PE-060-03

PE 60-3

TERRITORY OF ALASKA
DEPARTMENT OF MINES

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REPORT ON THE PRELIMINARY EXAMINATION OF THE FRED J. JENKINS PROPERTY NEAR EAGLE, ALASKA

by

Robert H. Saunders
Associate Mining Engineer

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ABSTRACT

Near the town of Eagle, Alaska, Mr. Fred J. Jenkins has staked eight lode claims paralleling a major fault zone and covering a number of mineralized outcrops. This fault zone, one hundred or more feet in width and traceable for several miles, has apparently served as a passageway for solutions that deposited a number of ore minerals in the adjacent country rock. The important metals that have been detected are gold, silver, copper, nickel, and cobalt. The mineralization is widely scattered on the claims in both replacement and filled-fissure deposits. The present value of the claims lies in the widespread mineralization rather than in any known minable deposit.

INTRODUCTION

As part of its program to furnish aid to prospectors in Alaska, the Department of Mines regularly employs mining engineers to examine mines and prospects. Examinations are made at the request of property owners. Mr. Fred J. Jenkins requested that an examination be made of property that he owns near Eagle, Alaska. In response to his request, a preliminary examination was made June 8 to 13, 1952, by R. H. Saunders, Associate Mining Engineer. This report is written from notes taken during that examination.

Acknowledgement for hospitality and for assistance in gathering the information in this report is due Mr. and Mrs. Fred J. Jenkins.

The first requisite for a complete report on this property would be a detailed geologic and topographic map of the claims. The making of such a map is beyond the scope of Department of Mines activities at the present time. Much of the time spent for this examination was used in scaling the steep slopes of Eagle Bluff; a reconnaissance of the claims and the outcrops upriver from the claims required four days. The remaining two days were spent in sampling and sketching those mineralized outcrops which, from the reconnaissance, appeared to have the greatest possibilities.

LOCATION AND ACCESSIBILITY

The town of Eagle is on the upper Yukon River about six airline miles west of the Canadian Border at 64° 47' N latitude and 141° 12' W longitude. It is in the Eagle District in the Yukon River Basin Region. By river, it is 100 miles downstream from Dawson, Y. T., 300 miles upstream from Circle, and 1500 miles from St. Michael, the seaport on Norton Sound. Before World War II, both Canadian and Alaska shipping companies operated river boats that stopped at Eagle on scheduled runs. The decrease in placer mining in Alaska has reduced river traffic to such an extent that, in 1952, there was no regular commercial traffic on this part of the Yukon.

By air, Eagle is about 200 miles from Fairbanks and about 300 miles from Valdez. For many years an old army parade ground adjacent to the town has served as an airfield for small planes. In 1952, a new field, suitable for two-engined planes, was completed about two miles upstream from the town. It has a more nearly level surface, a longer runway, and better approaches than the old field.

There is at present a road from Eagle to the head of O'Brien Creek, tributary of the Fortymile River. The Alaska Road Commission is constructing a road from Chicken to O'Brien Creek thereby linking the Eagle road with the Alaska Highway. When this road is completed, Eagle will be 420 miles from Valdez and 350 miles from Fairbanks by road. The cost of freighting between Eagle and Seattle should then be only slightly more than the present freight rates between Fairbanks and Seattle by truck and barge. By road, it will be about fifty miles farther from Valdez to Eagle than it is from Valdez to Fairbanks. Present freight rates by truck and barge are $160 per ton from Seattle to Fairbanks and $130 per ton from Fairbanks to Seattle on all classes of freight.

GENERAL INFORMATION

The Yukon River crosses the International Boundary at an elevation of about 880 ft. above sea level. For 200 miles downstream from the boundary, the river winds through a range of hills that rise abruptly to elevations of 2000 to 3000 ft. from the river valley. The river falls about one foot per mile from the boundary to Circle; the rate of flow is four to six miles per hour; and the general direction of flow is northwesterly. The river,

through this part of its course, is not braided as much as it is farther downstream; it is mostly confined to one main channel. Few tributaries of the upper Yukon are glacier-fed streams, and this part of the river is normally clear. It is generally devoid of sweepers and shifting sand bars, the characteristic impediments to Alaska river navigation.

The town of Eagle is on the southwest side of the Yukon on a terrace that stands about twenty feet above the high water level of the river. Mission Creek flows southeasterly along the north side of the town and joins the Yukon at the base of Eagle Bluff, a mass of rock that rises steeply from the river to an elevation of 1800 ft. Broad terraces extend along the southwest side of the river from Eagle Bluff upstream about six miles. On the northeast side of the river and across from the town of Eagle, there is a lowland that terminates against the hills that line the river bank from the mouth of Eagle Creek to the Canadian Border.

The climate of the upper Yukon valley is much the same as the climate of the Tanana Valley. The streams are open to navigation from mid-May to mid-October. Killing frosts usually begin about late August and continue until late May or early June. The Yukon-Tanana Region is considered to be semi-arid.

Spruce, birch, and cottonwood trees are abundant in most of the stream valleys. Timberline lies about 2500 ft. above sea level. In the immediate vicinity of Eagle, the larger trees have been cut, but trees suitable for saw logs or mine timbers can be found in most of the valleys in the surrounding country.

During the early days of mining in Alaska, Eagle served as the United States port of entry on the Yukon, and it was a supply point for the Seventymile, Fortymile, and other surrounding mining districts. United States troops were garrisoned at Fort Egbert, in the town of Eagle, until 1911, when the military post was abandoned. At present, there are about 25 people living in the town and an additional 25 people living in the native village which is three miles upstream from the town. The whit e residents, through their control of local politics, have thus far prevented the Indians from living in the town, except for a few who are married to whites. The only business establishment in the town is a trading post owned by the Northern Commercial Company.

A few of the residents continue to make a living by mining the gold placer deposits in the neighboring creeks. In recent years, some of the other residents have been employed through the summer months by the Alaska Road Commission in the construction of the road between Eagle and Chicken. Most of the Indians make their living by hunting, trapping, and fishing. Most of the employeees required for a new mining venture in this locality would have to be imported from Fairbanks or other larger communities.

PROPERTY AND OWNERSHIP

Plate I shows the location of Mr. Jenkins' claims with respect to the town and the drainage pattern. In 1951 the Eagle Recording Precinct became a part of the Fairbanks Recording Precinct, and the records are now kept in the office of the United States Commissioner at Fairbanks. The location certificates for all the claims are recorded in Volume No. 5 of the Eagle records. Fred J. Jenkins is shown to be the locator for all the claims. The proof of annual labor for the claims for the year ending June 30, 1952, was recorded August 1, 1952. Other information pertinent to the claim ownership is given in Table I.

There are no underground workings on the property.

At Eagle, Mr. Jenkins has a three-room log house, a river boat with outboard motor, and the hand tools required for preliminary prospecting.

TABLE I

Name of Claim	Instrument No.	Date Located	Date Recorded	Page on Which Recorded in Volume No. 5
Rosie	820	April 26, 1948	June 11, 1948	438
Esther	835	June 26, 1948	June 29, 1948	446
Esther No. 2	837	April 23, 1948	July 17, 1948	448
Agaucuconi No. 1	682	May 29, 1946	June 3, 1946	354
Agaucuconi No. 2	683	June 1, 1946	June 3, 1946	355
Agaucuconi No. 3	711	June 25, 1946	September 25, 1946	377
Agaucuconi No. 4	836	April 23, 1948	July 17, 1948	447
Agaucuconi No. 5	837	April 23, 1948	July 17, 1948	448
Agaucuconi No. 1 (amended location)	712		October 4, 1946	378
Agaucuconi No. 2 (amended location)	713		October 5, 1946	379

GENERAL GEOLOGY

The geology of the vicinity of Eagle has been described by J. B. Mertie, Jr., in U.S.G.S. Bulletin 816, GEOLOGY OF THE EAGLE-CIRCLE DISTRICT, ALASKA. In addition to the Quaternary alluvium deposits in the stream valleys, there are sedimentary and meta-sedimentary rocks of the pre-Cambrian, Paleozoic, Cretaceous, and Tertiary ages. The igneous and meta-igneous rocks in the vicinity consist of: granitic intrusives of Tertiary and Mesozoic ages, greenstone of Paleozoic age, and the metamorphic derivatives of ancient igneous rocks in the Paleozoic and pre-Cambrian meta-sediments.

The deposits that Mr. Jenkins has staked are in a belt of Paleozoic rocks that outcrop along the north side of Mission Creek and extend southeastward to outcrop again along the northeast bank of the Yukon from the Rosie claim across the boundary into Canada. These Paleozoic rocks consist of interbedded limestone, quartzite, greenstone, and greenstone schist. In Bulletin 816, Mr. Mertie states that most of the greenstone has been derived from basic extrusive rocks, but he does not preclude the possibility that some of it could be of intrusive origin. The nearest known granitic intrusion is about five miles southwest of Eagle.

Below the mouth of Eagle Creek, a broad flat zone is exposed along the north bank of the Yukon. The fault zone strikes about N 55° W; it can be traced along the lower part of Mission Creek for about ten miles, and it can also be seen on the hilltops along the International Boundary. The lower part of Mission Creek apparently follows this fault zone. The dislocation that occurred along this zone was probably caused by thrust movements from the southwest when the granitic intrusions were being formed. There has been intense drag folding and branch faulting in the rocks along the northeast side of the zone. Figs. III and IV show the deformation in rock outcrops along the Yukon on the northeast side of the fault. The rocks that form Eagle Bluff have been subjected to this same degree of deformation.

MINERAL DEPOSITS

The mineral deposits occur in the folded and faulted rocks on the northeast side of the major fault zone. Small patches of nickel and cobalt bloom are scattered along the apex of a shear zone about two feet wide on the Rosie claim. The shear zone dips vertically and strikes about N 65° W. In two hand-dug pits, primary metallic minerals are visible in narrow

fissures within the zone. Nickel and cobalt bloom can also be found on the Agaucuconi claims nearly three miles from the Rosie claim. Copper occurs in chalcopyrite, malachite, and azurite on the steep face on the southwest side of Eagle Bluff on the Agaucuconi claims and on the northeast side of the bluff on the Esther claims. Very little copper has been found on the Rosie claim, and neither nickel nor cobalt has been found on the Esther claims on the northeast side of the bluff. The prospects that appear to have the best possibilities are shown in Plates II and III. The chalcopyrite occurs in veins with quartz and calcite, in particles disseminated through limestone, and in amygdaloids in the greenstone. The copper-bearing veins on the Esther No. 1 claim are in meta-sedimentary rocks, and the veins apparently terminate where they intersect a greenstone contact.

On the Esther No. 1 claim, the sides of the bluff are steeper in some places than the dip of the veins or mineralized strata. The eroded surface is so irregular that the same geologic feature may outcrop in three or more places on the sides of the bluff. The complex folding and branch faulting together with the irregular land surface would make the detailed geologic mapping of these deposits very difficult. Plate II shows only the relative locations of the outcrops that were sampled; it does not show all of the mineralized outcrops within the area covered by the map.

SAMPLING AND ASSAYS

Eight samples taken during this examination were assayed at the Territorial Department of Mines Assay Office at College, Alaska, by Lowell Patten, Assayer-in-Charge. The locations from which the samples were taken are shown on Plates II and III, and the results of the assays are shown in Table II. Samples 1 to 5 were taken on the Ester No. 1 claim, and samples 6 to 8 were taken on the Rosie claim. Samples 1 to 5 were not analyzed for nickel and cobalt because chalcopyrite appeared to be the only ore mineral present. Samples 6 to 8 were not analyzed for copper because there appeared to be no copper minerals present.

TABLE II

Sample No.	Channel Length Ft.	Ounces per Ton Gold	Ounces per Ton Silver	Per Cent Copper	Per Cent Nickel	Per Cent Cobalt	Remarks
1	1.4	Tr	0.5	0.76			Quartz-calcite vein.
2	Grab Sample]	Tr	Nil	1.02			Same Vein as No. 1
3	Grab Sample	Tr	Nil	3.47			Same Vein as No. 1
4	Grab Sample	Tr	Nil	1.05			Vein about 6 ft. wide.
5	Grab Sample	Tr	Nil	1.70			Chalcopyrite disseminated through limestone.
6	0.8	Tr	1.28		0.91	Tr	Branch from main mineralized zone
7	1.6	Tr	Nil		0.18	Nil	Full width of main shear zone.
8	Grab Sample	Tr	Nil		0.19	Tr	Main shear zone.

PROPOSALS

On the Rosie claim, the outcrop of the mineralized zone is on the slope of a bank that stands 50 to 60 ft. above the river. To the north, this bank slopes gently downward to a flat beside the river. Because of the low topography over the mineralized zone, an orebody large enough to be minable would have its greater part below the elevation of the river. Further prospecting on this claim, therefore, would be essentially a problem of exploration in depth, and it would require either the drilling of many closely-spaced core-drill holes, the sinking of a shaft, or a combination of both. Either shaft-sinking or closely-spaced drilling would be expensive, and either would likely require a large initial investment in equipment. The depth of overburden is probably shallow enough to make trenching practicable for at least a few hundred feet northwest from the river bank. In addition to the trenching, a small prospect drift driven 100 to 200 ft. along the shear zone slightly above the elevation of the river would help to show whether or not exploration in depth is justified.

On the claims on Eagle Bluff, the rugged topography and the intricate geologic structure make it inadvisable to attempt planning a complete exploration program at the present time. The next step in the prospecting of these claims should be the detailed geologic and topographic mapping of all the rock exposures, combined with the careful sampling of all veins, shear zones, and beds that appear to be mineralized.

Chalcopyrite is 34.5 percent copper, therefore, in order to get one pound of copper to the smelter, it would be necessary to ship about three pounds of a nearly pure chalcopyrite concentrate. The cost of shipping three pounds from Eagle to Seattle would probably exceed 18¢; the value of the copper contained in three pounds of concentrate would not exceed 24.5¢ at present prices; and there would be less than 6.5¢ left for all other expenses. It seems doubtful, therefore that the mining of any chalcopyrite in the vicinity could be profitable for its copper content alone. The five samples taken on the Esther claim indicate that the gold-silver content of the chalcopyrite is not very high.

Although during this examination no samples were taken on the Agaucuconi claims, there are traces of nickel and cobalt bloom on those claims on the southwest side of Eagle Bluff. The chances of finding a workable nickel-cobalt-silver deposit on the southwest side of the bluff are probably greater than the chances of finding a workable copper-gold-silver deposit on the northeast side of the bluff.

Territory of Alaska

DEPARTMENT OF MINES

Assay Office

College, Alaska, June 26, 19.52

REPORT OF ASSAY

On samples received from Robert Saunders

Address Territorial Department of Mines, College, Alaska

Assay No.	Mark on Sample	OUNCES PER TON		Value Per Ton	PERCENTAGE OF	
		Gold	Silver			
17855	RHS-1952 1	Trace	0.5	$ 0.45	Copper	0.76%
17856	RHS-1952 2	Trace	Nil	None	Copper	1.02%
17857	RHS-1952 3	Trace	Nil	None	Copper	3.47%
17858	RHS-1952 4	Trace	Nil	None	Copper	1.05%
17859	RHS-1952 5	Trace	Nil	None	Copper	1.70%
17860	RHS-1952 6	Trace	1.28	$ 1.16	Nickel Cobalt	0.91% Trace
17861	RHS-1952 7	Trace	Nil	None	Nickel Cobalt	0.18% Nil
17862	RHS-1952 8	Trace	Nil	None	Nickel Cobalt	0.19% Trace

#5 – limestone matrix

Lowell L. Patten

ASSAYER.

TERRITORY OF ALASKA
DEPARTMENT OF MINES
BOX 1391
JUNEAU, ALASKA

September 18, 1958

Mr. Fred J. Jenkins
Box 913
Fairbanks, Alaska

Dear Mr. Jenkins:

Following our telephone conversation of yesterday and in the absence of Robert H. Saunders from Fairbanks, the following will act as this Department's consent to the use of a report made by Robert H. Saunders on your copper-nickel-cobalt prospect near Eagle, Alaska, in January of 1953.

The Department of Mines consents to your use of this report in preparation of an offering to be approved by the Securities and Exchange Commission providing the report is used in its entirety. The original report consisted of twelve double spaced typewritten pages in the text and was accompanied by four photographs and three plates. The table of contents reads as follows:

It is the policy of this Department in their field examinations of prospects or mining properties held by individuals to keep the reports resulting from these investigations in a confidential status until the owners of said properties authorize their release. Inasmuch as you are the owner of this property and wish to use the report in an offering circular to be prepared, you are free to do so as long as the entire report is used.

Very truly yours,

Phil R. Holdsworth
Commissioner of Mines

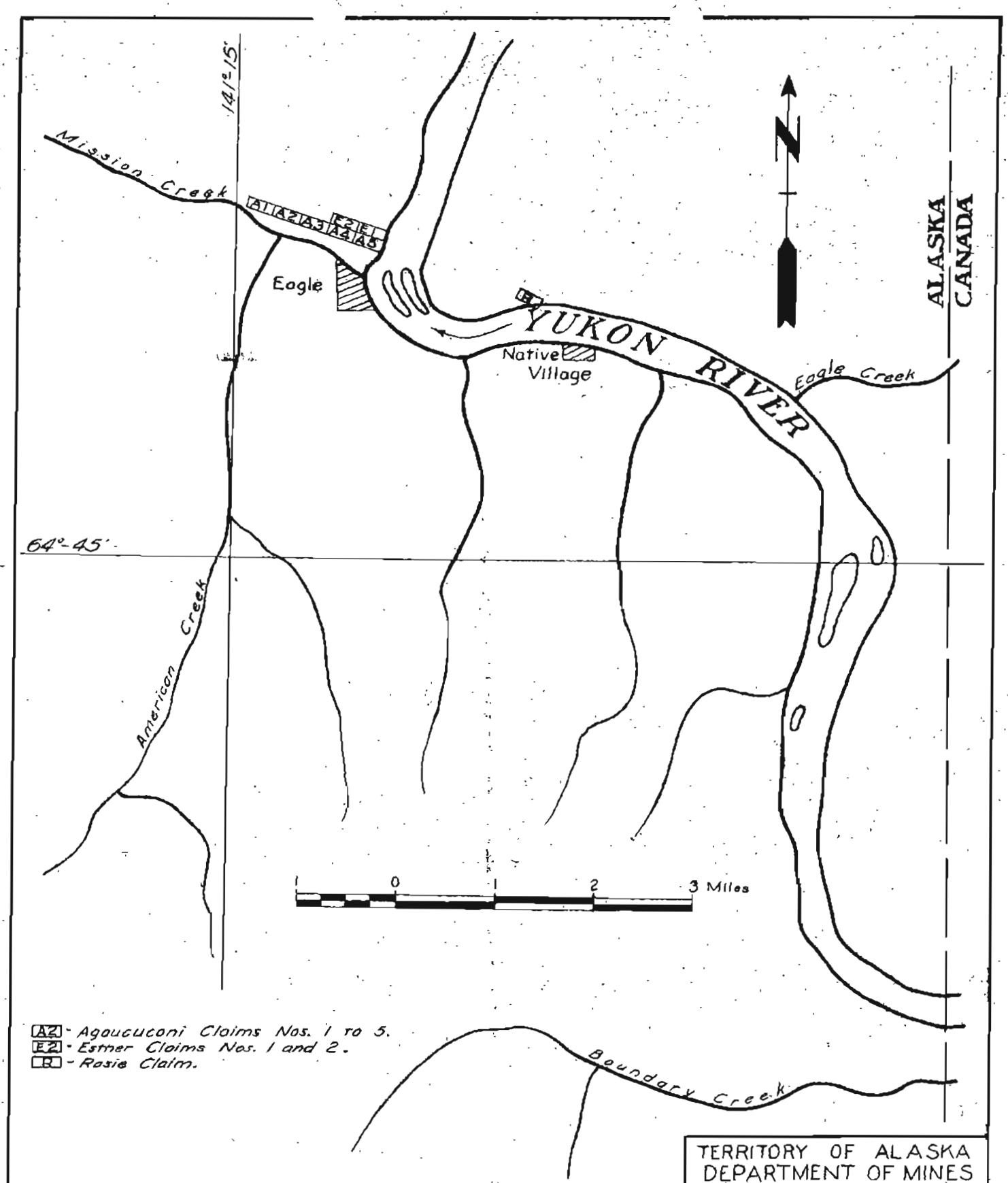
PRH'cm
enc. - 1
cc - Robert H. Saunders

STRUCTURE OF AGATE CREEK AREA
CASED ON AERIAL PHOTOGRAPHS
SKETCHED FROM MEMORY.
R.C. RAGLE.

Fig. I - Southeast End of Eagle Bluff

Fig. II - Excavation on the Rosie Claim

Figs. III and IV - Folding and Faulting in Outcrops Upstream from the Rogie Claim.



TERRITORY OF ALASKA
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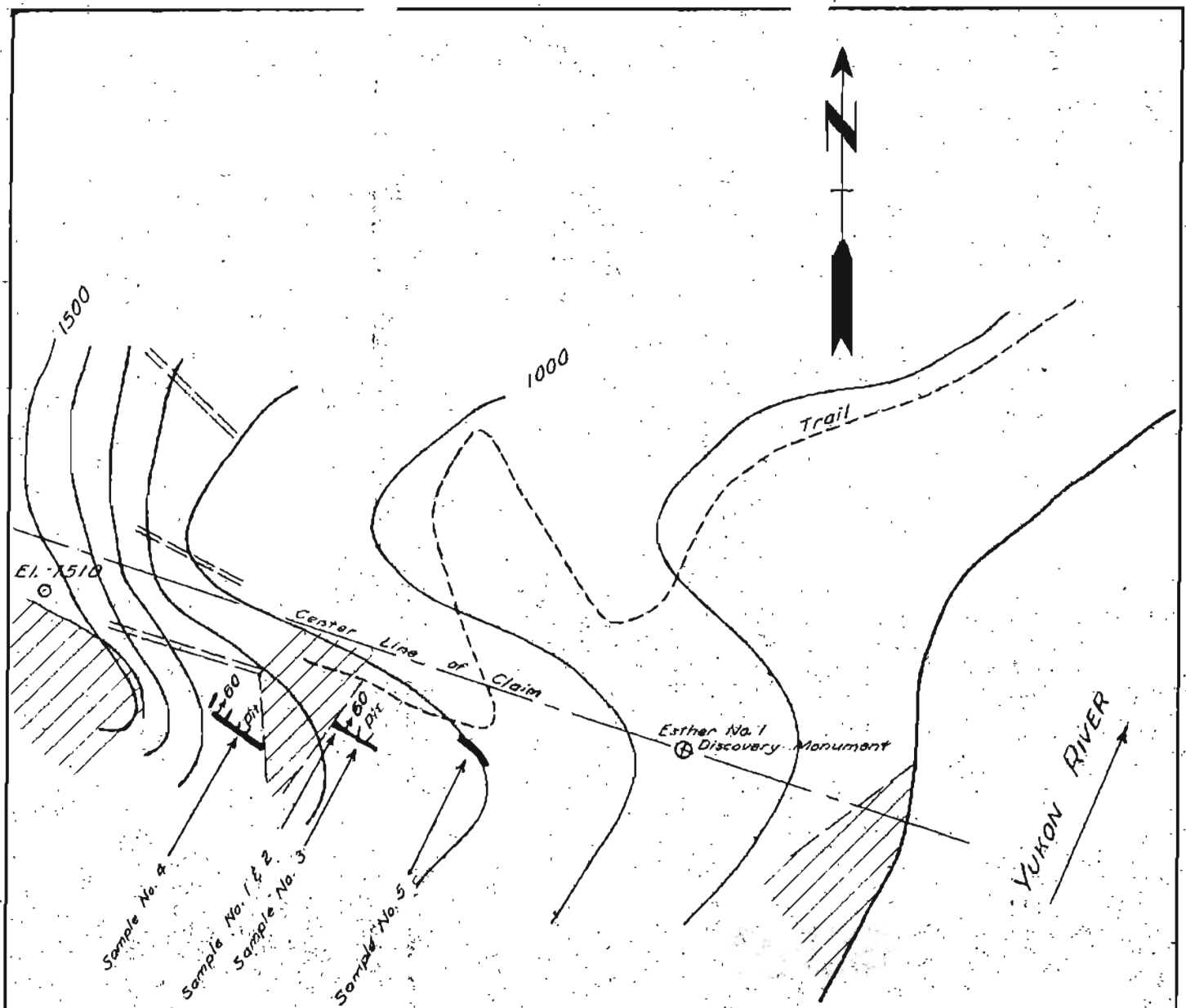
SKETCH MAP
EAGLE & VICINITY

Adapted from USGS Bull. 816 by R.H.Sounders, Assoc. Min. Engr. Dec. 1952

PLATE I



SCALE: 1" = 100'

Fault
Mineralized Outcrop
Greenstone

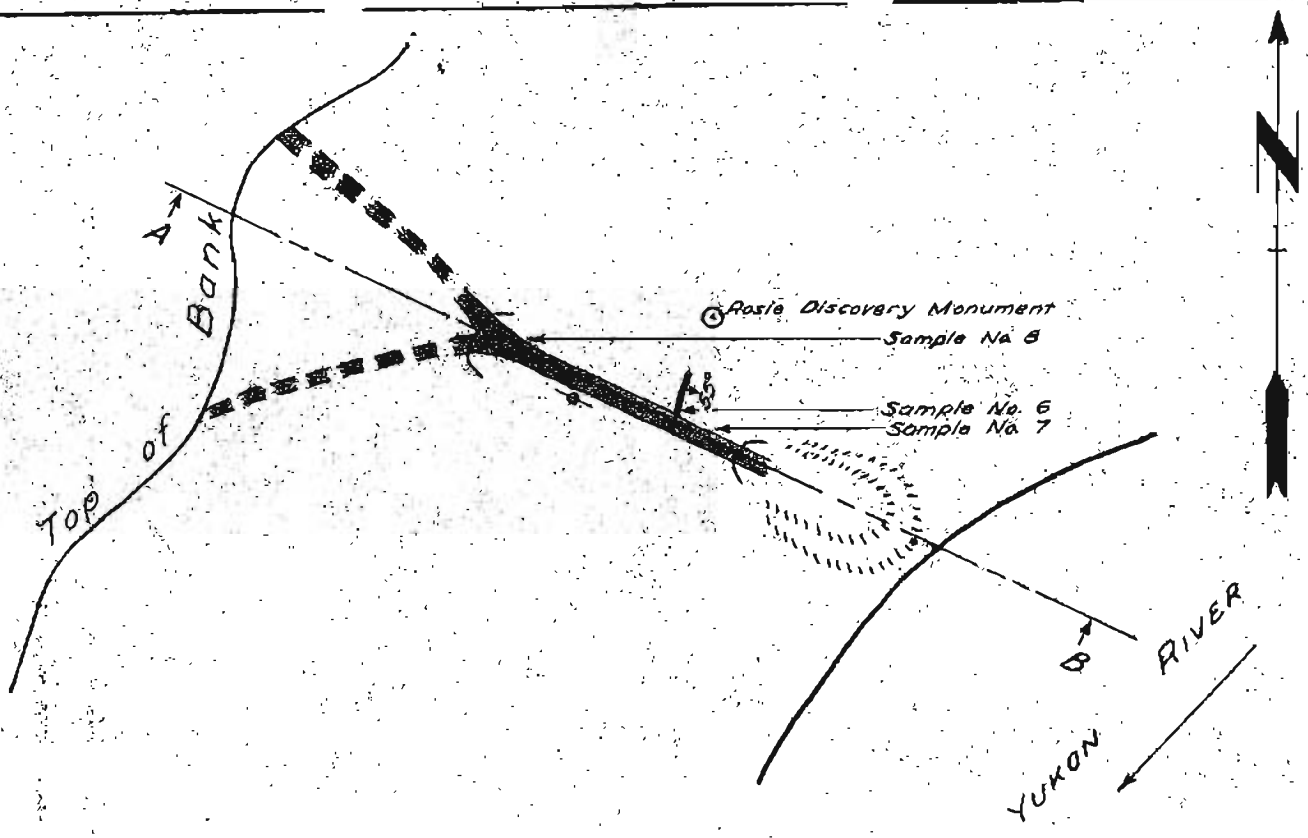
TERRITORY OF ALASKA
DEPARTMENT OF MINES

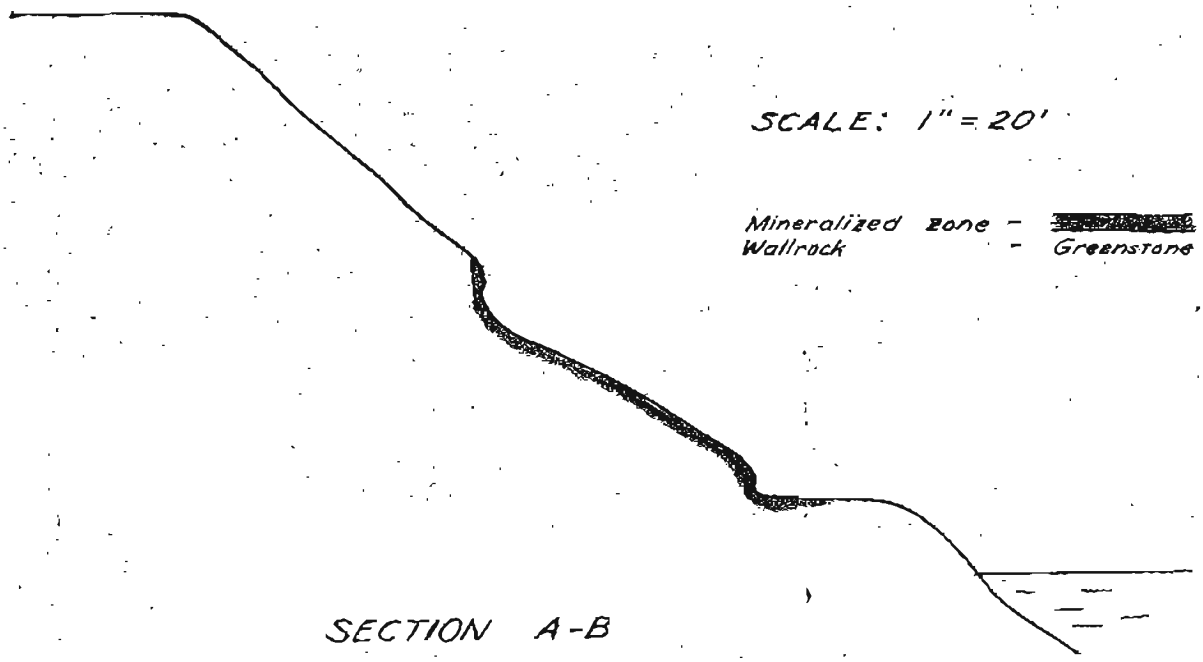
SKETCH OF OUTCROPS
ON ESTHER NO. 1 CLAIM

By R.H. Saunders, Assoc. Min. Eng.

Dec. 1952

PLATE II





SCALE: 1" = 20'

Mineralized zone -
Wallrock - Greenstone

SECTION A-B

TERRITORY OF ALASKA DEPARTMENT OF MINES
SKETCH OF OUTCROPS ON ROSIE CLAIM
By R.H. Saunders, Assoc. Min. Eng. Dec. 1952

PLATE III