

Summary Description of the Geology of the Dinwoody Canyon with
Special Reference to Artifact-bearing Loess-like material on
the Valley Floor.

* * * *

by S. H. Knight, State Geologist

Dinwoody Canyon traverses rocks from Pre-Cambrian to Eocene in age. The upper reaches of the Canyon are cut in pre-Cambrian igneous and metamorphic rocks. From a point some four miles upstream from the main site of archeological investigations to a point some three miles downstream from this site the canyon is cut in a thick succession of Paleozoic and Mesozoic rocks that dip to the northeast at an angle of fifteen degrees. Resting unconformably upon the Mesozoic rocks exposed in the lower reaches of the canyon is a succession of coarse conglomerates which are believed to be Eocene in age.

Pre-Pleistocene history. Evidence indicates that the Dinwoody river cut a deep precipitous canyon across the upturned and eroded sedimentary rock succession prior to Pleistocene time. The time of the beginning of canyon cutting is not known but it is believed to have been sufficiently far back in Cenozoic time to permit erosion to have developed the main features of the canyon.

Pleistocene history. Successive advances of valley glaciers during Pleistocene time caused considerable modification of the pre-Pleistocene canyon. Three successive advances and retreats of valley glaciers are exhibited in the terminal moraines which impound the first, second and third lakes. (The archeological site is situated 500 or more feet southwest of the inlet to the third lake.)

Recent history. Following the last retreat of the valley glaciers two lakes on the valley floor above the upper morainal lake came into being.

The lower of these (Mud Lake) was dammed by a wall of limestone. This lake has been partially drained by post-glacial trenching and solution channels through the limestone dam. This lake basin has also been partially filled by fine textured sediments from meltwater of Dinwoody River. During lower water stages much of the silt surface of the lake is exposed.

The topography of the valley floor traversed by the thick Paleozoic limestone formations has been modified by sinks. This feature is conspicuous in the area lying to the southwest of the archeological site.

Post glacial erosion has cut a precipitous gorge 300 feet deep through the limestone barrier or dam which traverses the valley between the archeological site and Mud Lake.

Recent deposits. There have been only minor modifications of the valley floor since the retreat of the last valley glacier. The time of the retreat of this glacier has not been definitely determined. It seems safe to conclude that the portion of the canyon occupied by the archeological site was released from the ice several thousand years ago. The Dinwoody River is in large part fed from melting ice in its upper catchment basin. It exhibits wide seasonal variations in volume of flow which reaches its maximum in midsummer. When visited on numerous occasions during the period of maximum runoff the river was confined to its channel. There is little or no evidence of river-laid deposits adjacent to its present channel in the vicinity of the archeological site. The thin, irregular soil veneer resting upon the bed rock of the valley floor at the archeological site is, for the most part, an unstratified fine-textured loess-like deposit, intermixed with angular rock fragments

from adjacent outcrops of bed rock. The maximum thickness of the soil veneer is unknown to the writer. It is not believed to be more than a few feet thick. The exposed silt surface of Mud Lake is an obvious source of the loess-like material. Wind blown deposits of considerable extent cover the bed rocks adjacent to the northeast margin of Mud Lake. There is nothing in the soil veneer or its position, so far as the writer is aware, which could be used to date the age of the deposit except that it has accumulated during Recent geological time.