

INTER-OFFICE MEMORANDUM

SUBJECT: A Preliminary Hydrogeochemical Report on  
the water of Kelley Hot Spring, California

DATE April 21, 1975

TO: W. M. Dolan                      H. D. Pilkington  
H. J. Olson                        M. H. Alldredge  
A. L. Lange ✓

FROM: F. Dellechaie

---

Kelley Hot Spring is a high discharge boiling hot spring a few miles west of Alturas, California. The area has generated geothermal interest and deep drilling in the past. The Kelley Hot Spring area is set in the Modoc plateau, noted for extensive tertiary through recent basic and acidic volcanism. The Modoc volcanics are thought to overlie basin and range structure.

Kelley Hot Spring is about 50 kilometers from our Bieber property. The two areas share similarities in geology and remarkable similarities in hydrogeochemistry. The purpose of this report is to reveal chemical similarities between Kellogg Hot Spring in Bieber, California, and Kelley Hot Spring.

Table 1 contains analyses for both the aforementioned hot springs. Kelley Hot Spring is boiling and Kellogg Hot Spring is near boiling. The reader will see remarkable similarities in pH, F, HCO<sub>3</sub>, SiO<sub>2</sub>, Na, K, Ca, Mg, Li, NH<sub>4</sub>, B, TDS, and subsurface temperatures. Sizeable discrepancies appear in Cl and SO<sub>4</sub>. These discrepancies may be explained by cold water mixing in Kellogg Hot Spring.

Memo re:  
Kelley Hot Spring, California  
April 21, 1975

Page 2

The chemistry of the thermal waters of the Bieber area is not overly exciting. The chemistry of Kelley Hot Springs is very similar to Kellogg Hot Spring near Bieber, California. I suggest that we assess the merits of the Bieber property carefully. If a producing field is discovered the similarities between the two areas pointed out in this report may indicate the presence of a similar field near Canby, California, and vice versa.

A complete report on the thermal features of the Bieber area is forthcoming.

  
Frank Dellechaie

FD:d

Table 1. Analysis of Kelley Hot Spring by the USGS and Kellogg Hot Spring, Bieber, California. Units are mg/l unless otherwise noted.

	<u>Kelley Hot Spring</u>	<u>Kellogg Hot Spring</u>
T°C	98	89
pH	8.03	9.00
F	3.6	2.4
Cl	182	86
SO <sub>4</sub>	290	400
HCO <sub>3</sub>	45.4	27
CO <sub>3</sub>	0.6	0
SiO <sub>2</sub>	111	83
Na	244	240
K	6	5.6
Ca	23	35
Mg	0.7	<0.1
Al	0.2	ND
Fe	0	<0.1
Pb	0	ND
Mo ppb	ND	60
As	0	
Li	0	0.1
NH <sub>4</sub>	0.1	0.22
B	3.9	2.6
TDS	916	884
Sp Cord	1300	ND
Flow gpm	400	50
Cation mg/l	11.9	12.4
Anion mg/l	12.2	11.4
TSiO <sub>2</sub> °C	138	124
TNa/K °C	65	60
TNa/K-Ca °C	90	75.5

NAME: Kelly Hot Spring (89600)  
COUNTY: Canby  
STATE: California  
LOCATION: NE 1/4 Sec. 29, T42N, R10E  
TEMP: 98°C  
DISCHARGE: 500 gpm



