

PINHEY'S POINT NATURAL HERITAGE

Pinhey's Point Historic Site is underlain by Ordovician-age bedrock (about 470 Million years old) and covered with a thin veneer of Ice Age and more recent sediments.

The Ordovician bedrock in the Pinhey's Point area consists of fine-grained sandstone (Rockcliffe Formation) and slightly younger limestone (Ottawa Group). These two rock units are locally separated by a northwest-trending fault. The trace of this fault forms the embankment that slopes down to the Ottawa River immediately beside Pinhey's house and barn.



ROCKCLIFFE FORMATION SANDSTONE

Cropping out along the Ottawa River shoreline are horizontal beds of grey-green, fine-grained sandstone.

- In most of the exposures, thin beds display *ripples*. Ripples were formed as waves and currents moved sand along the ancient shallow sea floor during the Ordovician Period.
- You can also see, in the rippled sandstone, horizontal burrows that were formed by ancient organisms as they moved along the rippled sands, perhaps as they were feeding on nutrients in the unconsolidated sediment. These horizontal burrows are called *trace fossils*, as they are not fossils but structures developed by the activity of the organisms living in the shallow marine environment during the Ordovician Period.
- The less common, thicker sandstone beds display cross bedding.



OTTAWA GROUP LIMESTONE

The limestone is not as well exposed as the sandstone. However, one place that you can see it is in the house, where the limestone bedrock forms part of Mrs. Pinhey's kitchen floor. You can also see the local limestone in the stone walls of the buildings at Pinhey's Point Historic Site. These limestone building stones were locally quarried, then crudely-shaped and bush hammered into platy and rectangular blocks. Together with mortar, they were used to build the exterior building walls, door and window jambs, lintels and sills and chimneys.

A close look at the limestone blocks in the walls and bordering the walkways will reveal fossil fragments, rounded mud pieces, thin bedding, jagged near-horizontal lines (*stylolites*), and some ripples and small cross beds.



GLACIAL AND GLACIAL-MARINE DEPOSITS

Scattered around Pinhey's Point are rounded boulders, referred to as erratics. During the last ice age of the Pleistocene epoch, between 22,000 and 11,500 years ago, glacial ice eroded these boulders and carried them to this site. Most are Precambrian igneous and metamorphic rocks and were likely eroded from the Gatineau hills. Some of these boulders have been used as borders beside the walks and roads on the Pinhey's Point Historic Site. The stony-sandy soil in the surrounding fields is till, another deposit of the glaciers.

By 11,500 years ago the ice sheet had melted northward out of the area and the region was covered to a depth of 230 m above present sea level by the cold Champlain Sea. The Leda clay which causes construction problems and landslides in the Ottawa region was deposited in this sea. Stony gravel areas on the property are beaches formed during regression of the Champlain Sea.



EVOLUTION OF THE OTTAWA RIVER

About 10,000 years ago the Champlain Sea had receded from the Ottawa Valley and the ancestral Ottawa River flowed across the area. The ancestral Ottawa was much larger and had different routes than today's river. One ancient channel extends from Constance Bay through Constance Lake (southwest of Pinhey's Point) to Shirley's Bay.

The ancestral Ottawa River drastically decreased in size about 8,000 years ago when the large glacial lakes covering the Prairies and northern Ontario abruptly drained to Hudson Bay. At this time the Ottawa was confined to its present channel. Lakes Superior, Michigan and Huron continued to drain to the Ottawa River until 4,000 years ago.



OTTAWA-GATINEAU GEOHERITAGE PROJECT

The Ottawa-Gatineau Geoheritage Project is dedicated to promoting public awareness of the geological and landscape aspects of natural history in and around Canada's National Capital Region.