

Regional Geology of Valley County

Three major rock groups are exposed near McCall, Idaho. These include: the Cretaceous Idaho batholith, the Triassic-Jurassic metamorphosed island-arc sedimentary and volcanic rocks of the Seven Devils Group and the Miocene flood-basalt flows of the Columbia River Basalt Group. Several structural features are prevalent in the area and most likely control along with the past glaciation the geomorphology in the region.

Structurally, McCall is situated at the end of Long Valley, a major tectonic and structural feature of west central Idaho. The West Mountain escarpment is the high ridge formed along the west side of the Long Valley fault. West Mountain and Long Valley are part of a group of linear north-south ranges and valleys formed by block faulting during the late Tertiary and Quaternary. As West Mountain rose and Long Valley subsided, as much as 7,000 feet of alluvium accumulated in the valley (Idaho Geological Survey website <http://www.idahogeology.org/FieldWorkshops/WestCentralIdaho/McCall.htm>.)

Glacial deposits are divided into two categories on the basis of origin. "Till" is unsorted, rounded glacial sediments which commonly form moraines. Moraines can be one of four types. "Lateral" moraines are formed from the large accumulations of unsorted debris at the glacier-valley wall interface. "Medial" moraines form when two glaciers merge, and their lateral moraines are incorporated into the center – or medial portion – of the glacier, much like when two streams come together. A "Terminal" moraine is one that marks the furthest advance of the glacier; each farther-reaching advance wipes out the previous terminal moraine. "Recessional" moraines mark periods when the glacier is retreating – that is, the end of the glacier (the snout) where moraine is being deposited is short of the terminal glacier. It is important to remember, however, that even when a glacier is retreating the ice and sediment movement is always forward. In terms of glacial sediment transport, a glacier is not unlike a conveyor belt that can lengthen and shorten as conditions mandate.

The second category of glacial deposit is not formed by flowing ice, but flowing water and is referred to as outwash. "Outwash" is deposited by meltwater discharging at the base of glaciers. Outwash from glaciers commonly forms expansive braided stream networks downvalley from glaciers and differ from moraines in that outwash sediments are well-sorted. For further information on glaciers and glacial geomorphology, please visit the USGS website <http://pubs.usgs.gov/gip/glaciers/glaciers.pdf>.

Glacial features can be found around the area as most of the broad, high elevation region north of McCall was buried by an ice cap during the Pleistocene. Payette Lake and Little Payette Lake were formed as a result of glaciation in the region as valley glaciers carved the basin and deposited the moraines which impound the lakes. Other glacial geomorphic features, such as cirques – the alpine headwalls where glaciers begin – and medial moraines, around the area are visible in the landscape. An example would be Timber Ridge which formed originally as a large prominent medial moraine. Meltwater streams from these glaciers coursed across the valley depositing thick deposits of sand and gravel that can be seen as high terraces above the Payette River. These terraces are relict valley

floors that have been incised as the post-glacial climate has changed and discharges in the Payette drainages have diminished.