

PIERRE SHALE FORMATION

This mile-thick, even, and well-bedded shale bed was deposited below wave disturbance on the floor of the Interior Seaway during the Cretaceous. Today Pierre Shale exists as eroded valley floors, dark with organic carbon. It is often the source rock for oil and gas deposits in the Denver Basin.

These shale beds may contain volcanic ash layers altered to clay. When wet, these clays expand and take on a soapy texture—bad news if you are trying to drive a car across them in a rainstorm.

Pierre Shale contains a wealth of fossils, particularly ammonites of the Interior Seaway. Researchers at the U.S. Geological Survey have put together ammonites' evolutionary history by assembling a succession of species and calibrating the age of the beds using radiometric techniques. The results reveal one of the best-constrained evolutionary successions of marine invertebrates from anywhere in the world.



Pierre Shale outcrop along Rooney Road



15.0 mm

Baculites from the Pierre Shale showing sutures and remnant aragonite; western South Dakota, Late Cretaceous.

The Pierre Shale is the host formation for commercial oil and gas deposits in the DJ Basin, Weld County, Florence and Canon City fields, Boulder Oil Field, and the Raton Basin all in Colorado.

The shale formation is usually too impermeable for hydrocarbon extraction but produces in areas where it is naturally fractured or fractured by artificial means.