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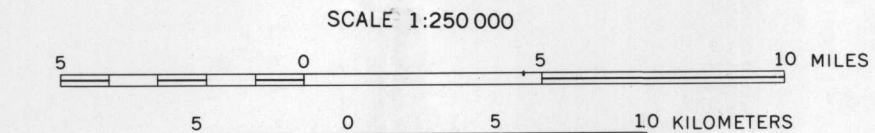
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Base from U.S. Geological Survey, 1963

Geology from Detterman and others, 1979.

COPPER IN MINUS-80-MESH STREAM-SEDIMENT SAMPLES



**DESCRIPTION OF MAP UNITS**

SYMBOL	DESCRIPTION
Qk	SURFICIAL DEPOSITS AND SEDIMENTARY ROCKS
Qk1	Unconsolidated alluvium, colluvium, glacial, marine, swamp and eolian deposits; mainly sand, silt, gravel and pebbles
Qk2	MELLY RIVER FORMATION OR ALLUVIAL (LATE) AND BEAR LAKE FORMATION—Melly River Formation (Pliocene); mainly volcanic sandstone and conglomerate, non-marine; Bear Lake Formation (Pliocene); sandstone, conglomerate, siltstone, shale, and coal; shallow marine to non-marine
Qk3	WOODS AND CHIGNIK FORMATIONS—Woods Formation (Upper Cretaceous); dark shale and siltstone; dark shaly, coal; high percent volcanic debris; mainly non-marine
Qk4	HERZENBERG LIMESTONE AND STANISLOVICH, MANEK, AND SHELLOFF FORMATIONS—Sherenberg Limestone (Lower Cretaceous); thin-bedded calcareous composed of limestone, green and blue calcareous sandstone, Stanislavich Formation (Upper Jurassic and Lower Cretaceous); thin-bedded felsitic and basaltic sandstone; Manek Formation (Upper Cretaceous); dark siltstone and shale in upper part; light-colored sandstone and conglomerate in lower part; Shelloff Formation (Middle Jurassic); dark siltstone and shale
Qk5	INTRUSIVE ROCKS
Qk6	ASH AND DEBRIS FLOW DEPOSITS—volcanic ash, tuff, and breccia; includes air-fall ash flow, and ash flow deposits; unsorted to well-sorted; includes some lava flow
Qk7	CINDER AND SHATTER CONES, AND DOMES—cinders, scoria, and associated pyroclastic rock
Qk8	VOLCANIC ROCKS—andesite and dacite flows, tuff, volcanic breccia, and lahars
Qk9	VOLCANIC ROCKS—shygolite, andesite, dacite, and basalt flows; tuff, volcanic rubble flows, and lahars; includes hypabyssal plugs and dikes
Qk10	MELLY RIVER FORMATION (Miocene or Oligocene)—Basalt flows, volcanic rubble flows, and lahars; minor volcanoclastic sedimentary rock
Qk11	INTRUSIVE ROCKS—Quartz diorite, diorite, and gabbro; medium- to coarse-grained, mainly small dikes
Qk12	GRANODIORITE—Seldin Islands pluton; medium- to coarse-grained; hornblende- and biotite-bearing

**GEOLOGIC MAP SYMBOLS**

--- · ---	Contact—Dotted where concealed
- - - - -	Fault—Dashed where approximately located, dotted where concealed, solid where probable; U, upstream side; D, downstream side; Arrows indicate relative lateral movement
- · - · -	Thrust or high-angle reverse fault—Dotted where concealed; dashed on upper plate
- - - - -	Folds—Showing trace of axial planes; dashed where approximately located; dotted where concealed; Arrow indicates direction of plunge
- - - - -	Anticline
- - - - -	Syncline
○	Volcanic crater
○	Volcanic vent or cinder cone
○	Hornfels
■	Alteration
— · — · —	Dikes and sills
+	Exploratory drill hole
●	Hot spring
— · — · —	Native Corporation boundary

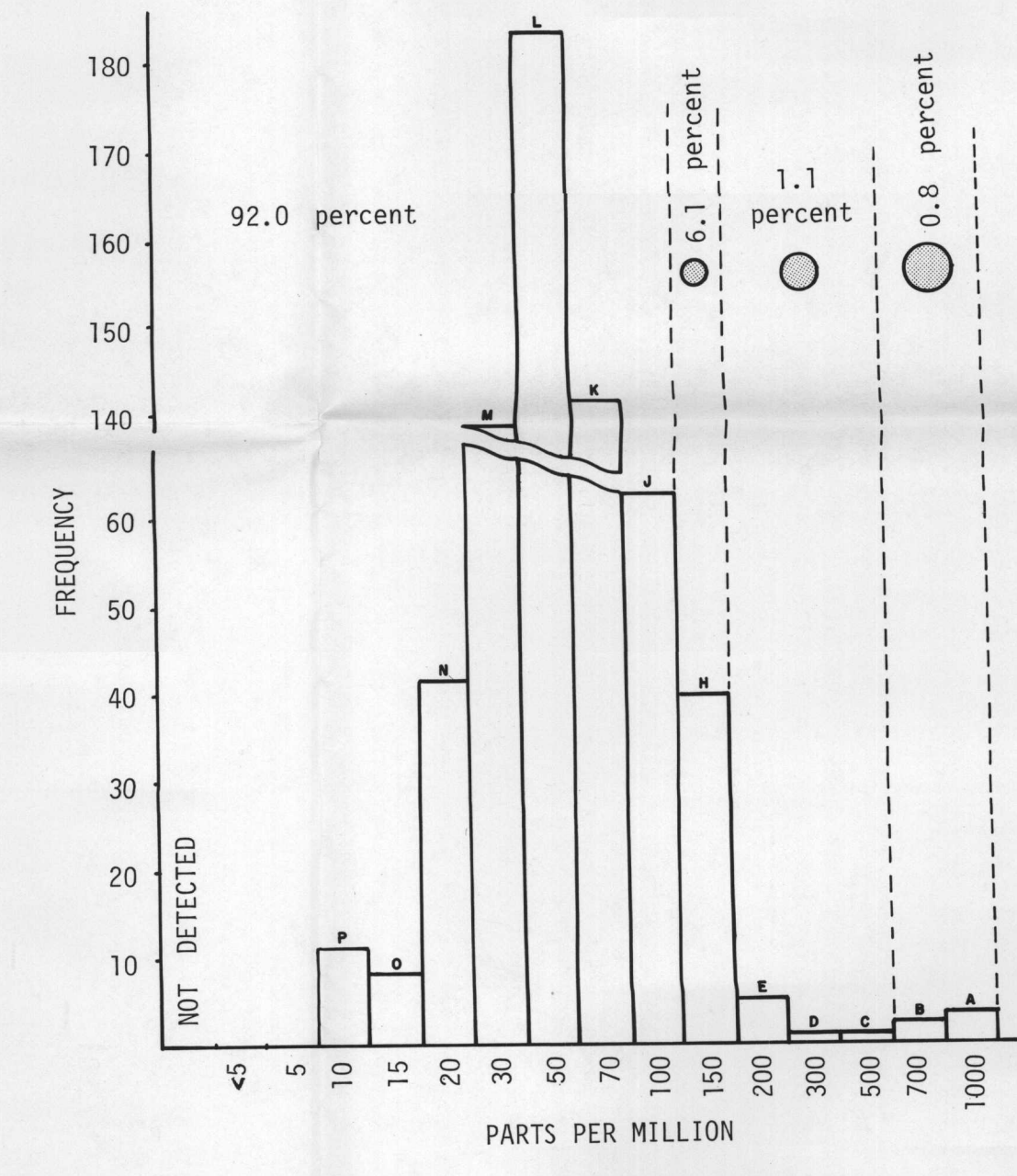


Figure 2.—Histogram for copper in 637 minus-80-mesh stream-sediment samples, Chignik and Sutwik Island quadrangles, Alaska, showing: symbols denoting anomalous concentrations, percentage of total number of samples represented by each range, and letters corresponding to concentrations in parts per million. Statistics are based on all unqualified values (637) within the sample population; arithmetic mean, 67.0; standard deviation, 83.9; geometric mean, 51.3; and geometric deviation, 1.2.

Table 2.—Lead, zinc, molybdenum, and silver associated with anomalous copper values in minus-80-mesh stream-sediment samples, Chignik and Sutwik Island quadrangles, Alaska

Map no.	Field no.	Cu	Pb	Zn	Mo	Ag
1	SW23	150	30	55	N	N
2	028	150	50*	65	N	N
3	034	150	50*	65	N	1*
4	069	150	20	55	N	N
5	091	300	20	55	L(S)	N
6	092	700	200*	350*	20*	1*
7	093	700	200*	45	20*	1*
8	094	150	20	70	N	N
9	097	150	20	70	N	N
10	125	200	50*	140*	N	N
11	CG491	150	20	40	N	N
12	339	150	10	55	N	N
13	422	150	20	60	N	N
14	416	150	30	65	10*	N
15	413	150	30	95*	20*	N
16	415	150	50*	90*	15*	N
17	258	150	20	35	N	N
18	252	800	15	40	75*	L(O,S)
19	203	1,000	15	95*	25*	L(O,S)
20	159	150	20	40	30*	N
21	399	150	15	45	N	N
22	402	150	30	45	N	N
23	402	1,000	20	110*	20*	N
24	403	150	20	60	N	N
25	411	150	20	75	N	N
26	482	150	15	45	N	N
27	483	150	20	35	N	N
28	480	150	20	25	N	N
29	425	150	30	35	N	N
30	241	150	20	75	N	N
31	143	150	20	50	10*	N
32	141	200	30	55	20*	N
33	142	150	20	50	N	N
34	047	200	20	65	N	N
35	409	150	20	55	N	N
36	062	1,000	20	25	200*	N
37	063	150	20	45	N	N
38	064	150	10	25	10*	N
39	065	150	20	35	N	N
40	066	150	15	45	50*	N
41	067	150	20	35	N	N
42	036	150	30	200*	10*	L(O,S)
43	127	150	15	10	N	N
44	474	150	15	35	N	N
45	472	150	20	60	N	N
46	473	150	20	50	N	N
47	471	200	L(10)	55	N	N
48	469	150	20	40	N	N
49	461	150	30	45	N	N
50	429	150	20	70	N	N
51	444	150	20	60	N	N
52	439	150	50*	50	N	N
53	132	200	20	45	N	N

Table 3.—Statistical summary of copper results obtained from the analysis of representative rock samples collected from the generalized units listed in the geologic map, Chignik and Sutwik Island quadrangles, Alaska

[The statistics are calculated using only the unqualified values (those not coded with an N, L, or G); leaders indicate insufficient data to calculate values; method of analysis is semiquantitative emission spectroscopy]

Rock unit	Number of samples		Data based on the unqualified population				Percentile distribution based on 6 samples analyzed				
	Qualified	Unqualified	Geometric mean	Arithmetic mean	Standard deviation	Range of values	25th	50th	75th	90th	95th
Volcanic rocks, (Qv)---	0	1	0	1	---	---	150	---	---	---	---
Melly River and Bear Lake Formation, (Mv)---	0	0	0	3	20.8	1.9	23.3	11.5	10-	30	---
Intrusive rocks, (Iv)---	0	0	0	17	44.4	2.6	71.2	79.3	15-	300	---
Volcanic rocks, (Tv)---	0	1	0	30	119.2	3.8	262.7	346.3	20-	1,500	---
Melish Formation, (Tm)---	0	0	0	24	49.5	2.5	71.7	57.7	10-	200	---
Tolstoi Formation, (Tt)---	0	0	0	9	74.5	2.1	95.6	57.0	20-	150	49
Hoodoo and Chignik Formations, (Hc)---	0	0	0	18	36.4	4.0	81.1	80.5	10-	300	---
Herzenberg, Stanislavich, Manek, and Shelloff Formations, (Hs)---	0	0	0	7	72.1	2.0	87.1	51.9	30-	100	66

DISTRIBUTION AND ABUNDANCE OF COPPER IN MINUS-80-MESH STREAM-SEDIMENT AND NONMAGNETIC HEAVY-MINERAL-CONCENTRATE SAMPLES, CHIGNIK AND SUTWIK ISLAND QUADRANGLES, ALASKA

By  
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1980

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