



Site Description

Las Vegas Valley

(updated 2010)

Geologic setting:

Geothermal features: Many water wells and springs in Las Vegas Valley have temperatures between 21 and 41°C. The area has a high mean annual temperature (over 16°C), which is a factor in the reported water temperatures. However, when well temperatures are adjusted for the increase of temperature with depth (the geothermal gradient), many temperatures still seem anomalous. A geothermal gradient of 0.0243 °C/m was selected as the lower limit, and only those wells with a gradient above that were included in this report. Any surface temperature over 21°C was considered anomalous, as has been the practice elsewhere in this report. Therefore, the 0.02 line on the [figure](#) was begun at 21°C, and only wells that fell to the right of that line were considered. Much of the water data for Las Vegas Valley was obtained from Maxey and Jameson (1946, 1948).

In Las Vegas Valley the warm-water springs and wells seem to be concentrated in several areas. The most northerly of these, Kyle Spring in Sec. 15, T 20S, R 61E, has a reported temperature of 24°C. Several warm-water wells in the surrounding sections seem to indicate that their source is also related to this spring. These anomalous spring and well temperatures probably indicate that the water at this area has circulated to depths greater than much of the rest of the water in Las Vegas Valley.

Downtown Las Vegas: Las Vegas (or Vegas) Springs are located in Secs. 30,31, T20S, R61E east of downtown Las Vegas and have temperatures up to 26°C. Fremont stopped here on May 3, 1844 and reported that the waters were "two narrow streams of clear water, 1 to 1.5 m deep, with a quick current, from two singularly large springs." The water had a pleasant taste but was too warm to be agreeable (Carpenter, 1915). The springs were used locally for irrigation, but have gone dry due to intense groundwater development. They originally flowed 9,717 L/min, and are reportedly along a fault which displaces the basin alluvium (Mifflin, 1968).

North Las Vegas:

South Las Vegas: Several other warm-water wells are found in the southern part of Las Vegas Valley, but do not seem to be concentrated in any one area. The warmer water probably represents a



Site Description

deeper source area, and may be useful in determining areas of maximum groundwater discharge from deep aquifers or faults. An exploration well (the Joe W. Brown Wilson-Government No. 1) was drilled for oil in 1957 in C NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 24, T21S, R61E and encountered hot water. The well was plugged below 1,844 m and converted to a hot (58°C) artesian water well. The hot water entry point was about 1,588 m, in the Permian Kaibab Limestone (Schilling and Garside, 1968). Waters similar to this could be the source for warm springs and wells in the Las Vegas Valley.

More than 20 wells with anomalous temperatures are clustered around Warm Springs Ranch in Sec. 10, T22S, R61E ([figure](#)). No temperature data are available for springs which may have been present at Warm Springs Ranch, but nearby well waters are 32°C, and temperatures of 26°C to 29°C are encountered in an area up to 1.5 to 2.5 km north and west of the ranch. A 41°C water well is present in NW $\frac{1}{4}$ Sec. 16, T22S, R61E about 1.6 km southwest of Warm Springs Ranch (Malmberg, 1965). A hot well is shown in NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 21, T22S, R61E (Las Vegas 1:100,000-scale topographic map); this may be a well that was planned (but not used) at a spa ("The Spa") in that area (Larry Monroe, oral commun., 1993).

Paradise Valley, Henderson:

Nellis Air Force Base:

Red Spring, White Rock Spring:

Leasing information: