

The Shore of an Ancient Sea



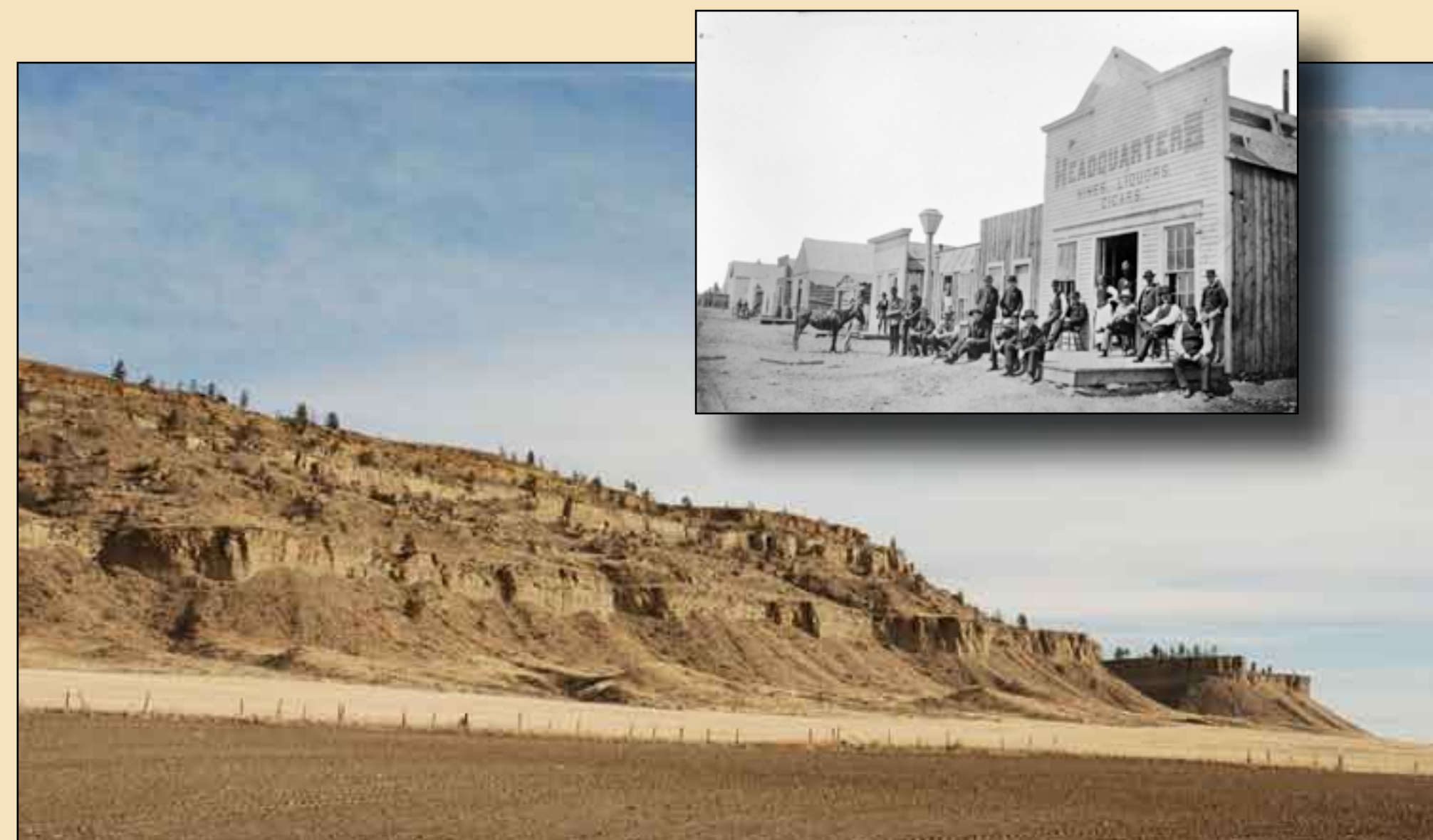
About 80 million years ago this area was near the shore of the Western Interior Seaway that stretched from the present-day Gulf of Mexico to the Arctic Ocean. Rivers draining highlands to the west carried sediment into the seaway and near-shore currents concentrated the sand creating barrier islands. As the sea level alternately rose and fell, the barrier islands migrated, forming an extensive layer of fine-grained sand across much of central Montana. The sand was eventually buried, compacted, and cemented into the rocks that now compose the rims and that geologists have named Eagle Sandstone. When observed from the south, the rimrocks reveal cross beds called accretion surfaces. These surfaces record the deposition of sand washed over the barrier and deposited on the other side by waves, causing the sand bar to grow shoreward.

The seaway was shallow, warm, and probably no more than a few hundred feet deep. Oysters lived in dense banks along the shore, while ammonites fed on clams that lived in the shallow water offshore; sharks cruised the shallows preying on whatever animals appeared tasty to them. For several million years, two predators were at the top of the food chain in the sea: the long-necked *Plesiosaurs* and the snakelike *Mosasaurus*. Neither were dinosaurs, but were air-breathing reptiles adapted to living in the oceans.

The rims near the confluence of the Yellowstone River and Alkali Creek is one of Montana's historic hot spots. Native Americans utilized the area for at least 8,000 years before William Clark passed through here in July 1806. Near here in May 1823, Blackfoot warriors ambushed and killed seven Missouri Fur Company trappers led by Michael Immel and Robert Jones. The rims were later a spectacular backdrop for the rip-roaring riverside settlement of Coulson in the 1870s and for Billings beginning in the early 1880s.



Cretaceous Mosasaur and Ammonites. Illustration courtesy of Douglas Henderson.



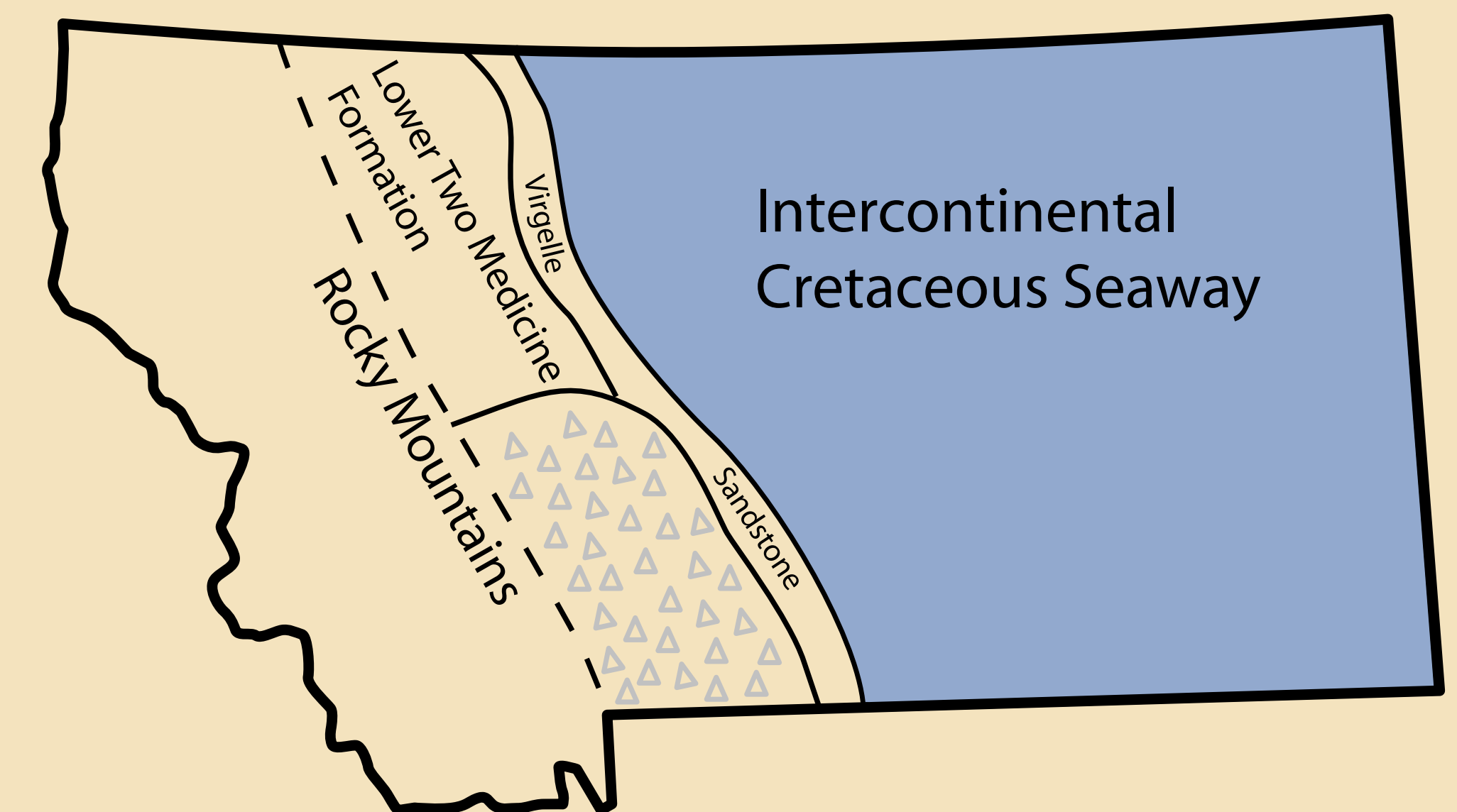
Sandstone rimrocks along I-90 near Park City, Montana. Photograph by Kristi Hager. Inset: Main street Coulson, 1882. Photo courtesy of the Montana Historical Society.

Geo-Facts:

- Once this area looked much like the modern coast of south Texas - except that dinosaurs roamed the countryside instead of cattle.
- The Yellowstone River began cutting into the rims about one million years ago as the river migrated back and forth across the valley. The process continues today with the river cutting into the South Hills.
- Black Otter Trail was constructed in 1936 by 150 men employed by the Works Progress Administration. The 2.5-mile scenic road was promoted by the Billings Commercial Club and included interpretive signs and observation points.

Geo-Activity:

- Imagine this area was once the edge of a shallow sea where sharks and swimming carnivorous reptiles patrolled the waters. If you were a sea creature, identify a spot along the rimrocks where you would hide from predators.



Depositional features in Montana during the early Campanian Stage of Cretaceous time.