

# Fanshawe Dam & Reservoir



Aerial view of Fanshawe Dam and Reservoir during the December 2008 flood.

The Thames River has been a focus for human activity for centuries. Native peoples and the early European settlers relied on the river as a source of abundant resources and as a corridor for travelling through the forests that covered Southern Ontario. The first settlements along the river were small and transitory, but soon grew to take on a more permanent nature. As human activity near the water increased, it was affected more and more by the seasonal fluctuations of the Thames.

The normally placid Thames was periodically subject to severe flooding which disrupted the new communities built in the river's extensive floodplains. The first written account of flooding after European settlement on the Thames River dates from 1791 and floods of various levels were recorded regularly after that. However, because of the long time interval between severe floods, residents tended to forget the potential for flooding and built more in the floodplain than was wise. Other activities, such as clearing forests and draining wetlands, also increased the severity of floods.

In 1883, a severe flood on the Thames killed a dozen people in London and caused extensive damage. The 1883 flood helped identify the need to protect people and their properties from repeated flooding. In London, construction began on a system of dikes which would prevent future floods from inundating low lying properties next to the river. This measure proved to be insufficient, though, when the worst flood ever recorded on the Thames hit in April of 1937. The devastation left in its wake convinced many people that the only solution would be to construct a series of dams that, together with the dikes, would control floods and protect lives and property.

In 1947, an organization formed that would respond to citizens' concerns about flood control. The Upper Thames River Conservation Authority (UTRCA) took as its first major project the construction of a flood control dam upstream from London on the North Thames River.

Fanshawe Dam was just one of a series of eight dams recommended by the *Upper Thames Valley Report* (1952) as essential for complete flood control on the Thames River system. All of the dams, along with additional structural

measures such as dykes and channels, were to be operated in an integrated manner to prevent flood damage throughout the river system.

Since Fanshawe Dam began operating in 1953, the UTRCA has built two more large flood control dams: Wildwood Dam, on Trout Creek near St. Marys, and Pittock Dam, near Woodstock on the South Thames River. The other five recommended dams may never be built because of the development of alternatives to these costly and environmentally disruptive structures.

Today, rather than attempting to keep the floodwaters of the river away from the people who have moved into the floodplain areas, the UTRCA works to keep human development away from the river, to leave the floodplain available to the Thames. Regulating development near the river is a cost effective, environmentally sound means of preventing flood damage. These floodplain regulations and flood control structures, such as Fanshawe Dam and the West London Dykes, together protect watershed residents from a repeat of the devastation caused by floods in the past.

Significant floods that occurred in 2000, 2008 and 2009 are recent examples of the need for this protection. Operations at Fanshawe Dam and Reservoir reduced flows on the North Thames River by up to 50 percent when record amounts of rain fell in parts of the watershed (*see graph on reverse*).

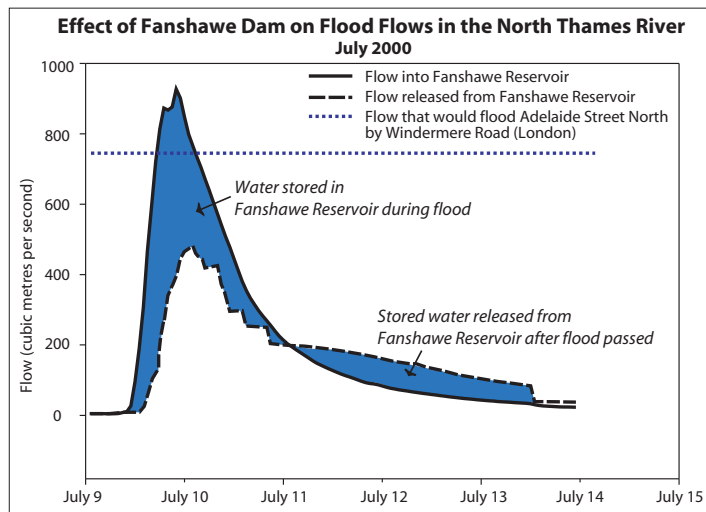
## A Few Facts about Fanshawe Dam & Reservoir

- Construction: 1950 - December 1952
  - Cost: \$5 million (structure, land base)
  - Who paid: Federal Government - 37.5%  
Provincial Government - 37.5%, UTRCA - 25%  
(City of London 95%, London Township 5%)
  - UTRCA property around reservoir: 7.3 square km
  - Area drained by Fanshawe Dam & Reservoir: 1,450 square km
  - Length of dam: 625 metres (including berm)
  - Height of dam: 23.5 metres above old river bed  
30.5 metres above bedrock
  - Typical summer discharge: 4 cubic metres\* per second (cms)
  - Maximum possible discharge: 3,200 cms
- \*1 cubic metre=2 bathtubs; 100 m<sup>3</sup>=in-ground pool

## Fanshawe Reservoir Stats

	Normal Operating Level	Reservoir Full
Length	6.4 km	12 km
Maximum Width	0.8 km	1.4 km
Maximum Depth	12.5 m	21.6 m
Storage	12 billion litres	48 billion litres
Surface Area	2.61 square km	6.5 square km
Surface Elevation	262.1 metres above sea level	271.3 masl

- Highest reservoir elevation recorded: 270.7 masl (March 1977)



## How is the Dam Operated?

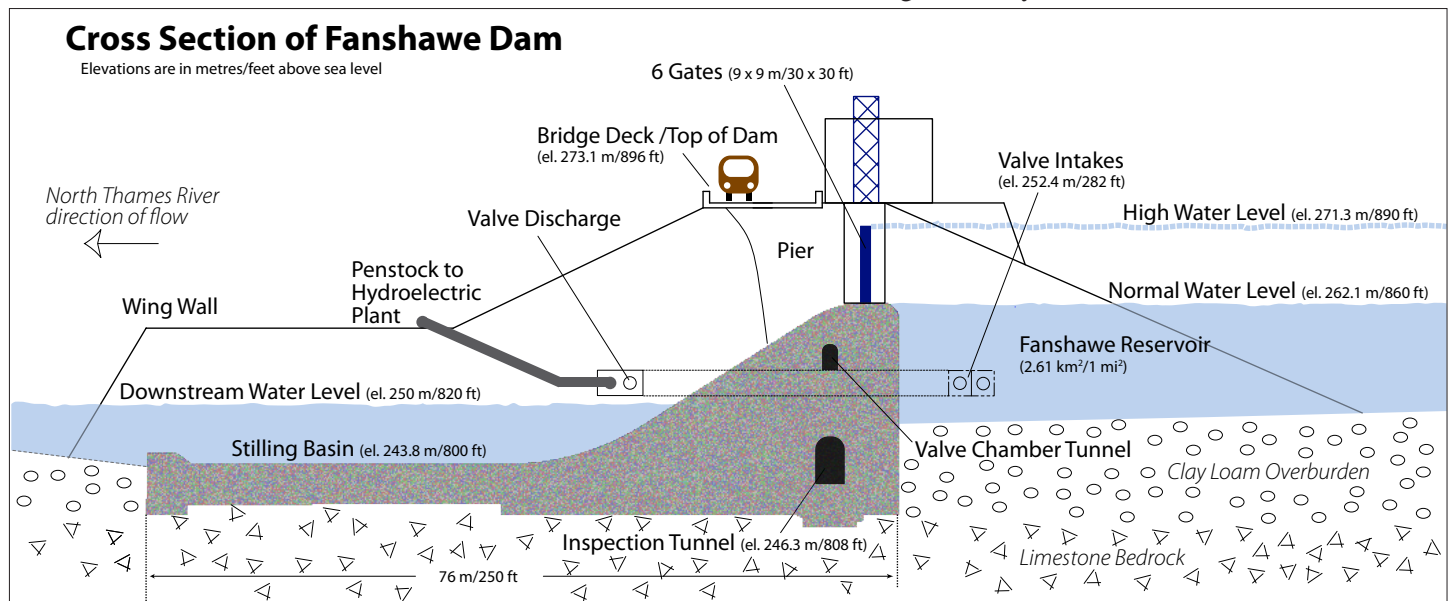
The primary purpose of Fanshawe Dam and Reservoir is to assist in flood control efforts to reduce flood damage in the City of London. For most of the year, the amount of water released from the reservoir is the same as the amount of water entering from upstream. During a flood event, less water is released than comes into the reservoir, which results in the reservoir gradually filling up as the extra water is stored. After the flood, the stored water is gradually released. Some flooding may still occur but the flood peaks (highest flood levels) downstream may be reduced by five to 50 per percent, depending on the nature of the event (volume of water and duration).

UTRCA water management staff use information from several sources to operate the dam and to integrate operations of the three dams on the Thames. Computer models of floods, operating tables, weather data and water level information enable staff to assess and respond to flood potential and initiate the municipalities' flood warning systems, if necessary.

Many factors affect the severity of flooding, such as:

- snow pack (snow depth and water content),
- soil conditions (may be frozen or saturated),
- temperature (affects snow melt, evaporation and soil moisture), and
- plant cover (may intercept rainfall).

The amount of rain and where it falls is also important. For example, although London may not receive much precipitation, snowmelt or rainfall in the northern part of the watershed could cause flooding in the city.



## Did you know that . . .

- The six sluice gates are each 9.1 m<sup>2</sup> and weigh 33.6 tonnes.
- 775,023 bags of Portland cement were used in the dam's construction.
- A stairway with 139 steps descends to the inspection tunnel deep inside the dam.
- The dam is built on and keyed into bedrock.
- Historically, most of the major floods on the Thames River system occur during the spring snowmelt, but the most severe floods ever recorded (1883, 1937) occurred in the late spring or fall and were caused by extremely heavy or prolonged rainfall.
- The dam has reduced damages from significant floods at least a dozen times in the past 50 years.
- The hydroelectric plant at the base of Fanshawe Dam generates enough power to run 300 households.
- When the dam was built, the City of London planned to take its water supply from the reservoir.

UPPER THAMES RIVER

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