



Site Description

S Big Smoky Valley

(updated 2010)

Geologic setting: At the Alum Mine, native sulfur coats fractures in an altered rhyolite dike; potassium alum is also present as veins (Spurr, 1904; Branner, 1959). The deposit is latest Pleistocene: alunite associated with the sulfur has been K-Ar dated to 0.29 ± 0.01 Ma (Vikre, 2000, p. 751).

Geothermal features: Three widely-separated regions in the southern Big Smoky Valley have anomalous water temperatures.

Alum Mine: A geothermal anomaly is centered on the Alum Mine (SE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 29, T1N, R38 $\frac{1}{2}$ E, protracted on the Goldfield 30'x60' topographic map), where native sulfur was mined from the 1920's onward. The anomaly was defined by gradient-hole drilling: drill hole temperatures reach 118.3°C at 453.8 m, and geothermometry suggests higher-temperatures at depth (GeothermEx, 2004). The Fishlake Livestock Co. well (SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 5, T1S, R39E), now defunct, was reported to flow hot water from 50.3 m depth (Rush and Schroder, 1970).

Leasing information: The 7,198 acre Alum project was drilled in the 1970's, and 1980's by Amax Exploration, Phillips Petroleum, and O'Brien Resources (46 TG holes). Geothermometer temperatures indicate a reservoir temperature up to 225°C. The maximum bottom-hole temperature from prior drilling was 118°C at 455 meters. In November 2009, SGP completed ground-based MT and airborne ZTEM surveys and drilling well 25-29 which reached 126°C at 620m. The former Sierra Geothermal Power was awarded a \$5 million DOE grant with funds to be used at Alum for day/night thermal infrared imagery, 3D resistivity, shallow temperature surveys, and drilling. See RAM Power's Clayton Valley Project for more details.

Emigrant Well, Barrel Spring, Macaroni Spring: The Emigrant well (NW $\frac{1}{4}$ Sec. 6, T1N, R38E) had a reported temperature of 25°C (Trexler and others, 1979, Table 1) or 26.7°C (Rush and Schroder, 1970). It is reportedly 98.7 m deep, with a water line at 93.9 m. Six kilometers southwest, an unnamed 166.4-m-deep well (NW $\frac{1}{4}$ Sec. 14, T1N, R37E) has a reported temperature of 21.7 °C.

Hall Mine:



Site Description

Indian Springs:

Stanley A Tanner Well:

