

# HIGH PARK'S HIDDEN RIVER

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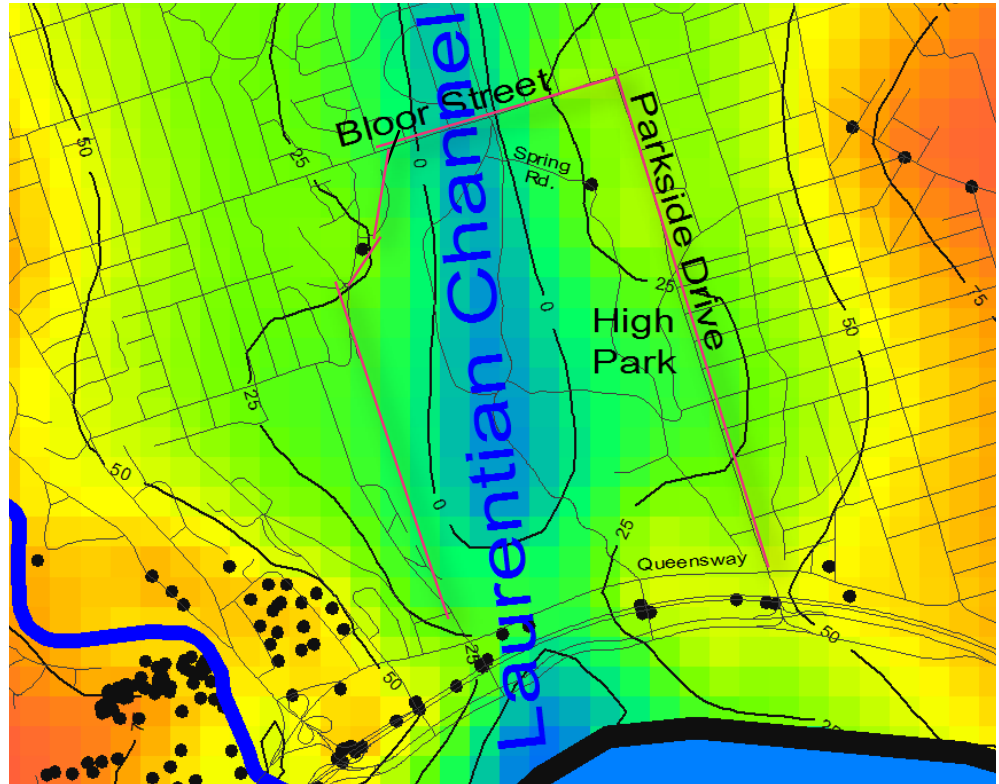
High Park has an Ancient Buried River

High Park is Toronto's largest public park featuring many hiking trails, sports facilities, a rare oak savannah, picnic areas and playgrounds.

It also has a zoo, dog park, greenhouses, a nature centre a beautiful lakefront, surface creeks.... springs, and a large

## Buried River

black circles are wells that penetrate the bedrock surface



**As High Park is the lowest elevation, all underground creeks and surface waters flow towards it.**

Left undisturbed for thousands of years, an ancient buried river exists about 50 meters below High Park. It lies within a glacially modified trench that starts 110 km away. Sections of this underground trench are known to be up to 30 km wide.

The buried river's water is cold, iron rich and very slow moving. The valley is buried beneath a thick sequence of gravel, sand, silt and clay sediments. It also contains pockets of coarser sand and gravel that yield large amounts of groundwater. These pockets are called aquifers.



The Aquifer



Proof of the Laurentian River's existence as far south as High Park, occurred in 2003 when work crews drained Howard & Ridout Ponds - in the Park's NE section.

They discovered previously dug and capped wells from the late 1950's. A deep borehole observation well was dug nearby to explore the bedrock levels and test the waters below. It unexpectedly erupted geyser style indicating that a source of unreleased pressure, was struck.

**< An Iron rich outflow is located near the Spring Creek Footbridge.**

photo credit: Frank Remiz



# Discover the natural wonders of Toronto's High Park

Hidden Laurentian River's East Bank, Proved to be below High Park's Spring Road

JULY 2003 DISCOVERY



July 2003

A work crew drains Ridout & Howard Ponds.

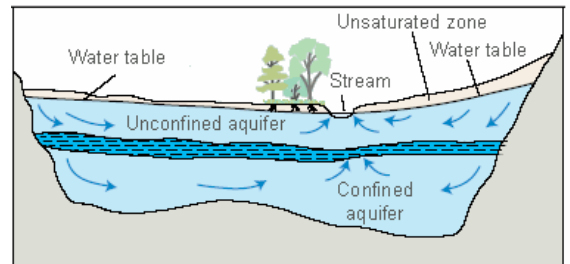
They find 2 previously dug wells that have been capped. Circa 1959.

They decide to drill an observation well near the curve in Spring Road.

The observation well blows under pressure bringing forth proof of a confined aquifer.

An Aquifer is made up of porous rock and sediment layers which allow water to flow slowly, but freely. An Aquifer can be tapped by drilling a well. An unconfined aquifer has a natural outlet, a confined aquifer does not.

When drilling into a confined aquifer, tremendous built up pressure is released, such as what happened in High Park.



Photos provided by Steve Holysh



## The Laurentian River & how it was discovered in High Park

In the late 1800's, geologists discovered clues that suggested a preglacial drainage network existed that centred on the Great Lakes Basins. This extensive drainage network was a valley system created by the erosive forces of rivers which had cut deep, deep gorges; the result of millions of years worth of scraping and melting from vast ice sheets. **The Laurentian River is only one channel within a larger drainage network.**

The Laurentian River or Channel stretches from the Wasaga Beach area (on Georgian Bay) to High Park, Toronto (on Lake Ontario). It lies within a 110 km long bedrock trough, that in places, measures roughly 30 km wide. It is also believed to continue north from Wasaga Beach beneath Georgian Bay and also more southeastward beneath Lake Ontario. **Its true length is still unknown.**

Water flowed along the Laurentian Channel prior to glaciation and also perhaps during some episodes of de-glaciation, *(as the ice melted)*. Then the Laurentian Channel was left buried and infilled with up to 200 m of sediments consisting of a mix of gravel, sand, silt, clay and glacial till. **Because it is so deep, it is difficult to observe and research.**

The base of the valley lies at an elevation of about 25 metres above sea level - in the northern part of Toronto *(observed in a borehole drilled near Weston Road and Finch Avenue)* and at about 96 meters above sea level *(in a borehole drilled to the west of Barrie)*. Based on these key locations, the bottom of the valley at Wasaga Beach on Georgian Bay is believed to be about 63 m below the Georgian Bay water level. At Lake Ontario the bottom of the channel is believed to be at an elevation of about 30 m below the Lake Ontario

lake level. **This drop indicates its southerly flow.**

Within the channel are many pockets of subsurface gravel and sand. These are called aquifers, which can also contain vast amounts of slow moving groundwater. **One such aquifer was discovered in High Park during the summer of 2003.**

After draining Howard & Ridout Ponds, work crews located two capped wells that had been dug in the late 1950's. A discovery borehole was drilled nearby. Expert hydrologists encountered bedrock at a depth of 146 ft (44.5 m) or, an elevation of about 42 meters above sea level. Since the bottom of the valley is believed to be lower, **the Spring Road borehole is likely to be positioned on the side of the valley and not in the centre.** It was observed that a finer grained till and silt was in the upper 120 ft (36.6 m). Below that, a coarser grained sand and gravel aquifer was encountered. It quickly rose to some 20 meters above the ground and flowed up to 1,800 litres a minute before slowing down to 55 litres per minute - after a couple days.

**A surface outflow pipe can be found, near the footbridge located along the curve in Spring Road. It relieves hydrostatic pressure. The outlet is stained red indicating a high iron content.**

The significant artesian conditions at the Spring Road location suggest that the permeability of the Laurentian River's sediments decreases as it travels south. In other words; **the pressure built up proves the waters are somehow restricted and do not flow underneath into Lake Ontario**

**References:** [Dr. Andy Bajc](http://www.geologyontario.mndm.gov.on.ca) Quaternary Geologist  
<http://www.geologyontario.mndm.gov.on.ca>

[Steve Holysh](http://trca.on.ca/the-living-city/conservation-authorities-moraine-coalition.dot) Hydrogeologist

<http://trca.on.ca/the-living-city/conservation-authorities-moraine-coalition.dot>

## Entombed Sewers, border High Park's NE corner

The **High Park Trunk Sewer** was installed on the northern border of High Park in 1914.

This sewer, along with sewers from South Earlscourt and the Junction (which run down Keele Street to High Park) were buried, along with significant portions of both Spring Creek and Wendigo Creek Ravines.

By infilling the ravines, the newly leveled grade along Bloor Street, made home building easier.

The trunk sewer runs from just east of Jane Street beneath Bloor, west to the vicinity of High Park Avenue, where it turns southeast into the park and passes by the now disused Parkside Standby Tanks.

It begins as a low rectangular box, passing down a series of steps east of Runnymede, and then grows to a 2m tall brick and concrete arch, east of Clendennan Ave. It then joins with a sub-trunk from the north. It also receives a side-connection that serves the apartment towers northwest of Bloor and Keele. This connection frequently smells of chlorine and ammonia.

Concrete storm sewers were also built and they feed the remaining sections of both creeks, through outfalls at the

sediment ponds, located within the park. (Ridout & Howard Ponds).

Also in the northeast corner of High Park, is a small pipe that diverts the flow from the trunk sewer into a High Level Interceptor.

A system was created in the 1970's to ease the strain on the High Level Interceptor; it is a tall side-flow weir with an adjacent concrete shaft, within a diversion chamber. Overflows, which still occur in heavy rains, now drop about fifteen feet into a modern concrete conduit that deliver them to the **Parkside Drive Relief Sewer**.

This sewer, that runs along Parkside Drive, used to flow straight into the lake, but since the 2000's, it is now intercepted into the Western Beaches Storage Tunnel.

## The High Park Trunk Sewer and Parkside Dr Standby Tanks

Water & Sewershed;

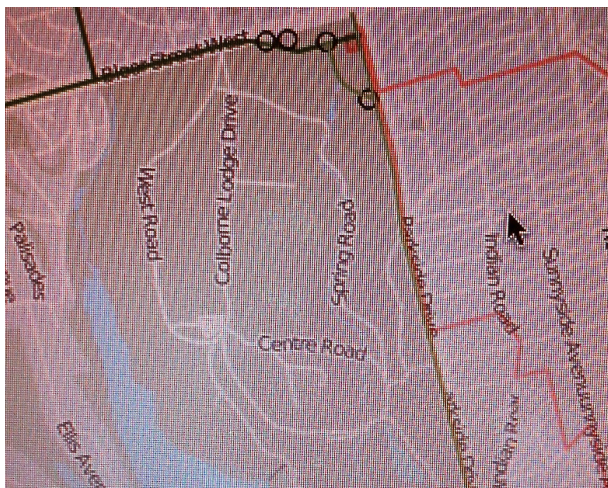
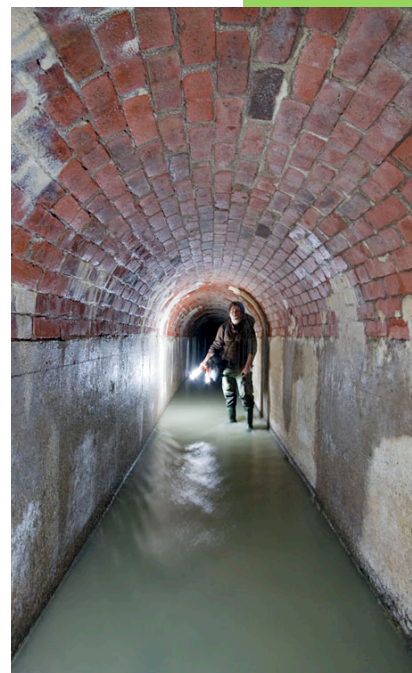
Spring Creek  
Wendigo Creek  
Jane Creek

Built during 1914 as a small brick arch passageway, then covered over with landfill.

The now disused **standby tanks** are 2.7 meter brick pipes, which have a small sewer line beneath them.

They run straight-down Parkside Drive towards Lake Ontario.

references:  
Michael Cook



black line = High Park sewer trunk    red lines = below street sewers, circles represent connections & relief/standby tanks locations

## Do sewers & groundwater runoffs affect High Park's buried River?

The Laurentian River lies at the lowest elevation between High Park's East and West Ravines. All nearby water sources, would thereby, naturally flow towards a more shallow basin.

Most of the water and wastewater that ends up in sewers is conveyed east to

Ashbridges Bay and the rest ends up in the lake.

Is it possible, that the odor that lingers around High Park's NE section emanates from these underground features?

Diligent monitoring of these urban creations will ensure that the Laurentian Channel Basin can be safeguarded against any contaminants.



## Lost Creeks that used to flow into High Park

DO LOST CREEKS STILL FLOW INTO HIGH PARK?

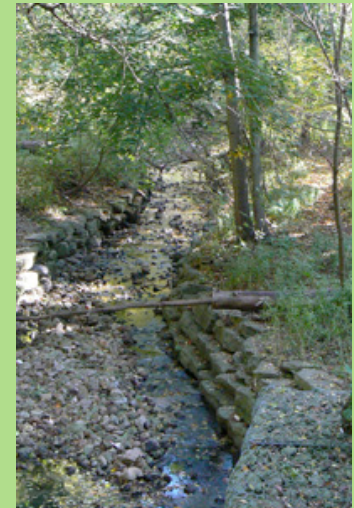


Creek shorelines & Ravines circa 1790

**The West Ravine originally accepted Wendigo Creek which made its way into present day Grenadier Pond. The Creek's upper section and tributaries were either filled in, or run into the storm sewers that join the storm water catchment area in the Park's NE corner. A remnant of Wendigo Creek, near its original entry point in the NW, now exits a culvert and flows into Wendigo Pond**

all that remains of northern Wendigo Creek, is a culvert that enters the NW corner of High Park.

photo:  
Karen Yukich



## Spring Creek's Old Eastern Tributaries

The 1878 York County Atlas and late 1880s municipal maps both show creeks entering High Park, by crossing Parkside Dr.

High Park's founder; Surveyor John Howard also shows these creeks on his 1870s plan. One creek ran near the intersection of today's Indian Grove and Indian Valley Crescent, at the base of a steep ravine hill. Howard's Survey shows that this one had an additional finger, extending it further east to Indian Road. Somewhere between Indian Road & Indian Grove, a spring existed, and served as the headwater of this creek that eventually flowed into High Park.

The City of York (former Toronto) 1884 Goad plate, shows the curve of this stream reaching just east of Parkside Drive and then curving back southeast towards, the present day intersection of Howard Park Ave and Indian Road. By 1890 this creek is no longer shown.

Another set of short, spring-fed creeks are noted in the 1884 in both the Goad & Howard Plan. They had entered south of Howard Park Ave into High Park near where the present day "Castle Playground" is.

reference: Michael Cook; Urban Underground Infrastructures

**All these creeks were infilled or buried to make way for residential developments.**

Their names are largely lost, although the creek that ran along Indian Valley Crescent & Indian Grove, was once referred to as the Indian Valley Creek by Professor of Geology; Elwood S Moore.

This particular creek entered into High Park at the exact location along Parkside Drive, where sinkholes appeared in 2009. This stream is no longer shown outside the Park in maps..