

LINCOLN COUNTY

Caliente Hot Springs [173]

The Caliente Hot Springs in S8 & SW/4 S5,T4S,R67E in Lincoln County have temperatures over 100°F—temperatures up to 118°F have been reported (Sanders and Miles, 1974). The town of Caliente derives its name from the springs. The springs no longer flow; much of the water apparently flowing underground into Caliente Creek. However, a 66,000-gallon swimming pool can be filled in 4 hours with a small pump lifting water only 7 feet (Smith, 1958). The springs are along a fault in Tertiary volcanic rocks (Adams, 1944; Hardman and Miller, 1948; Phoenix, 1948a).

Several water wells in the area have high temperatures. The highest is 145°F in the Wallis Health well near the Caliente Hospital (Sanders and Miles, 1974). The city of Caliente's North Well in the NE/4 S7,T4S,R67E is 130 feet deep, and has water temperatures of 78°F at 25 feet, 90°F at 100 feet, and 128°F at the bottom (Phoenix, 1948a). The Caliente Public Utility No. 4 well in the SW/4 S5,T4S,R67E also is 130 feet deep and has a temperature of 104°F (Rush, 1964). Another(?) well "near Caliente Hot Springs" has a temperature of 135°F (Smith, 1958).

Other springs northeast of Caliente

Several other hot springs extend in a line northeast from Caliente along Meadow Valley Wash. The location of these springs is obviously fault-controlled. This reach of Meadow Valley Wash follows the northeast extension of the Menard Lake Fault (Tschanz and Pampeyan, 1970, plate 3), a major transverse fault in this region.

Panaca (Owl) Warm Spring [170]. The Panaca Warm Spring is in the CN/2 S4,T2S,R68E just north of the town of Panaca. It has reported temperatures ranging from 85° to 88°F, and flow rates ranging from 1,800 to 6,277 gpm. The water issues from a fault contact between alluvium and Paleozoic limestone. The town of Panaca uses the spring as its water supply (Carpenter, 1915; Phoenix, 1948a; Rush, 1964).

Hot water occurs in a least six wells north and south of the spring, in S32,33,T1S,R68E, and S5,7,8,T2S,R68E. Temperatures ranged from 74° to 70°F (see Table 1 for analyses, etc.).

Delmue's Springs [168]. The two Delmue's springs are about 6 miles northeast of the Panaca Warm Spring in the NE/4 NW/4 SE/4 S13,T1S,R68E. The reported temperature is 70°F with a flow rate of some 200 gmp. The water is used for irrigation (Hardman and Miller, 1934; Rush, 1964).

Flatnose Ranch Spring [167]. The Flatnose Spring is about 6 miles northeast of the Delmue's Springs in the SE/4 S34,T1N,R69E. Temperatures up to 77°F and flow rates up to 400 gpm are reported. The spring is along a buried fault under Tertiary lava. The water is used for irrigation (Phoenix, 1948).

Springs in Pahrnagat Valley

Several hot springs occur for a distance of about 12 miles along the east edge of Pahrnagat Valley, along the west edge of the Hiko Range.

Hiko Spring [172]. Hiko Spring, in S14,T4S,R60E, is the northernmost of this group. Temperatures range from

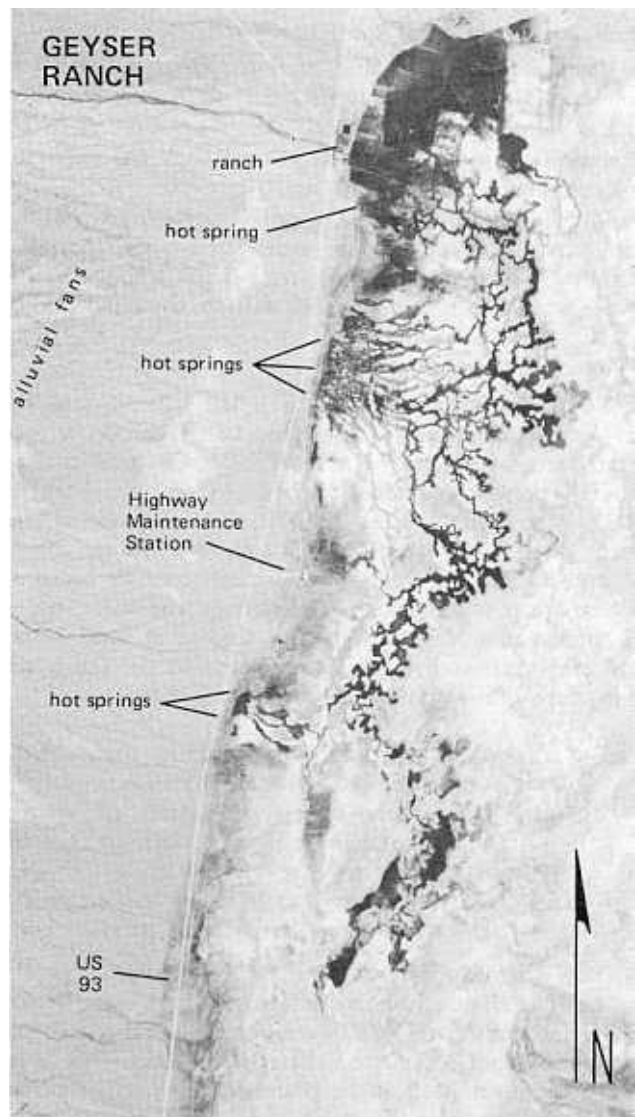
90° to 80°F and flow rates from 538 to 2,400 gpm (Carpenter, 1915; Mifflin, 1968). The water issues from a contact between alluvium and dolomite. The water is used for irrigation and domestic purposes.

Crystal Springs [174]. Crystal Springs are south of Hiko Spring, in S10,T5S,R60E. Temperatures range from 90° to 81°F and flow rates from 9,000 to 2,680 gpm (Hardman and Miller, 1934; Eakin, 1963b). There are at least two springs; one flows from an orifice in limestone bedrock. The water has been used for irrigation and domestic purposes.

Ash (Alamo) Springs [175]. Ash (Alamo) Springs are south of Crystal at the corner of T5,6S and R60,61E. There are six main springs. Reported temperatures range from 97° to 88°F and flow rates from 10,300 to 7,630 gpm (Eakin, 1963b; Mifflin, 1968). The springs issue from a contact between alluvium and dolomite bedrock. The water is used for irrigation and domestic purposes. Carpenter (1915) mentions a "warm" spring in section 18, three miles to the south.

Other areas

Geysir Ranch Springs [165]. A series of warm springs occur at the Geysir Ranch in S1,12,13,23,T9N,R65E, at



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the north end of Lake Valley, along the toe of the alluvial fan from the Schell Creek Range. Reported temperatures range from 65° to 70°F, with flow rates (one spring ?) of 50 to 1,400 gpm. The water is used for irrigation (Rush and Eakin, 1963; and Lamke and Moore, 1965).

Hammond Ranch [166]. A large hot spring issues from limestone at the head of Camp Valley (probably S17,T5N, R69E) on the Hammond Ranch. The water has a temperature of 84°F and is used for irrigation (Carpenter, 1915).

Sand Springs Valley [171]. Sand Springs in S26,T2S, R55E is the only reported hot spring in northwestern Lincoln County. It has a temperature of 86°F but a flow rate of only 0.2 gpm. The N. J. Gunderson well to the southwest in S19,T3S,R55E has a water temperature of 83°F, and two other wells in S5,8,T4S,R55E are reported to contain "warm" water (Van Denburgh and Rush, 1974).

Bennetts Springs [169]. Bennetts (Bennett) Springs in S7,T5S,R66E, have a temperature of 70°F and a flow rate of 10 gpm. There are two springs along a buried fault. The water is used to water cattle (Hardman and Miller, 1934).

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Hazen area (Patua) Hot Springs [177]

Patua Hot Springs consist of four springs and two mud domes, located in S8,13,T20N,R26E about 4 miles northwest of Hazen (Miller and others, 1953; Tischler and others, 1960). The springs are reported to be boiling. Only one published analysis is known from the springs.

In 1961 Magma Power Co. drilled three shallow cable-tool exploratory wells in the area. These were reportedly 300 to 750 feet deep, with temperatures above 275°F (Koenig, 1971; B. C. McCabe, written communication).

Wabuska Hot Springs [181]

Hot springs, approximately 1 mile north of Wabuska, range in temperature from 138° to 162°F and occur over a large area in S14,15,16,23,T15N,R25E. Gas bubbles issue from the pools with a faint odor of H₂S (Stearns and others, 1937). According to Russell (1885, p. 48, 49), the springs occur along an east-west line that coincides with the course of a post-Lahontan fault which is plainly shown by an irregular scarp, in some places 20 feet high. The springs occur in circular mounds; the water is collected in small basins and evaporated, reportedly forming a saline deposit, a section of which is described below (Russell, 1885):

- 1 to 2 in. white, hard crust of sodium sulfate with sodium chloride, some calcium carbonate.
- 2 to 7 in. soft, mealy or clayey deposit of sodium sulfate, calcium carbonate, calcium sulfate, etc.
- 6 to 8 ft. clear, transparent crystals of sodium sulfate with some impurities; resting on saline clay.

The American Sodium Co., using evaporating ponds, refined and shipped sodium sulfate from here in the 1930's. Davis and Ashizawa (1960) have suggested that a chemical company might be able to use hot water from wells to refine sodium sulfate. Samples of mixed sodium chloride and sodium sulfate from surface incrustations reportedly show



Steam well at Wabuska Hot Springs, Lyon County.

minor amounts of potash but no lithium, rubidium, cesium, nitrate, phosphate, or borate salts (Moore, 1969, p. 40).

In 1959 Magma Power Co. drilled three steam wells at the Wabuska area. Two of the wells were shallow (less than 600 ft) and the third was drilled to 2,223 ft, with a maximum reported temperature of 227°F. Several water wells in this area have temperatures above 80°F. Also, a well about 4 miles to the southeast reportedly has 70°F water. Samples of water from the Magma Power Co. wells yield estimated reservoir temperatures of 293° and 306°F based on silica and Na-K-Ca geothermometers (Mariner and others, 1974).

In 1972 Agri-Technology Corp. began building greenhouses near the site of the steam wells. The company plans to grow vegetables hydroponically, especially tomatoes, using the steam and hot water from the wells to heat the greenhouses.

Long and Brigham (1975a) and Peterson (1975) have reported on audiomagnetotelluric and gravity data in the Wabuska area.

Hinds' (Nevada) Hot Springs [184]

The third hottest springs in Lyon County, after Hazen and Wabuska, are those found near the edge of the Pine Nut Mountains along the western margin of Smith Valley. These springs are named for J. C. Hinds, the first settler in the north end of Smith Valley. Hinds utilized the springs as early as 1860 for agriculture and in a spa built on the site (Loeltz and Eakin, 1953; Thompson and West, 1881). The flow of the springs was also used to turn a water wheel, which powered a rock arrastre employed to mill various ores from mines in the vicinity (Pioneer Nevada, 1951, p. 96).

The temperatures reported at Hinds' are as high as 149°F (L. J. Garside, unpublished data), although cool sulfur water reportedly issues from a spring only a few hundred feet away. Thermal springs are also found along the edge of the valley from half a mile south of the main springs at Hinds' to a point due south of the alkali flat. Generally the flow of each spring is less than 5 gpm and the temperature is a little less than 70°F (Loeltz and Eakin, 1953). The water from these springs is probably rising from depth along a system of faults. The fluoride content of Hinds' Hot Springs has been reported as 2.7 and 3.1 ppm. Most water in Smith Valley whose temperature indicates little if any mixing with thermal water contained only 0.2 to 0.4 ppm fluoride. It appears that high contents of fluo-