

**Above: Western Interior Seaway Diorama.** An Artist's impression of marine life during the Cretaceous period, evidence of which has been unearthed in the current Boundary Trail Heritage Region. (Carr, Karen. C.F.D.C. Pamphlet, 2013.)

**BENTONITE DEPOSITS AND MARINE FOSSILS**

Towards the end of the Cretaceous Period large portions of what is now southern Manitoba was covered by a huge shallow inland sea, known as the Western Interior Seaway. Sometime during this era, about 83 million years ago, intense volcanic activity thought to have originated in the vicinity of present-day Montana, blasted millions of tons of volcanic ash into the skies over the North American continent. Drifting northward, much of this ash eventually settled onto the surface of the Mesozoic seas. Here it sank to the bottom, where it was eventually covered with other layers of marine deposits before another series of eruptions laid down more strata of ash.

Today this volcanic ash, in layers usually not more than six inches to a foot (15-30 cm) thick and layered between beds of shale, is a commercially valuable mineral known as bentonite. A creamy-white coloured 'slippery clay', it possesses a high calcium content, and most significantly does not expand when exposed to water. Bentonite is currently widely used in the purification process of mineral and vegetable oils.

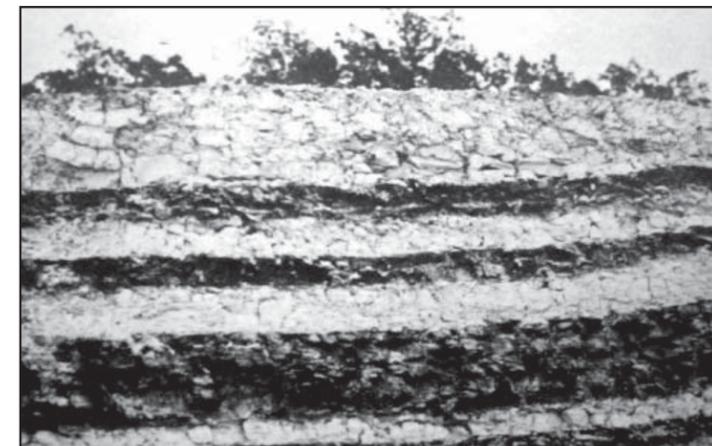
Commercial bentonite mining began in the 1930s. When the shale overburden was stripped away to access the bentonite deposits along the Pembina Escarpment, particularly in the Miami area, the skeletons of the dwellers of the Western Interior Seaway seas were found remarkably preserved. These include marine reptiles, (including massive turtles) ancient sharks and even the occasional bird. In some instances, because of the glacial erosion of later overlying deposits, these fossils can be found a little as five feet below the surface.

Some of these remarkable finds are on display in the Canadian Fossil Discovery Centre in Morden, where they form the largest collection of its kind in North America. Among the most fascinating fossils of this collection are the reptile remains, in particular the mosasurs and plesiosaurs.

(Sources: Carr, Karen. C.F.D.C. Pamphlet, 2013. R.M. of Louise History, 1979; BT-NHR research files.)



**Above: Map. Western Interior Seaway.** As depicted on this map, during the Cretaceous Period much of the interior region of the current North American continent was covered by shallow saltwater seaways brimming with ancient marine life. (C.F.D.C. Pamphlet, 2013.)



**Above:** Excavation face showing bentonite layers in a pit in the Miami area of the BTHR. (source: Louise RM local history.)



**Above:** Over a thousand marine fossil specimens have been excavated from locations along the Pembina Hills. The majority of these finds are now stored and displayed at the Canadian Fossil Discovery Centre in Morden. (C.F.D.C. Pamphlet, 2013.)



**Above:** Canadian Fossil Discovery Centre staff member Cheryl Link provides size context with the museum's star attraction, "Bruce", a 13 meter (43 feet) mosasaur skeleton discovered near Thornhill in 1974. (Author's photo. 2017.)



**Above:** A diorama display at the Canadian Fossil Discovery Centre in Morden showing bentonite strip mining. (Author's photo. 2017.)