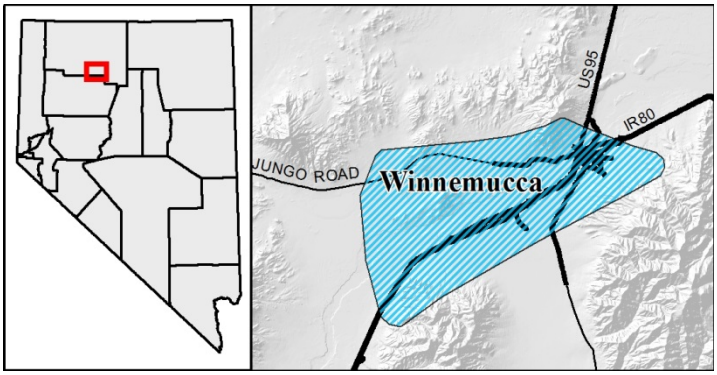
Site Description

Winnemucca
(Updated 2014)



Geologic setting:

The Harmony mining district, 8 km southwest of Winnemucca, was mined for mercury, silver, gold, and copper-lead-zinc sulfide. Locally, the Valmy Formation has been overthrust upon the Harmony Formation, with attendant complex faulting. Quartz latite dikes cut both formations, and contain the district's mineable ores (Vanderburg, 1938; Willden, 1964; Bonham et al., 1985).

The East Range fault is believed to intersect a buried, northwest-trending fault from the Krum Hills (figure). The fault projection is based on geophysical evidence and the presence of thermal springs and wells. Alluvial units are altered in the vicinity of the faults, and spring deposits are present at several areas (Garside and Schilling, 1979).

Tungsten-bearing manganese veins near the East Range fault (E½ SE¼ Sec. 5, T34N, R36E) are called the Victory Lode. The veins consist largely of calcite with films of manganese and iron oxides. Other gangue minerals are quartz, chalcedony, and gypsum. R.J. Roberts (quoted in White, 1955), believes that these veins are the "roots" of spring deposits now removed by erosion. They are no doubt older than the travertine deposits to the north, but may be genetically related (White, 1955).

Geothermal features: (Map)

Several wells and springs are noted in the Great Basin Groundwater Geochemical Database for the Winnemucca geothermal cluster. These springs and wells are recorded primarily as cold with few warm springs and wells noted. Temperatures for these springs and wells range from 11°C to 33.9°C. Geothermometer readings were recorded for many of these features.

California Pacific Utilities Co. Well: This well is a warm well located in the southern half of Section 30, T36N, R38E. This well was reported to have a temperature of 22.8°C with a Na-K-Ca geothermometer of 57.81 (Fournier, 1981), a quartz geothermometer of 102.74°C (Fournier, 1977), and a chalcedony geothermometer of 72.88°C (Fournier, 1981). The total depth of this well was recorded at 151 meters with samples being taken from this depth (Great Basin Groundwater Geochemical Database).

USBLM Corral Well: This well is recorded as a warm well operated by the Bureau of Land Management. It is located in the SE quarter of Section 23, T36N, R38E. Temperature for this well was recorded to be 22.8°C with low Na-K-Ca and silica geothermometer readings (Fournier 1977, 1981). Recent field notes for this well recorded an abandoned windmill pump in the corral area that was not functioning (Great Basin Groundwater Geochemical Database).

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NWIS Well 070 N36 E37 26C 1: This is a warm well located in section 26 of T36N, R37E. A temperature of 20°C was recorded by the USGS in 1961 with a Na-K-Ca geothermometer of 56.85°C (Fournier, 1981), a quartz geothermometer of 105.44°C (Fournier, 1977), and a chalcedony geothermometer of 75.78°C (Fournier, 1981). The sample depth was recorded as 26.5 meters with no total depth recorded (Great Basin Groundwater Geochemical Database).

Rose Creek Springs: Warm springs and wells are located at the northwestern corner of the East Range (Secs. 21, 27, 28, T35N, R36E) (Cohen, 1962b; 1964). Two gas-discharging springs (Little and Big Alkali Springs) have elevated temperatures, varying between 20°C and 28.9°C (Great Basin Groundwater Geochemical Database). These springs lie along a range-boundary fault extension, believed to cross Interstate 80 near the center of Sec. 28, according to geophysical evidence (Cartwright et al., 1964).

Spring deposits consist of both siliceous sinter and travertine (Cohen, 1962a). The deposit in Sec. 33 is at the approximate maximum level of Pleistocene Lake Lahontan, and may be related, in which case the deposit would be younger than 50,000 years. White (1955) describes the travertine at one spring terrace (probably in NE¼ NW¼ Sec. 33, T35N, R36E) as being light brown and very porous. One sample contained 9% Mn and 0.3% WO_3. The present spring is not depositing travertine.

Water wells down-gradient from the springs contain 2-15 ppm boron (Cohen, 1964). A warm water well (30.6°C) is also reported from NE¼ Sec. 25, T35N, R36E (Ron Deichman, written commun., 1990), >3 km east of the projected fault. In 1981, Phillips Petroleum Company drilled two temperature gradient holes (91 and 166m (116?) depths) in the southern portion of current leased area that yielded maximum recorded temperatures of 57.8°C and 34.5°C and temperature gradients of 220-269°C/km. (GeothermEx, 2004).

The Great Basin Groundwater Geochemical Database reports Na-K-Ca geothermometer readings ranging from a low 27.8°C up to a moderate 116.08°C (Fournier, 1981). Quartz geothermometer readings are moderate, ranging between 101.81°C and 124.44°C (Fournier, 1977) and chalcedony geothermometer readings are reported to range between 71.88°C and 96.43°C (Fournier, 1981) (Great Basin Groundwater Geochemical Database).

Leasing information:

The 1,544 acres Whitehorse property, located near Rose Creek Springs, has several surface manifestations indicating geothermal potential, including siliceous sinter, hematite/argillic alteration, and warm springs aligning on probably NNE-striking structures. Alterra Power Corp, formally Magma Energy US, proposed magnetic, gravity, resistivity, and seismic surveys, and shallow temperature gradient drilling. No information is available on this project, which no longer appears on the Company website as of fall 2013.

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