February 2018
Thames River Flood

North Thames River, St. Marys

Event Highlights

During the week of February 19, 2018, the upper Thames River watershed experienced a significant flood event. Flows reached record highs at various monitoring stations.

- Highest on North Thames River near St. Marys since records began in 1938
- Highest along Medway Creek in London since records began in 1946
- Highest on Thames River at Byron (west London) since Fanshawe Dam began operating in 1952
- One of the highest flows recorded on North Thames River in Mitchell

Operations at the UTRCA's three flood control dams combined to reduce flows by nearly 30% on the Thames River at Byron station.

- Wildwood Dam reduced peak flows on Trout Creek by 68 %
- Pittock Dam reduced peak flows along the South Branch of the Thames River by 45%
- Fanshawe Dam reduced peak flows on the North Thames into London by 34%

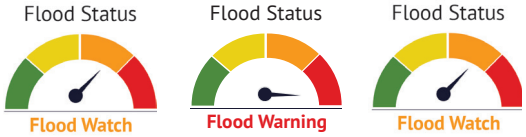
Flood control dykes and channels also helped to protect more than 1200 homes and businesses.

Watershed Conditions

- 25-75 mm of water in snowpack, with highest amounts in the North Thames watershed
- 30-60 mm of rain initially forecast for February 19-21
- Temperatures rose into double digits and remained above freezing overnight (caused significant snow melt)
- Frozen ground could not absorb any water from rain or melting snow

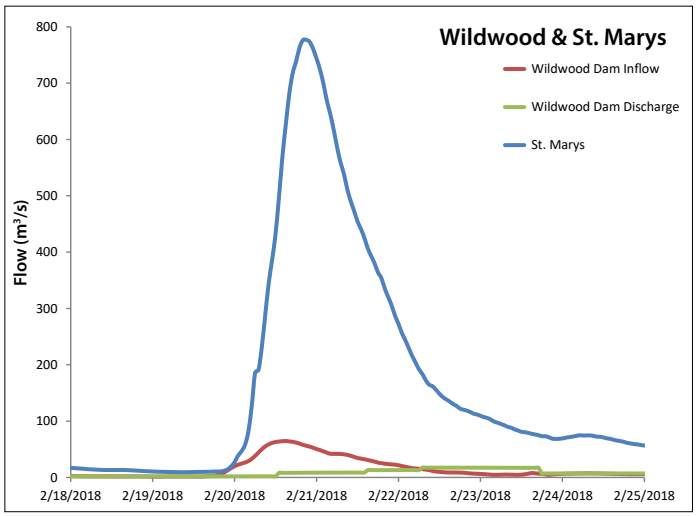
UTRCA Flood Bulletins Issued

- **Flood Watch:** Friday, Feb. 16 - Monday, Feb. 19
- **Flood Warning:** Tuesday, Feb. 20 - Wednesday, Feb. 21
- **Flood Watch:** Thursday, Feb. 22 - Monday, Feb. 26



North Branch of the Thames River (including Mitchell, St. Marys, Stratford)

- Snowpack melt released 45-75 mm of water
- Areas received 30-60 mm of rain on February 19-21
- Thames River in Mitchell peaked on February 20 with flows of 275 m^3/s
- Avon River overtopped the Stratford Channel, resulting in road closures
- Wildwood Dam reduced flows on Trout Creek from 65 m^3/sec to 21 m^3/sec, decreasing the amount of water flowing through St. Marys
- Thames River in St. Marys peaked on February 20 with flows of 777 m^3/s
- St. Marys Floodwall prevented significant flooding in the downtown area (regularly flooded by similar events before Floodwall construction in 1990)
- Flooding occurred in low lying areas near the river including roads, parks, and private residences
- High flows along Fish Creek flooded trailers and damaged a pedestrian bridge at Prospect Hill campground



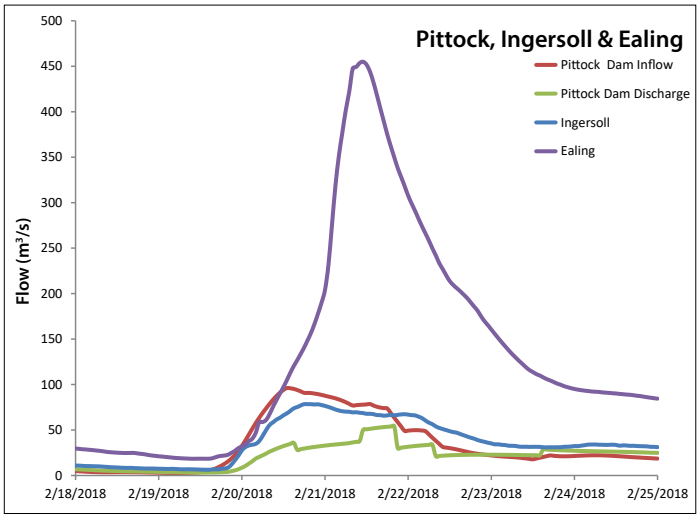
The red line represents flows in Trout Creek entering Wildwood Reservoir, on February 18-25.

The green line shows flows passing through Wildwood Dam. Dam operations reduced maximum flows on Trout Creek from 65 m^3/sec to 21 m^3/sec and delayed its peak flow until the North Thames, downstream in St. Marys, began to drop.

The blue line represents flows in the North Thames River at the St. Marys monitoring station, including water from Trout Creek (controlled by Wildwood Dam) and five other tributaries. The river peaked at a record high of 777 m^3/s.

South Branch of the Thames River (including Tavistock, Woodstock, Ingersoll, Thamesford)

- Snowpack melt released 25-40 mm of water
- Areas received 35-45 mm of rain on February 19-21
- Pittock Dam was operated to decrease downstream flows on the south branch of the Thames from 95 m^3/s to 54 m^3/s
- Combined flows from Cedar Creek and the South Branch caused road closures along Dundas Street in Woodstock
- South branch of the Thames River in Ingersoll peaked on February 20 with flows of 78 m^3/s
- Ingersoll Channel contained flows and only minor flooding occurred
- Snowmelt in the Middle Thames caused road closures in Zorra and flooding in the Braemar Trailer Park
- Flows along the Middle Thames River at Thamesford reached 127 m^3/s
- Ealing monitoring station (southeast London) measures flows from the south branch and the Middle Thames
- Ealing peaked on February 21 with flows of 455 m^3/s



The red line represents flows in the South Branch of the Thames entering Pittock Reservoir in Woodstock, on February 18-25.

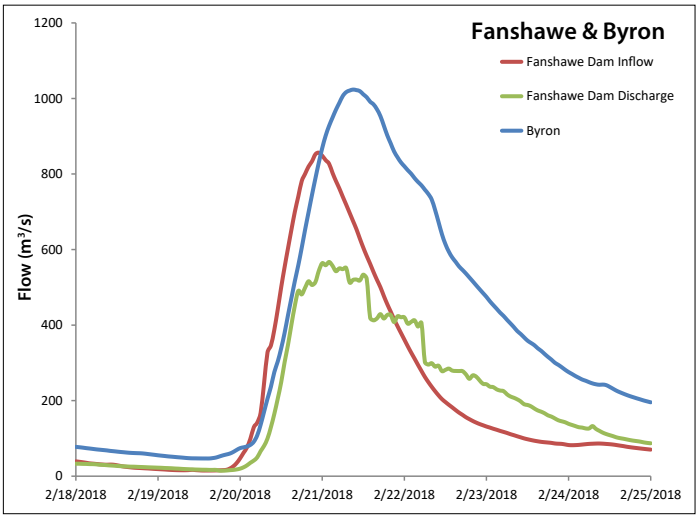
The green line shows flows passing through Pittock Dam. Dam operations reduced flows from 95 m^3/s to 54 m^3/s

Also shown are the flows recorded at the Ingersoll (blue) and Ealing (purple) monitoring stations. The Ealing station, located at the southeast edge of London, includes flows from the South Branch of the Thames, Middle Thames and other, smaller watercourses.

North & South Branches of the Thames River in London

The two main branches of the Thames converge at the Forks in downtown London. The Thames River then flows west, through the city, past the Byron monitoring station and into the lower Thames Valley watershed. The river continues through Thamesville and Chatham before draining into Lake St. Clair.

- Fanshawe Dam reduced flows on the Thames River from 856 m^3/s to 567 m^3/s
- Windermere Road near Adelaide Street was closed
- Medway and Stoney Creeks join the Thames River downstream of Fanshawe Dam, increasing the flows coming into the West London Dykes in London
- Snowpack melt along Medway Creek released 42-68 mm of water
- Medway Creek peaked with flows of 156 m^3/s on February 20
- Western University experienced flooding in parking lots close to the river
- Drainage problems caused flooding behind the West London Dyke near Cavendish Street
- Wonderland Road was closed near Riverside Drive
- Byron station peaked at 1024 m^3/s on February 21
- All parks located along the river flooded extensively
- Some residences and parking lots along the river were flooded, and some vehicles were damaged



The red line represents flows in the North Thames River entering Fanshawe Reservoir in London, on February 18-25.

The green line shows flows passing through Fanshawe Dam. Dam operations reduced flows from 856 m^3/s to 567 m^3/s.

The blue line shows the flows recorded at the Byron monitoring station, located along the main Thames River.

Flows recorded at Byron peaked at 1024 m^3/s due to the amount of water coming in from the North and South Branches of the Thames River.

Lower Thames Watershed

- Near-record floods and damages were experienced in the following days in Thamesville and Chatham, as the peak flows moved downstream
- While the benefits from the UTRCA dams were much less obvious further downstream, the dam operations still had a positive impact

Without Wildwood Dam, it is estimated that the North Thames River in St. Marys would have peaked at 830 m^3/sec (instead of 777 m^3/sec). These higher flows would have reached close to the top of the St. Marys Floodwall.

Without Pittock Dam, it is estimated that the South Branch of the Thames River in Ingersoll would have peaked at 146 m^3/sec (instead of 78 m^3/sec).

Without Fanshawe and Wildwood Dams, it is estimated that the maximum flow at Western University would have exceeded 1100 m^3/sec. The unregulated flow would have caused flooding in the Broughdale area and would have likely overtopped the lowest sections of the West London Dyke.

Without Fanshawe, Wildwood and Pittock Dams, it is estimated that the maximum flow at Byron would have exceeded 1400 m^3/sec (instead of 1024 m^3/s). This flow would have threatened areas behind the other dykes downstream of the Forks.

North Thames River, Mitchell

Pittock Dam/South Branch of the Thames River, Woodstock

Fish Creek, Prospect Hill

North Thames River at the West London Dykes, London

Looking Forward

The flood of February 2018 had the potential to cause significant damages. With the collaboration of the UTRCA and watershed municipalities, the upper Thames River watershed experienced only minor damages relative to the severity of the flood.

- Flood control structures (dams, dykes and channels) performed very well.
- Communications with local municipalities were effective and allowed for appropriate and immediate local responses (e.g., public warnings, road closures).
- Land use planning efforts by municipalities and the UTRCA kept development out of harm's way, greatly reducing the risk to life and property.

This flood provides valuable lessons and reinforces the following priorities:

- Continual maintenance of flood control structures is required.
- Continual updates to UTRCA flood models are necessary to ensure early and accurate flood warning as watershed conditions (i.e., development) and weather patterns change.
- Investment in new monitoring technology is needed to ensure the accuracy and reliability of future flood predictions.
- Municipal and Conservation Authority flood response staff training should be continued, to improve communications, coordination, response times and, ultimately, provide greater protection for residents.

UPPER THAMES RIVER
CONSERVATION AUTHORITY

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