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UNITED STATES DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

= Reports - Open file series =

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DISTRIBUTION AND CHEMICAL ANALYSES OF THERMAL SPRINGS

IN ALASKA

Compiled by

Thomas P. Miller

Open-file report - ⁷³⁻187

1973

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MASTER

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Discussion

Interest in geothermal systems as potential sources of energy has been increasing in the past decade. Thermal, or hot, springs commonly occur as surface manifestation of geothermal systems. One of the first steps in evaluating the potential of such systems is the compilation of an inventory of known thermal springs and available chemical data. The only previous such compilation in Alaska has been by Waring (1917) who listed 75 known hot springs and 22 chemical analyses; a later world-wide summary by Waring (1965), which included Alaska, listed a total of 79 thermal springs. These publications, both now out of print, are excellent summaries of known thermal springs as of about 1963. In the last 10 years, however, previously unreported occurrences of thermal springs have been published in various geologic reports and topographic maps and additional chemical analyses are now available. The purpose of this compilation, therefore, is to supplement Waring's earlier reports with the more recent data. In a few cases, springs reported by Waring have been deleted since later work has cast doubt on their existence.

Only those springs whose temperatures are significantly (i.e., 15-20°C.) above mean annual surface temperature have been included in this compilation. Excluded, therefore, are such springs, as the Sadlerochit Springs in northeastern Alaska on the North Slope, carbonated and/or soda springs on the Seward Peninsula and elsewhere, and the mud volcanoes of the Copper River valley.

It should be emphasized that more thermal springs undoubtedly exist than are shown on the accompanying map. Knowledge of the geology of many areas in Alaska is still only of reconnaissance nature and more thermal springs will certainly be reported in the future. The Alaska Peninsula, Aleutian Islands, and Wrangell Mountains, for example, are areas of active volcanism and almost surely have more thermal springs than are presently reported in the literature. On the other hand, further investigation may show that some of the springs shown on the map whose temperature and location are uncertain may not exist. The present compilation should therefore be regarded as a summary of known and reported thermal springs in Alaska as of 1972 and subject to change based on future work.

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Table 1. Thermal springs in Alaska.

Map No.	Name or location	Reference
1	Pilgrim Hot Springs	Waring, 1917; Miller and others, 1973
2	Serpentine Hot Springs	Waring, 1917; Miller and others, 1973
3	Hot spring near Lava Creek	Miller and others, 1973
4	Hot spring near Mt. Kachauik	Do.
5	Hot spring near Kwiniuk River	Do.
6	Hot springs near Clear Creek	Do.
7	Hot springs near Granite Mtn.	Do.
8	Reported hot spring on tributary on Innoko River	Waring, 1917
9	Hot springs on Hawk River	Miller and others, 1973
10	Warm spring near Purcell Mtn.	Do.
11	Hot springs near South BM	Do.
12	Hot springs near Division BM	Do.
13	Reported hot spring on Reed River	Waring, 1917
14	Reported hot spring near Alatna River	Do.
15	Tunalkten Lake hot spring	Miller and others, 1973
16	Hot spring near Sun Mountain	Do.
17	Hot springs near Dulbi River	Do.
18	Horner hot springs	Waring, 1917; Miller and others, 1973
19	Melozitna hot springs	Do.
20	Little Melozitna hot springs	Do.
21	Kilo hot springs	Miller and others, 1973
22	Hot springs on upper Ray River	Do.
23	Hot springs on lower Ray River	Do.
24	Kanuti hot springs	Do.
25	Reported hot springs near Dall River	Brosge and others, 1970
26	Reported hot spring near Little Minook Creek	Waring, 1917
27	Manley hot springs	Waring, 1917; Miller and others, 1973
28	Hutlinana hot spring	Do.
29	Tolovana hot spring	Waring, 1917; Miller and others, 1973
30	Chena hot spring	Waring, 1917
31	Circle hot springs	Waring, 1917
32	Reported hot spring on Big Windy Creek	Do.
33	Reported hot spring on Flat Creek	Do.
34	Reported hot springs between Diamond and Toklat River	Do.
35	Reported hot springs near Glacier	Do.

Map No.	Name or location	Reference
36	Reported hot spring near Flat	
37	Hot spring near Ophir Creek	Do.
38	Reported hot spring near Tuluksak River	Do.
39	Hot springs on upper Chuilnuk River	Do.
40	Hot lake in bottom of Crater Peak	Cady and others, 1955
41	Reported hot spring on Attu Island	This report
42	Reported hot spring on Little Sitkin Is.	Waring, 1917
43	Reported hot spring on Tanaga Is.	Do.
44	Reported hot springs on Adak Is.	Waring, 1965
45	Hot springs on Great Sitkin Is.	Fraser and Snyder, 1959
46	Reported hot springs on Atka Is.	Byers and Brannock, 1949
47	Do.	Waring, 1917
48	Do.	Do.
49	Reported hot spring on Sequam Is.	Do.
50	Reported hot spring on Chuginadak Is.	Do.
51	Reported hot spring on Kagamil Is.	Do.
52	Hot springs near Geyser Bight, Umnak Is.	Do.
53	Hot springs near Hot Springs Cove, Umnak Is.	Byers and Brannock, 1949
54	Hot springs in Okmok Caldera, Umnak Is.	Do.
55	Reported hot springs on Bogoslof Is.	Do.
56	Hot springs near Makushin volcano, Unalaska Is.	Waring, 1917
57	Hot springs near Summer Bay, Unalaska Is.	Drewes and others, 1961
58	Hot springs near Hot Springs Bay, Akutan Is.	Do.
59	Reported hot springs on Akun Is.	Byers and Barth, 1953
60	Do.	Do.
61	Reported hot spring on Unimak Is.	Do.
62	Reported hot spring near Frosty Peak	Waring, 1917
63	Reported hot spring on Amagat Is.	Do.
		Do.

Map

	Name or location	Reference
64	Hot springs east of Cold Bay	This report
65	Hot spring at west end of Emmons Lake	Kennedy and Waldron, 1955
66	Hot spring near Port Moller	Waring, 1917; this report
67	Reported hot spring near Balboa Bay	Waring, 1917
68	Reported hot spring near Port Heiden	Do.
69	Reported hot spring near Mother Goose Lake	This report
70	Reported hot spring near Mt. Paulik	Waring, 1917
71	Reported hot spring near Katmai Pass	Do.
72	Reported hot springs near Mt. Katmai, ind. Valley of Ten Thousand Smokes	Waring, 1965
73	Reported hot spring west of Cape Douglas	Do.
74	Hot spring on Twelve Mile Creek near head of Kiagna River	Waring, 1917; Moffit, 1918
75	Reported hot springs near Lituya Bay	Waring, 1917
76	Reported hot springs near Mud Bay	Do.
77	Reported hot spring near Nika Bay	Do.
78	Hot springs near north end of Tenakee Inlet	Do.
79	Reported hot springs on east shore of Lisianski Inlet	Do.
80	Hooniah Hot Springs	Do.
81	Hot springs at north end of Peril Strait	Do.
82	Tenakee hot springs	Waring, 1917; this report
83	Hot springs near Fish Bay	Waring, 1917
84	Baranof hot springs	Waring, 1917; this report
85	Goddard hot springs	Waring, 1917; this report
86	Hot springs near Gut Bay	Waring, 1917
87	Reported hot springs west of Shakes Springs	Do.
88	Shakes hot springs	Do.
89	Reported hot springs on south side Stikine River	Do.
90	Reported hot springs on Vanak Island	Do.
91	Bailey Bay hot springs	Waring, 1917
92	Bell Island hot springs	Do.
93	Hot springs near Saks Cove	Do.
94	Reported hot springs near Unuk River	Do.

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Distribution and chemical analyses of thermal springs in Alaska

Compiled by Thomas P. Miller
Open File Map-1973

SCALE 1:250,000
1 INCH APPROXIMATELY 40 MILES

DATUM IS MEAN SEA LEVEL
THIS MAP IS AVAILABLE WITH OR WITHOUT SHADED RELIEF OVERPRINT
FROM SALE BY U.S. GEOLOGICAL SURVEY
FAIRBANKS, ALASKA DENVER, CO. COLORADO WASHINGTON, D.C.

1954

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5	Hot spring near Kwikuk River	Do.
6	Hot spring near Clear Creek	Do.
7	Hot spring near Granite Mts.	Do.
8	Reported hot spring on Teton River	Waring, 1971
9	Hot spring on Tanana River	Miller and others, 1973
10	Hot spring on Chukchee River	Do.
11	Warm spring near Pucell Mt.	Do.
12	Hot spring near South Mt.	Do.
13	Hot spring near Division Mt.	Do.
14	Reported hot spring on Tana River	Waring, 1971
15	Reported hot spring near Alutka River	Do.
16	Tushkum Lake hot spring	Miller and others, 1973
17	Hot spring near Sun Mountain	Do.
18	Hot spring near Bull River	Do.
19	Hot spring near Saka River	Waring, 1971; Miller and others, 1973
20	Hot spring near Saka River	Do.
21	Hot spring near Saka River	Do.
22	Hot spring on upper Bay River	Do.
23	Hot spring on lower Bay River	Do.
24	Kamet hot spring	Do.
25	Reported hot spring near Little Minook Creek	Do.
26	Reported hot spring near Little Minook Creek	Do.
27	Hot spring near Saka River	Waring, 1971; Miller and others, 1973
28	Hot spring near Saka River	Do.
29	Hot spring near Saka River	Do.
30	Hot spring near Saka River	Do.
31	Hot spring near Saka River	Do.
32	Reported hot spring on Flat Creek	Do.
33	Reported hot spring on Flat Creek	Do.
34	Reported hot spring on Flat Creek	Do.
35	Reported hot spring near Glacier	Do.
36	Hot spring east of Cold Bay	Do.
37	Hot spring west end of Seward Peninsula	Kennedy and Waldron, 1955
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39	Reported hot spring near Unalakleet	Do.
40	Hot lake in bottom of Crater	Do.
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44	Reported hot spring on Adak	Do.
45	Hot spring on Great Sitka Is.	Do.
46	Reported hot spring on Unalaska	Do.
47	Reported hot spring on Saka River	Do.
48	Reported hot spring on Saka River	Do.
49	Reported hot spring on Saka River	Do.
50	Reported hot spring on Saka River	Do.
51	Reported hot spring on Saka River	Do.
52	Hot spring near Cape Wankarem	Do.
53	Hot spring near Cape Wankarem	Do.
54	Hot spring near Cape Wankarem	Do.
55	Hot spring near Cape Wankarem	Do.
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64	Hot spring near Cape Wankarem	Do.
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96	Hot spring near Cape Wankarem	Do.
97	Hot spring near Cape Wankarem	Do.
98	Hot spring near Cape Wankarem	Do.
99	Hot spring near Cape Wankarem	Do.
100	Hot spring near Cape Wankarem	Do.

Table 2. Chemical analyses of thermal springs in Alaska. Results reported in parts per million (ppm). Sample numbers refer to map localities.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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Map Explanation

Thermal spring; location certain.
Number refers to table 1. Outer circle indicates chemical analysis available (table 2).

Possible thermal spring; temperature and location uncertain. Number refers to table 1.

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey standards and nomenclature.