

Cenozoic Geologic History of Gem and Payette Counties

The Cenozoic geologic history of Gem and Payette Counties is similar to many areas in southwestern Idaho. Volcanism resulted mainly from the faulting and initiation of the Western Snake River Plain in the Miocene. Sedimentation occurred within the many lakes interconnected at times by a river system that was present in the newly formed rift environment. Columbia River volcanic flows and pyroclastic rocks that were erupted from both central and fissure-type vents represent the oldest volcanic rocks in the area.

These lava flows temporarily blocked major surface water drainages causing extensive deposits of alluvial, fluvial and lacustrine sediments referred to as the Miocene - Pliocene Payette and Sucker Creek and Pliocene - Pleistocene Idaho Formations. The age of these sedimentary deposits range from Miocene to the Pleistocene and exhibit many sedimentary structures for example the fluvial facies exhibit cross bedding, ripples, scouring, delta foresets and others. Well preserved fluvial and lacustrine facies of the Idaho Formation can be observed along Old Freeze Out Hill Road.

Columbia River basalts are widely distributed over Gem County and parts of eastern Payette County. Squaw Mountain represents a major block of the Columbia River Basalt which is estimated to have been uplifted approximately 2500' along its eastern margin (Savage, 1961). Other exposures of Columbia River basalts can be observed along the north side of Black Canyon Reservoir. Silicic volcanic rocks, rhyolitic welded ash flow tuffs, also crop out in the region and are stratigraphically above the Columbia River basalt units. Exposures of the rhyolitic ash flow tuff units can be observed in the Pearl region.