

INTER-OFFICE MEMORANDUM

SUBJECT: Thermal waters of the Cove Fort - Sulfurdale  
area, Utah

DATE April 19, 1976

cc: W. M. Dolan  
H. J. Olson

TO: R. A. Barker

FROM: F. Dellechiaie

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Thermal Features

The Cove Fort area contains at least five thermal features. Meadow (31°C) and Hatton (37°C) Warm Springs are located 18 miles NNW of Cove Fort. Both these springs issue out of valley fill. Two wells were drilled into the alluviated floor of Dog Valley to depths of approximately 900 feet. These wells produced 83°C water. An acid mineral "spring" is located at the sulfur workings in Sulfurdale. Many small jets of sulfurous gases bubble into a small stagnant pond. A sulfur exploratory hole at Sulfurdale encountered boiling, gaseous water at 270 feet.

Chemistry

Chemical data of decent quality exists only for the Sulfurdale Mineral Spring and Meadow Warm Spring (Table 1). The Sulfurdale water is very difficult to interpret owing to the low pH (1.2). The geothermometers are surely without creditability. The high chloride concentration (2600 mg/l) may indicate a hot water system if evaporite beds do not occur at depth. Sulfurous gases, fluorite and sulfur deposits and significant hydrothermal alterations are associated with active volcanic systems. These phenomena occur in the Cove Fort, Sulfurdale and Dog Valley areas.

Meadow Warm Spring contains interesting amounts of F, Li, K and B. Mundorff (1970) indicates that the total dissolved solids for Meadow Warm Spring is similar to local groundwater. The alkali geothermometer temperatures are interesting, but may not be valid if an evaporite section exists at depth.

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Summary

Many more water samples must be analysed before a clear picture of the geothermal potential of the Cove Fort area is understood. The Cove Fort - Sulfurdale areas are interesting, based on fossil and current sulfur deposits, fluorite deposits, hydrothermal alteration, sulfurous gases and near surface hot water.

*Frank Dellechaie*

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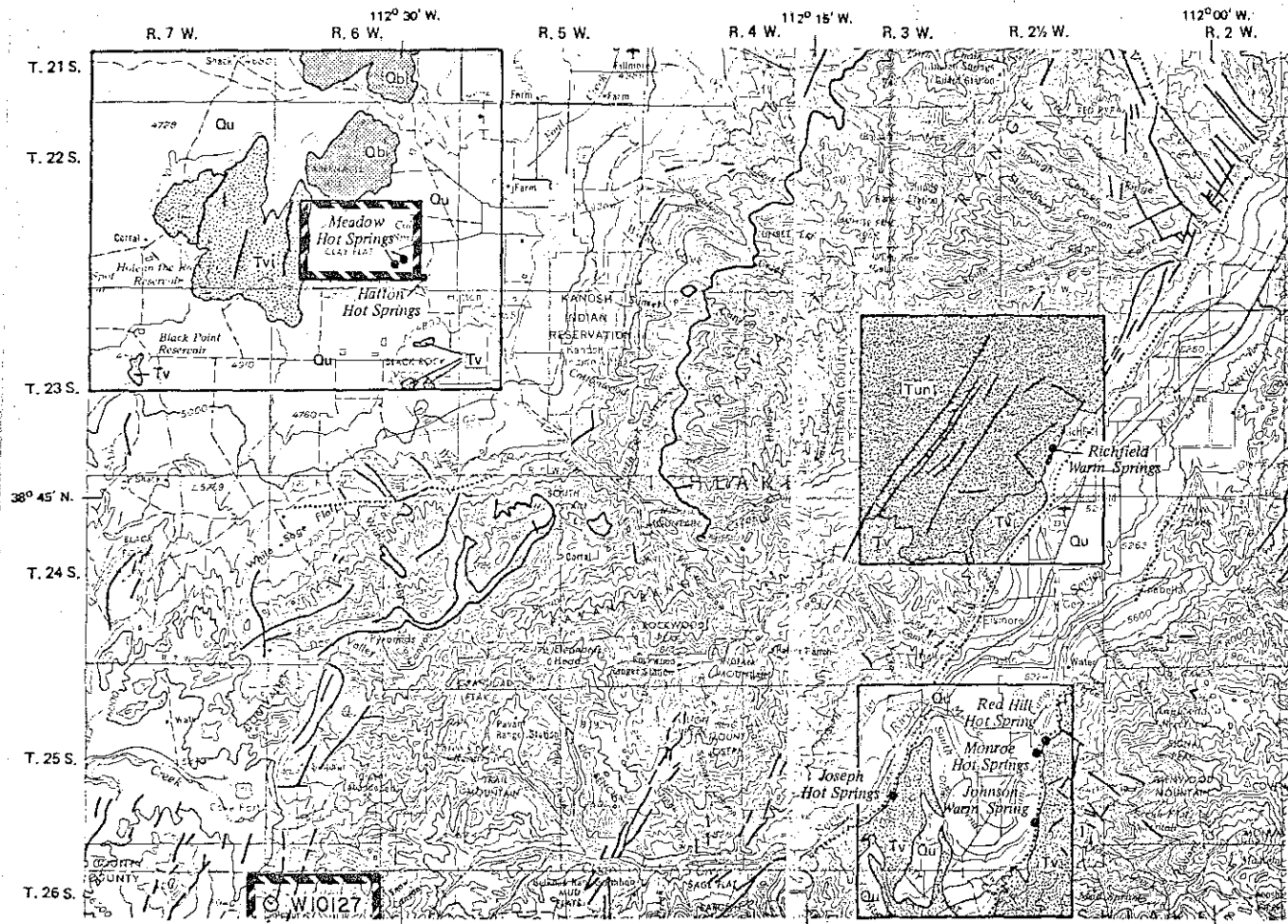
Reference:

Mundorff, J. C., 1970, Major thermal springs of Utah:  
Utah Water Resources Bulletin 13, p. 40.

FD/c

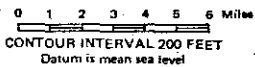
Table 1. Chemical Analyses of the Sulfurdale Mineral "Spring" and Meadow Warm Spring. Units are mg/l unless otherwise noted.

	<u>Sulfurdale Mineral</u> <u>"Spring" W10127</u>	<u>Meadow</u> <u>Warm Spring</u>	<u>Roosevelt</u> <u>Hot Spring</u>
pH	1.2	7.5	7.9
Cl	2600	1780	4240
F	<0.1	5.0	7.5
SO <sub>4</sub>	12000	1040	73
HCO <sub>3</sub>	0	429	156
CO <sub>3</sub>	0	0	0
SiO <sub>2</sub>	120	47	313
Na	140	1060	2500
K	100	157	488
Ca	300	451	22
Mg	100	103	0
Li	0.3	3.2	0.3
B	<0.2	4	38
TDS	15360	4900	12700
TSiO <sub>2</sub> Quartz °C	148	98	213
TSiO <sub>2</sub> Chalcedony °C	122	69	---
TSiO <sub>2</sub> Cristobalite °C	97	49	---
TNa/K °C	644	235	278
TNa-K-Ca °C	276	208	283
T°C	5	31	55
Flow	?	?	?
Cl/B	15858	136	34
Cl/SO <sub>4</sub>	0.6	4.6	73
Cl/HCO <sub>3</sub>	0	7.1	47



**EXPLANATION**

- Qu Unconsolidated deposits of Quaternary age
- Ob Basalt of Quaternary age
- Tv Volcanic rocks of late Tertiary age
- Tun Sedimentary rocks of Tertiary age
- Spring
- Contact
- - - Fault  
Dashed where inferred; dotted where concealed



Geology from Stokes, 1964  
 Base map taken from AMS Topographic Series of Utah, 1:250,000.