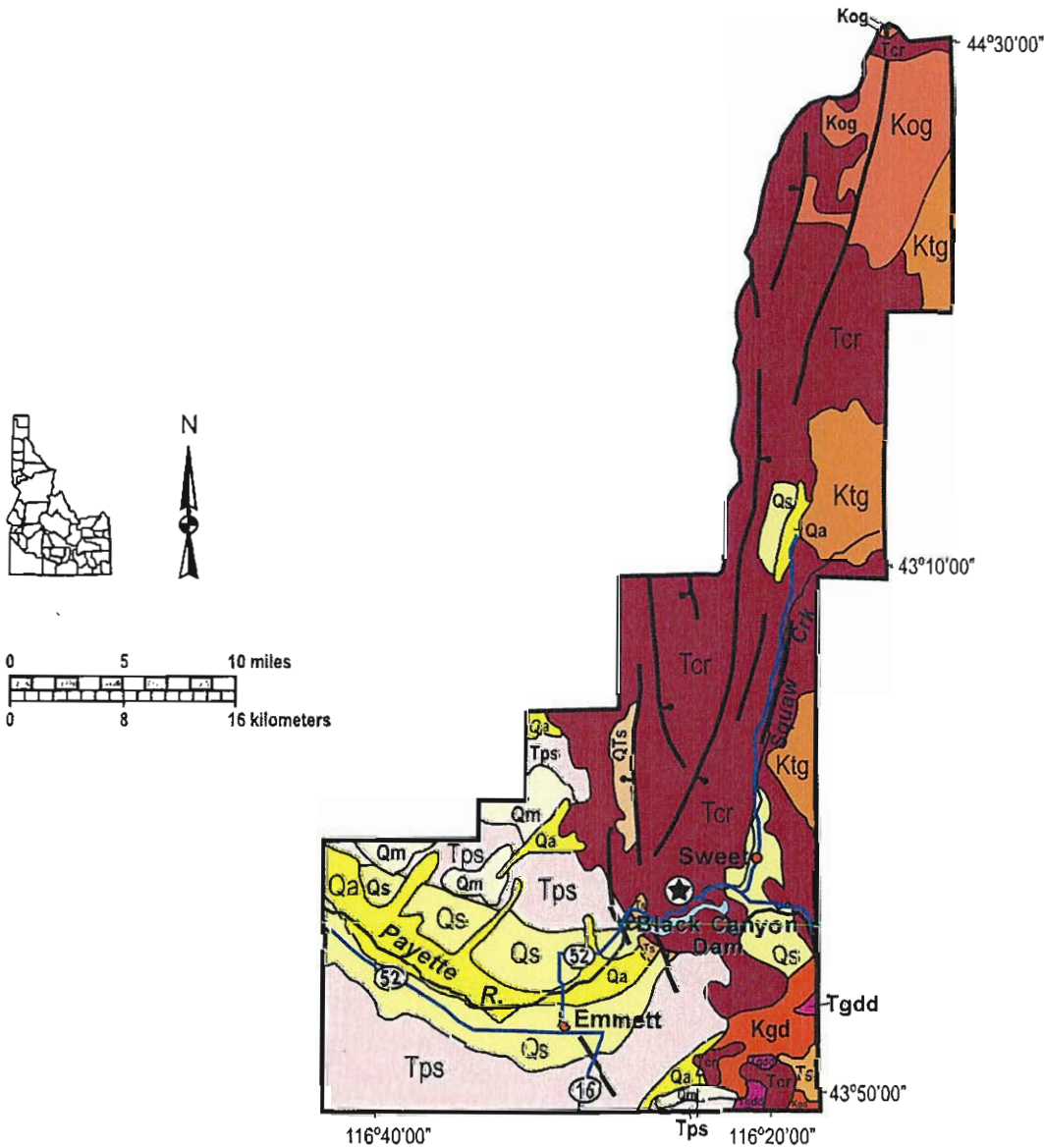


Gem County, Idaho



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<http://imnh.isu.edu/digitalatlas>
Compiled by Paul K. Link,
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<http://www.isu.edu/departments/geology/>

EXHIBIT

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Gem County

Gem County covers a small area on the northern border of the Snake River Plain, including the drainage of Squaw Creek and the main channel of the Payette River.

On the southwest are outcrops of Miocene to Recent lake and fluvial beds in bluffs above the Payette River. Much of the northern panhandle of the county is underlain by Miocene (17 Ma) Columbia River basalt. North-trending fault zones parallel Squaw Creek and control the linear topography of the northern county.

On the eastern edge of the county are several outcrops of Cretaceous tonalite, orthogneiss and granodiorite of the Idaho batholith complex.

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. 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 ranges from Miocene to the Pleistocene. These units exhibit many sedimentary structures. The fluvial facies exhibits cross bedding, ripples, scouring, and delta foresets. 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.




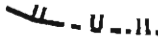










T. Schiappa and P.K. Link, 10/02

Description of Units for Gem County, Idaho

- Qa** Quaternary alluvial deposits
- Qm** Quaternary moraine (unsorted boulders, cobbles and sand) and glaciofluvial outwash (bedded stream deposits formed from streams draining active glacial ice).
- Qs** Quaternary surficial cover, including colluvium, fluvial, alluvial fan, lake, and windblown deposits. Included fluvial cover on Snake River Plain, (Snake River Group).
- QTs** Pleistocene and Pliocene stream and lake deposits; sand, gravel and mud; Lake Idaho sediments; Glens Ferry Formation; Idaho Group.
- Tps** Pliocene and Upper Miocene stream and lake deposits (Salt Lake Formation, Starlight Formation, Idaho Group).
- Ts** Tertiary sedimentary rocks, undifferentiated. Includes Oligocene and Eocene sedimentary rocks in east-central Idaho (Paleogene basins of Janecke). In northern and western Idaho this unit contains Miocene lake and stream deposits formed adjacent to and above the Columbia River and Weiser basalts, which formed dams in stream canyons.
- Ter** Miocene basalt (Columbia River Basalt Group); flood basalt, extensively exposed in western Idaho; fed by fissures, many of which are near the Idaho-Oregon border. Flowed eastward up valleys cut into the Idaho mountains.
- Tgdd** Eocene granodiorite and dacite porphyry intrusive, also includes diorite and, in northern Idaho, minor granitic rock; intermediate phase of Challis magmatic event (50 to 46 Ma). Summit Creek stock.

- Kgd** Cretaceous granitic rocks of the 2 mica suite. Idaho batholith and related plutons; granite and granodiorite that contains both muscovite and biotite. Sodium (Na) rich. Intruded between 80 and 65 Ma.
- Kog** Cretaceous orthogneiss, and foliated granodiorite and granite (includes mylonitic plutonic rocks in western Idaho suture zone); deformed early phases of the Idaho batholith.
- Ktg** Cretaceous tonalite and quartz diorite; hornblende and biotite bearing early phases of the Idaho batholith. Intruded about 90 to 95 Ma.

Symbols

 <p>Geologic unit contacts with unit designation.</p>  <p>Normal fault: certain; dashed where approximately located; dotted where concealed.</p>  <p>Thrust fault: certain; dashed where approximately located; dotted where concealed.</p>  <p>Detachment fault: certain; dashed where approximately located; dotted where concealed.</p>  <p>Anticline: trace of axial plane: large arrow indicates direction of plunge.</p>  <p>Syncline: trace of axial plane: large arrow indicates direction of plunge.</p>	 <p>Overtured anticline: trace of axial plane.</p>  <p>Overtured syncline: trace of axial plane.</p>  <p>Location of ISU Rockwalk rock from each county.</p>  <p>Cities</p>  <p>Feature location</p> <p>Roads</p>  <p>Interstate Route</p>  <p>U.S. Route</p>  <p>State route</p>
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