



## Site Description

### Crescent Valley

(updated 2010)

#### Geologic setting:

Cortez Mine and Carlin Trend

Young north- and northeast-trending faults are common in the alluvial deposits of Crescent Valley.

Hot Springs Point is bounded on the northwestern and southeastern sides by faults. All hot springs appear on the northwestern face, along the ~13 km Dry Hills fault trace. SE of Hot Springs Point, native sulfur is found along the Dry Hills fault (Keith Papke, personal commun., 1975), associated with hot springs activity. Sulfur is hosted within the Ordovician Valmy Formation, plus minor cinnabar and antimony (Olson, 1964). Vikre (2000) identified the Valmy Formation matrix as a sulfur-gypsum colluvium with clay-altered argillite.

The Cortez Fault is a significant range-front fault (Roberts and others, 1967). \_\_\_\_\_

#### Geothermal features:

**Hot Springs Point:** There are 10 known springs at Hot Springs Point, five of which have been chemically analyzed. Spring temperatures fall between 46 and 58.9°C, apart from one 26.1°C spring on the valley floor. These arise from alluvium and bedrock in a line 2.4 km long (located near the corner of Secs. 1, 2, and 11, T29N, R48E). The sampled springs have Na-K-Ca geothermometer temperatures less than the measured temperature (<30°C). Chalcedony geothermometers, however, indicate temperatures between 79 and 90°C. Samples of cold water are needed to evaluate mixing at this and other sites.

A 125-m-deep geothermal well drilled by Magma Power Co. encountered subsurface temperatures up to 74°C. The estimated thermal-aquifer temperature for this spring system is 115°C (Mariner and others, 1974). Spring sinter and caliche are reported along nearby northeast-trending faults which cut Tertiary andesites (Wilson, 1960b). These deposits are in the N½ Sec. 6, T29N, R49E. UNR samplers identified ongoing travertine deposition within the hot springs.



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**Dann Ranch:** The highest hot-spring temperatures in Eureka County are found at Dann Hot Spring, along the northeastern Cortez Range (NW¼ NW¼ NE¼ Sec. 10, T28N, R49E). Wilson (1960a) reported a temperature of 85.6°C, while Trexler et al. (1981), reported 92°C. Trexler measured water chemistry, which yields reservoir temperatures of 203.8°C (Na-K-Ca) and 136.6°C (quartz). Sinter is present around the spring and along the Cortez Fault ~0.5 km to the northeast (Richard Loring, written commun., 2002).

Although on BLM land, Dann Hot Spring is named for the Dann Ranch property 2 km north. In March 2003, UNR samplers measured the spring at 87.3°C and 9 L/min flow. Samples were not collected because staff was asked to leave by the Dann Ranch landowner.

Trexler et al. (1981) identified a 28°C well in Sec. 2, T28N, R49E of Dann Ranch. This could be part of the blind anomaly reported by Richards and Blackwell (2002, p. 75). However, estimated reservoir temperatures are low, at 34.5°C (Na-K-Ca-Mg) and 30.1°C (chalcedony). In July 2008, UNR samplers confirmed the well's location and temperature, which measured 26.8°C.

**Frenchie Flat:** Two warm wells were identified by UNR samplers in Frenchie Flat, northeastern Crescent Valley. Both wells are moderately warm (20.9°C and 24.3°C) and drain into cattle troughs. Water samples were taken, but not analyzed as of 2010. Phillips Petroleum drilled five gradient holes in the vicinity, with calculated temperature gradients from 36 – 65 °C/km.

### Leasing information:

Trexler, Koenig, Flynn, Bruce and Ghusn (1981; p. 192)

Vikre, 2000, p. 751