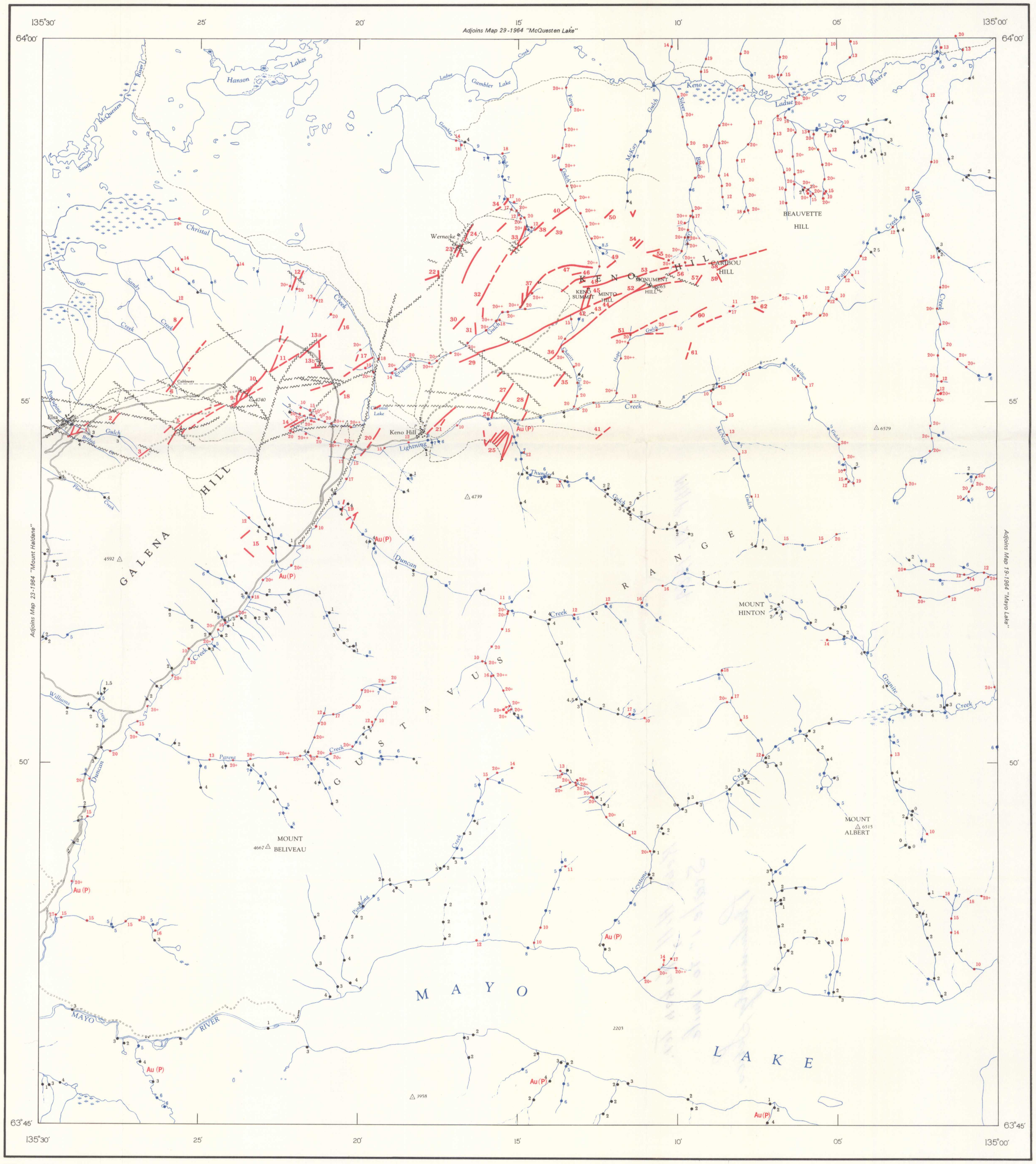
GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

105 M/14



LEGEND

Concentration of heavy metal, 10 ppm or greater in stream sediments . . . . . 15•, in spring sediments 15

Concentration of heavy metal, 5 to 9 ppm in stream sediments . . . . . 7•, in spring sediments . . . 7

Concentration of heavy metal, 0 to 4 ppm in stream sediments . . . . . 4•, in spring sediments . . . 4

Location of known veins . . . .

Mineral occurrence . . . . Au ×

Mineral deposit 3

Mineral Symbol

Gold (placer). . . . . . . Au (P)

Field work by C. F. Gleeson, W. M. Tupper, A. Suparman, K. Domai, M. Shafiqullah, J. A. Colwell, J. R. Deighton, C. H. Yurchak, J. K. Worth, H. R. James, A. G. Troup, G. Wind, L. Hogg, and F. R. Campbell

Geological cartography by the Geological Survey of Canada, 1965

INDEX TO MINES AND PROSPECTS

1. Elsa
2. Dixie
3. Coral and Wigwam
4. Arctic and Mastiff
5. Ruby
6. No Cash
7. Betty
8. Cream
9. Hector
10. Calumet
11. Dragon (UN)
12. Formo
13a. Galkeno (McLeod vein)
13b. Galkeno (Sime and Sugiyama veins)
14. Eagle
15. Fisher Creek
16. Bluebird
17. Tin Can
18. Rico
19. Duncan Creek
20. Moth
21. Onek
22. Klondyke-Keno
23. Sadie-Friendship
24. Ladue
25. Bellekeno
26. Mount Keno (Hogan vein)
27. Ankeno
28. Mount Keno (Runer vein)
29. Dorothy
30. Kijo
31. Croesus No. 1
32. Black Cap and Shepherd
33. Lucky Queen
34. Lake
35. Vanguard
36. Apex
37. Shamrock
38. Highlander
39. Cub and Bunny
40. Stone
41. Homestake
42. No. 6
43. Porcupine-Kinman
44. Comstock
45. No. 9
46. No. 1
47. Gambler
48. Main fault and Nabob
49. Lake View
50. Nabob No. 2
51. Helen Fraction
52. Gold Hill No. 2
53. Ladue Fraction
54. Fox
55. Silver Basin
56. Gold Queen
57. Duncan
58. Alice
59. Caribou
60. Divide
61. Devon
62. Faith

Roads, all weather . . . .

Other roads . . . .

Intermittent lake and stream . . . .

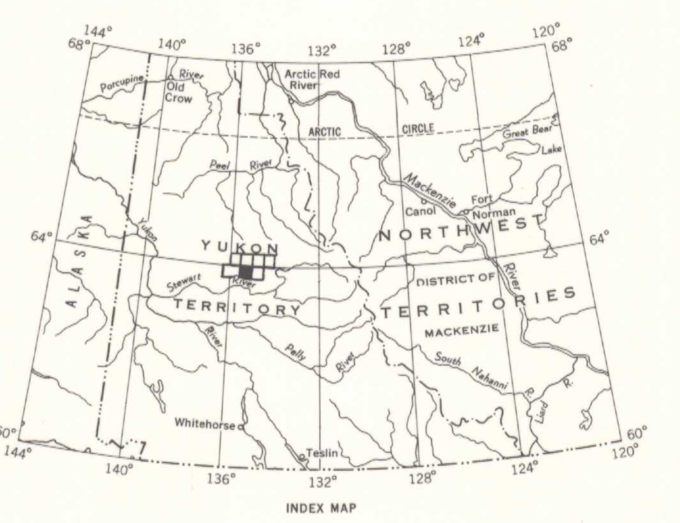
Marsh . . . .

Horizontal control point . . . . △

Elevation in feet above mean sea-level 5384

Base-map produced by the Army Survey Establishment, R. C. E. 1951

Approximate magnetic declination, 33° 42' East, decreasing 4.2' annually



INDEX MAP

DESCRIPTIVE NOTES

Geological

The Keno Hill area is underlain by a series of metamorphosed sedimentary rocks, mainly quartzites, phyllites, chlorite, sericite, and graphite schists, and minor limestone. Basic igneous sills and lenses now altered to greenstones are interlayered with these rocks. Quartz-feldspar porphyry dykes and sills and a few lamprophyre dykes cut the metasedimentary rocks in places.

The area has undergone several stages of glaciation, and thick glacial deposits occupy the major valleys and hill slopes below an elevation of 3,000 feet. Permafrost is present throughout the area.

Most of the ore deposits occur along northeasterly striking vein faults in thick-bedded quartzite and occasionally in greenstone. Early vein fillings contain mainly pyrite and/or arsenopyrite with or without silver and lead minerals. Later mineralization resulted in the deposition of siderite, sphalerite, galena, and argentiferous tetrahedrite.

The near surface parts of the veins have been deeply oxidized, with the formation of limonite, manganese oxides, cerussite, anglesite, malachite, azurite, and scorodite, and numerous other supergene lead, zinc, cadmium, and silver minerals.

Further details on the geology and mineralization of the area can be obtained from reports by Bostock (1947), McTaggart (1960), Kindle (1962), Aho (1964), Boyle (1965), and Poole (1965).

Geochemical

The data on the map are based on samples of sediment collected from the channels of the streams and on the sediments and precipitates in the vicinity of springs. Where possible the active channel was sampled. However, as the field work progressed it was found that moss on the creek banks below the water line had trapped considerable amounts of fine sediment. This kind of sample proved to be adequate, and in many instances this was the type of stream sediment sample analyzed. The wet sediment was analyzed at the sample site for cold citrate-soluble heavy metals (principally zinc, copper, and lead) using the method described by Smith (1964).

The values are expressed as total heavy metal in parts per million. The quantitative laboratory work done to date indicates that most of the heavy metal detected by the field test is zinc.

The creeks not accessible by roads were reached by helicopter. An attempt was made to maintain a sample interval of 1,500 feet along all creeks.

The anomalies on Erickson, Gambler, Faro, Silver Basin, Charity, Hope, and Faith Gulches, and the anomalies in the creeks draining Galena Hill, are associated for the most part with known mineralized vein structures. The high values in Duncan, Parent, Pingpong, and Keystone Creeks, and in the first gulch east of the mouth of the latter creek are probably derived from fault zones in pyritiferous graphitic schists and phyllites. McNeill, McMillan, and Allen Creeks, and the creeks south and east of the head of Allen Creek, the anomalous stream draining into Mayo Lake in the southeast part of the map-area, the anomalous creeks draining the northern slope of Beauvette Hill, and those draining south into the Keno - Ladue River, all drain areas underlain by thick bedded quartzite and/or greenstone. These areas should be investigated further.

The majority of the stream sediment anomalies are coincident with the water anomalies (see Map 20-1964). However, in the upper left fork of Parent Creek the cut-off of the sediment anomaly is about 2,000 feet below the cut-off of the water anomaly. The main sources of the water anomaly are two metal bearing springs which issue from the right limit of the creek. The quantitative laboratory results also show that the cut-off of the zinc anomaly occurs 2,000 feet below the metal rich springs. Hence, it appears that the physico-chemical conditions of the waters in the vicinity of some anomalous springs are such that zinc may be transported some distance downstream before it is retained by the stream sediments. Where this is the case a false cut-off will result; however, the anomaly can be traced to its source by testing the stream waters.

The heavy metal content of the stream and spring sediments and precipitates shown on this map should be compared with the heavy metal content of the water shown on Map 20-1964.

Aho, A. E.: Mineral potential of the Mayo district; Western Miner, vol. 37, No. 10, pp. 80-88 (1964).

Bostock, H. S.: Mayo, Yukon Territory; Geol. Surv. Can., Map 890A (1947).

Boyle, R. W., Illsley, C. T., and Green, R. N.: Geochemical investigation of the heavy metal content of stream and spring waters in the Keno Hill - Galena Hill area, Yukon Territory; Geol. Surv. Can., Bull. 32 (1955).

Boyle, R. W.: Geology, geochemistry, and origin of the lead-zinc-silver deposits of the Keno Hill - Galena Hill area, Yukon Territory; Geol. Surv. Can., Bull. 111 (1965).

Kindle, E. D.: Keno Hill, Yukon Territory; Geol. Surv. Can., Map 1105A (1962).

McTaggart, K. C.: The geology of Keno and Galena Hills, Yukon Territory; Geol. Surv. Can., Bull. 58 (1960).

Poole, W. H.: Reports of activities: field, 1964; Geol. Surv. Can., Paper 65-1 (1965).

Smith, A. Y.: Cold extractable "heavy metal" in soil and alluvium; Geol. Surv. Can., Paper 63-49 (1964).

PUBLISHED, 1966
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MAP 21-1964

HEAVY METAL CONTENT OF STREAM AND SPRING SEDIMENTS

KENO HILL

YUKON TERRITORY

Scale 1:63,360
1 inch to 1 mile

Miles 1 0 1 2 3 Miles

Kilometres 1 0 1 2 3 4 5 Kilometres

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KENO HILL
YUKON TERRITORY
MAP 21-1964

5.1.11 A, Geol. Keno Hill map 21, 1964 Scale 1" to 1 mile