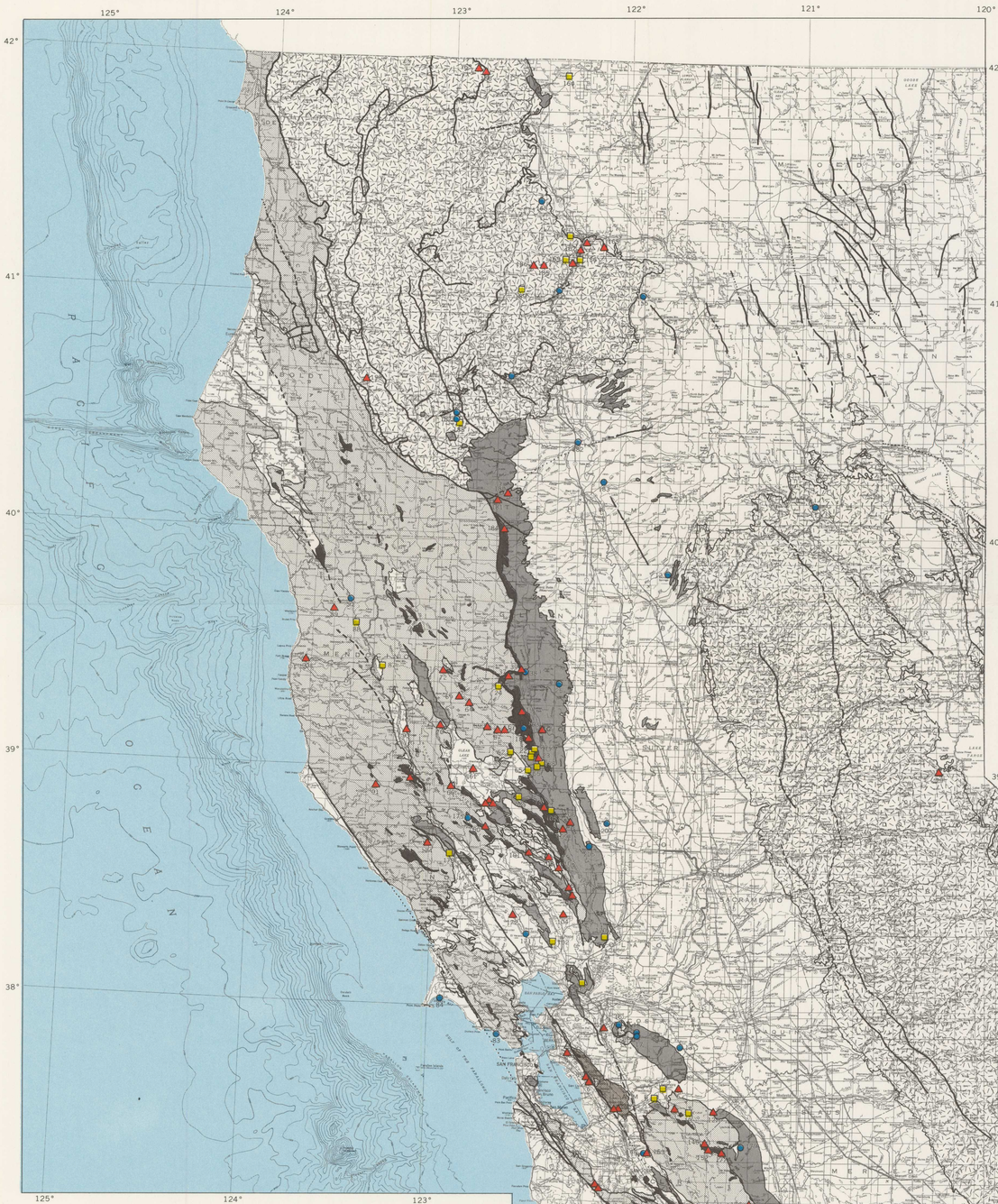

Number	Spring name by county	Type	Location	Reference number
	Alameda County			
1	Boys Camp	△	sec. 31, T. 2 S., R. 2 W.	3
2	Mayhew	△	sec. 16, T. 4 S., R. 1 W.	3
3	Mendenhall	△	sec. 16, T. 4 S., R. 3 E.	3
4	Piedmont	△	sec. 30, T. 1 S., R. 3 W.	3
5	Unnamed	△	sec. 15, T. 3 S., R. 3 E.	3
6	Unnamed	△	sec. 5, T. 3 S., R. 2 W.	3
7	Unnamed	□	sec. 14, T. 3 S., R. 2 E.	3
8	Unnamed	□	sec. 33, T. 3 S., R. 2 E.	3
9	Unnamed	△	sec. 15, T. 4 S., R. 1 W.	3
10	Unnamed	□	sec. 19, T. 4 S., R. 4 E.	3
	Alpine County			
11	Grovers Hot	△	sec. 24, T. 10 N., R. 20 E.	8
	Butte County			
12	Richardson	○	sec. 20, T. 23 N., R. 2 E.	7
	Colusa County			
13	Buck Hot	△	sec. 23, T. 15 N., R. 6 W.	8
14	Cook's	△	sec. 9, T. 16 N., R. 6 W.	4
15	Deadshot	□	sec. 6, T. 14 N., R. 5 W.	4
16	Elgin	□	sec. 13, T. 14 N., R. 6 W.	11
17	Jones Hot	□	sec. 12, T. 14 N., R. 6 W.	8
18	Malaney Flat	△	sec. 17, T. 14 N., R. 5 W.	4
19	Redeye	□	sec. 5, T. 17 N., R. 7 W.	4
20	Salt	○	sec. 32, T. 18 N., R. 4 W.	4
21	Unnamed	□	sec. 6, T. 14 N., R. 5 W.	8
22	Unnamed	△	sec. 4, T. 15 N., R. 5 W.	4
23	Wilbur	□	sec. 28, T. 14 N., R. 5 W.	8
	Contra Costa County			
24	Byron Hot	○	sec. 15, T. 1 S., R. 3 E.	3
25	Sulphur	△	sec. 24, T. 1 N., R. 2 W.	3
26	Travertine	○	sec. 28, T. 1 N., R. 1 E.	3
27	Unnamed	○	sec. 15, T. 1 N., R. 1 W.	8
28	Unnamed	○	sec. 33, T. 1 N., R. 1 E.	8
	El Dorado County			
29	Rubicon	△	sec. 31, T. 14 N., R. 16 E.	9
	Fresno County			
30	Domengine	△	sec. 25, T. 18 S., R. 14 E.	3
31	Escarpado Canyon	○	sec. 8, T. 15 S., R. 12 E.	4
32	Little Oak	○	sec. 30, T. 18 S., R. 15 E.	3
33	Mercey Hot	○	sec. 15, T. 14 S., R. 10 E.	3
34	Unnamed	□	sec. 10, T. 18 S., R. 14 E.	4
35	Unnamed	△	sec. 32, T. 13 S., R. 10 E.	3
36	Unnamed	△	sec. 31, T. 18 S., R. 15 E.	3
	Glenn County			
37	Black Diamond Glades	△	sec. 23, T. 18 N., R. 7 W.	4
38	Salt	○	sec. 9, T. 18 N., R. 6 W.	3
39	Sulphur	△	sec. 9, T. 18 N., R. 6 W.	3
	Imperial County			
40	Fish	○	sec. 9, T. 9 S., R. 9 E.	5
41	Four Palm	○	sec. 21–22, T. 10 S.,R. 9 E.	5
42	Frink	○	sec. 20, T. 9 S., R. 13 E.	5
43	Hot mineral	○	sec. 1–2, T. 9 S., R. 12 E.	5
44	Kane	○	sec. 21, T. 12 S., R. 11 E.	5
45	Mud Pot	○	sec. 24, T. 11 S., R. 13 E.	5
46	Palm Wash	○	sec. 22, T. 10 S., R. 9 E.	5
	Inyo County			
47	Keene Wonder Hot	□	sec. 1, T. 15 S., R. 46 E.	8
48	Lime Canyon	△	sec. 31, T. 13 S., R. 34 E.	8
49	Tecopa Hot	□	sec. 33, T. 21 N., R. 7 E.	7

—Continued

	Kern County			
50	Salt	□	sec. 25, T. 25 S., R. 18 E.	3
51	Unnamed	□	sec. 33, T. 29 S., R. 21 E.	3
	Kings County			
52	Unnamed	△	sec. 3, T. 23 S., R. 16 E.	3
53	Unnamed	△	sec. 3 T. 23 S., R. 16 E.	3
54	Wade Baxter	△	sec. 6, T. 23 S., R. 17 E.	3
	Lake County			
55	Abbott	□	sec. 32, T. 14 N., R. 5 W.	11
56	Adams	△	sec. 26, T. 12 N., R. 8 W.	4
57	Allen	△	sec. 8, T. 15 N., R. 7 W.	4
58	Baker Soda	□	sec. 16, T. 12 N., R. 6 W.	4
59	Bartlett	△	sec. 2, T. 15 N., R. 8 W.	3
60	Big Injun	△	sec. 35, T. 11 N., R. 8 W.	8
61	Big Soda	△	sec. 6, T. 13 N., R. 8 W.	4
62	Chalk Mountain	□	sec. 12, T. 14 N., R. 7 W.	8
63	Complexion	○	sec. 3, T. 15 N., R. 6 W.	4
64	Crabtree	△	sec. 36, T. 17 N., R. 9 W.	4
65	Grizzly	□	sec. 2, T. 13 N., R. 6 W.	4
66	Highland	△	sec. 31, T. 13 N., R. 9 W.	9
67	Hough	△	sec. 10, T. 15 N., R. 7 W.	4
68	Howard	△	sec. 30, T. 12 N., R. 7 W.	8
69	Parramore	△	sec. 21, T. 17 N., R. 9 W.	4
70	Saratoga	△	sec. 4, T. 15 N., R. 10 W.	4
71	Seigler Hot	△	sec. 24, T. 12 N., R. 8 W.	4
72	Soda	△	sec. 15, T. 18 N., R. 10 W.	4
73	Unnamed	△	sec. 34, T. 12 N., R. 5 W.	4
	Los Angeles County			
74	Aliso	△	sec. 30, T. 4N., R. 11 W.	3
75	Alvarado Hot	○	sec. 24, T. 2 S., R. 10 W.	3
76	Cal-Baden Mineral	△	sec. 17, T. 2 S., R. 11 W.	3
77	El Encino	△	sec. 19, T. 1 N., R. 15 W.	3
78	Hollywood Spa	△	sec. 14,T. 1 S., R. 14 W.	3
79	Seminole Hot	△	sec. 5, T. 1 S., R. 18 W.	3
80	Sulphur	△	sec. 4, T. 1 N., R. 17 W.	3
81	Sulphur	△	sec. 35, T. 3 N., R. 16 W.	3
82	Wagonwheel Ranch	△	sec. 24, T. 4 N., R. 12 W.	3
	Marin County			
83	Rocky Point	○	sec. 34, T. 1 N., R. 7 W.	4
84	Unnamed	○	sec. 11, T. 2 N., R. 10 W.	4
	Merced County			
85	Iridat	△	sec. 29, T. 13 S., R. 10 E.	3
	Mendocino County			
86	Duncan	△	sec. 25, T. 13 N., R. 12 W.	9
87	Gas	□	sec. 9, T. 18 N., R. 13 W.	4
88	Long Valley Hot	□	sec. 7, T. 20 N., R. 14 W.	8
89	Mud	△	sec. 19, T. 21 N., R. 15 W.	4
90	Mud	△	sec. 2, T. 18 N., R. 17 W.	1
91	Ornbaun	△	sec. 4, T. 12 N., R. 13 W.	4
92	Sulphur	○	sec. 1, T. 21 N., R. 15 W.	4
93	Vichy	△	sec. 15, T. 15 N., R. 12 W.	4
	Mono County			
94	Bridgeport Hot	△	sec. 34, T. 5 N., R. 25 E.	8
95	Fales Hot	△	sec. 24, T. 6 N., R. 23 E.	8
96	Hot	□	sec. 11, T. 2 N., R. 26 E.	8
97	Hot Creek Geyser	△	sec. 25, T. 3 S., R. 28 E.	8
	Monterey County			
98	Sulphur	△	sec. 5, T. 22 S., R. 7 E.	3
99	Table Mountain	△	sec. 21, T. 23 S., R. 15 E.	8
100	Unnamed	○	sec. 22, T. 23 S., R. 15 E.	8
	Napa County			
101	Aetna	△	sec. 1, T. 9 N., R. 6 W.	4
102	Congress Valley	□	sec. 17, T. 5 N., R. 4 W.	1
103	Napa Rock Soda	△	sec. 25, T. 8 N., R. 4 W.	1
104	Napa Soda	△	sec. 2, T. 6 N., R. 4 W.	4
105	One-shot	□	sec. 1, T. 11 N., R. 5 W.	4
106	Samuel	△	sec. 28, T. 9 N., R. 4 W.	9
107	Unnamed	△	sec. 6 T. 7 N., R. 3 W.	4
108	Walter	△	sec. 12, T. 9 N., R. 5 W.	4
109	Zem Zem	△	sec. 34, T. 11 N., R. 4 W.	8
	Orange County			
110	La Vida Mineral	△	sec. 2, T. 3 S., R. 9 W.	3
	Plumas County			
111	Hot	○	sec. 2, T. 26 N., R. 9 E.	8
	Riverside County			
112	Asbestos	△	sec. 28, T. 6 S., R. 5 E.	3
113	Bare Tree	△	sec. 10, T. 2 S., R. 5 E.	3
114	Dos Palmas	○	sec. 3, T. 8 S., R. 11 E.	3
115	Hidden	△	sec. 11, T. 7 S., R. 10 E.	3
116	McCoy	△	sec. 17, T. 5 S., R. 20 E.	8
117	Murrietta Hot	○	sec. 14, T. 7 S., R. 3 W.	3
118	Stubby	△	sec. 27, T. 2 S., R. 7 E.	3
	San Benito County			
119	San Benito Mineral	□	sec. 7, T. 13 S., R. 6 E.	3
120	San Juan Canyon	△	sec. 10, T. 13 S., R. 4 E.	3
121	Sulphur	△	sec. 24, T. 16 S., R. 11 E.	8
122	Unnamed	△	sec. 36, T. 18 S., R. 11 E.	3
123	Unnamed	○	sec. 10, T. 19 S., R. 9 E.	3

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	San Bernardino County			
124	Quail	△	sec. 33, T. 1 S., R. 7 E.	3
125	Saratoga Springs	□	sec. 2, T. 18 N., R. 5 E.	3
	San Diego County			
126	Horno Ridge	△	sec. 35, T. 9 S., R. 6 W.	3
	San Joaquin County			
127	Sulphur	△	sec. 20, T. 4 S., R. 5 E.	3
	San Luis Obispo County			
128	Artesian	△	sec. 16, T. 26 S., R. 12 E.	8
129	Newsome	△	sec. 23, T. 32 S., R. 13 E.	3
130	Paso Robles City Bath	□	sec. 33, T. 26 S., R. 12 E.	3
131	Paso Robles Mud Bath	□	sec. 20, T. 26 S., R. 12 E.	3
132	Sycamore Hot	△	sec. 32, T. 31 S., R. 12 E.	3
133	Ybarra	△	sec. 31, T. 25 S., R. 16 E.	3
	Santa Barbara County			
134	Aqua Caliente	△	sec. 1, T. 5 N., R. 26 W.	3
135	Aqua Vina	□	sec. 30, T. 6 N., R. 35 W.	3
136	Gaviota Hot	△	sec. 22, T. 5 N., R. 32 W.	3
137	Parida	○	sec. 18, T. 4 N., R. 25 W.	3
138	Unnamed	□	sec. 23, T. 4 N., R. 28 W.	3
139	Unnamed	△	sec. 12, T. 5 N., R. 32 W.	3
140	Unnamed	△	sec. 7, T. 5 N., R. 34 W.	3
141	Unnamed	△	sec. 1, T. 5 N., R. 35 W.	3
142	Unnamed	□	sec. 25, T. 6 N., R. 36 W.	3
143	Veronica	□	sec. 19, T. 4 N., R. 27 W.	3
	Santa Clara County			
144	Alum Rock	○	sec. 24, T. 6 S., R. 1 E.	3
145	Azule	△	sec. 3, T. 8 S., R. 2 W.	8
146	Blackbird Canyon Sulfur	△	sec. 1, T. 6 S., R. 4 E.	8
147	Congress	△	sec. 11, T. 8 S., R. 2 W.	8
148	Gilroy Hot	△	sec. 36, T. 9 S., R. 4 E.	3
149	Madrone Soda	△	sec. 10, T. 9 S., R. 4 E.	3
150	Unnamed	□	sec. 23, T. 11 S., R. 3 E.	8
151	Unnamed	△	sec. 31, T. 11 S., R. 4 E.	3
152	Unnamed	△	sec. 18, T. 6 S., R. 5 E.	3
153	White Sulphur	△	sec. 19, T. 6 S., R. 2 E.	3
	Santa Cruz County			
154	El Pajaro	△	sec. 10, T. 12 S., R. 3 E.	3
	Shasta County			
155	Big Bend Hot	○	sec. 36, T. 37 N., R. 1 W.	4
156	Castle Crag	□	sec. 12, T. 38 N., R. 4 W.	4
157	Castle Rock	△	sec. 15, T. 38 N., R. 4 W.	4
158	Salt	○	sec. 34, T. 33 N., R. 7 W.	4
159	Sulphur	□	sec. 8, T. 38 N., R. 4 W.	4
160	Unnamed	○	sec. 25, T. 37 N., R. 5 W.	4
	Siskiyou County			
161	Aqua de Ney	□	sec. 32, T. 40 N., R. 4 W.	4
162	Cave	△	sec. 24, T. 39 N., R. 4 W.	4
163	Cinnabar	△	sec. 34, T. 48 N., R. 9 W.	4
164	Soda	□	sec. 12, T. 47 N., R. 5 W.	7
165	Soda	△	sec. 13, T. 39 N., R. 3 W.	4
166	Soda Creek	△	sec. 1, T. 47 N., R. 9 W.	4
167	Shasta	△	sec. 7, T. 39 N., R. 3 W.	5
168	Stewart Mineral	○	sec. 11, T. 41 N., R. 6 W.	4
	Solano County			
169	Sulphur	□	sec. 14, T. 3 N., R. 3 W.	4
170	Tolenas	□	sec. 2, T. 5 N., R. 2 W.	4
	Sonoma County			
171	Boyes Hot	○	sec. 1, T. 5 N., R. 6 W.	4
172	Los Guilicos	△	sec. 5, T. 6 N., R. 6 W.	4
173	Lytton	□	sec. 7, T. 9 N., R. 9 W.	9
174	Skaggs	△	sec. 25, T. 10 N., R. 11 W.	4
175	The Geysers	○	sec. 13, T. 11 N., R. 9 W.	4
	Stanislaus County			
176	Crevison Peak	△	sec. 6, T. 9 S., R. 7 E.	8
177	Little Fawn Canyon	△	sec. 23, T. 6 S., R. 5 E.	8
178	McDowell	○	sec. 10, T. 9 S., R. 7 E.	8
179	Salt Grass	○	sec. 10, T. 6 S., R. 6 E.	3
	Tehama County			
180	Cobb Flats	△	sec. 22, T. 27 N., R. 7 W.	8
181	Heitman Place	△	sec. 31, T. 27 N., R. 7 W.	8
182	Morgan Hot	○	sec. 1, T. 29 N., R. 4 E.	8
183	Tuscan	○	sec. 32, T. 28 N., R. 2 W.	7
184	Unnamed	△	sec. 16, T. 25 N., R. 7 W.	4
	Trinity County			
185	Altoona	△	sec. 19, T. 38 N., R. 5 W.	4
186	Altoona Quicksilver	△	sec. 22, T. 38 N., R. 6 W.	7
187	Deadshot	○	sec. 1, T. 30 N., R. 10 W.	4
188	Deerlick	□	sec. 7, T. 30 N., R. 9 W.	4
189	Unnamed	□	sec. 30, T. 37 N., R. 6 W.	2
190	Unnamed	△	sec. 13, T. 3 N., R. 6 E.	4
191	Unnamed	○	sec. 25, T. 31 N., R. 10 W.	4
	Tulare County			
192	Soda	△	sec. 2, T. 21 S., R. 29 E.	3
	Tuolumne County			
193	Tuolumne Meadows	△	sec. 5, T. 1 S., R. 24 E.	3
	Ventura County			
194	#3 San Nicolas Island	□	33° 16′05″N, 119° 31′20″	3
195	#4 San Nicolas Island	△	33° 15′26″N, 119° 32′44″	3
196	#7 San Nicolas Island	□	33° 17′00″N, 119° 31′50″	3
197	#9 San Nicolas Island	○	33° 13′58″N, 119° 31′38″	3
198	Sespe Hot	○	sec. 21, T. 6 N., R. 20 W.	3
199	Sulphur Mountain	△	sec. 17, T. 4 N., R. 21 W.	3
200	Wheelers Hot	□	sec. 16, T. 5 N., R. 23 W.	3
201	Willett Hot	△	sec. 30, T. 6 N., R. 20 W.	3
202	Unnamed	△	sec. 10, T. 7 N., R. 24 W.	3
203	Unnamed	○	sec. 24, T. 5 N., R. 24 W.	3
204	Unnamed	△	sec. 22, T. 7 N., R. 24 W.	3
	Yolo County			
205	Big	○	sec. 25, T. 10 N., R. 3 W.	4
206	Duncan	△	sec. 24, T. 11 N., R. 4 W.	4
207	Unnamed	○	sec. 23, T. 11 N., R. 2 W.	8

EXPLANATION

CENOZOIC ROCKS – Sedimentary and volcanic rocks; marine and nonmarine; locally includes Upper Cretaceous strata on the Salinian block and in the Peninsular Ranges.

GREAT VALLEY SEQUENCE – Sandstone, shale, and conglomerate, ranging from Late Jurassic (upper Kimmeridgian) to Late Cretaceous in age; dominantly marine; deposited on oceanic crust in western part where in proximity to Franciscan rocks; deposited on continental crust (Klamath-Sierra Nevada block) in northern and eastern part.

SERPENTINITE – Mostly altered ultramafic rocks, but locally includes associated mafic igneous rocks; occurs mainly at the base of the Great Valley sequence; some occurs as part of the Franciscan terrane; serpentinite is present but not shown in the basement complex

FRANCISCAN ROCKS – A complex assemblage consisting mainly of graywacke, shale, mafic volcanic rocks, radiolarian chert, and serpentinite; occurs both in coherent blocks and as melange; mainly ranges from Late Jurassic (Tithonian) to Late Cretaceous in age, but coastal belt in northern Coast Ranges includes early Tertiary; regionally metamorphosed to laumontite, pumpellyite, and blueschist facies.

BASEMENT COMPLEX – Chiefly Late Jurassic (early Kimmeridgian) and older sedimentary, metamorphic, and igneous rocks, but includes Cretaceous plutonic rocks.

Contact

Fault – Dashed where inferred; dotted where concealed

TYPE OF SPRING

▲ Carbon dioxide-rich ● Chloride-rich ■ Mixed carbon dioxide-rich and chloride-rich

Ranges of compositions. Mixed carbon dioxide-rich and chloride-rich (■) springs have compositions between the following limits.

	▲ Carbon dioxide-rich containing	● Chloride-rich containing
Ca^{+2}	15 to 300 mg/l	20 to 5,000 mg/l
Mg^{+2}	15 to 500 mg/l	<1 to 1,000 mg/l
Na^{+1}	200 to 3,000 mg/l	300 to 34,000 mg/l
K^{+1}	20 to 200 mg/l	5 to 500 mg/l
HCO_3^-	300 to 13,000 mg/l	20 mg/l to one-half of the chloride
Cl	10 mg/l to one-half of the bicarbonate	300 to 62,000 mg/l
B	2 to 400 mg/l	2 to 250 mg/l

Carbon dioxide- and chloride-rich springs occur in all geologic provinces in California, but are most abundant in the Coast Ranges and the Great Valley. The carbon-dioxide-rich springs issue mainly from Franciscan terrane; they also are rich in boron and are of the metamorphic type (White, 1957). Based on isotopic data, either the carbon dioxide or the water, or both, may be of metamorphic origin. Because of high magnesium values, the water of many of the carbon-dioxide-rich springs is thought to have passed through serpentinite.

The chloride-rich waters are most common in rocks of the Great Valley sequence. Nearly all are more dilute than present-day sea water. The similarity in isotopic compositions of the metamorphic carbon-dioxide-rich water and the chloride-rich water may indicate a similar extent of water-rock interaction.

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Base from U.S. Geological Survey 1:500,000 State base map, north half and south half, 1970

Geology modified from Jennings (1973)

20 0 20 40 60 MILES

20 0 20 40 60 KILOMETRES

DATUM IS MEAN SEA LEVEL
DEPTH CURVES AT 100 FATHOM INTERVAL

GEOLOGIC MAP SHOWING SPRINGS RICH IN CARBON DIOXIDE OR CHLORIDE IN CALIFORNIA

By
Ivan Barnes, William P. Irwin, and H. A. Gibson

1975

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