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# MINERAL COMMODITY REPORT

# —— SULFUR ——

1984

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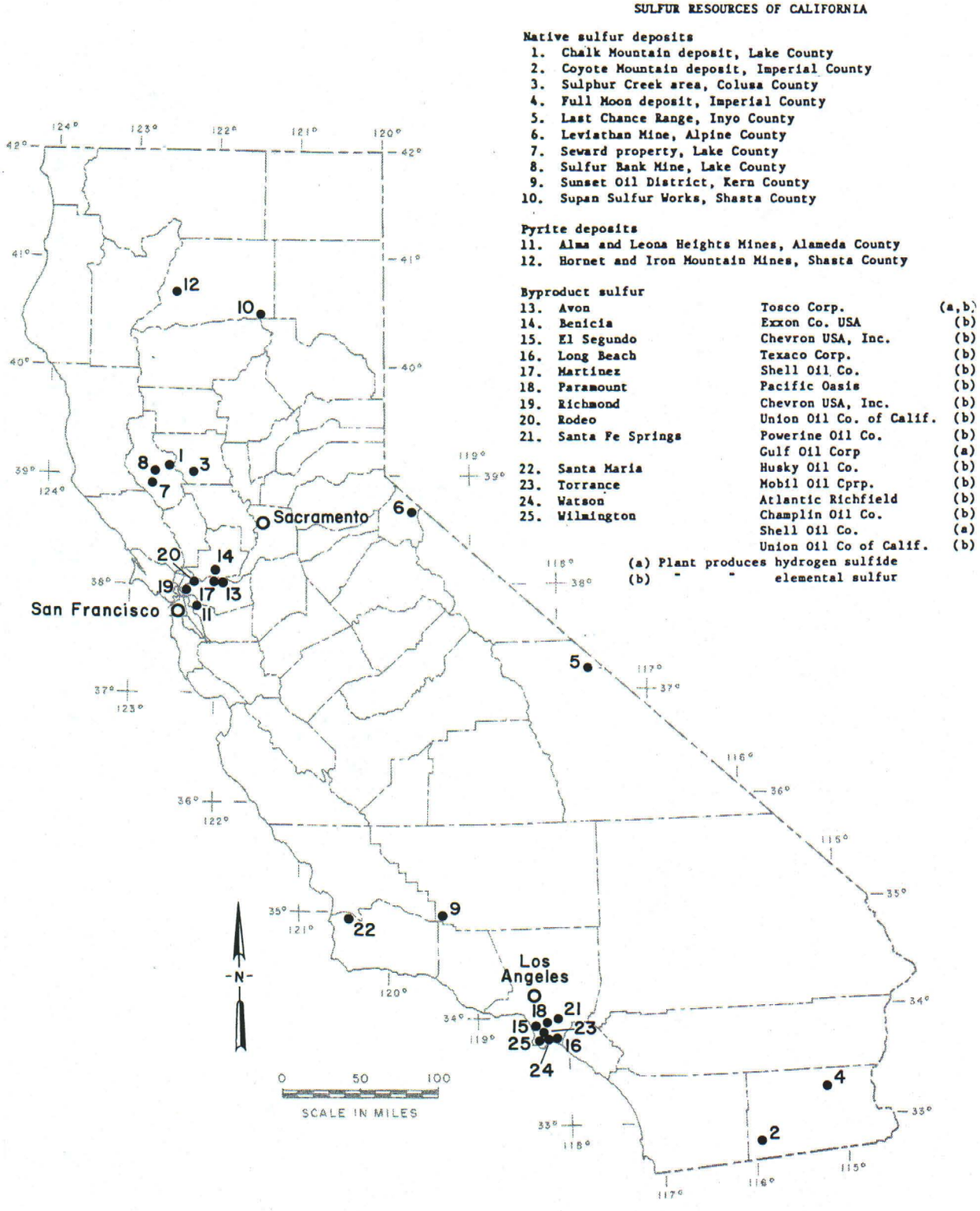


Figure 1. Locations of California sulfur resources.

## PART II: CALIFORNIA

### 12. CALIFORNIA GEOLOGIC OCCURRENCES

Most of the native sulfur deposits in California are associated with volcanic rocks. Nearly all sulfur of volcanic origin occurs as disseminations, massive replacement bodies or veins. Disseminated sulfur is characteristic of deposits in which the ore grade is less than 50 percent, although such dissemination commonly form envelopes about richer massive replacement bodies. Large veins are usually found in the lower parts of deposits where the wall-rock is relatively unaltered. Sulfur formed by hot-spring action may be deposited in sediments at the bottom of warm lakes. Sulfur also as liquid flows from volcanic vents, as cement in near-surface alluvium, and as sublimates about sulfurous gas vents (Lydon, 1957).

### 13. CALIFORNIA LOCALITIES

#### A. Native Sulfur

Native sulfur production in California has been reported from Alpine, Colusa, Imperial, Inyo, Kern, Lake and Shasta Counties (Figure 1). The most productive localities were the Leviathan mine in Alpine County, and the Crater and Gulch areas on the west slope of the Last Chance Range in Inyo County.

Alpine County: The Leviathan mine, located about 10 miles east of Markleeville, has produced about 500,000 metric tons of sulfur which was mined and shipped to Yerington, Nevada by the Anaconda Company. The sulfur was used to manufacture sulfuric acid for leaching secondary copper ore at Anaconda's Weed Heights open pit mine. The sulfur ore body occurs as faulted, flat northwest-trending elliptical lens about 90 feet in maximum thickness and at least 2400 feet long (Clark, 1977). Sulfur has impregnated the lower part of a lake-deposited(?) tuff bed and part of the underlying andesite(?). The sulfur usually is coarsely crystalline and glossy. Sulfur in the andesite(?) or opalized tuff is less uniformly distributed. Mineralized rock exposed in the west wall of the main pit is broken and bright yellow sulfur fills fracture planes rather than pores as in the tuff. Mineralized tuff contained as much as 70 percent sulfur, but averaged about 30 percent. Mineralized andesite(?) has a wide variability in sulfur content, but averaged about 25 percent. Thick masses or veins of pure sulfur occured in both rocks but only rarely.

The mine closed in 1962 for several reasons: (1) ore away from the existing pit had a thicker overburden and mining there would increase mining costs; (2) the walls of the existing pit were caving and needed shaving to shallower slopes, and also increasing mining costs; and (3) Anaconda no longer was mining secondary copper ore and did not need acid leaching.

The mine was sold in 1963 and has not been worked since then. Sulfur resources still exist at the Leviathan mine but unless a nearby market can be developed for sulfur and the environmental problems which have plagued this mine cheaply solved, it is doubtful if any of the remaining sulfur will be recovered.