



**Photo 21. Caldera-collapse landslide breccia, clasts of Fish Canyon Tuff.**

A. Rugged outcrops of massively brecciated Fish Canyon Tuff (Tpbf), that formed by landsliding into Cochetopa Park caldera as it subsided in response to early stages of eruption of the Nelson Mountain Tuff from the San Luis complex. The Fish Canyon breccia was deposited across irregular paleotopography on andesite of the Conejos Formation (Tca, Tcv), constituting inward-sagged lower parts of the south caldera wall and margins of the caldera floor. View to northwest, across Mexican Joe Canyon (just south of map area, SA).

B. Typical outcrop, landslide breccia of Fish Canyon clasts (Tpbf). Pumice-compaction foliations in clasts have diverse orientations, documenting rotation during transport, and random paleomagnetic-pole orientations on adjacent clasts indicate cold emplacement (Lipman and McIntosh, 2008, table 3). Some large coherent clasts (not within image) are as much as several tens of meters across. West-facing cliff, east of Mexican Joe Canyon (SA).

C. Close-up view, landslide breccia of Fish Canyon clasts (Tpbf). Clast-supported texture, scarcity of matrix fines, and unfilled voids are consistent with modest transport distance. West-facing cliff, east of Mexican Joe Canyon (SA).

D. Rare exposure of basal contact (along back of cave), landslide breccia of Fish Canyon clasts (Tpbf), resting depositionally on andesite of the Conejos Formation (Tca). Normal welding zonation of the Fish Canyon tuff sheet is completely disrupted by brecciation, but no clasts from the underlying andesite are incorporated within the slide breccia. West-facing cliff, east of Mexican Joe Canyon (SA).

E. Landslide breccia of Fish Canyon Tuff (Tpbf), at northwest margin of Cochetopa Park caldera, containing rare clasts of phenocryst-poor rhyolitic Carpenter Ridge Tuff (Tcr), intermixed with dominant Fish Canyon fragments (geochron sample no. 03L-32, table 3). Such exposures document late timing of landsliding, unrelated to eruption of the Fish Canyon and associated caldera subsidence. Roadcut, along Los Pinos Creek (CS).