The Red Hill Valley - Virtual Field Trip -

School of GEOGRAPHY & GEOLOGY

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From McMaster University turn right onto Main Street West towards Ancaster. Follow Main Street West by turning left at the major intersection just past the Main West Mall (travelling straight will take you onto Osler Drive, Dundas). Main Street West becomes Wilson Street as you reach the bottom of the escarpment. Follow Wilson Street up the escarpment and turn left onto Rousseaux Street. This street becomes Mohawk Road and the Lincoln M. Alexander Parkway.
Exit the Lincoln M. Alexander Parkway at Dartnall Road. Turn left (east) at the lights onto Stone Church Road. Follow Stone Church Road to Pritchard Road and turn left. At Mud Street turn left and follow a sharp curve past the top of Albion Falls. Turn right into the parking area approximately 100m from the bridge. Albion Falls sits at the top of the Red Hill Valley, which can be accessed from the falls.
The Red Hill Valley can also be accessed from its northern end:

McMaster University to the Skyway Bridge

From McMaster University turn right onto Main Street West towards downtown Hamilton. Take the Highway 403 east exit to Toronto and follow the 403 into Burlington. Take the QEW towards Niagara and cross the Skyway Bridge.
After crossing the Skyway Bridge, continue on the QEW towards Niagara as far as the exit for Highway 20/Centennial Parkway. Take this exit toward South Service Road, then take the Centennial Parkway South ramp toward downtown. Continue driving south on Centennial Parkway. The map above shows access to the valley from King Street, but the valley can be accessed along any of the cross streets west of Centennial Parkway between Barton Street and King Street.
The Red Hill Valley is Hamilton’s largest green space and runs from the Niagara Escarpment in the south to Lake Ontario in the north.
Albion Falls is located at the head of the Red Hill Valley. It is here that the main channel of Red Hill Creek cascades over the Niagara Escarpment as it flows towards Lake Ontario.
Buttermilk Falls

A tributary of Red Hill Creek, Buttermilk Creek flows over the escarpment and joins Red Hill Creek approximately 1 km downstream of Albion Falls.

Interbedded sandstones and shales behind Buttermilk Falls.
Upper Stratigraphy at Buttermilk Falls

- Lockport Fm
- Rochester Fm
- Irondequoit Fm
- Reynales Fm
- Thorold Fm
The Red Hill Creek
Although a tranquil stream for much of the year, during periods of high flow water depths can exceed 2 meters. Note the angular shape of pebbles in the creek. Their angularity is an indication that they have not been transported long distances from their source area.
The Red Hill Creek can be categorized as a meandering stream.
The soft sediment that comprises the Red Hill Creek banks experiences a lot of slumping. Slumping is greatest along the steep cut bank; deposition of fluvial sediment occurs on point bars.
The Red Hill Valley is one of the largest urban parks in Canada, and its environment has been extensively modified by human activities.

Recreational activities are abundant in the valley, and include golfing, hiking, biking, and playing on the numerous sports fields.

The natural vegetation has been altered with the introduction of a tree nursery, a pine plantation, and the remains of orchards from the former farms in the area.

A number of closed landfill sites are located within or adjacent to the valley.

Water, sewer, and electrical lines run through the valley.

A major rail line crosses the valley, and a highway is being constructed to run parallel to the valley.
Recreational activities are common in the valley, and include golfing on King’s Forest municipal golf course. Decreased use of pesticides in recent years and increased amounts of ‘natural’ areas adjacent to the creek should help to minimize the impact of the golf course on the watershed.
Soccer fields, baseball diamonds, and a Bocce Club are found in the valley. These facilities help to bring people to the valley and expose them to all that the valley offers.
Adjacent to the Red Hill Creek is the City of Hamilton’s tree nursery.
Orchards

Historically, large sections of the Red Hill Valley were farmed. Each of the farms had orchards, and the remnants of these orchards are still visible today.
The pine plantation is a small area (<400m²) that has been planted with a single *Pinus* species. Initially, the plan was to harvest this timber as it reached maturity. However, the decision has been made to allow the trees to continue growing.
Water in an urban watershed is prone to contamination. This is particularly true for the Red Hill Creek as three closed landfill sites lie within or adjacent to the valley. The largest of these is the Upper Ottawa Street Landfill. The main concern is that leachate is moving away from these landfill sites and flowing towards the creek.
Rennie Street Landfill

Contract No: T0E - 02-50(M)
Contract Name: Rennie St. and Brampton St.
Landfill Site – Erosion Control
and Leachate Management
Contractor: Aecon Construction and Materials Ltd.
Consultant: Dillon Consulting Ltd.
City of Hamilton Contact – John Mater – 546 – 3915
Unauthorized dumping of industrial waste occurred at many landfill sites during the 1950’s. Leachate leaking from these sites is thought to contribute contaminants to the Red Hill Creek and surrounding areas.

This site, located at the intersection of Brampton and Nash, is another one of Hamilton’s many closed landfills.
Combined Sewer Overflow

Much of the sewer system in Hamilton is a combined system. In a combined system (CS), the sanitary and storm sewers are connected and waste water transport to the sewage treatment plant can exceed capacity at times of peak flow. When this occurs, excess waste water is diverted to CS overflow tanks. When the capacity of these tanks is exceeded, raw (i.e. untreated) sewage is discharged directly into the Red Hill Creek.
The location of the CS overflow tanks is close to several of the outdoor recreational areas. The person in the two photos is standing beside the warning signs (top left and right) and pointing toward the nearby baseball diamonds (bottom right).
The TH&B Railway

Both the TH&B (Toronto-Hamilton-Buffalo) rail line and electricity lines run through the valley.
Unfortunately, as an urban park, the Red Hill Valley is prone to the accumulation of litter.
The construction of artificial channels, gabiens, and concrete sewer covers has modified the form of the Red Hill Creek. Artificial channels prevent bank erosion and force the stream to flow in a certain area. Gabiens and sewer covers increase the stability of the stream banks and stream bed.
Creek Modifications
Near the Queenston Bridge

Modifications have also been made to the creek at the lower end of the valley, to the north of the Queenston bridge.

Erosion of concrete blocks during periods of high flow.

Step weirs and concrete channels are both employed to minimize erosion and control the direction of stream flow.
The Red Hill Valley is dramatically changing its face with the construction of the Red Hill Creek Expressway. The Expressway will cross the creek at least five times and will run the length of most of the valley.

Looking south down the valley from near Mud Street during the initial construction of the Expressway (May 2004).
The following photos illustrate the impacts of road construction on the natural environment.
The results of clear cutting: lush forests have been removed from the valley to allow for road construction.
Here at King Street, the Red Hill Creek meanders through construction roads, fences, and deforestation debris.
To the north of the TH&B bridge, a number of 2-3 metre high piles of wood chips and shavings lie on the valley floor; the remnants of the forest that once flourished here.
The result of more clear-cutting near Mount Albion Road.
A freshly clear-cut area just to the north of Mud Street, near the head of the valley.
Urbanization encroaches on the Red Hill Valley.
Acknowledgements:

Maps Source Data: DMTI Spatial Inc.

Photographs by Ben Cowie, Luisa DaSilva, Liz Kenny and Zachary Windus

Based on earlier slide field trip prepared by Alvin Chan and Sandra Rolph