the top of the concrete lining in the Milton Channel, but flows remained within the overall channel cross section.

- Water levels in the Hager-Rambo channel increased by over 1.6 m but remained within the channel.

- No debris blockages or other issues were identified.

Hager-Rambo Creek Outlet at Maple Avenue – July 13, 2024

Natural Watercourses

- The smaller urban streams flowed above bank-full conditions; these streams had not returned to baseflow levels due to the chain of rainfall events. Creeks in Burlington peaked on Monday, July 15, while urban creeks in Oakville peaked on Tuesday, July 16.

- Lower reaches of larger watersheds, including Fourteen Mile Creek, Bronte Creek, Grindstone Creek, and Sixteen Mile Creek exceeded bank-full conditions and extended into natural floodplain areas, but were well within the defined valley lands.

- Roadway overtopping was observed on Tuesday, July 16, at numerous locations, most notably in the Sixteen Mile Creek and Bronte Creek watersheds, as shown in the photos taken by staff during RiverWatch patrols.

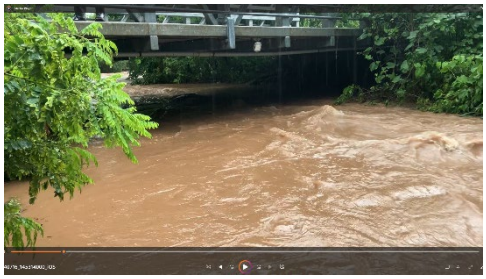
- Halton Regional Police and municipal response teams installed warning signage and closed roads accordingly.

- Localized flooding along roadside ditches and depressional areas were also noted in most areas.

Our Shoreline

- No significant wave action or shoreline flooding was reported in CH's jurisdiction during the storm events.

- CH's real-time shoreline monitoring cameras captured numerous docks and moorings that had broken free and were carried into Lake Ontario due to elevated flood levels and extremely high velocities at the mouth of Sixteen Mile Creek on Tuesday, July 16.

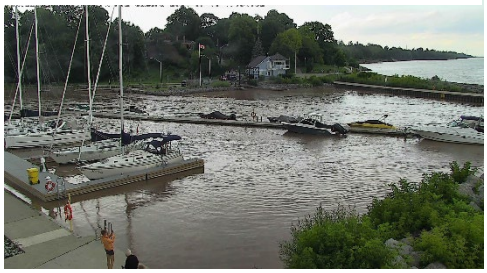


Sheldon Creek at Shell Park Stream Gauging Station – July 16, 2024

East Sixteen Mile Creek at Lower Baseline Road West (WSC Gauge 02HB004) – July 16, 2024

Roadway Flooding – Britannia Road & Bell School Line – July 16, 2024

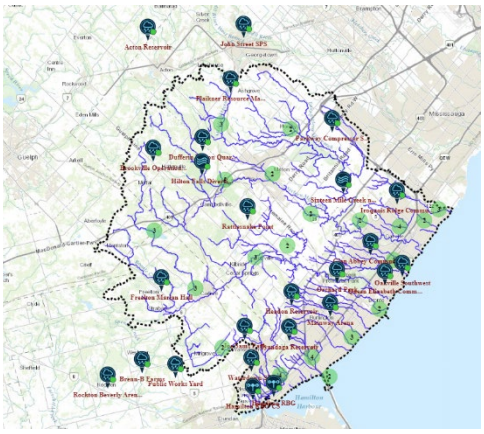
Roadway Flooding – Steeles Avenue at 6th Line – July 16, 2024



Shoreline - Sixteen Mile Creek at Tannery Park – July 16, 2024

POST-EVENT FOLLOW-UP ACTIONS

- Monitored the long-term forecast and real-time watershed monitoring network, completed high flow measurements, and recorded high water level observations;
- Operated flood control dams and stabilized discharge and reservoir levels;
- Followed up with municipalities to confirm any additional records of flooding or shoreline erosion damage;
- Participated in post-event meetings with municipal partners and provided available detailed weather and watershed monitoring data as requested; and
- Additional photo and video documentation was completed for archival purposes.



Conservation Halton Near Real-Time Watershed Monitoring Network (DataCurrent - Smart City Water)

High Flow Measurements – Sixteen Mile Creek at Appleby Line – July 16, 2024

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