

MESAS IN CALIFORNIA?

CH 7: SCIENCE PREVAILS IN THE DISCOVERY OF TRACHYANDESITE VOLCANIC VENT

LARRY SCHEMEL, RETIRED USGS SCIENTIST

King Huber's hypothesis that the Kennedy Table Mtn Complex originated from a local vent stood for three decades. However, very recently a publication by Wes Hildreth et al. (2021) showed that it was very likely the result of flow from a volcanic vent located near the present Sierra crest. This is similar, in concept, to the origins of Oroville and Tuolumne Tables, but with important exceptions. The vent is located on the middle fork of the San Joaquin River south of the Devil's Postpile. After a decade of new investigations, no other remnants of the eruption 9.3Ma ago were located between the vent and Kennedy Table, 66km downstream. Extensive elemental and isotopic analyses clearly show that these two separated volcanic structures are identical Kennedy Table Trachyandesite.

Remnants of the lava flows that produced Oroville and Tuolumne Tables have been identified in their upstream reaches, but why is this not the case for Kennedy Table? One possibility is that the drainage basin of the San Joaquin River extended far into Nevada at the time of the eruption, but it was severely severed (reduced) by a combination of uplift and blockage by eruptions of basaltic lava about 3.3Ma ago. So, for about 6 Ma, erosion rates in the San Joaquin River were extremely high and presumably capable of destroying and transporting the upstream remnants.

Wes Hildreth told me a few years ago that a possible source for the Kennedy Table Trachyandesite had been located near

Mammoth crest. He contacted our family's and adjacent cattle ranches on Kennedy Table to make measurements and collect samples. His paper, released this summer, is another chapter in the Earth science of the Sierra Nevada. Chapter 7 concludes our examination of the geology and history of California's three volcanic mesa complexes. We shouldn't get too comfortable with our knowledge so far, because the beauty of Earth sciences is that there is always something new waiting to be discovered.

Wes Hildreth, Judy Fierstein, Fred M. Phillips, and Andy Calvert, 2021. Trachyandesite of Kennedy Table, its vent complex, and post-9.3 Ma uplift of the central Sierra Nevada. GSA Bulletin. <https://doi.org/10.1130/B36125.1>



Rainbow Falls, Sierra peaks, and more-recent volcanism on the Middle Fork of the San Joaquin River west of the 9.3Ma vent .

