UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey
Washington

THE CAAMANO POINT ANTIMONY DEPOSIT CLEVELAND PENINSULA, SOUTHEASTERN ALASKA

The Caamano Point antimony deposit was examined during the period August 16 to September 10, 1942 by G. D. Robinson of the Geological Survey, U. S. Department of the Interior. The workings were mapped on a scale of 1 inch to 10 feet, and contoured on an interval of 10 feet. As a field setting for the prospect area, the southern part of the peninsula was mapped on a scale of 2 inches to 1 mile.

The Caamano Point deposit is near the southern tip of the Cleveland Peninsula, southeastern Alaska, 16 miles by water northwest of Ketchikan, the nearest port (see fig. 1). The deposit is one-half mile northwest of the small bay on the east side of Caamano Point, at an elevation of 140 feet, and is accessible by a good trail from the bay. The property is reported to be owned by Val Klemm of Ketchikan, who located it in February, 1914.

General Geology

According to Buddington and Chapin 1/, the vicinity of the deposit is underlain by Jurassic or Cretaceous greenstone volcanics, containing black slate and graywacke. A brief reconnaissance by the writer indicated that a sequence of meta-volcanic rocks, exposed along Clarence Strait, underlies a sequence of meta-sedimentary rocks, exposed along Bond Bay (see fig. 2). The rocks have been moderately changed by dynamic metamorphism and are complexly folded. The folds are nearly isoclinal, are overturned to the west, and generally plunge northwesterly.

The limestone country rock of the antimony deposit is near the base of the sedimentary section, where it occupies a position on the west limb of a large northwesterly plunging syncline, overturned to the west and crumpled into numerous small folds.

Ore Deposits

Present development on the property includes four trenches, one of which contains two shallow shafts, and scattered small pits within a few hundred feet of the shafts. Ore has been found in the shafts and in the trench containing them, and a little stibnite is exposed in the two more northerly trenches (see fig. 3).

1/ Buddington, A. F. and Chapin, Theodore, Geology and mineral deposits of southeastern Alaska: U. S. Geol. Survey Bull. 800, pl. 1, 1929.

The principal body (A on fig. 3), in Trench 1, is at least 23 feet long and as much as 8 feet wide and 3½ feet thick. Between the shafts the ore is much thinner and narrower, thus giving the body a dumbbell shape. The long axis trends about N. 65° E and pitches 26°-28° E. The intermediate axis pitches 30°-35° N. According to Mr. Klemm, the original discovery was on a body 6 feet by 3 feet by 3 feet on an extension of the long axis of the principal body. This small mass, which was above the present surface, has now been mined out. Barren country rock is said to have intervened between it and the main body. A small pod of ore (B on fig. 3), beginning 6 feet west of the center of the more westerly shaft, crops out at shoulder height on the south wall of the trench; its dimensions are 4½ feet by 3 feet by 1½ feet. Its long axis pitches 30° N. Smaller masses of stibnite extend discontinuously nearly to the surface from the base of the pod, in a direction parallel to the long axis of the main body. There is no visible connection between the (A) and (B) bodies, but herein they are considered as one.

The ore consists of massive and bladed stibnite, in limestone breccia. The central portions of the ore body are nearly pure stibnite, but toward the margins blocks of limestone, veined with and partially replaced by stibnite, become abundant. In addition to limestone fragments, the gangue includes minor amounts of vein calcite and quartz. Associated with small amounts of stibnite in the two more northerly trenches are occasional crystals of primary chalcocite and sphalerite as well as a little sericite and ankerite. An orange-red mineral, sparsely present on the periphery of the ore body, may be primary realgar or secondary kermesite (Sb_2S_2O). Weathering has produced a small amount of antimony and arsenic (?) oxides.

The ore occupies fractures in and replaces black crystalline limestone. Two types of limestone are present: a thinly bedded, slaty variety and an intricately brecciated, massive variety, without visible bedding. The contacts between the two types are gradational. The country rock is cut by some discontinuous talc schist bands, ranging in thickness from less than 1 inch to 60 inches. Apparently dikes originally, these bands are older than the ore; probably they have not influenced ore deposition significantly.

The structure in the prospect area is complex. The exposed ore is on the north flank of a small anticline, trending about N. 70° E and plunging easterly, which cuts across the regional structure. Although this fold may have been superimposed upon earlier, northwesterly trending structures, it is likely that it represents the short limb of a large plunging drag fold. This fold obviously influenced the deposition of the exposed ore body. Other

comparable folds may have influenced the deposition of ore bodies as yet undiscovered in the vicinity; it is believed, however, that the influence of folding in providing openings for ore deposition has been secondary to that of another structural control described below.

The slaty limestone surrounds the massive limestone in crudely eye-like forms. The attitudes of the slaty partings confrom to the general outlines of the "eyes", which range in long diameter from 6 feet to 50 feet. These small-scale structures are believed to have been the most effective influences on ore localization in the area. The known ore body occupies three small closely spaced "eyes", with maximum diameters ranging from 6 feet to 15 feet. All showings of stibnite found have been in the massive breccia, which is the less abundant type. Because the two limestones are not greatly different and because they have graduational contacts, the "eyes" are recognizable with difficulty. Apparently these structures developed during metamorphism as a result of flowage of the less competent, originally slaty rock around beds or lenses of the more competent massive rock. The massive limestone broke rather than flowed. The ore-bearing solutions probably rose along small fractures and deposited sulphides in the larger openings between the limestone breccia blocks, and worked outward from these openings to replace the limestone. Other ore bodies, if present, probably owe their locations principally to the presence of other breccia "eyes" in the paths of the ore-bearing solutions.

The alignment of the known ore body suggests the presence of a fault or strong fracture, dipping northerly at a moderate angle and originally providing a main channel for the solutions. Although no other evidence for such an opening was found, it might have been obscured in the present exposures by later readjustments of breccia blocks. The possiblilty of such a control should not be overlooked in future exploration.

Reserves

The proved or measured ore includes the exposed part of the principal body, the small body (B) and the mass on which the original discovery was made. Except for one ton, which made up a test shipment, all the ore is still on the property. The ore removed from the principal body, and part of that which constituted the discovery body is now on the ore pile on the west end of Trench 1. The rest of the ore from the discovery body is piled outside the trench near the more westerly shaft. Approximately 375 cubic feet of ore is in sight in Trench 1 and on the ore piles. In the absence of representative analyses, it is estimated that the ore averages about 60% of stibnite (Sp. Gr. 4.6) by volume, or 73% by weight. On this basis, approximately 45 tons of ore, containing 32.5 tons of stibnite, are proved. It is probably not safe to assume that the ore body continues far in its present dimensions. If the structural interpretation favored is correct, the principal ore body may be expected to end rather abruptly downward within a few feet. Not more than 25 tons of ore beyond that in sight is indicated.

In addition to the known ore body, which may continue farther than can be predicted with safety, other bodies of stibnite may underlie the surface in the vicinity. There are no indications as to the number or size of these bodies. Finding them may be impractical, unless further development provides a basis for predicting more accurately than is now possible the location of breccia "eyes" which may be mineralized.

Recommendations

Future development should follow the massive breccia, particularly where small amounts of stibnite indicate that ore-bearing solutions penetrated it. If any development is undertaken it is recommended that 1) the present ore body be mined out and its enclosing "eyes" be explored to their borders against slaty limestone; that 2) the "eyes" containing small amounts of stibnite be explored by means of inclined shafts; and that 3) the extension of the plane in which the present ore body lies be explored in conjunction with the work involved in 1) and 2), in order to test the possibility of control of ore deposition by a fault or fracture. Short diamond drill holes might be used to explore the ground to the north of Trench 1, as breccia "eyes" are known to be present there, but are not known to be present to the south.

In normal times, this deposit would offer little inducement for exploitation. In view of the present shortage of antimony, however, it might be advisable to test the area briefly.

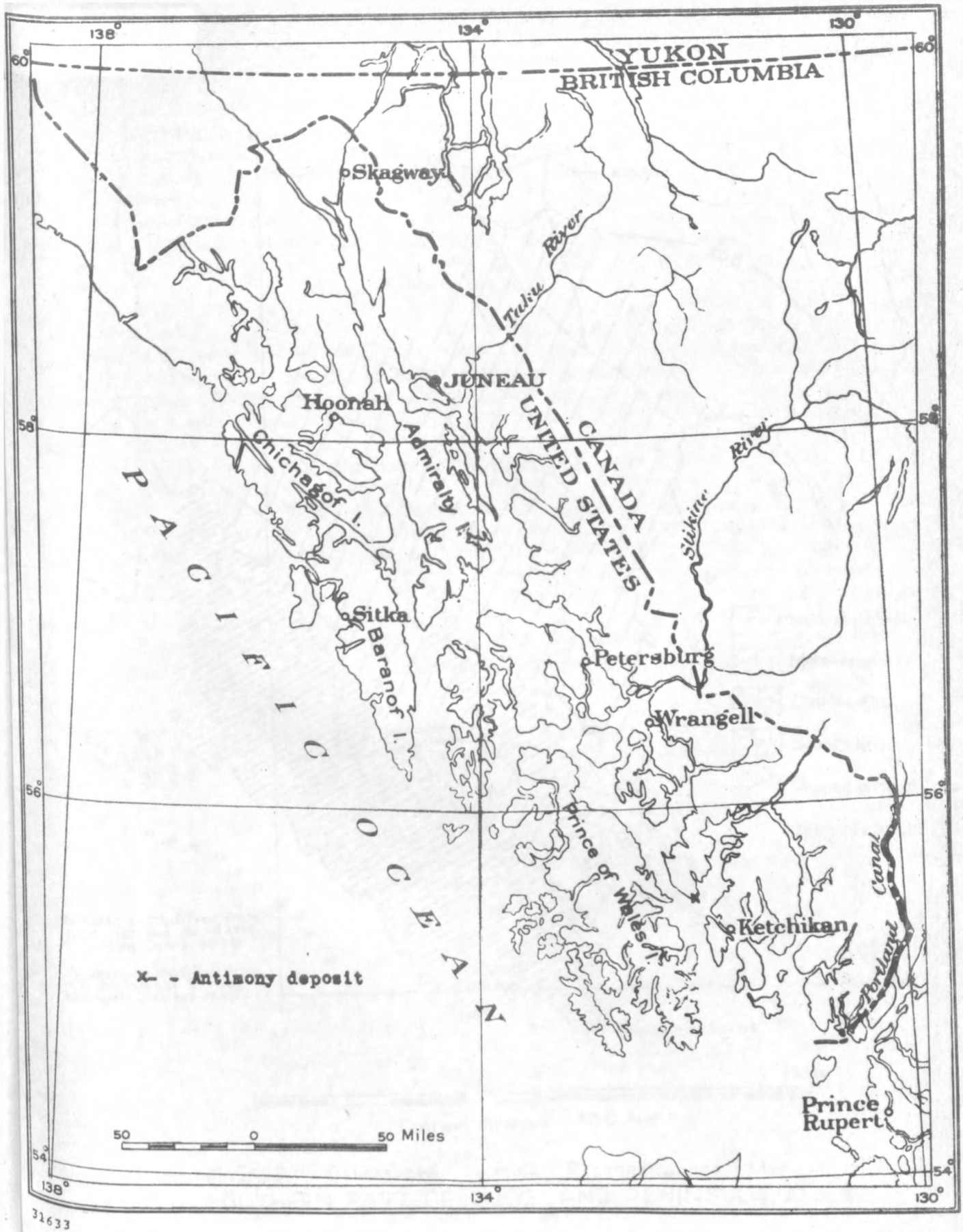

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Figure 1.- Index map of southeastern Alaska showing location of Caamano Point antimony deposit.

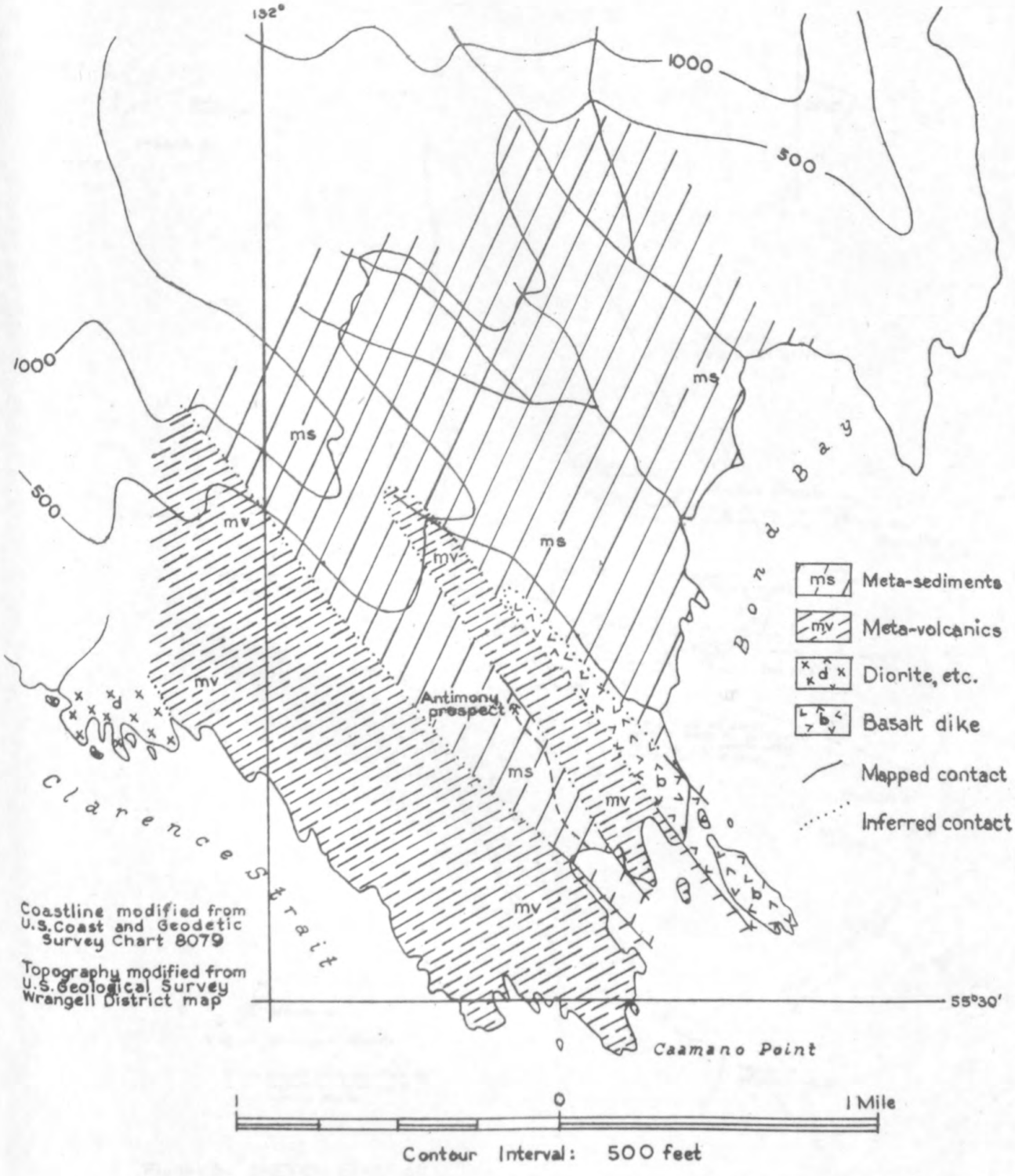

Figure 2 : Generalized Geologic Reconnaissance Map of SOUTHERN PART OF CLEVELAND PENINSULA, ALASKA

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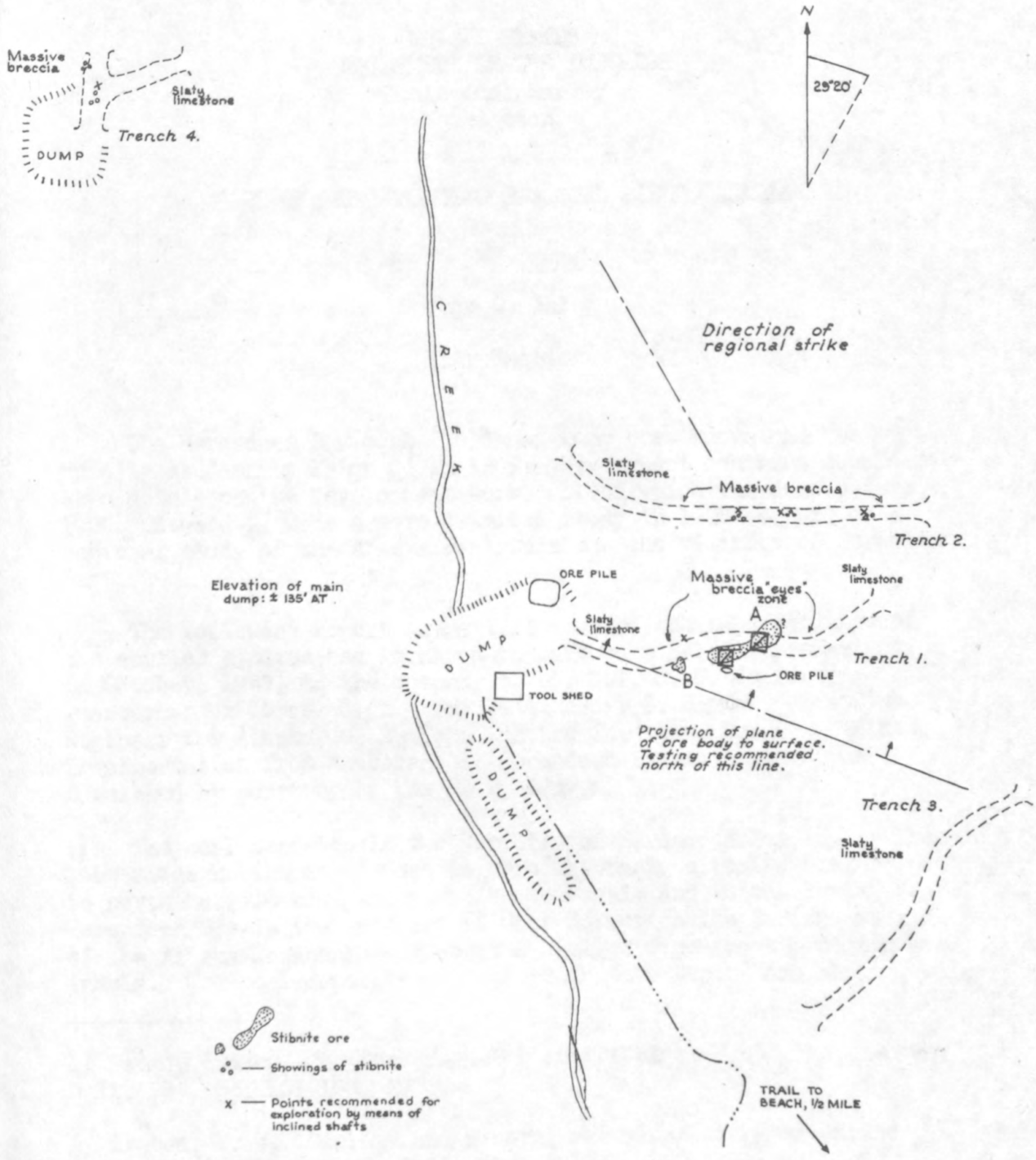

Figure 3: SKETCH MAP OF WORKINGS, CAAMANO POINT ANTIMONY DEPOSIT