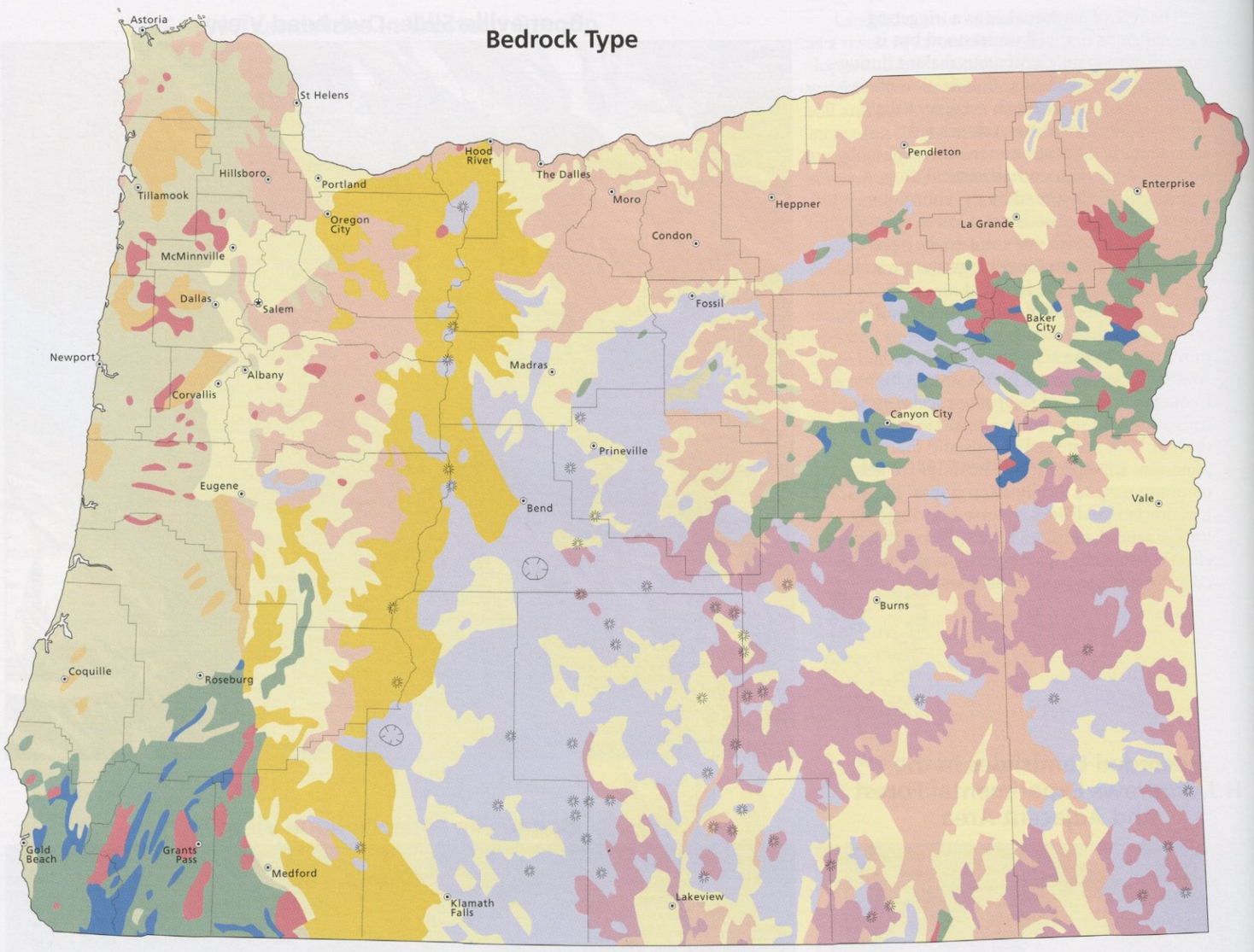
Geology



Oregon's rich and turbulent geological past is reflected in this map of bedrock types. Splashed across the center of the map, the Cascade volcanics in yellow mark the axis of Oregon. To the northeast in the Blue Mountains and the southwest in the Klamath Mountains, blue and green colors represent the metamorphic rocks of the exotic terranes that anchor the state. While much of the Coast Range and Willamette Valley is composed of older sedimentary rocks, a veneer of lava flows in the northern part, and volcanic headlands along the Coast, stand out as erosion-resistant knobs and sheets above the softer sediments.

Eastern Oregon is predominantly volcanic in origin, consisting of both lava flows and ash layers interspersed with shallow fossil-bearing basins. The dry high desert environment of Eastern Oregon preserves these features remarkably well. In contrast, volcanic structures in Western Oregon are subdued by the aggressive effects of heavy rainfall and weathering.

Marine Sediments

Exposed in the Coast Range and along the margins of the Willamette Valley, oceanic sediments, shown on the map as light tan, date back as much as 50 million years. These sediments, deposited underwater, blanket older volcanic rocks. Originating in both the Cascade and Klamath Mountains and carried to an ancient ocean in the process of erosion, these sediments represent a variety of marine environments from shoreline and deltas to continental slope depths. Fossils in the sediments attest to the tropical nature of the local climate at the time of deposition.

Oceanic Volcanics

Peeking from beneath the marine sediments, a series of oceanic volcanic rocks, composed predominantly of basaltic lavas, floors the Coast Range. These rocks represent an ancient oceanic submarine platform formed 50 to 60 million years ago some distance offshore from Oregon before being accreted (annexed) to the state. The most distinctive of these oceanic volcanics is a type of rock called "pillow basalt." Represented by bulbous blobs of rock, pillow basalt is the result of lava erupting underneath the water.