

# Mineral Investigations in the Chugach National Forest, Alaska (Islands Area)

By: Joseph M. Kurtak and Rodney E. Jeske



UNITED STATES DEPARTMENT OF THE INTERIOR  
Donald P. Hodel, Secretary

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Robert C. Horton, Director



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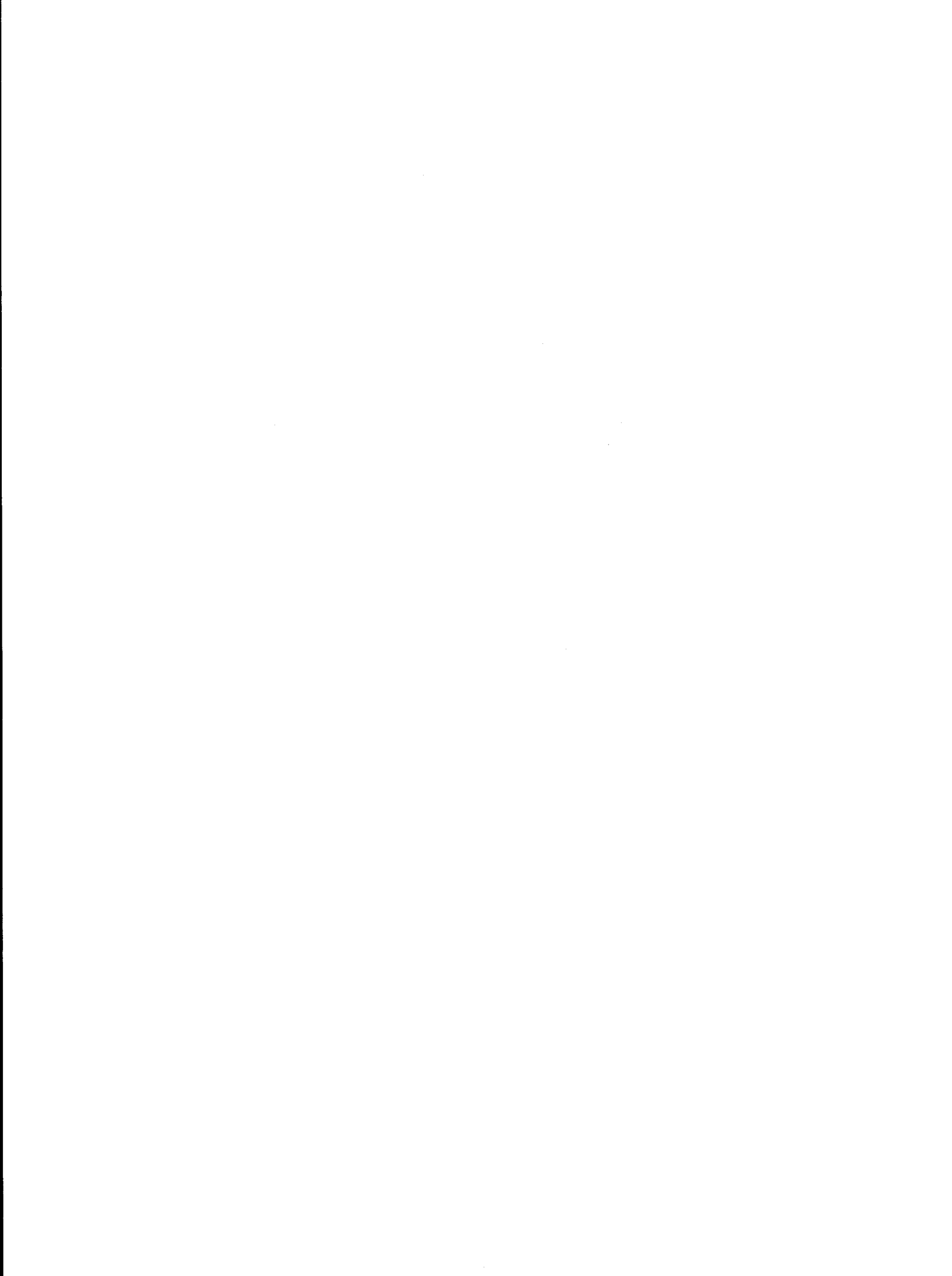
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UNIT OF MEASURE ABBREVIATIONS USED IN THIS REPORT

ft	feet
ft <sup>3</sup>	cubic feet
in	inch(es)
lb	pound
mm	millimeter
m.y.	million years
oz	ounce
%	percent
ppm	parts per million
yd <sup>3</sup>	cubic yard



MINERAL INVESTIGATIONS IN THE CHUGACH NATIONAL  
FOREST, ALASKA (ISLANDS AREA)

by Joseph M. Kurtak<sup>1/</sup> and Rodney E. Jeske<sup>2/</sup>

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ABSTRACT

The Bureau of Mines (Bureau) and the U.S. Geological Survey (USGS) conducted a 4-year (1979-1982) mineral assessment study of the Chugach National Forest (CNF), Ak, as part of the Roadless Area Review and Evaluation (RARE II) Program. The USGS remapped the geology and distribution of mineral resources. The Bureau investigated mines, prospects, and mineral occurrences. This report describes the results of Bureau work in the central 790,880 acres of the Forest.

Copper, with by-product zinc, silver, and gold, has been the major metal produced from the study area as well as from the entire Chugach National Forest. The majority of the copper deposits are concentrated within basaltic rocks on Knight Island but the major producers are hosted by sedimentary rocks on Latouche Island. Approximately 182.6 million lb of copper, 1.5 million oz of silver, and an unknown but substantial amount of gold were produced during a 30 year period. Currently no mines in the area are producing.

Inferred, indicated and measured reserves having mineral development potential total 4.6 million tons, with weighted average grades of 1.6% copper, 0.30 oz silver/ton, and 0.04 oz gold/ton.

INTRODUCTION

Beginning in 1979, as designated by Public Law 94-588 relating to the U.S. Forest Service Roadless Area Review and Evaluation (RARE II) Program, the Bureau, and USGS undertook a four-year program to assess the mineral potential of the CNF, AK (fig. 1). In order to provide the Forest Service the mineral data required for land use planning purposes, known mines, prospects, and mineral occurrences were located, studied, and evaluated. Reconnaissance was done in areas for which little information was available.

For purposes of this assessment, the Bureau divided the CNF into three study areas, termed "PENINSULA" (west), "ISLANDS" (central), and "SOUND" (east). This report concerns the 790,880 acres making up the ISLANDS study area (Fig. 2). Two separate reports will cover the PENINSULA and SOUND portions of the CNF.

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<sup>1/</sup>Geologist, Alaska Field Operations Center, Anchorage, Alaska.

<sup>2/</sup>Geologist, Intermountain Field Operations Center, Denver, Colorado.



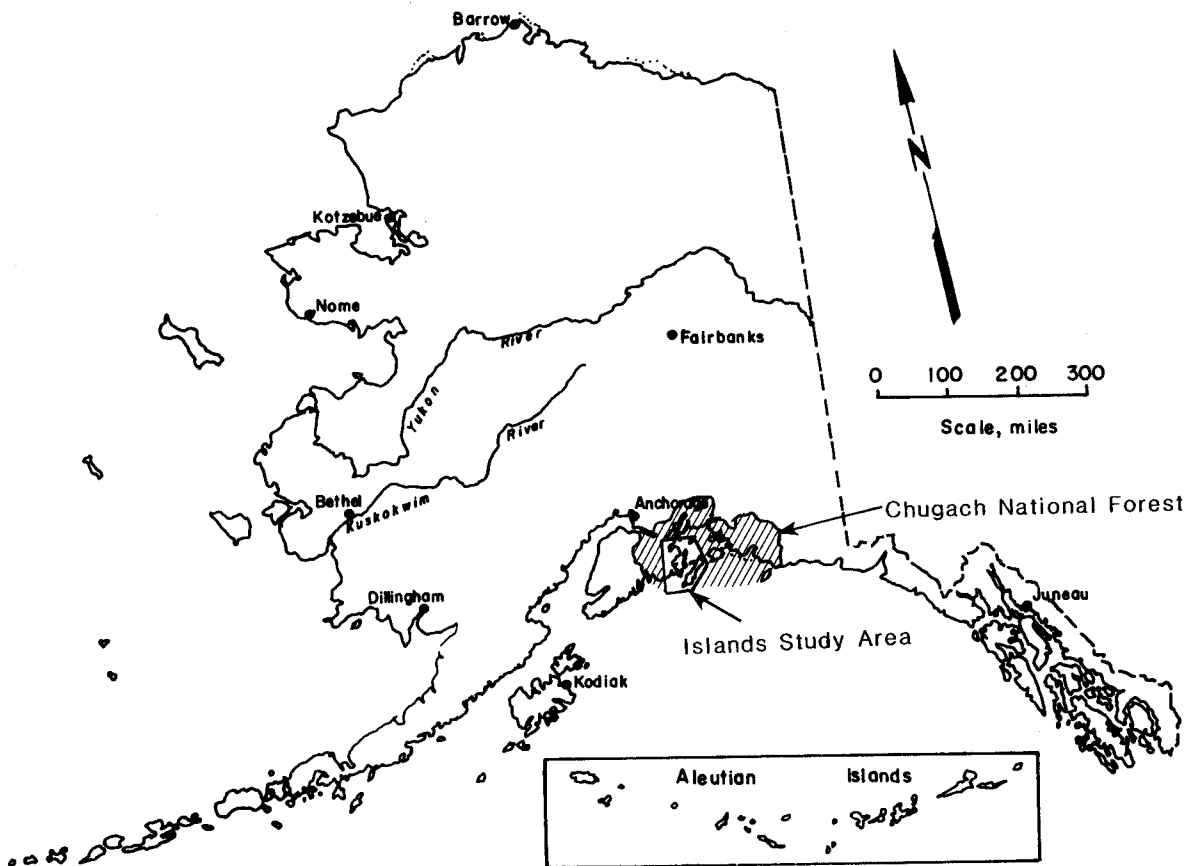


FIGURE 1. -- Index map Alaska showing the Chugach National Forest and location of the Islands study area



FIGURE 2. -- Land Status map of Chugach National Forest, Alaska

## ACKNOWLEDGMENTS

The completion of this project would not have been possible without the assistance and support of numerous people, a few of whom will be mentioned here. Bureau field personnel who made important suggestions concerning the geology and ore deposits included Douglas Buteyn, Barbara Sellars, Joseph Zamudio, and Scott Wenger, Physical Science Technicians. Dail Hurdlow, manager of Port San Juan Aquaculture and Marla Adkins, owner of the Prince William Sound Inn provided background on mining history in the area. USGS personnel led by Steve Nelson, Geologist, provided expertise on the geology of the area to the Bureau. Wallace McGregor of the Wallace McGregor Company and Paul Hartley of Texasgulf Minerals made available their data on the Rua Cove Prospect. Cominco American Incorporated and the Bear Creek Mining Company provided information concerning various mines and prospects within the study area.

## GEOGRAPHIC SETTING

The study area is in western Prince William Sound and consists of a group of islands and adjacent Alaskan mainland coast. Most of the terrain is rugged with elevations ranging from sea level to over 6,000 ft. The area has undergone glaciation as evidenced by numerous cirques and glacial valleys. Large ice sheets still cover the western portion of the area. Most of the shoreline is very irregular with numerous deep bays, and passages. Vegetation consists mainly of Sitka Spruce and Western Hemlock forest with a dense Alder brush undergrowth. This forest alternates with low relief muskeg-covered clearings mostly in the lower elevations. Above an approximate 1,000-ft timberline, the forest gives way to bedrock and talus slopes, locally covered by thin tundra vegetation.

During 1980-1981 precipitation for a one-year period in the southern portion of the area totalled 165 in. with 38 in. falling as snow. The greatest precipitation was in January and the least in June (101)<sup>3/</sup>. Temperatures range from 44°-61°F during the summer to

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3/Underlined numbers in parentheses refer to items in reference list at the end of this report.

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26°-40°F in winter. Minimum and maximum temperatures are 1°F and 80°F, respectively (1, p. 11).

No roads connect the area with mainland Alaska and access is by boat or plane only. The majority of the few permanent residents live at two salmon hatcheries, one at Port San Juan on Evans Island, and the other in Main Bay just south of the entrance to Port Nellie Juan (fig. 4). The Port San Juan site has the only pier facility that can accommodate larger boats. No public accommodations, other than some Forest Service cabins, are currently available within the study area. Whittier, the nearest community, is approximately 9-miles northwest of the study area boundary (fig. 2).

## LAND STATUS

Figure 2 shows the land status of the CNF as of January 1, 1984. Included within it are Federal, State, and private lands. Some

existing CNF lands have been tentatively selected under the Alaska Native Claims Settlement Act and are currently closed to mineral entry. Other CNF lands have been proposed for possible wilderness status and are also currently closed to mineral entry.

#### PREVIOUS STUDIES

The first published reports of geologic investigations in the ISLANDS area date back to 1900 when the USGS visited the area (Schrader and Spencer, 117). A series of studies followed with the most complete being those by Grant and Higgins (51-52), Johnson (78), Moffit (95-97), Moffit and Fellows (98), Stefansson and Moxham (130), and Stejer (131). Bateman (6-8) published some of the work done for Kennecott Copper Corp. at the Beatson Mine. Roehm (112) examined gold properties on Culross Island for the Alaska Territorial Department of Mines. The Bureau investigated the copper deposits on Latouche and Knight Islands as part of the Strategic Minerals Program [Rutledge (113-114), Webber and Rutledge (158)]. Richter (111) investigated many of the prospects in central Knight Island area for the Alaska Division of Mines and Geology. Tysdal (141) and Tysdal and Case (143) compiled a complete geologic map of the area and an extensive compilation of mines, prospects, and mineral occurrences prior to the present study.

#### MINING HISTORY

Recorded mining history in the study area began in 1897 with the discovery of the Big Bonanza or Beatson Copper Deposit (S-17)<sup>4/</sup> on the

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<sup>4/</sup>Map location number. Refer to fig. 4 and appendices B and C.

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northwest shore of Latouche Island (fig. 4). Prospectors were led to the mineralized outcrops by Indians. Their curiosity was first aroused when observing an Indian using chalcopyrite to produce a black stain on his badarka paddle. Stone hammers were found near the outcrops and were believed left by Indian miners who pounded native copper from the rocks (88, pp. 203-204). The prospecting that followed was mainly concentrated on Latouche and Knight Islands. Most prospecting occurred between 1902-1917 during which time several copper and gold prospects were discovered (52, p. 52). The Beatson Mine later became the largest copper and silver producer in the ISLANDS area as well as for Prince William Sound.

Only small amounts of ore, mainly for metallurgical testing were shipped from prospects on Knight Island. The Copper Bullion Claims (S-67), staked in 1907 at Rua Cove on the northeast shore of Knight Island (fig. 4), contain the largest copper reserves on the island.

Lode gold was discovered at the north end of Culross Island (fig. 4) in 1907 and later became the Culross Mine (S-102) which was the only property in the ISLANDS area with gold as its main product.

After World War I, prospecting declined and with the closure of the Beatson operation in 1930 all mining ceased (98, pp. 48-49). From 1929 to 1930, the Solar Development Company did diamond drilling and underground development at Rua Cove on Knight Island. In the 1970's,

diamond drilling and geophysical surveys were conducted at Rua Cove by Northwest Exploration and Texasgulf Inc. Both of those companies also drilled the Duke (S-3) and Duchess (S-4) prospects on Latouche Island. Also in the 1970's, Phelps Dodge Corp. and Noranda Exploration Inc. carried out geophysical studies and drilling along the southern extension of the Beatson fault which is spatially related to the Beatson ore body on Latouche Island. Currently no mines are producing in the ISLANDS area.

#### BUREAU INVESTIGATIONS

Bureau work was initiated to assess the mineral production potential of the study area. Known mines, prospects, and occurrences were located and evaluated. The surrounding mineralized areas were also investigated.

In 1979, following a literature search, a reconnaissance and stream sediment geochemical survey were made of the entire area by the Bureau (69-70). During the field seasons of 1980-1982 detailed examinations were made at all mines, prospects, and mineral occurrences that could be found. Groups of up to four Bureau personnel took part in the field work at one time. In the period from 1980-82, a total of 134 days were spent in the field with 32 of these lost because of equipment failures or bad weather. The dense vegetation undergrowth and rapid deterioration of man-made structures made mine and prospect identification difficult at times.

A total of 3 mines 5/7, 82 prospects 6/7, and 26 mineral occurrences 7/7, had been reported. Approximately 72% of these were

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5/Ore shipments made over a period of several years.

6/Development work done but no ore shipped.

7/Mineralization exists but no signs of development.

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actually located in the field and an additional 13 previously unreported occurrences were identified. In most cases mineralized zones were mapped and rock samples collected for quantitative analysis. When possible a reserve or resource estimate was made. Geochemically anomalous stream sediment samples previously collected by both the Bureau and USGS were followed up and resampled.

Two boats, a lodge in Thumb Bay on Knight Island, and a salmon hatchery at Port San Juan on Evans Island (fig. 4) were utilized as bases of operation. Skiffs were used for shoreline investigations and a helicopter for access to the higher elevations.

#### SAMPLING

From 1980 to 1982, 709 rock, 198 stream sediment, 184 soil, and 6 placer samples were collected in addition to 389 rock specimens for petrographic determination of rock types. Rock samples were of four types: 1) chip sample - collected in a continuous line for a measured distance across an exposure; 2) random chip sample - collected at random points from an apparently homogeneous mineralized exposure; 3) select grab sample - collected from the highest or lowest grade portion of a mineralized zone or high or low grade dump float to

determine the presence or absence of minerals of economic importance; 4) grab sample - random sampling of dump, outcrop, or float material to determine the presence or absence of minerals of economic importance.

Stream sediment samples consisted of silt-sized material collected from active stream drainages. Soil samples were collected from the A or B soil horizons.

Placer samples consisted of approximately 0.1 yd<sup>3</sup> of stream or bank material run through a 10 x 48-in sluice box and panned down to produce approximately 1-lb of concentrate. This was then submitted for analysis after a microscope examination was made for visible gold and other heavy metals.

#### ANALYTICAL WORK

Samples were prepared at the Bureau's laboratory in Juneau and Rainbow Resource Labs Inc. in Anchorage. Geochemical samples were analysed by atomic absorption x-ray fluorescence, and colorimetric methods at TSL Laboratories LTD. in Spokane, Washington and Rainbow Resource Labs in Anchorage. Fire assays for gold and silver were run by both the Bureau's Juneau lab and TSL. Check analyses were done at the Bureau's laboratories in Reno and Juneau. A 39 element emission spectrographic analysis was run by TSL on all rock samples collected. The analytical results will be compiled in the future as a Bureau open-file report. Table 1 gives lower detection limits of elements analyzed for by atomic absorption and fire assay.

#### GEOLOGIC SETTING

The ISLANDS area is underlain by: (1) sedimentary rocks of the Tertiary Orca and Cretaceous Valdez Groups; and (2) igneous rocks which consist of Tertiary Orca Group basalts, diorites, gabbros, and Tertiary granites.

#### SEDIMENTARY ROCKS

Orca Group rocks of Paleocene-Eocene age make up the major rock unit in the ISLANDS area (fig. 3). It consists of what early USGS workers termed interbedded graywacke and slate with localized beds of conglomerate and limestone (97, pp. 262-263). More recently USGS workers have described these rock types as thin to thick-bedded sandstone, siltstone, and mudstone containing sedimentary structures indicating turbidity current deposition (143, pp. 4-5).

The graywacke is made up of quartz, plagioclase, and a small percentage of volcanic fragments. Locally the rocks grade to arkoses (97, pp. 226). Conglomerate beds from 6 to 40-ft-thick are exposed intermittently in the southern part of the area especially on the west side of Latouche Island. They are composed of a graywacke matrix with pebbles of vein quartz, slate, and four types of granitic pebbles (52, pp. 29). Most of the rocks are metamorphosed to the greenschist and prehnite facies (143, p. 4). A thickness for this entire sequence has not been determined but is probably on the order of thousands of feet (97, pp. 226).

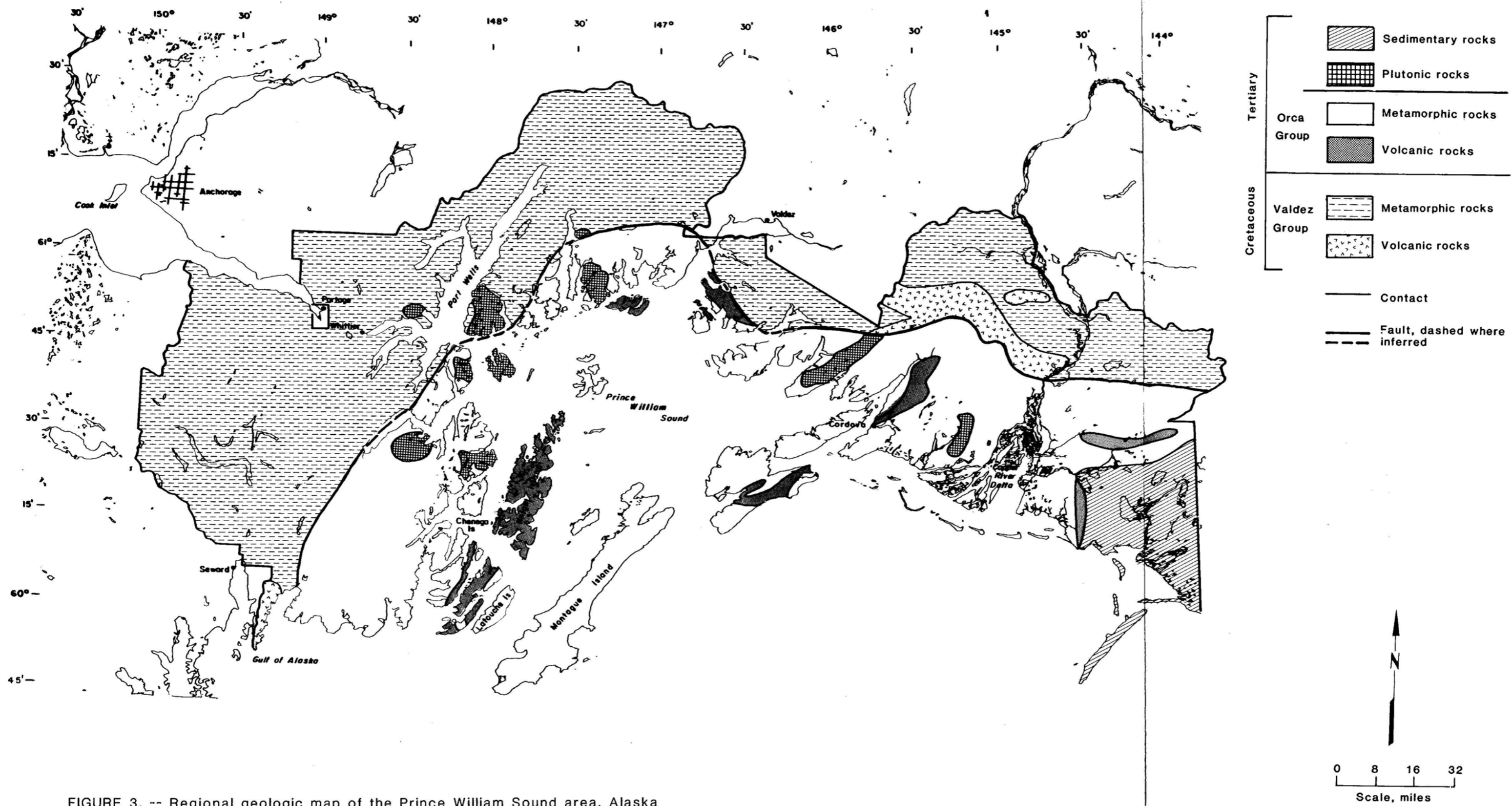


FIGURE 3. -- Regional geologic map of the Prince William Sound area, Alaska

TABLE 1. - Lower detection limits of element determinations.

Atomic Absorption Analysis		Fire Assay	
Element	Detection Limit (ppm)	Element	Detection Limit (oz/ton)
Ag.....	0.1	Au.....	.005
Au.....	0.03	Ag.....	0.2
Ba.....	1		
Co.....	1		
Cr.....	1		
Cu.....	1		
Mn.....	1		
Mo.....	1		
Ni.....	1		
Pb.....	1		
Sb.....	1		
Zn.....	1		
U.....	10		
U <sub>3</sub> O <sub>8</sub> .....	1		
Th.....	20		
W.....	5		
Hg.....	0.1		

Upper Cretaceous sedimentary rocks of the Valdez Group crop out in the northwest portion of the area. These rocks include thin to thick-bedded sandstone, siltstone, and mudstone flysch, and are at least 6,500-ft thick. The entire sequence is intensely folded and regionally metamorphosed to grades ranging from zeolite facies and lowermost greenschist facies, to upper amphibolite facies (143, p. 7).

#### IGNEOUS ROCKS

##### Basalts

Basaltic rocks making up sheeted dikes, tholeiitic pillow flows, breccia, and tuffs, totalling more than 16,000-ft thick underlie a considerable portion of western and northern Knight Island, as well as parts of Elrington, Evans, Bainbridge, Chenega, and Lone Islands (143, pp. 5). A small exposure lies on the southeast shore of Latouche Island. These varieties of basalt were grouped under the term "greenstone" by early workers (97, pp. 276). The greenstones are intercalated with Orca Group sedimentary rocks but whether or not they concentrate above or below the sedimentary sequence has not yet been determined (97, pp. 266-67).

A sheeted dike complex makes up the core of Knight Island. The complex consists of aphanitic basaltic dikes intruding a thick porphyritic to aphanitic diabase. The dikes are vertical to steeply dipping and trend slightly east of north. The dike complex is in transitional contact with pillow basalts which flank the dike complex on the east, west, and north sides of the island. Some dikes cut the



pillows and were apparently the feeders for the volcanic flows (143, p. 6). The pillows are multilobed, up to 13-ft in diameter, and elongate parallel to the dip direction of the pillow sequences. Bifurcations indicate flow directions roughly parallel to present dip directions (143, p. 5). Disseminated sulfides occur locally within both the pillows and as interstitial matrix between the pillows.

Pillows formed as lava was extruded onto the sea floor at estimated depths of 1,000 to 1,700-ft (92, p. 37). A flow can at times have a massive nonpillow core due to slower interior cooling. This entire basaltic pile has been identified to be part of an ophiolite-type sequence (92, p. 114).

Locally lenses of siltstone and mudstone occur within the basalts or in contact with them on the southeast side of Knight Island.

#### Granitic Rocks

Four stocks of Oligocene age (34-36 m.y.) and ranging in composition from granite to granodiorite intrude slate and sandstone of the Orca Group in the northwest portion of the study area. Contacts with sediments are quite sharp. Marginal phases of the intrusives contain abundant inclusions of country rock. Biotite enrichment of the granitic rocks occurs near contacts, locally giving the rocks a gneissic texture. The sediments are locally cut by aplitic and pegmatitic dikes (143, pp. 1-2).

#### Gabbro and Diorite

Several small isolated gabbro and diorite bodies occur on Knight and Latouche Islands. On Knight Island the diorite bodies are elongate and occur both parallel to and crosscutting the sheeted dikes. At the north end of Latouche Island a gabbro dike intrudes the Orca Group sediments. Several small gabbro and diorite bodies are also associated with the granitic plutons in the northwest portion of the study area (52, p. 37; 143, pp. 2, 6).

#### STRUCTURE

Within the ISLANDS area, the Orca and Valdez Groups are parts of a highly deformed flysch belt that extends along the north side of the Gulf of Alaska. These are believed to have been deformed and accreted to the continent in the late Cretaceous to early Tertiary. The processes were accompanied by intense folding and faulting, which in some areas may have shortened the geologic section by as much as 50% (143, p. 9). A series of major northeast-trending faults resulted from this deformational phase including ones on Montague, Latouche, and Knight Islands, and the Kenai Peninsula. Fault trends roughly parallel bedding in sedimentary rocks which strike northeast and mostly dip west to northwest. The Beatson fault on Latouche Island (fig. 3 and A-2) is a major fault in that area from an economic standpoint because of its proximity to the orebody at the Beatson Mine and the sulfide bodies further south at the Duke and Duchess prospects (fig. A-2).

A series of northeast trending, steeply dipping shear zones or high angle reverse faults are roughly parallel to the trend of the sheeted dikes on Knight Island (92, p. 114). The shear zones are represented on the surface as topographic depressions caused by the differential weathering of their intensely fractured and foliated interiors. They are concentrated within the sheeted dike complex possibly due to its greater competency relative to the surrounding pillow basalts. Shear zones are less common in the sediments on Latouche Island where they roughly parallel bedding strike. These structures both on Knight and Latouche Islands are of economic importance as copper mineralization is concentrated along them.

Isoclinal folding occurs locally within the sediments with fold wave lengths ranging from a few feet to several hundred feet in width. Axial planes vary from overturned to the east to recumbent. The major fold axis orientation is northeast-southwest (52, p. 30) which roughly parallels the bedding strikes and major fault trends.

The sheeted dike complex on central Knight Island may be the core of a large anticline flanked by pillow basalts on its limbs and plunging to the north.

#### MINERAL DEPOSITS

Copper has been the main metal produced within the ISLANDS study area. Silver and gold have been produced mainly as by-products of copper mining. Reserves of copper, silver, and zinc still exist along with occurrences of nickel and manganese.

Orca Group sedimentary rocks have been host to the largest producers of copper, silver, and possibly gold in the ISLANDS area as well as the entire CNF. They also contain the largest known reserves of copper, silver, and zinc and locally were found to contain manganese.

Orca Group sheeted basalt dike complex and pillow basalt on Knight Island host most of the copper and zinc prospects in the study area. The few deposits that actually produced copper are hosted by Orca Group sediments on Latouche Island.

Both types are associated with shear and fault zones. Nickel occurs locally associated with isolated mafic-ultramafic bodies enclosed within the sheeted dike complex.

Small high grade pods of zinc occur locally in some of the shear zones cutting the sheeted dike complex. Gold is locally associated with quartz veins filling shear and fault zones within Orca Group sediments and volcanics on Culross Island, at the north end of the study area. Mineral deposit types in the study area, criteria, and examples are summarized in table 2.

#### COPPER

In the ISLANDS area, as well as the rest of Prince William Sound, copper has been the major commodity of interest. The Beatson Mine (S-17) produced more copper, silver, and probably gold than all other lode mines combined (148).

Most of the copper prospects occur within the Orca Group sheeted basalt dike complex and pillow basalts comprising an ophiolite-type

TABLE 2. - Mineralization Types

Deposit Type	Structure	Size	Grade	Assoc. Sulfides	Host Rocks	Ore Mineral Assoc.	Production & History	Examples
Sediment-hosted Copper Zinc Silver	Majority of mineralization concentrated within shear, fracture, and fault zones. Locally bedding conformable.	Range from small sulfide lenses covering a few cubic feet to $2 \times 10^8$ ft <sup>3</sup> ore bodies. Reserves 3,200,000 tons <u>1/</u>	Averages: 1.7% copper, 1.0% zinc 0.30 oz gold/ton 0.04 oz silver/ton.	Pyrite pyrrhotite galena cubanite.	Interbedded graywacke, slate, and shale. Sulfides concentrate in graywacke.	Chalcopyrite and sphalerite occur in massive stringer and disseminated form associated with silicified sediments.	Beatson Mine only major producer: 5,992,941 tons at 1.65% copper 0.279 oz silver/ton 1899-1930.	Beatson Mine (S-17) <u>2/</u> Duke Prospect (S-3) <u>2/</u> Duchess Prospect (S-4) <u>2/</u> .
Volcanic-hosted Copper Zinc	Majority of mineralization concentrated within shear zones. Locally roughly conformable to pillow flow structures.	Range from small sulfide lenses a few cubic feet in size to $4 \times 10^6$ ft <sup>3</sup> lenses. Reserves 1,420,000 tons	Averages: 1.4% copper, 0.66% zinc.	Pyrrhotite pyrite.	Mainly sheeted basalt dikes and secondary pillow basalts.	Chalcopyrite and sphalerite in massive, stringer, and disseminated form associated with basalts.	No producers.	Rua Cove Prospect (S-67) <u>2/</u> Pandora Prospect (S-65) <u>2/</u> Jonesy Prospect (S-59) <u>2/</u> .
Nickel	Occurs locally within shear zones and dikes.	Small localized occurrences.	Average: 0.54% nickel.	Pyrrhotite pyrite chalcopyrite.	Gabbro bodies and basalt dikes.	Nickel occurs as Pentlandite formed apparently contemporaneously with other sulfides.	No producers	Knight Island Copper Mining Co. Prospect (S-52) <u>2/</u> Hubbard and Elliot Prospect (S-49) <u>2/</u> H. J. Harvey Prospect (S-36) <u>2/</u> .

See footnotes at end of table.

TABLE 2. - Mineralization Types -- Continued

Deposit Type	Structure	Size	Grade	Assoc. Sulfides	Host Rocks	Ore Mineral Assoc.	Production & History	Examples
Quartz-calcite veins gold silver	Occur with- in north- east trend- ing shear zones.	Veins range from a few inches to 3 ft wide, in zones up to 410 ft long and extend- ing up to 180 ft vertically Reserves: 9800 tons.	Averages: 14.8 ppm gold 6.5 ppm silver.	Pyrrhotite pyrite galena chalco- pyrite sphal- erite.	Basalts spatially associated with Valdez Group sedi- ments.	Gold asso- ciated with carbonaceous? zones and ribbon struc- tures with- in quartz.	62 oz gold 53 oz silver 1907-1922.	Culross Mine (S-102) 2/ only example.
13 Quartz veins and siliceous breccia zones gold	Veins and breccia occur with- in shear and fault zones.	Vein widths range from a few inches up to 13 ft wide and extend intermit- tently up to 200 ft along strike.  Reserves: 380 tons	Average: 0.08 oz gold/ton 0.10 oz silver/ ton Locally up to 130 ppm silver.	Pyrrhotite pyrite chalco- pyrite galena sphal- erite.	Mudstone shale slate.	Gold related to ribbon structures, fault gouge, and siliceous breccia matrix.	No recorded production.	John Sells Prospect (S-103) 2/  Whale Bay Prospect (S-25) 2/.

See footnotes at end of table.

TABLE 2. - Mineralization Types -- Continued

Deposit Type	Structure	Size	Grade	Assoc. Sulfides	Host Rocks	Ore Mineral Assoc.	Production & History	Examples
Manganese	Mineralized layer lies parallel to enclosing sedimentary beds.	Roughly 9,000 ft <sup>3</sup> Reserves 700 tons	Average: 17% manganese.	Magnetite pyrrhotite pyrite.	Calcareous chert interbedded with calcareous shales and phyllites.	Rhodochrosite and pyroxmangite are concentrated within calcareous chert.	None	Chenega Island (S-90) <sup>2/</sup> only example.

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<sup>1/</sup> Reserves include inferred, indicated, and measured.

<sup>2/</sup> Bureau Map numbers refer to Appendix B.

complex within central Knight Island (58, 144). Most of the deposits lie within northeast-trending, steeply dipping shear zones, best developed within the sheeted basalt dike complex. This unit is more competent than other rock types in the area and open fractures tend to develop during deformation. The fractures may act as conduits for ore-bearing fluids. Copper deposits are less frequently hosted in Orca sediments on Knight and Latouche Islands, but these deposits have produced the only significant amounts of copper in the area. The largest deposits occur on Latouche Island and are spatially associated with the Beatson fault and related shearing (fig. A-2).

The Beatson Fault has been interpreted to extend for at least 2.5-miles from the Blackbird Mine on the north to the Duke (S-3) and Duchess (S-4) Prospects on the south (97, p. 300). Sulfide lenses at these sites roughly parallel bedding. At one unnamed occurrence on the southeast side of Latouche Island (BS-3) sulfides lie parallel to bedding with no visible evidence of associated shearing or faulting.

Major sulfide minerals consist of pyrrhotite, pyrite, and chalcopyrite. These occur as masses, stringers, and disseminations. Minor sulfides consist of sphalerite, chalmersite, covellite, chalcocite, and galena. Zinc was apparently not recovered during milling. The average copper, zinc, silver, and gold values are higher in the sediment-hosted deposits than in the volcanic-hosted deposits.

Early workers believed the copper deposits to mainly be epigenetic formed by mineralizing solutions either invading fissures formed by shearing and faulting or as replacement deposits (6, p. 360; 130, p. 89; 131, p. 116).

More recent work indicates that the deposits may be volcanogenic and related to submarine volcanics within the Orca Group (162-163, 166).

#### LODE SILVER AND GOLD

Silver and gold were mainly produced as by-products from copper mines in the ISLANDS area. Minor amounts of gold were produced from quartz veins.

Virtually all of the silver production and probably gold in the ISLANDS area came from the Beatson Mine where they were recovered as by-products associated with copper sulfides in sedimentary host rocks (6, p. 349). Production records indicate 0.28 oz silver/ton and 0.05 oz gold/ton in the ore (148). At the Duke and Duchess Prospects, located 2.5-miles south of the Beatson Mine, similar sulfide mineralization contains reserves averaging 0.34 oz silver/ton and 0.04 oz gold/ton (158).

Sulfide deposits in volcanic host rocks contain much lower silver and gold values than those hosted by sediments. At Rua Cove (S-67), for example, sulfide reserves contain 0.1 oz silver/ton and 0.005 oz gold/ton (114).

Gold and minor associated silver in quartz veins occur at a few localities in the ISLANDS area. At the Culross Mine (S-102), which was the only gold producer from vein type mineralization, gold-bearing quartz-calcite veins occur as fissure fillings within shear zones cutting basalts locally containing pillow structures. This deposit is the only one in Prince William Sound where quartz veins in basaltic

rocks have produced gold. Samples contained an average 5.5 ppm gold and 3.4 ppm silver <sup>87</sup> with select grab samples containing up to 22 ppm gold.

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8/1 oz/ton equals 34.28 ppm. Sample results are reported in ppm for atomic absorption and in oz/ton for Fire Assays.

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At the John Sells Prospect (S-103), located 2-miles to the southwest of the Culross Mine, gold also occurs in quartz as fissure fillings but the host rocks are Valdez Group mudstone and shale. Samples from this prospect contained up to .37 oz gold/ton. At Whale Bay (S-25) gold occurs in quartz veins and Orca Group silicified mudstone breccia and contains up to .30 oz gold/ton.

A silver occurrence is located at Surprise Cove (S-104) near Whittier. Here narrow breccia and shear zones extending for up to 1,300 ft along strike contain sulfide mineralization. Samples from bedrock and float contain up to 140 ppm silver.

#### PLACER GOLD

The only reported placer gold prospect in the ISLANDS area is located in Goat Harbor (P-49) in the southwest corner of the study area. Claims were staked in the area during 1970 (82). Some riffle plates were found at an old campsite near the shore at the head of the Harbor, but no signs of placer workings were located. A series of placer samples collected from all major drainages in the area contained none or only trace gold.

#### NICKEL

Nickel occurs locally within shear zones, basaltic dikes, gabbro bodies, and peridotites (102) associated with copper mineralization in shear zones at several prospects on southcentral Knight Island (S-36, S-49, S-52). The nickel mineral appears to be pentlandite (92, p. 108). Seven samples from three prospects contain up to 0.83% nickel (S-52) and average 0.54%. The known occurrences are small and no nickel has been produced.

#### MANGANESE

Manganese minerals in the form of rhodocrosite and pyroxmangite were found in one 6 x 50-ft exposure on the northeast shore of Chenega Island (S-90). The exposure occurs at tidewater with its northern extension submerged under seawater and its southern extension muskeg covered. Samples contain up to 37% manganese and average 17%. The deposit appears to be of the bedded type trending northeast, dipping steeply to the west, and interlayered with Orca Group calcareous shales and phyllites. Analysis of bottom samples collected in the vicinity indicate anomalous amounts of manganese off the east shore of Chenega Island and near Squire Island (84).

#### PRODUCTION AND RESERVES

Production and reserve figures for mines and prospects in the ISLANDS area are summarized in table 3. This information was gathered

TABLE 3.- Production and Reserves

Map No.	Mine/Prospect Name	Production (Tons)	Pounds Copper	Oz Silver	Oz Gold	Average Grade	Dates	Reserves (Tons)	Comments
BS-2	Seattle-Alaska Prospect	12	2,350	23	---	9.8% copper 1.9 oz silver/ton	1908-1914	Inferred: 2900 3.0% copper 8.7 ppm silver	
S-3	Banta Shaft Duke Claims	Small tonnage shipped					1898-1916, 1970	Measured: 68,800 1.32% copper 0.06 oz gold/ton 0.05 oz silver/ton  Indicated: 200,000	
17 S-4	Duchess Prospect	2,850	215,000	---	---	3.8% Copper	1898-1916, 1970	Measured: 436,500 1.4% copper Indicated: 570,000 1.2% copper Inferred: 1,720,000 1.2% copper 0.40% zinc 0.02 oz gold/ton 0.57 oz silver/ton 600,000 50% sulfur	
S-7	Latouche Island Copper Mining Co. Prospect	Reported small ore shipment	---	---	---	---	1916	None reported	Workings not located

--- no data



TABLE 3.- Production and Reserves -- Continued

Map No.	Mine/Prospect Name	Production (Tons)	Pounds Copper	Oz Silver	Oz Gold	Average Grade	Dates	Reserves (Tons)	Comments
S-10	Unnamed Prospect	None				0.74% copper	1908	Inferred: 30	
S-17	Beatson Mine	5,992,941	182,600,000	1,466,649	484	1.65% Copper 0.28 oz silver/ton	1899-1930	None reported	Largest copper and silver producer in Prince William Sound
S-19	Blackbird Mine	5,150	547,118	3,980		5.3% Copper	1902-1923	Indicated? ore in 1920 201,450 2.2% copper	After 1923 production included with Beatson
S-25	Unnamed Prospect	None	---	---	---	0.12 oz gold/ton	1911-1912	Inferred: 200	
S-26	Copper Queen	110	57	---	---	0.02% copper	1917	None reported	
S-30	Minnie Prospect	None	---	---	---	0.25% copper	1900	Inferred: 200	
S-33	Home Camp Prospect	A few tons reportedly shipped	---	---	---		1900	A few tons exposed	
S-47	Harry Moore Prospect	20	1,452	---	---	3.6% copper	1909-1917	None reported	Workings not located
S-50	Copper Coin	Small shipments made	---	---	---	2.4% copper	1906-1917	Indicated: 700 3.3% copper  Inferred: 5,200 2.3% copper	

--- no data

TABLE 3.- Production and Reserves -- Continued

Map No.	Mine/Prospect Name	Production (Tons)	Pounds Copper	Oz Silver	Oz Gold	Average Grade	Dates	Reserves (Tons)	Comments
S-52	Knight's Island Copper Mining Co. prospect	1	240	3	2	12.0%	1902-1915	None reported	
S-53	Twentieth Century Knight Island Copper Co. Prospect	None	---	---	---	2.6% copper	1908	Inferred: 30	
S-56	Knight Island Alaska Copper Co. Prospect	None reported	---	---	---	---	1907-1913	200 tons of ore reported on dump	
S-59	Jonesy Prospect	Reported small ore shipments	---	---	---	3.3% copper	1900-1907	Inferred: 1300	
S-61	Knight Island Consolidated Copper Co.	Small shipment made	---	---	---	---	---	None reported	
S-65	Pandora Prospect	A reported small shipment	---	---	---	1.31% copper	1906-1917	Inferred: 85,000	
S-67	Rua Cove Prospect	1,000 lb	---	---	---	1.68% copper in shipped ore	1905-1930	Measured: 25,000 1.25% copper Indicated: 1,100,000 1.25% copper Inferred: 200,000 1.25% copper .005 oz gold/ton 0.1 oz silver/ton	Largest reserves on Knight Island

--- no data

TABLE 3.- Production and Reserves -- Continued

Map No.	Mine/Prospect Name	Production (Tons)	Pounds Copper	Oz Silver	Oz Gold	Average Grade	Dates	Reserves (Tons)	Comments
S-102	Culross Mine	52	---	53	62	1.2 oz gold /ton 1.0 oz silver/ ton	1907- 1925	Inferred: 9800 5.5 ppm gold 3.4 ppm silver	
S-103	John Sells Prospect	Test shipment of gold- bearing quartz made	---	---	---	0.05 oz gold /ton	1911- 1938	Inferred: 180	

--- no data

from a variety of sources, including Bureau permanent individual mine records (148), USGS data, and unpublished company reports.

Reserve classifications were based on the following criteria after Bureau and USGS (152):

"Measured - Quantity is computed from dimensions revealed in outcrops, trenches, workings or drill holes; grade and (or) quality are computed from the results of detailed sampling. The sites for inspection, sampling, and measurement are spaced so closely and the geologic character is so well-defined that size, shape, depth, and mineral content of the resource are well established.

Indicated - Quantity and grade and (or) quality are computed from information similar to that used for measured resources, but the sites for inspection, sampling, and measurement are further apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for measured resources, is high enough to assume continuity between points of observations.

Inferred - Estimates are based on an assumed continuity beyond measured and (or) indicated resources, for which there is geologic evidence. Inferred resources may or may not be supported by samples or measurements."

The largest copper, silver, and possibly gold production for the ISLANDS area as well as the entire Prince William Sound region comes from the Beatson Mine on the northwest shore of Latouche Island. It produced 182,600,000 lbs of copper from 5,992,941 tons of ore at an average grade of 1.65% copper. This is followed by the Blackbird Mine located nearby, which produced 547,118 lbs of copper at an average grade of 5.3%. Some of its later production was included with that of the Beatson. Minor gold and silver were produced from the Culross Mine at the north end of Culross Island.

Mainly inferred, but occasionally indicated, reserves were determined from field data collected during the course of the present study. Where enough lateral or vertical continuity of mineralization existed at a site, a volume was determined by multiplying the average width of a mineralized zone by its measured or inferred length times a depth or height if known. If depth or height was unknown, a vertical extent of one-half the length was used. Tonnages were obtained by dividing the volume by tonnage factors ranging between 9.3 - 10.6 ft<sup>3</sup>/short ton depending upon the individual deposit type.

Though the Beatson Mine was the largest producer in the study area, information concerning reserves is incomplete. Production records show that initial ore grades were over 2% copper and down to 1.1% copper when the mine was shut down in 1930. Records show that the mine was losing money at the time due to the depressed price of copper. Drilling beneath and along strike of the orebody in 1927 showed negative results and no mention was made of economic reserves (5). The underground workings are presently inaccessible limiting the amount of work which could be done there by the Bureau.

The largest identifiable reserves of copper, zinc, silver, and gold known in the study area underlie the Duke (S-3) and Duchess (S-4) Prospects on the west side of Latouche Island. These contain a combined indicated reserve of 1,720,000 tons at 1.2% copper, 0.40%

zinc, 0.57 oz silver/ton, and 0.02 oz gold/ton. The second largest known reserves occur at the Rua Cove Prospect (S-67) on the northeast shore of Knight Island. It contains indicated reserves of 1,100,000 tons at 1.25% copper.

The Culross Mine (S-102) at the north end of Culross Island contains an inferred reserve of 9,800 tons at 5.5 ppm (0.16 oz/ton) gold.

All mines, prospects, and occurrences, if located, based on reserves, and grades of mineralization, were classified according to the following criteria:

"High Development Potential - Likely to have economically minable reserves or resources. Good potential for developing tons or cubic yards with reasonable geologic support for continuity of grade.

Moderate Development Potential - Mineralization has limited extent as shown by geology, dimensions, and/or grades are low and tend to stay low. No suggestion of being economically minable, but could serve as a material source if economics were not a factor.

Low Development Potential - Little or no potential for developing ore or as a significant source of the material of interest.

Unevaluated - Not located or visited in the field. Data only available from previous reports."

No deposits in the study area were considered to presently have high development potential, because of low grades and reserves. A total of 24 sites were given a moderate rating, 49 low, and 38 unevaluated because of a lack of data.

Appendix A tabulates detailed information for each site concerning location, history and production, geology, and Bureau work. Appendix B summarizes all sites with name, commodities of interest, potential ratings, and a map number indexed to a location map (fig. 4).

#### SUMMARY

Copper has been the main metal produced from the ISLANDS study area. In addition, silver and gold have been recovered as by-products of copper mining. Production totals 183,366,217 lbs of copper, 1,470,655 oz of silver, and an undetermined amount of gold. The ores also contained zinc, but it was apparently never recovered. The Beatson Mine was the largest operation producing more copper, silver, and probably gold than any other mine in the CNF.

Orca Group volcanics host most of the copper and zinc prospects in the study area, but the producing mines were hosted by Orca Group sedimentary rocks.

Reserves for the study area totaled 4.6 million tons with a weighted average grade of 1.6% copper, 0.30 oz silver/ton, and 0.04 oz gold/ton. The largest known reserves in the study area are at the Duke and Duchess Prospects. These include an indicated reserve of 1,720,000 tons at 1.2% copper, 0.40% zinc, 0.57 oz silver/ton, and 0.02 oz gold/ton. Little information could be found concerning reserves at the Beatson Mine. Drilling along strike and beneath the orebody before the mine shut down showed

negative results. Moderate development potential exists along the concealed trend of the Beatson fault between the Beatson Mine and the Duke and Duchess Prospects.

Total lode gold production from quartz veins on Culross Island is 62 oz. Moderate development potential exists along the strike extension and beneath the Culross orebody. Moderate development potential exists along the subsurface extension of the quartz veins at the John Sells Prospect on Culross Island.

Moderate development potential for silver exists near Surprise Cove where float and bedrock samples contain up to 140 ppm silver.

A manganese occurrence on Chenega Island, although presently small, has moderate development potential along its concealed extension to the south and nearby subaqueous areas anomalous in manganese.

The shear zones containing nickel occurrences on Knight Island are narrow, but low to moderate development potential exists along their strike extensions. Also the wallrocks in the vicinity of the mineralized shear zones need to be sampled to determine their nickel content.

## REFERENCES

1. Arctic Environmental Information and Data Center, Alaska Regional Profiles, Southcentral Region, Univ. of AK, Anchorage, AK, v. 1, 1974, p. 11.
2. Arctic Environmental Information and Data Center, Mineral Terranes of Alaska 1:1,000,000 scale map series, University of AK, Anchorage, AK, 1979, 6 maps.
3. Atwood, W. W. Mineral Resources of Southwestern Alaska. U.S. Geol. Surv. Bull. 379, 1909, p. 108.
4. Barry, M. J. A History of Mining on the Kenai Peninsula, AK, NW Publ. Co., 1973, 214 pp.
5. Bateman, A. M. Consultant reports to Kennecott Copper Corp. Seattle, WA, 1916-1927, available upon request from BuMines, Anchorage, AK.
6. Bateman, A. M. Geology of the Beatson Copper Mine, Alaska. Econ. Geol., v. 19, No. 4, 1924, pp. 338-368.
7. Bateman, A. M. (Results from Geophysical Surveys) Kennecott Mines, Alaska: Am. Inst. Min. Metall. Eng. Tech., Publ. 369, Oct. 1930, pp. 7-11.
8. Bateman, A. M. The Beatson Mine, Alaska in Newhouse, W. H., ed. Ore Deposits as Related to Structural Features: Princeton Univ. Press, 1942, pp. 147-148.
9. Berg, H. C., and Cobb, E. H. Metalliferous Lode Deposits of Alaska. U.S. Geol. Surv. Bull. 1246, 1967, 254 pp.
10. Birch, S. Geology and Mining Methods of Beatson Mine (Prince William Sound District) Alaska. Am. Inst. Min. and Metall. Eng. Trans. (reprint) No. 1288, v. 72, 1924, pp. 147-153.
11. Boyle, R. W. The Geochemistry of Gold and its Deposits (together with a chapter on geochemical prospecting for the element). Geol. Surv. of Canada Bull. 280, 1979, 584 pp.
12. Brooks, A. H. The Mining Industry in 1910. U.S. Geol. Surv. Bull. 480, 1911, p. 21.
13. ----- . The Mining Industry in 1911. U.S. Geol. Surv. Bull. 520, 1912, pp. 17-44.
14. ----- . The Mining Industry in 1912. U.S. Geol. Surv. Bull. 542, 1913, pp. 18-51.
15. ----- . The Alaskan Mining Industry in 1913. U.S. Geol. Surv. Bull. 592, 1914, pp. 45-74.
16. ----- . Notes on Geology of Latouche District of Prince William Sound, Alaska. Unpubl. U.S. Geol. Surv. Rep., 1916, 39 pp.
17. Brooks, A. H., and Others. Mineral Resources of Alaska. Report on Progress of Investigations in 1915. U.S. Geol. Surv. Bull. 642, 1916, p. 142.
18. Brooks, A. H., and S. R. Capps. The Alaskan Mining Industry in 1922. U.S. Geol. Surv. Bull. 755-A, 1923, p. 29.
19. Bundtzen, T. K., G. R. Eakins, and C. N. Conwell. Review of Alaska's Mineral Resources 1981. State of AK Div. of Geol. and Geophys. Surv., Dep. of Nat. Res., 1982, 39 pp.
20. Capps, S. R. Some Ellipsoidal Lavas on Prince William Sound, Alaska. WA Acad. of Sci. J., v. 4, 1914, p. 169. Also publ. in J. of Geol., v. 23, 1915, pp. 45-51.

21. Capps, S. R., and B. L. Johnson. Mineral Deposits of the Ellamar District, Alaska. U.S. Geol. Surv. Bull. 542, 1913, pp. 86-124.
22. Capps, S. R., and B. L. Johnson. The Ellamar District, Alaska. U.S. Geol. Surv. Bull. 605, 1915, 125 pp.
23. Case, J. E. Magnetic Expression and Mineralization of Some Tertiary Plutons of Prince William Sound and the Alaska Peninsula, Southern Alaska. Geol. Soc. of America Abst., 1980.
24. Case, J. E., Oral Communication, Jan., 1981, available upon request from BuMines, Anchorage, AK.
25. Case, J. E., D. F. Barnes, G. Plafker, and S. L. Robbins. Gravity Surv. and Regional Geology of the Prince William Sound Epicentral area, Alaska. U.S. Geol. Surv. Prof. Paper 543-C, 1966, pp. C1-12.
26. Case, J. E., R. Silcora, R. G. Tysdal, D. F. Barnes, and R. Morin. Geologic Interpretation of the Gravity Anomaly Map of the Seward and Blying Sound Quadrangles, Alaska. U.S. Geol. Surv. Misc. Field Studies Map MF-880-C, 1979.
27. Case, J. E., R. G. Tysdal, J. W. Hillhouse, and C. S. Gromme. Geologic Interpretation of Aeromagnetic Map, Seward and Blying Sound Quadrangles, Alaska. U.S. Geol. Surv. Misc. Field Studies Map MF-880-D, 1979.
28. Cobb, E. H. Metallic Mineral Resource Map of the Blying Sound Quadrangle, Alaska. U.S. Geol. Surv. Misc. Field Studies Map MF-440, Scale: 1:250,000, 1972.
29. -----. Placer Deposits of Alaska. U.S. Geol. Surv. Bull. 1374, 1973, 213 pp.
30. -----. Synopsis of the Mineral Resources and Geology of Alaska. U.S. Geol. Surv. Bull. 1307, 1974, 53 pp.
31. -----. Alaskan Papers and Abstracts published by the Geological Society of America, 1890-1978. U.S. Geol. Surv. OFR 79-1640, 1979., 201 pp.
32. Cobb, E. H. Alaskan Paper and Abstracts published in American Assoc. of Petroleum Geologists Bulletins, 1950-1978. U.S. Geol. Surv. OFR 79-1475, 1979, 78 pp.
33. -----. Selected Geological Surv., U.S. Bureau of Mines, and Alaska Division of Geological and Geophysical Surveys Reports and Maps on Alaska, released during 1979, indexed by quadrangle. U.S. Geol. Surv. OFR 80-291, 1980, 111 pp.
34. -----. Lode Gold and Silver Occurrences in Alaska. U.S. Geol. Surv. OFR 82-406, 1982, 31 pp.
35. -----. Occurrences of Copper Minerals in Alaska. U.S. Geol. Surv. OFR 82-1029, 1982, 32 pp.
36. Cobb, E. H., and D. H. Richter. Metallic Mineral Resources Map of the Seward Quadrangle, Alaska. U.S. Geol. Surv. Misc. Field Studies Map MF-466, Scale: 1:250,000, 1972.
37. Cobb, E. H., and R. G. Tysdal. Summaries of Data on and Lists of References to Metallic and Selected Nonmetallic Mineral Deposits in the Blying Sound and Seward Quadrangles, Alaska. U.S. Geol. Surv. OFR 80-621, 1980, 285 pp.
38. Condon, W. H., and J. T. Cass. Map of a part of the Prince William Sound area, Alaska, Showing Linear Geologic Features as Shown on Aerial Photographs. U.S. Geol. Surv. Misc. Geol. Invest. Map I-273, 1 sheet, scale: 1:125,000, 1958.



39. Cook, James. A Voyage to the Pacific Ocean (etc.) in the years 1775-1778, 3 vols. London, 1784. See V. 2, p. 364. Prince William Sound Information.
40. Crosby, W. O. Geological Report on the Copper Properties of the Reynolds-Alaska Development Company in Prince William Sound, Alaska. Consultant Rep. to Reynolds-Alaska Development Co., 1906, 10 pp.
41. De Laguna, F. Chugach Prehistory; the Archaeology of Prince William Sound, AK. Univ. of WA Press, 1956, 289 pp.
42. Eakins, G. R., and R. B. Forbes. Investigation of Alaska's Uranium Potential. State of AK, Dep. of Geol. & Geophys. Surv., Rep. No. 12, 1976, 372 pp.
43. Fellows, R. History of Copper Production - Prince William Sound. Unpubl. U.S. Geol. Surv. Rep., 2 pp.
44. Field, W. O., Jr. The Mountains and Glaciers of Prince William Sound, Alaska. Am. Alpine J., v. 1, No. 4, 1932, pp. 445-458.
45. Flemming, George. Oral Communication, Aug. 1, 1981; available upon request from BuMines, Anchorage, AK.
46. Govett, G. J. S., and I. Nichol. Lithochemistry in Mineral Exploration. Geol. Surv. of Can., Econ. Geol. Rep. No. 3, 1979, pp. 339-362.
47. Grant, U. S. Copper and Other Mineral Resources of Prince William Sound. U.S. Geol. Surv. Bull. 284, 1906, pp. 78-87.
48. ----- Gold on Prince William Sound. U.S. Geol. Surv. Bull. 379, 1909, p. 97.
49. ----- Mining and Prospecting on Prince William Sound in 1909. U.S. Geol. Surv. Bull. 442, 1910, pp. 164-165.
50. ----- Copper Deposits of Prince William Sound, Alaska. Min. and Sci. Press, v. 100, 1910, pp. 63-64.
51. Grant, U. S., and D. F. Higgins, Jr. Copper Mining and Prospecting on Prince William Sound. U.S. Geol. Surv. Bull. 379, 1909, pp. 87-93, Plate IV.
52. ----- Reconnaissance of the Geology and Mineral Resources of Prince William Sound, Alaska. U.S. Geol. Surv. Bull. 443, 1910, 89 pp.
53. Grant, U. S., and D. F. Higgins, Jr. Preliminary Report on the Mineral Resources of the Southern Part of Kenai Peninsula. U.S. Geol. Surv. Bull. 442, 1910, p. 166.
54. ----- Coastal Glaciers of Prince William Sound and Kenai Peninsula, Alaska. U.S. Geol. Surv. Bull. 526, 1913, 75 pp.
55. Hansen, W. R., E. B. Eckel, W. E. Schaem, R. E. Lyle, G. Warren, and G. Chance. The Alaska Earthquake, March 27, 1964: Field Investigations and Reconstruction Effort. U.S. Geol. Surv. Prof. Paper 541, 1964, 111 pp.
56. Hawley, C. C. Exploration and Distribution of Stratiform Sulfide Deposits in Alaska. From Recent and Ancient Sedimentary Environments in Alaska. Sym. Proc., AK Geol. Soc., 1976, pp. T1-24.
57. Heiner, L. E., E. N., Wolff, and D. Grybeck. Copper Mineral Occurrences in the Wrangell Mt. - Prince William Sound Area, AK. MIREL Rep. No. 27, 1971, 179 pp.
58. Helwig, J. and P. Emmet. Structure of the Early Tertiary Orca Group in Prince William Sound and Some Implications for the Plate Tectonic History of Southern Alaska. J. of the AK Geol. Soc., 1981, pp. 12-35.

59. Herbert, C. F. A Possible Guide to Metal Deposits in Alaska. AK Div. of Mines and Minerals Rep. for the year 1964, p. 71.
60. Herdlick, J. A. Letter to M. F. Buler, President Radco Inc. concerning Bureau of Mines sampling at Horseshoe Bay, Latouche Island, Oct. 1953, available upon request from BuMines, Anchorage, AK
61. Herreid, G. Geology and Deposits of Alaska. Reprinted from Min. Eng., Dec. 1961, Misc. Publ.
62. -----. Tectonics and Ore Deposits in Alaska. AK Div. of Mines and Miner., Rep. for the year 1964, p. 61.
63. -----. A Geologic and Geochemical Traverse along the Nellie Juan River, Kenai Peninsula, AK. AK Div. of Mines and Miner. Geol. Rep. No. 9, 1965, 2 pp.
64. Hollister, V. F. Relationship of Sulfide Mineralization to Ophiolite Complexes in North America. Min. Eng., v. 33, No. 4, 1981, pp. 421-424.
65. Holt, S. P. Copper Bullion Property Rua Cove, Knight Island, Prince William Sound, AK. Unpubl. War Minerals Rep., 1943.
66. Jackson, C. F., and E. D. Gardner. Stopping Methods and Costs. BuMines B 390, 1936, 276 p.
67. Jackson, M. C., J. A. Zamudio, J. Clough, and K. Watts. Mineral Land Assessment RARE II: Chugach National Forest, SOUND Project. Summary Progress Report, 1980. BuMines unpubl. Rep., 122 p.
68. Janson, L. E. The Copper Spike. AK NW Publ. Co., 1975, 175 pp.
69. Jansons, U. Summary of daily activity, for RARE II Study. BuMines Unpubl. Rep. 1979, 46 pp.
70. -----. Bureau of Mines Sampling Sites and Analytical Results for Samples Collected in the Chugach National Forest, Alaska. BuMines OFR 83-81, 1981, 229 pp.
71. Johannsen, N., and E. Johannsen. Exploring Alaska's Prince William Sound its Fiords, Islands, Glaciers, and Wildlife. AK Travel Publ., 1975, 306 pp.
72. Johnson, B. L. The Port Wells Gold District. In Mineral Resources of Alaska, U.S. Geol. Surv. Bull. 592-G, 1914, pp. 195-236.
73. -----. Mining on Prince William Sound. U.S. Geol. Surv. Bull. 592-G, 1914, pp. 236-243.
74. -----. Mining on Prince William Sound. U.S. Geol. Surv. Bull. 622, 1915, pp. 131-139.
75. -----. Mining on Prince William Sound. U.S. Geol. Surv. Bull. 642-D, 1916, pp. 137-139.
76. -----. A Preliminary Note on the Occurrence of Chalmersite,  $\text{CuFe}_2\text{S}_3$  in the Ore Deposits of Prince William Sound, Alaska. Econ. Geol., v. 12, 1917, pp. 519-525.
77. -----. Chalmersite,  $\text{CuFe}_2\text{S}_3$ , a New Ore of Copper. Washington Acad. Sci. J., v. 8, 1918, 99 pp.
78. -----. Copper Deposits of the Latouche and Knight Island Districts, Prince William Sound. U.S. Geol. Surv. Bull. 662, 1918, pp. 184-220.
79. -----. Geology and Ore Deposits of Latouche and Knight Islands, Alaska. Unpublished U.S. Geol. Surv. Manuscript, 1918.
80. -----. Mining on Prince William Sound. U.S. Geol. Surv. Bull. 692-C, 1919, pp. 143-151.
81. Kardex. Alaska Mineral Property Reference File, District 5, Blying Sound Quadrangle 105. AK Div. of Geol. and Geophy. Surv., 1982b, pp. 173-175.

82. Kardex. Alaska Mineral Property Reference File, District 5, Seward Quadrangle 95. AK Div. of Geol. and Geophy. Surv., 1982a, pp. 93-141.
83. Kennecott Copper Corp. Company Records, 1916-1971, available upon request from BuMines, Anchorage, AK.
84. Kurtak, J. M. A Manganese Occurrence on Chenega Island, Prince William Sound, Alaska. BuMines OFR No. 124-82, 1982, 9 pp.
85. Kurtak, J. M., D. J. Buteyn, B. D. Sellars, J. A. Zamudio, and M. C. Jackson. RARE II Mineral Appraisal Study of Knight and Latouche Islands - Chugach National Forest, Alaska. Progress Report, 1981. BuMines Unpubl. Rep., 145 pp, available upon request from BuMines, Anchorage, AK.
86. Lanphere, M. A. Potassium-Argon Ages of Tertiary Plutons in the Prince William Sound Region, Alaska. Geol. Surv. Research, 1966. U.S. Geol. Surv. Prof. Paper 550-D, pp. D195-D198.
87. LeCompte, J. R. Interpretation of Landsat Imagery of the Seward and Blying Sound Quadrangles, Alaska. U.S. Geol. Surv. OFR 78-737, 1979.
88. Lincoln, F. C. The Big Bonanza Copper Mine, Latouche Island, Alaska. Econ. Geol., v. 4, 1909, pp. 201-213.
89. LKB Resources, Inc. NURE Aerial Gamma-Ray and Magnetic Reconnaissance Survey, Cook Inlet, Alaska (Bendix Field Eng. Corp., Grand Junction Operations Subcontract No. 76-015-5 and Bendix Contract EY-76-C13-1664, prepared for Dep. of Energy, Grand Junction, CO). V. II, GJBX 108-(78), July, 1978.
90. Mackevett, E. M., Jr., D. A. Singer, and C. D. Holloway. Maps and Tables Describing Metalliferous Mineral Resource Potential of Southern Alaska. U.S. Geol. Surv. OFR 78-1E, 1978, 12 pp.
91. McCormick, C. P. Mining on Prince William Sound, Alaska. Min. World: v. 31, 1909, pp. 1199-1202.
92. McGlasson, J. A. Geology of Central Knight Island, Prince William Sound, Alaska. MS Thesis, CO School of Mines, 1976, 136 pp.
93. McGregor, W. Oral Communication, Nov. 1982, available upon request from BuMines, Anchorage, AK.
94. McMahon, A. D. Copper. A Materials Surv. BuMines IC 8225, 1965, 340 pp.
95. Moffit, F. H. Notes on Copper Prospects of Prince William Sound. U.S. Geol. Surv. Bull. 345, 1908, pp. 176-178.
96. ----- . The Occurrence of Copper on Prince William Sound, Alaska. U.S. Geol. Surv. Bull. 773-C, 1925, pp. 141-158.
97. ----- . Geology of the Prince William Sound Region, Alaska. U.S. Geol. Surv. Bull. 989-E, 1954, pp. 225-310.
98. Moffit, F. H., and R. E. Fellows. Copper Deposits of the Prince William Sound District, Alaska. U.S. Geol. Surv. Bull. 963-B, 1950, pp. 47-80, Plate V.
99. Moffit, F. H., and Others. Mineral Resources of Alaska Report on Progress of Investigations in 1925. U.S. Geol. Surv. Bull. 792, 1927, pp. 1-39.
100. Moores, E. M., and F. J. Vine. The Troodos Massif, Cyprus and Other Ophiolites as Oceanic Crust: Evaluation and Implications. Philosophical Trans. Royal Soc. (London), A 268, 1971, pp. 443-466.
101. National Oceanic and Atmospheric Administration, Weather Records at the Port San Juan, Alaska Observation Station, 1980-81, NOAA, Anchorage, AK.
102. Nelson, S. W. Written Communication, Jan. 1983, available upon request from BuMines, Anchorage, AK.

103. Parke, M. A. RARE II - 1979, Field Write-ups with Maps & Sketches. BuMines Unpubl. Rep., 1979.
104. Plafker, G. Surface Faults on Montague Island associated with the 1964 Alaska Earthquake. U.S. Geol. Surv. Prof. Paper 543-G, 1967, pp. G1-G42.
105. -----. Tectonics of the March 27, 1964, Alaska Earthquake. U.S. Geol. Surv. Prof. Paper 543-T, 1969, pp. 11-174.
106. Plafker, G., Kachadoorian, E. B. Reuben, and L. R. Mayd. Effects of the Earthquake of March 27, 1964, on various communities. U.S. Geol. Surv. of Prof. Paper 542-G, 1969, pp. G1-G50.
107. Plafker, G., and F. S. MacNeil. Stratigraphic Significance of Tertiary Fossils from the Orca Group in the Prince William Sound Region, Alaska. U.S. Geol. Surv. Prof. Paper 550-B, 1966, pp. B62-68.
108. Poy, C. W. Topographic and Assay Map of the Pandora Prospect, Knight Island, Alaska, 1926, Kennecott Copper Corp., available upon request from BuMines, Anchorage, AK.
109. Ransome, A. L., and W. H. Kerns. Names and definitions of Regions, Districts, and Subdistricts, in Alaska. BuMines IC 7679, 1954, 91 pp.
110. Richelsen, W. A. Summary of the Thomas Gold Property. Rep. from Kennecott Copper Corp. files. 1950, 1 pp.
111. Richter, D. H. Geology and Mineral Deposits of Central Knight Island, Prince William Sound, Alaska. Div. of Mines and Geol. Rep. No. 16, 1965, 37 pp.
112. Roehm, J. C. Summary Report of Mining Investigations in the Port Wells District, Prince William Sound, Alaska. Territorial Dep. of Mines, 1938.
113. Rutledge, F. A. Investigation of the Copper Bullion Claims, Rua Cove, Knight Island, Alaska. BuMines RI 4986, 1953, 6 pp.
114. -----. Confidential Investigation of the Copper Bullion Claims Rua Cove, Knight Island, Alaska. BuMines Unpubl. Rep. 1953a.
115. Sawkins, F. J. Sulfide Ore Deposits in Relation to Plate Tectonics. The J. of Geol., v. 80, No. 4, 1972, pp. 377-397.
116. Schrader, F. C. A Reconnaissance of a Part of Prince William Sound and the Copper River District, Alaska, 1898. U.S. Geol. Surv. 20th Ann. Rep., pt. 7, 1900, pp. 341-423.
117. Schrader, F. C., and A. C. Spencer. Geology and Mineral Resources of a Portion of the Copper River District, Alaska. U.S. Geol. Surv. Rep., 1901, pp. 88-89.
118. Schwab, D. A. Heavy Metal Concentration of Knight Island Greenstones. MS Thesis, NM Inst. of Min. and Technol. 1966, 45 pp.
119. Selkregg, L. L., ed. Alaska Regional Profiles, Southcentral Region. Univ. of AK, Arctic Environ. Inf. and Data Center, 1974, 255 pp.
120. Shacklette, H. T. Bryophytes associated with mineral deposits and solutions in Alaska. U.S. Geol. Surv. Bull. 1198-C, 1965, pp. C1-C18.
121. ----- Physiographic Processes of Sedge Meadow Pool Formation of Latouche Island, Alaska. U.S. Geol. Surv. Prof. Paper 424-D, 1967, pp. D197-D198.
122. Shepard, J. G. The Hemple Prospect, Hogan Bay, Knight Island, Alaska. U.S. Geol. Surv., Unpubl. Rep. 1925, 2 pp, available upon request from BuMines, Anchorage, AK.

123. Shepard, J.C. The Beatson-Girdwood Mines, Valdez Precinct, Alaska. U.S. BuMines Unpubl. Rep., 1925, 4 pp.
124. -----. The Shoo Fly Claims Prospect, Hogg Bay, Bainbridge Island, Alaska. U.S. Geol. Surv., Unpubl. Rep., 1926, 2 pp, available upon request from BuMines, Anchorage, AK.
125. Smith, P. S. Mineral Industry of Alaska in 1924 and Administrative Report. U.S. Geol. Surv. Bull. 783-A, 1926, p. 21.
126. -----. Mineral Industry of Alaska in 1926 and Administrative Report. U.S. Geol. Surv. Bull. 797-A, 1929, pp. 11-12.
127. -----. Mineral Industry of Alaska in 1939. U.S. Geol. Surv. Bull. 926-A, 1941, p. 26.
128. Smith, S. S. The Mining Industry in the Territory of Alaska during the Calendar Year 1915. BuMines B 142, 1917, 66 pp.
129. -----. The Mining Industry in the Territory of Alaska during the Calendar year 1916. BuMines B 153, 1917, 89 pp.
130. Stefansson, K., and R. M. Moxham. Copper Bullion Claims Rua Cove, Knight Island, Alaska. U.S. Geol. Surv. Bull. 947-E, 1946, pp. 85-92.
131. Stejer, F. A. Pyrite Deposits at Horseshoe Bay, Latouche Island, Alaska. U.S. Geol. Surv. Bull. 1024-E, 1956, pp. 107-122.
132. Stevens, B. Geology of some Copper Deposits in Alaska. Eng. and Min. J., v. 75, 1903, p. 782.
133. -----. Prince William Sound, Alaska; its Geology and Mineralogy. NW Min. J. v. 8, No. 1, 1909, pp. 3-6.
134. Stewart, B. D. Annual Report of the Mines Inspector to the Governor of Alaska, 1922. AK Territorial Dep. of Mines, Juneau, AK, 1923, 175 pp.
135. Thompson, A. P. The Relation of Pyrrhotite to Chalcopyrite and Other Sulfides (Big Bonanza Deposits, Latouche Island). Columbia School of Mines Q., v. 34, pp. 385-395.
136. Townsend, R. Ore Reserves Map of Duke and Duchess Properties, Horseshoe Bay, Latouche Island, Alaska, 1917, available upon request from BuMines, Anchorage, AK.
137. Trent, R. H. The Feasibility of Mining a Low Grade Copper Deposit in a Remote Area. MS Thesis, Univ. of Utah, 1972, 159 pp.
138. Tripp, R. B., and W. D. Crimm. Mineralogical Map Showing the Distribution and Abundance of Gold, Scheelite, Chalcopyrite, Arsenopyrite, Minium, and Sapphire Corundum in Heavy-Mineral Concentrates in the Seward and Blying Sound Quadrangles, Alaska. U.S. Geol. Surv. Misc. Field Studies Map MF-880-G, 1979.
139. Tripp, R. B., W. D. Crimm, and R. M. O'Leary. Geochemical Map Showing the Distribution and Abundance of Copper in Stream Sediments in the Seward and Blying Sound Quadrangles, Alaska. U.S. Geol. Surv. Misc. Field Studies Map MF-880-E, 1979.
140. -----. Geochemical Maps Showing the Distribution and Abundance of Gold in Stream Sediments and of Gold and Silver in Heavy-Mineral Concentrates in the Seward and Blying Sound Quadrangles, Alaska. U.S. Geol. Surv. Misc. Field Studies Map MF-880-F, 1979.
141. Tysdal, R. G. Mines, Prospects, and Occurrences Map of the Seward and Blying Sound Quadrangles, Alaska. U.S. Geol. Surv. Misc. Field Studies Map MF-880-A, 1978.
142. -----. Map Showing Placer Deposits of the Seward and Blying Sound Quadrangles, Alaska. U.S. Geol. Surv. Misc. Field Studies Map MF-880-B, 1979.

143. Tysdal, R. G., and J. E. Case. Geologic Map of the Seward and Blying Sound Quadrangle, Alaska. U.S. Geol. Surv. Misc. Invest. Series I-1150, 1979.
144. Tysdal, R. G., J. E. Case, G. R. Winkler, and S. H. B. Clark. Sheeted Dikes, Gabbro, and Pillow Basalt in Flysch of Coastal Southern Alaska. *Geology*, v. 5, 1977, pp. 377-383.
145. Tysdal, R. G., and G. Plafker. Age and Continuity of the Valdez Group Southern Alaska. U.S. Geol. Surv. Bull. 1457A, 1977, A-120 pp.
146. U.S. Bureau of Land Management. Mineral Surveys, Land Status, and Use Records, September, 1982, available upon request from Anchorage, AK.
147. -----. Mining Claim Report, Window 340, Chugach National Forest. September, 1982, available upon request from Anchorage, AK.
148. U.S. Bureau of Mines. Permanent Individual Mine Records for Prince William Sound area, Alaska, 1906-1943, available upon request from Anchorage, AK.
149. -----. Correspondence concerning the Rua Cove Copper Deposit, Knight Island, Alaska, 1943-1968; available upon request from Anchorage, AK.
150. -----. Alaska 1:250,000 scale Quadrangle Maps Showing Mineral Deposit Locations, Principle Minerals, and Number and Type of Claims. BuMines OFR 20-73, 1973, updated yearly.
151. -----. Minerals Availability System, 1982, available upon request from Anchorage, AK.
152. U.S. Bureau of Mines and U.S. Geological Surv. Principles of a Resource/Reserve Classification for Minerals. U.S. Geol. Surv. Circ. 831, 1980, 4 pp.
153. U.S. Geological Surv. Maps and Descriptions of Routes of Exploration in Alaska in 1898, with General Information concerning the Territory. U.S. Geol. Surv. Spec. publ., 1899, 138 pp.
154. -----. Aeromagnetic Map of the Seward Quadrangle, Alaska; Scale 1:250,000. U. S. Geol. Surv. OFR 78-1080, 1979.
155. -----. Aeromagnetic Maps of the Seward Quadrangle, Alaska. Scale 1:63,360. U.S. Geol. Surv. OFR 78-1081, 1979.
156. -----. Aeromagnetic Map of the Blying Sound Quadrangle, Alaska. Scale 1:250,000. U.S. Geol. Surv. OFR 78-1082, 1979.
157. -----. Aeromagnetic maps of part of Blying Sound Quadrangle. Scale 1:63,360, U.S. Geol. Surv. OFR 78-1083, 1979.
158. Webber and Rutledge. Horseshoe Bay Deposits, Latouche Island, Prince William Sound, Alaska. BuMines Unpubl. War Minerals Rep., 1944, 25 pp.
159. Wells, J. H. Placer Examination Principles and Practice. U.S. Dep. Interior Bureau of Land Management Tech. Bull. No. 4, 209 pp.
160. W. G. M. Inc. Consultant Report, 1976, available upon request from Anchorage, AK.
161. Williams, F. E. A Preliminary Study of the Feasibility of Fracturing the Copper Bullion Deposit, Alaska, with Nuclear Explosives. BuMines Unpubl. Rep., 1966, available upon request from Anchorage, AK.
162. Wiltse, M. A. Fe-Cu-Zn Massive Sulfide Deposits in an Ancient Outer Arc Ridge-Trench Slope Environment. *Geol. Soc. of Am. Abstr. with Programs*, v. 5, No. 1, 1973, pp. 122-123.
163. Wiltse, M. A., and J. A. McGlasson. Prince William Sound, Alaska; a Volcanogenic Massive Sulfide Province. *Geol. Soc. of Am. Abstr. with Programs*, v. 5, No. 7, 1973, 865 pp.

164. Wimmeler, N. L. Placer Mining in Alaska in 1923. Annual Report of the Mine Inspector to the Governor of Alaska, AK Territorial Dep. of Mines, Juneau, AK., 1923, p. 23.

165. Winkler, G. R. Deep-Sea Fan Deposition of the Lower Tertiary Orca Group, Eastern Prince William Sound, Alaska. U.S. Geol. Surv. OFR 76-83, 1976, 23 pp.

166. Winkler, G. R., E. M. Mackevett, and S. W. Nelson. Stratabound Iron-Copper-Zinc Sulfide Deposits, Prince William Sound Region, Southern Alaska. U.S. Geol. Surv. Circ. 751-B, 1977, pp. B44-B45.

167. Zuffa, G. G., T. H. Nilsen, and G. R. Winkler. Rock Fragment Petrography of the Upper Cretaceous Chugach Terrane, Southern Alaska. U.S. Geol. Surv. OFR 80-713, 1980, 30 pp.

APPENDIX A

MINE, PROSPECT, AND MINERAL OCCURRENCE SUMMARIES



## EXPLANATION OF APPENDICES

- LOCATION : Both geographic and public land survey grid locations were used. Refer to Fig. 4.
- QUADRANGLE : Refers to USGS quadrangle, scale 1:63,360.
- REFERENCE NUMBERS : Several different reference numbers are used due to the fact that not all properties are catalogued under any single system. These are all referenced in the bibliography except the Map number, which was assigned during the present study.
- BLM (147) : U.S. Bureau of Land Management. Mining Claim Report, Chugach National Forest.
- BS : Property within Blying Sound quadrangle, scale 1:250,000. Islands area BS-1 to BS-6.
- CG : Conglomerate
- Fel Plut : Felsic pluton
- KX (82) : Kardex. Alaska Mineral Property Reference File.
- Maf Volc : Mafic Volcanic
- Maf Plut : Mafic Plutonic
- MAP : U.S. Bureau of Mines RARE II project number designation for the property locations on Fig. 4 map.
- MAS (151) : U.S. Bureau of Mines Minerals Availability System.
- Metased : Metamorphosed sedimentary rock
- MS (146) : U.S. Bureau of Land Management. Mineral Surveys, Land Status, and Use Records.
- P : Placer property, numbered in a continuous sequence from P-1 to P-97. ISLANDS area includes P-49.
- Q : Quartz
- S : Property within Seward quadrangle, scale 1:250,000
- SedRk : Sedimentary rock
- Sed Volc : Sedimentary Volcanic
- SL : Slate
- SS : Sandstone
- TYSDAL (141) : U.S. Geological Survey Miscellaneous Field Studies Map MF-880-A.

NAME (other names): Sheppard 1A, 1B, 2      COMMODITIES: Gold

LOCATION:    Quadrangle: Seward A-4      SE 1/4 Sec 18 T 2S R 6E  
             Meridian: Seward  
             Geographic: Head of Goat Harbor, Puget Bay.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
P-49	95-386	NA	950073	NA	NA

HISTORY AND PRODUCTION:

1970 - Entry year & activity year (82).  
Owners: Stanley Conway and C. E. Bernhardt.  
3 placer claims.

1982 - An old camp and placer equipment consisting of riffle plates, canvas hose, and a metal water intake box were found in the trees just up from the beach.

RESERVES: Unknown.

OPERATING DATA:

Unknown.

GEOLOGIC SETTING:

Country rock in the area is graywacke that contains a trace of disseminated pyrite and some small quartz veins.

BUREAU WORK:

Five 0.1 yd<sup>3</sup> placer concentrate samples were taken from the three streams here using a small sluice box (table A-1). Some trace gold colors L.5mm-wide were noted in the samples. One sample contained 1.34 ppm gold and 80 ppm tungsten. This prospect has low mineral development potential.

REFERENCES:

82, 151

TABLE A-1. - ANALYTICAL RESULTS - Sheppard 1A, 1B, 2

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Hg	Sn	W	
5195	Alluvium	Placer	---	0.06	<.1	16	24	165	---	---	---	---	.1	<5	25	From 0.1 yd <sup>3</sup> placer concentrate sample from bank or stream gravels
5196	Alluvium	Placer	---	.04	<.1	14	25	110	---	---	---	---	<.1	<5	5	Do.
5197	Alluvium	Placer	---	.17	<.1	27	27	125	---	---	---	---	<.1	<5	7	Do.
5198	Alluvium	Placer	---	.05	<.1	39	730	145	---	---	---	---	<.1	<5	48	Do.
5199	Alluvium	Placer	---	1.34	.1	18	26	140	---	---	---	---	<.1	<5	80	Do.

--- no data

NAME (other names): Tibbits Prospect  
Latouche Consolidated  
Copper Co. Prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Blying Sound D-3 SW 1/4 Sec 2 T 3S R 8E  
Meridian: Seward  
Geographic: 0.2 miles northwest of the southeast tip of Latouche  
Island. Elevation 50 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
BS-1	105-10	270	21050014	ND	ND

HISTORY AND PRODUCTION:

1908 - Claims staked and some development work done during or before  
this date (51).

Owner: Latouche Consolidated Copper Co. (81).

1971 - Core drilling done by Phelps Dodge Corp. in vicinity (160).

RESERVES: Unknown.

OPERATING DATA:

Development consists of a 6x6 ft water-filled shaft of unknown depth.

GEOLOGIC SETTING:

The shaft is sunk in a 3-ft-wide sulfide-bearing S60°W trending shear  
zone within steeply-dipping graywackes. Chalcopyrite occurs mainly as  
stringers associated with quartz veinlets.

BUREAU WORK:

Sulfides exposed at the shaft collar and dump material was sampled  
(table A-2). Low mineral development potential for copper.

REFERENCES:

51, 81-82, 140-141

TABLE A-2 . - ANALYTICAL RESULTS - Tibbets Prospect

Sample	Material type	Sample type	Width (feet)	Elements, ppm (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2510	SL/SS/CG	Select Grab	---	<.03	8.5	0.59%	6.0	350	---	---	---	46	---	---	High-grade dump float quartz stringer, chalcopyrite stringer.
2511	SL/SS/CG	Grab	---	<.03	0.2	32	8.0	65	---	---	---	80	---	---	Dump float sample.
2512	SL/SS/CG	Chip	3.0	<.03	8.5	1.7%	8.0	550	---	---	---	34	---	---	3 ft wide shear zone at shaft collar sulfide-rich.
2513	SL/SS/CG	Random Chip	---	<.03	1.3	500	6.0	67	---	---	---	30	---	---	Shear zone wallrock, graywacke.

--- no data

NAME (other names): Seattle-Alaska  
Owen Ore Co.

COMMODITIES: Copper, Silver,  
Zinc

LOCATION: Quadrangle: Blying Sound D-3      1/4 Sec 36 T 2S R 8E  
Meridian: Seward  
Geographic: Majority of workings located on the north side  
of a cirque on the west side of Latouche Island at  
its southern end. Elevation 950-1,465 ft (fig.  
A-1).

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
BS-2	105-3	270	1050014	ND	ND

HISTORY AND PRODUCTION: (78, 148)

- 1908 - First report of property development.
- 1908-1911 - 840 ft of underground workings completed.
- 1911 - Mill set up below workings and run for a short while.
- 1914 - Test shipment of ore made. Production: 12 tons, 2,350 lb copper, 23 oz silver.
- 1916 - Some mill machinery had been removed by this date.
- 1976 - Geophysical studies done in the area and claims staked by Noranda Exploration (160).

RESERVES: Inferred: 2,900 tons at 3.0% copper and 8.7 ppm silver.

OPERATING DATA:

A total of six adits were found in the area, four of which are accessible. Three open cuts were also found (fig. A-1). Underground workings total 754 ft of crosscut and drift. A collapsed adit at an elevation of 1,229 ft in the northwest portion of section 36 is reported to be 400 ft in length. (78, pp. 209-210) A second collapsed adit of unknown length occurs in the southwest portion of the same section. A short adit in the west half of section 36 was driven only a few feet into colluvium. The northwest portion of the same section at the 700-ft level occur several collapsed buildings and some milling machinery.

GEOLOGIC SETTING:

In the northwest portion of section 36 a group of three adits were driven into a series of parallel N45°E trending shear zones dipping steeply to the west. Country rock consists of interbedded graywacke and shale with cleavages roughly parallel to the shear trends. These zones are up to 5 ft wide and drifted along for up to 45 ft. Locally

they are siliceous, containing massive and stringer sulfide zones up to 4 ft wide, including pyrite, pyrrhotite, up to 5% chalcopyrite, and trace native copper. What appears to be the same set of mineralized shear zones has been drifted along on two levels 95 ft apart vertically (fig. A-1 insert A). A third lower collapsed adit at the 1,229-ft level was apparently driven to intersect the same mineralized shear zones described above. Sulfide-rich float on the dump indicates it did. This would indicate a possible 236 ft total vertical extension of the mineralized zone in this area.

In the northwest corner of section 31, a 178-ft long adit at the 950-ft level follows a 3-ft wide northeast-trending shear zone that may be a northeast extension of the shear zones described above (fig. A-1 insert B). It contains quartz veins up to 8 in wide and up to 10% associated stringer chalcopyrite. Several open cuts are located nearby. Across the basin to the southwest of the adit at the 1,300-ft level the dump of a collapsed adit contains chalcopyrite-rich float. This adit may have cut a southern extension of the northeast trending mineralized shear zones described above, giving it a possible total strike length of 4,300 ft.

#### BUREAU WORK:

Mapped surface and accessible underground workings and sampled mineralization (table A-3). One underground sample cut across a 4-ft width, contained 6.5% copper, 14.2 ppm silver, and 0.12% zinc. Moderate mineral development potential for copper and silver.

#### REFERENCES:

78, 81-82, 141, 148, 151, 160

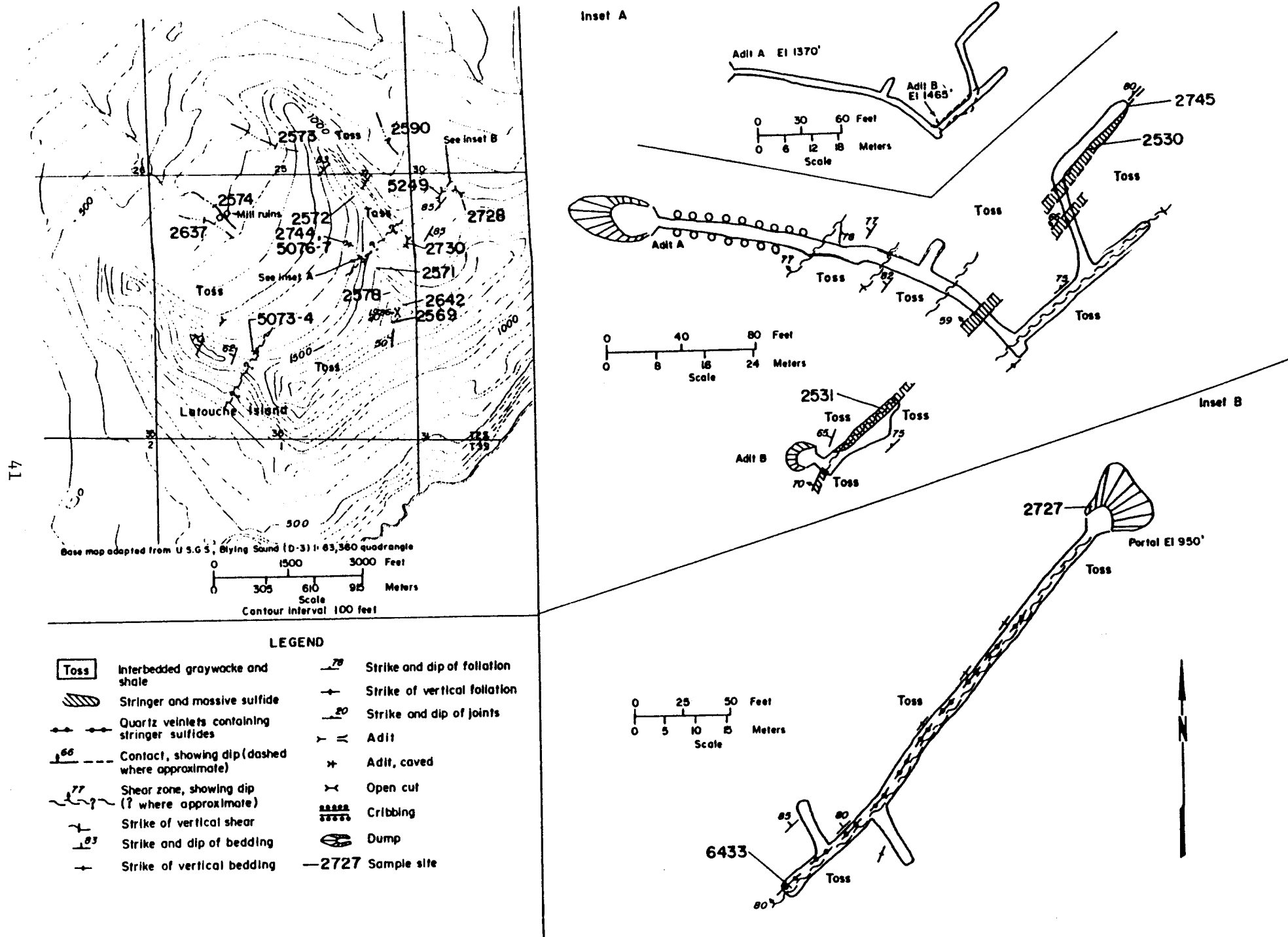


FIGURE A-1. - Seattle-Alaska prospect, geologic, and sample location map.



TABLE A-3. - ANALYTICAL RESULTS - Seattle-Alaska Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)										Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	
2530	SL/SS/CG	Cont Chip	4.0	0.1	14.2	6.5%	12	0.12%	---	---	---	34	---	4 ft wide massive and stringer sulfide zone.
2531	SL/SS/CG	Cont Chip	4.5	.05	2.1	0.55%	5.0	290	---	---	---	25	---	2 ft wide mineralized zone in adit. 5% combined chalcopryrite/pyrrhotite.
2569	SL/SS/CG	Random Chip	---	<.03	0.24	74	4	36	---	---	---	41	---	Graywacke country rock.
2571	SL/SS/CG	Random Chip	---	<.03	<.03	64	10	43	---	---	---	39	---	Graywacke country rock near shear zone. Disseminated sulfides.
2572	SL/SS/CG	Random Chip	---	<.03	0.16	6	4	37	---	---	---	42	---	Graywacke country rock. Disseminated sulfides.
2573	Str Sed	Stream Sed	---	<.10	0.76	---	---	---	---	---	---	---	---	Collected below prospect workings.
2574	Str Sed	Stream Sed	---	<.11	0.70	---	---	---	---	---	---	---	---	Collected below prospect workings.
2578	SL/SS/CG	Random Chip	---	<.03	0.25	16	10	60	---	---	---	43	---	Shale-graywacke country rock minor sulfide.
2590	Str Sed	Stream Sed	---	0.07	0.76	175	19	310	---	---	---	38	---	Collected below workings.
2637	Str Sed	---	---	<.03	0.60	20	14	28	---	---	---	19	---	Collected below workings.
2642	SL/SS/CG	Random Chip	---	0.10	0.45	125	14	120	---	---	---	35	---	Rusty-weathered shale.
2727	Schist	Select Grab	---	.11	14.5	6.0%	15	.18%	---	---	---	45	---	Dump sample.

--- no data

TABLE A-3. - ANALYTICAL RESULTS - Seattle-Alaska Prospect -- Continued

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)										Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	
2728	SL/SS/CG	Cont Chip	5.0	.06	.87	0.10	8.0	260	---	---	---	28	---	10 ft long surface trench w/ 5 ft wide mineralized zone. 5% cpy.
2730	Maf Volc	Random Chip	1.0	.08	1.3	0.2%	8.0	170	---	---	---	34	---	Trench with 1 ft wide mineral zone <1% cpy.
2744	SL/SS/CG	Select Grab	---	.40	10.00	4.5%	9.0	910	---	---	---	26	---	Dump sample.
2745	SL/SS/CG	Cont Chip	0.5	.16	24.5	9.0%	11	.13%	---	---	---	45	---	0.5 ft mineralized zone in adit face, chalcopyrite, bornite, malachite.
5073	SedRk/Q	Select Grab	---	<1/1000	<1/100	4.7%	33	0.53%	<10	---	---	---	---	Dump sample.
5074	SL/SS/CG	Grab	---	<1/1000	<1/100	96	120	342	<10	---	---	---	---	Dump sample.
5076	SL/SS/CG	Select Grab	---	.006	<1/100	3.7%	42	0.15%	<10	---	---	---	---	Dump sample.
5077	SL/SS/CG	Grab	---	<1/1000	<1/100	180	13	136	<10	---	---	---	---	Dump sample.
5249	SL/SS/CG	Cont Chip	2.0	<.007	2.65	.74%	<200	460	91	25	<40	<20	---	Slate with up to 5% cpy stringer, quartz veinlets.
6433	SL/SS/CG	Cont Chip	3.0	.007	2.67	.82%	<200	690	<40	26	<40	<20	---	Shear zone with quartz veinlet and up to 10% stringer chalcopyrite.

1/ ounces per ton

--- no data

43

NAME (other names): Mineral occurrence

COMMODITIES: Copper, Zinc, Silver

LOCATION: Quadrangle: Seward A-3

NE 1/4 Sec 28 T 2S R 9E

Meridian: Seward

Geographic: On shoreline 0.6 miles southeast of Latouche Peak,  
Latouche Island.

REFERENCE NUMBERS:

Map  
BS-3

Kx  
ND

Tysdal  
ND

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

None.

RESERVES: Unknown.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

Slump block of mineralized slate and graywacke displaced down 1,000 ft from slope above. According to Case (20, 1981), the slump occurred during the 1964 earthquake. Mineralization consists of 20 to 30% chalcopyrite and pyrrhotite in slates and up to 70% in parts of the graywacke. Mineralization appears conformable to bedding and occurs in three major 2-ft-thick zones extending 500 ft along strike. The slump block may be part of an iron-stained zone occurring on the slope above.

BUREAU WORK:

Collected chip sample (table A-4). Moderate mineral development potential for copper and silver.

REFERENCES:

20

TABLE A-4. - ANALYTICAL RESULTS - Mineral Occurrence - Latouche Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2623	SL/SS/CG	Chip	20.0	0.12	18.5	2.5%	15	0.14%	---	---	---	48	---	---	Bedding conformable sulfide stringers.

--- no data

NAME (other names): Alpha (?)

COMMODITIES: Copper

Claims: Alpha 1-74

LOCATION: Quadrangle: Blying Sound D-3      1/4 Sec 24 T 2S R 8E  
Meridian: Seward

Geographic: Approximately 1.0 miles northeast of Montgomery Bay, Latouche Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
BS-4	105-3	268	ND	ND	ND

HISTORY AND PRODUCTION: (81)

1908 - Claims staked.

1908 - Activity year.

1956 - Activity year.

1958 - Activity year.

RESERVES: Unknown

OPERATING DATA: Unknown

GEOLOGIC SETTING:

Much of the area is covered by muskeg vegetation. Shoreline exposures in the area consist of interbedded shale and graywacke striking northeast and locally deformed in similar folds.

BUREAU WORK:

Not located. Very little information concerning this claim block exists.

REFERENCES:

81, 141

NAME (other names): Claims: Whale

COMMODITIES: Copper

LOCATION: Quadrangle: Blying Sound D-3 NE 1/4 Sec 26 T 2S R 8E  
Meridian: Seward

Geographic: Montgomery Bay area, southwest side of Latouche  
Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
BS-5	105-11	269	1050014	ND	ND

HISTORY AND PRODUCTION:

1901 - Property examined by Schrader and Spencer (117, p. 89).

RESERVES: Unknown.

OPERATING DATA:

No indications of development were found.

GEOLOGIC SETTING:

Slate and sandstone country rock contain stringers and disseminations of chalcopyrite and bornite. The mineralization appears confined to a fracture zone paralleling the N75°E bedding strike (117, p. 89).

BUREAU WORK:

Not located. Tysdal (141, 1978) location disagrees with that given by Schrader and Spencer (107, plate V) who show it located on the southeast corner of the island.

REFERENCES:

81, 117, 141, 151

NAME (other names): Unnamed prospect      COMMODITIES: Copper

LOCATION: Quadrangle: Blying Sound D-3    NW 1/4 Sec 6    T 2S R 8E  
          Meridian: Seward  
          Geographic: East side of Elrington Island 4.2 miles east  
                          of Pt. Elrington.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
BS-6	NA	272	1050013	NA	NA

HISTORY AND PRODUCTION:

Unknown.

RESERVES: Unknown.

OPERATING DATA: Unknown.

GEOLOGIC SETTING:

Country rock in the area consists of intermixed graywacke, slate, and greenstone.

BUREAU WORK:

A ground and aerial search located no signs of prospecting or significant mineralization.

REFERENCES:

38, 141, 148, 151

NAME (other names): Claims: Keith No. 1-130      COMMODITIES: Copper, Gold,  
Zinc

LOCATION:    Quadrangle: Seward A-3                      NE 1/4 Sec 18    T 2S    R 9E  
                    Meridian: Seward  
                    Geographic: W. side of Latouche Island 1.4 miles southwest of  
   Horseshoe Bay.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-1	95-448	NA	950083	NA	NA

HISTORY & PRODUCTION:

1969-70 - Activity years. 130 claims staked (82).

RESERVES: Unknown.

OPERATING DATA:

No signs of development were found.

GEOLOGIC SETTING:

Country rock in the area is only exposed along the shoreline. This consists of a west-dipping sequence of interbedded graywacke, slate, and shale, locally deformed into similar folds.

BUREAU WORK:

Aerial and ground search found no signs of prospecting or mineralization. The claims were reportedly staked over a geophysical anomaly (160).

REFERENCES:

82, 151, 160



NAME (other names): Reynolds-Alaska Prospect COMMODITIES: Copper

LOCATION: Quadrangle: Seward A-3            NE 1/4 Sec 17 T 2S R 9E  
          Meridian: Seward  
          Geographic: 1.0 miles southeast of Horseshoe Bay, Latouche  
                          Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-2	ND	260	ND	ND	ND

HISTORY AND PRODUCTION:

1908 - Prospect first appears in literature but only a map location is given with no description (51, Plate IV).

RESERVES: Unknown.

OPERATING DATA:

No signs of development were located.

GEOLOGIC SETTING:

Bedrock in the area consists of northeast-striking, west-dipping interbedded shale and graywacke.

BUREAU WORK:

No mineralization or signs of prospecting were found.

REFERENCES:

51, 141



#### GEOLOGIC SETTING:

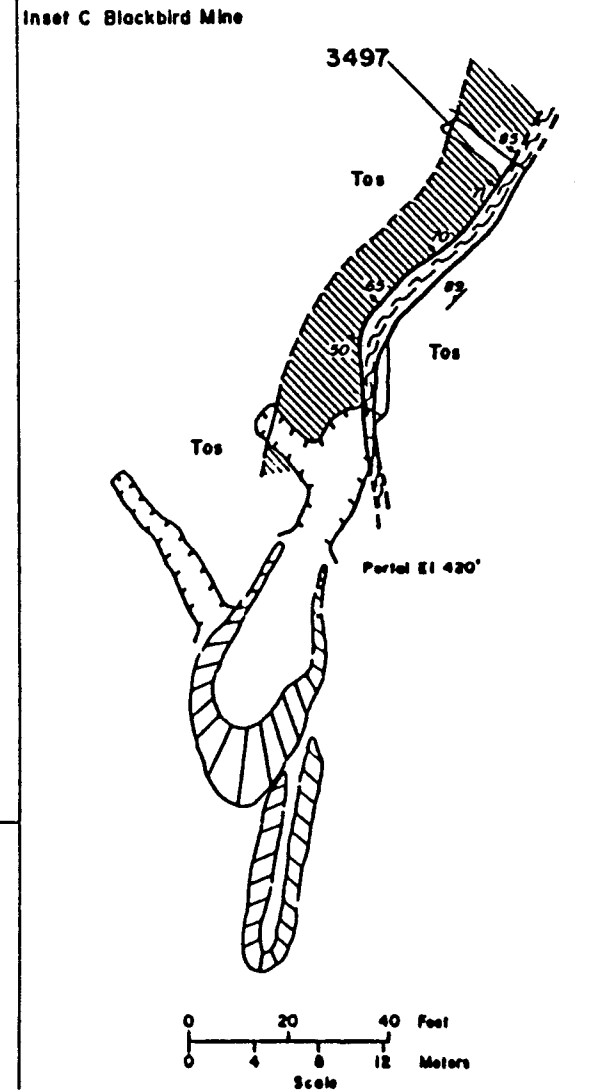
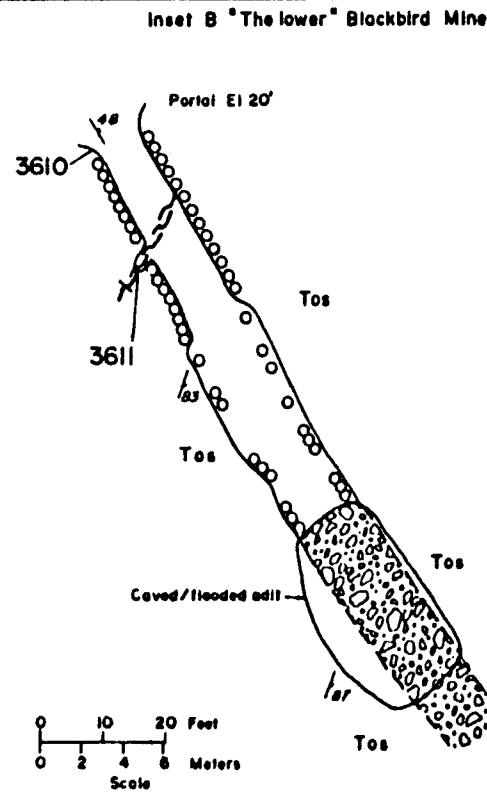
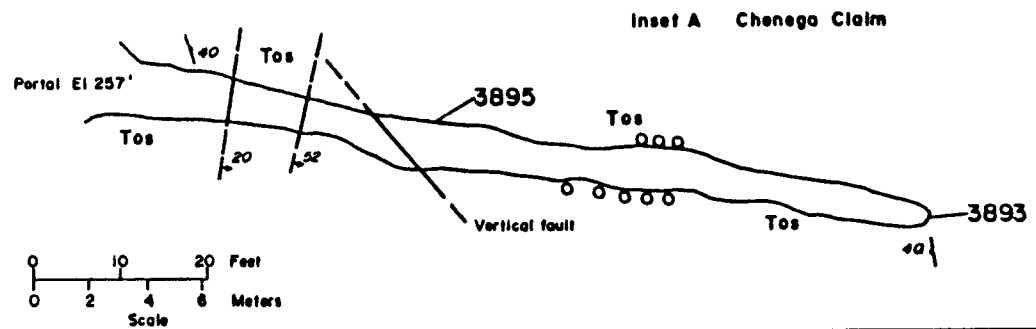
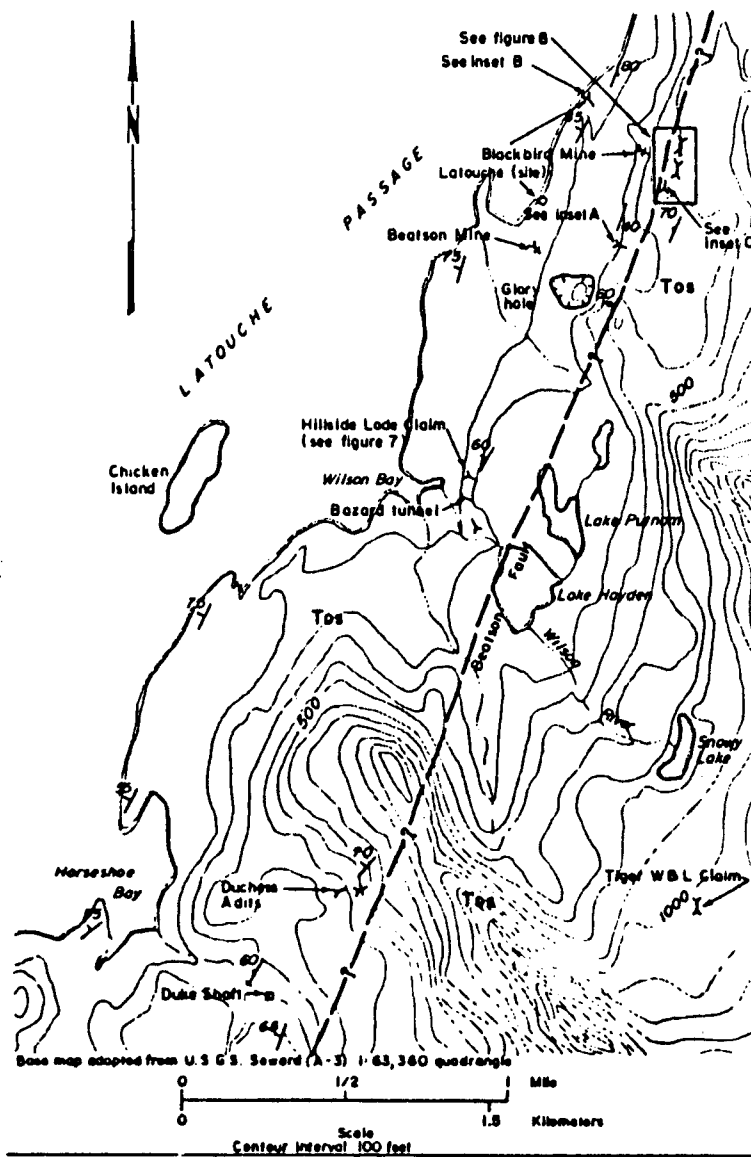
Massive sulfide lenses occur within a northeast-trending interbedded slate and graywacke sequence. Lenses vary from 4- to 27-ft-wide and are developed along strike for 151 ft. Some siliceous limestone and chert occur within the sediments. Some faulting occurs generally parallel to bedding. Sulfides consist of chalcopyrite, pyrrhotite, and pyrite. The surface outcrops indicate a mineralized belt from 200 to 250-ft-wide. It appears to be on the same trend as the Duchess mineralized zone 2400 ft to the north (98, 131) (fig. A-2).

#### BUREAU WORK:

The dumps near the shaft were sampled as underground workings were inaccessible (table A-5). Moderate mineral development potential for copper.

#### REFERENCES:

40, 60, 74, 82, 93, 98, 131, 136, 141, 146-147, 151, 158



LEGEND			
	Tertiary Orca group, sedimentary rocks		Shear zone
	Massive sulfides		Strike and dip of cleavage
	Contact, showing vertical strike (dashed where approximate)		Strike and dip of joint
	Fault, showing dip (dashed where approximate)		Strike and dip of bedding
	Shear/fault, showing vertical strike		Adit
			Adit, caved
			Open cut
			Portal and open cut
			Trench
			Cribbing
			Dump
			—3497 Sample site

FIGURE A-2. - Mine, prospect, and sample location map, Northwest shore, Latouche Island

TABLE A-5. - ANALYTICAL RESULTS - Duke and Iron Mountain Claims

Sample No.	Material Type	Sample Type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2516	SL/SS/CG	Select Grab	---	.33	12	0.1%	.17%	.76%	---	---	---	33	---	---	Drill core.
2518	SL/SS/CG	Grab	---	.27	6.1	790	190	690	---	---	---	26	---	---	Dump sample.
2519	SL/SS/CG	Select Grab	---	.14	8.5	1.1%	34	.12%	---	---	---	26	---	---	Dump sample.

--- no data

NAME (other names): Duchess  
 Claim: Duchess (patented)

COMMODITIES: Copper, Iron, Zinc,  
 Gold, Silver, Sulfur

LOCATION: Quadrangle: Seward A-3      NW 1/4 Sec 9 T 2S R 9E  
 Meridian: Seward  
 Geographic: 0.5 miles east of Horseshoe Bay.  
 Elevation 380 to 470 ft (fig. A-2).

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-4	95-231	258	950002	A003605	774

HISTORY AND PRODUCTION: (83, 97, 131)

- 1898 - Initial claims reportedly staked.
- 1905 - Branching tunnel 300 ft in length driven.
- 1906 - Production: 2,850 tons producing 215,000 lb of copper (148).
- 1907 - Wharf, electric plant, and several buildings erected at Horseshoe Bay.
- 1908 - Development consisted of 2,000 ft of tunneling by Reynolds-Alaska Development Company.
- 1916 - Duchess workings comprise two main tunnels with drifts and crosscuts totaling 2,800 ft, a 10-ft adit, and some open cuts and strippings.
- 1944 - Examined by Bureau as copper source for war effort (60, 158).
- 1952 - Texas Gulf Sulfur Company took an option on the property at about this time (83).
- 1955 - Examined by USGS as possible source of sulfur (131).
- 1970 - Core drilling done by Northwest Exploration (93).

RESERVES:

After Townsend, (136, 1917)

<u>Measured</u>		<u>Indicated</u>	
<u>Tons</u>	<u>% Copper</u>	<u>Tons</u>	<u>% Copper</u>
436,500	1.41	2,200,000	?

After Webber and Rutledge (158, 1944)

<u>Indicated</u>		<u>Inferred</u>		
<u>Tons</u>	<u>% Copper</u>	<u>Tons</u>	<u>% Copper</u>	<u>% Zinc</u>
570,000	1.17	1,720,000	1.17	0.40

Also indicated are trace to 0.02 oz gold/ton and .57 oz silver/ton. The massive pyrite bodies are composed of 50% sulfur with a reserve of 600,000 tons.

#### OPERATING DATA:

Development consists of two levels at 380 and 470 ft elevation. Underground workings total about 3,000 ft of drift and crosscut. In 1982 only the lower level was accessible. Several collapsed buildings lie on the surface nearby. A now abandoned townsite existed on Horseshoe Bay and electric power was obtained by pelton wheel in a nearby creek.

#### GEOLOGIC SETTING:

The mineralized zone consists of a series of N30°E trending massive sulfide lenses parallel to the bedding of the enclosing slate and graywacke sequence. The zone dips steeply to the west with individual lenses varying from a few inches to 60-ft-wide, 490 ft in length, and projected vertically for 600 ft. Zones of disseminated sulfides occur as halos around the massive bodies. A thick bed of slate forms the footwall of the ore body which contains the strongest mineralization. The boundaries between the massive and disseminated sulfides are sharp and the disseminated sulfide-wallrock boundary gradational. Primary sulfides consist of pyrite, chalcopyrite, cubanite, sphalerite, pyrrhotite, arsenopyrite, and galena. The sulfide lenses may be a northern extension of the mineralized zone at the Duke claim 2,400 ft to the south (131).

#### BUREAU WORK:

The Bureau sampled the underground workings in 1944 and 1953 (60, 158). Random samples were collected from the sulfide zones and wallrocks in 1982 (table A-6). Moderate mineral development potential for copper, silver, and zinc.

#### REFERENCES:

40, 60, 78, 82-83, 93, 98, 131, 136, 141, 146-147, 151, 158

TABLE A-6. - ANALYTICAL RESULTS - Duchess Claim

Sample No.	Material Type	Sample Type	Width (Feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Cr	Ni	Sb	Sn	
6428	SL/SS/CG	Chip	5.0	.008	<0.3	50	<200	320	<40	6	<40	35	---	---	Shale-slate wallrock 10 ft from sulfide lens.
6429	Sulfides	Chip	5.0	1.43	31.03	.50%	.24%	2.3%	.20%	72	<40	<20	---	---	Massive sulfides.
6432	SL/SS/CG	Chip	6.0	.013	.37	89	<200	210	<40	<4	<40	<20	---	---	Shale 10 ft beyond massive sulfide footwall

--- no data



NAME (other names): Claims: Tiger and W & L

COMMODITIES: Copper,  
Silver

LOCATION: Quadrangle: Seward A-3

NW 1/4 Sec 10 T 2S R 9E

Meridian: Seward

Geographic: In cirque 1.6 miles southeast of Latouche Townsite  
and 0.5 miles south of Snowy Lake (figure A-2).  
Elevation 1,000 ft.

REFERENCE NUMBERS:

Map  
S-5

Kx  
ND

Tysdal  
ND

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

1916 - Claim map shows Tiger and W & L claims in vicinity (83).  
No production.

RESERVES: Unknown.

OPERATING DATA:

Prospect consists of an open cut into a small bluff.

GEOLOGIC SETTING:

Wall rocks consist mostly of graywackes with quartz veinlets and some thin slate beds. Mineralization is concentrated on the west side of the cut and consists of chalcopyrite pyrrhotite stringers and trace native copper. Pyrrhotite occurs only in the south face of the cut.

BUREAU WORK:

Collected chip samples (table A-7). One sample contained 0.14% copper and 19.5 ppm silver. Low mineral development potential for copper and silver.

REFERENCES:

83

TABLE A-7. - ANALYTICAL RESULTS - Tiger and W & L Claim

Sample No.	Material Type	Sample Type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2524	SL/SS/CG	Chip	20.0	0.60	19.5	.14%	12	74	---	---	---	14	---	---	Open cut, graywacke with pyrrhotite, chalcopyrite, native copper.
2525	SL/SS/CG	Chip	---	.09	5.5	100	4	55	---	---	---	20	---	---	Open cut, pyrrhotite and chalcopyrite stringers.

--- no data

NAME (other names): Owner: Latouche Island      COMMODITIES: Copper, Zinc  
Copper Mining Co.  
Claim: Alameda

LOCATION:      Quadrangle: Seward A-3      SW 1/4 Sec 14 T 2S R 9E  
                Meridian: Seward  
                Geographic: Along shoreline 0.7 miles southeast of Reynolds Peak  
                                Latouche Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-6	95-226 D	267	950001	ND	ND

HISTORY AND PRODUCTION:

1897 - First showings said to be discovered.  
      No reported production.

RESERVES: Unknown.

OPERATING DATA: Unknown.

No signs of prospecting.

GEOLOGIC SETTING:

Mineralized graywacke is exposed along the shoreline. The mineralized zone varies from 4- to 40-ft-wide and is traceable for some distance. Chalcopyrite occurs in small bunches and stringers scattered through this zone, but is said to be most abundant in a zone 4- to 10-ft-wide. On another claim to the north a 4 ft mineralized shear zone is exposed for some distance. Sulfides consist of chalcopyrite, pyrrhotite, and sphalerite. The mineralized zones are parallel or nearly parallel to the strike and dip of the country rock. (51, Plate IV; 75, p. 139; 78, p. 211).

BUREAU WORK:

Not located.

REFERENCES:

38, 51, 75, 78, 82, 141, 151

NAME (other names): Owner: Latouche Island      COMMODITIES: Copper  
Copper Mining Co.

LOCATION: Quadrangle: Seward A-3      SW 1/4 Sec 11 T 2S R 9E  
Meridian: Seward  
Geographic: 0.5 miles east of Reynolds Peak Latouche Island.  
Elevation: 600 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-7	ND	266	ND	ND	ND

HISTORY AND PRODUCTION:

1916 - Prospected during or before this time. Some small shipments of ore reported (78).

RESERVES: Unknown.

OPERATING DATA:

Several hundred feet of tunnels were driven at elevations from sea level to 700 ft. A two-compartment shaft was sunk to a depth of 67 ft on one of the claims, with two log cabins, bunk, and mess houses erected nearby. A crosscut tunnel is located at the 550 ft level. Because of heavy timber cover no attempt was made by the company to determine the extent of the mineralization. (78, pp. 210-211).

GEOLOGIC SETTING:

Wallrocks consist of northeast-striking graywacke interbedded with slate, argillite, and a little chert. Dips are 40 to 65°W. Numerous faults parallel or nearly parallel to bedding and overturned drag folds occur. The southernmost mineralized zone consists of a 10 ft shear zone carrying considerable chalcopyrite exposed on a creek bank at an elevation of 600 ft. (78, p. 210).

BUREAU WORK:

Not located.

REFERENCES:

38, 78, 141

NAME (other names): Mineral occurrence

COMMODITIES: Copper, Zinc

LOCATION: Quadrangle: Seward A-3

SW 1/4 Sec 11 T 2S R 9E

Meridian: Seward

Geographic: Near shoreline 0.8 miles northeast of Reynolds Peak.

REFERENCE NUMBERS:

Map  
S-8

Kx  
ND

Tysdal  
265

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

None.

RESERVES: Unknown.

OPERATING DATA:

None.

GEOLOGIC SETTING:

The occurrence consists of a limonite-stained gossan 4-ft-wide and more than 45-ft-long. Altered country rock consists of slate and sandstone. It contains pyrite and chalcopyrite. Semiquantitative spectrographic analysis: 700 ppm copper, and 500 ppm zinc (141).

BUREAU WORK:

Not located.

REFERENCES:

141

NAME (other names): Owner: Latouche Island  
Copper Mining Co.  
Claims: Alameda

COMMODITIES: Copper, Zinc

LOCATION: Quadrangle: Seward A-3                      NW 1/4 Sec 11 T 2S R 9E  
Meridian: Seward  
Geographic: 1.2 miles northeast of Reynolds Peak, Latouche Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-9	ND	264	50015	ND	ND

HISTORY AND PRODUCTION:

Unknown.

RESERVES: Unknown.

OPERATING DATA:

Adit of unknown length.

GEOLOGIC SETTING:

Sandstone wallrocks with a few stringers of chalcopyrite along with a little pyrrhotite and pyrite occur here (141).

BUREAU WORK:

Not located.

REFERENCES:

141, 151

NAME (other names): Owner: Latouche Island COMMODITIES: Copper, Zinc  
Copper Mining Co.?  
Claims: Alameda ?

LOCATION: Quadrangle: Seward A-3                    NE 1/4 Sec 11   T 2S   R 9E  
                  Meridian: Seward  
                  Geographic: 1.5 miles northeast of Reynolds Peak, Latouche Island.  
                  Elevation: 10 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-10	226-C	ND	ND	ND	ND

HISTORY AND PRODUCTION:

Unknown.

INFERRED RESERVES: 100 tons at 0.74% copper and 0.19% zinc.

OPERATING DATA:

An adit 64-ft-long trending S40°W just above shoreline.

GEOLOGIC SETTING:

The adit follows a 3.5- to 4.5-ft-wide west-dipping shear zone within silicified slate and graywacke wallrocks. Mineralization consists of massive pyrrhotite, up to 15% chalcopyrite, and associated quartz veining.

BUREAU WORK:

Mapped and sampled adit (fig. A-3 and table A-8). Low mineral development potential for copper.

REFERENCES:

82

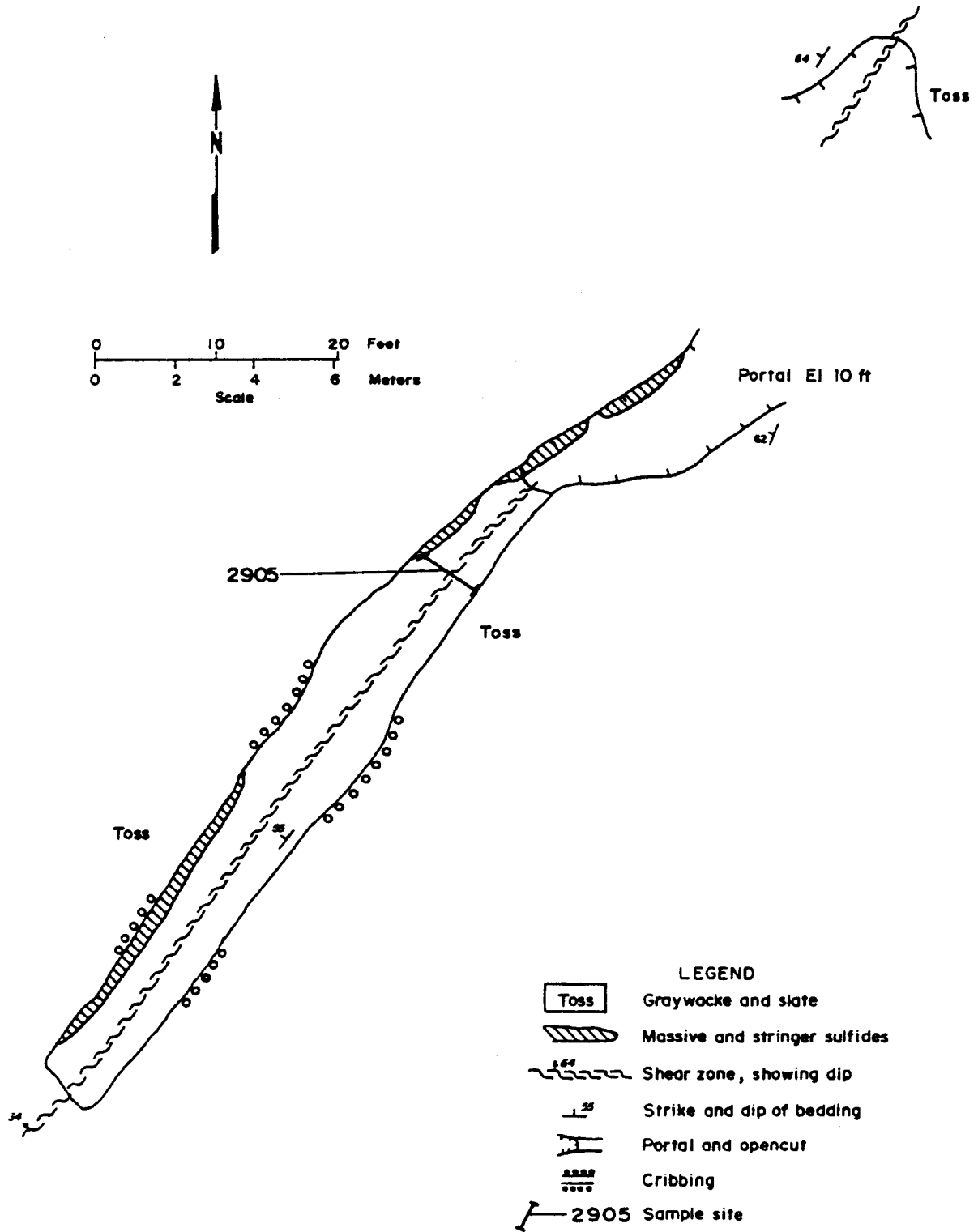


FIGURE A-3. - Latouche Island Copper Mining Co. Prospect, sample location map.



TABLE A-8. - ANALYTICAL RESULTS - Latouche Island Copper Mining Co.

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2905	SL/SS/CG	Chip	5.0	<.03	0.7	0.74%	40	0.19%	37	---	---	---	---	---	3.5 to 4.5-ft-wide mineralized shear zone, pyrrhotite, chalcopyrite.

99

--- no data

NAME (other names): Claims: Alameda                   COMMODITIES: Copper, Zinc

LOCATION:    Quadrangle: Seward A-3                    SE 1/4 Sec 2 T 2S R 9E  
            Meridian: Seward  
            Geographic: On east shore of Latouche Island 1.6 miles  
  east of Snowy Lake.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-11	95-226 B	ND	950014	ND	ND

HISTORY AND PRODUCTION:

1916 - Claims staked (82).

RESERVES: Unknown.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING: Unknown.

BUREAU WORK:

Not located.

REFERENCES:

82, 151

NAME (other names): Carlson Property      COMMODITIES: Copper, Silver  
Latouche Island Copper  
Mining Co.

LOCATION: Quadrangle: Seward A-3      SW 1/4 Sec 36 T 1S R 9E  
Meridian: Seward  
Geographic: 1.7 miles south of Gibbon Peak, Latouche Is.  
Elevation: sea level - 60 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-12	95-266 A	263	950013	ND	ND

HISTORY AND PRODUCTION:

1916 - Claims staked (82).

RESERVES: A few tons of ore are presently exposed.

OPERATING DATA:

A 100-ft-long tunnel is reported to be mostly submerged at high tide. On a cliff 60 ft above tidewater a shaft was sunk and later flooded (5). Signs of blasting were observed at an exposure near tidewater.

GEOLOGIC SETTING:

N29°E trending, 75°W dipping shear zone roughly parallel to the attitude of the surrounding graywackes. Intense fracturing and brecciation occur locally. Sulfides consisting of pyrrhotite, pyrite, and chalcopyrite occur in a massive zone up to one-foot wide and a stringer zone up to 5-ft-wide. Up to 5% chalcopyrite and malachite stain are present. Mineralization can be traced 200 ft along strike. Drag folds are associated with the shear.

BUREAU WORK:

Found no sign of workings described above. Sampled the shear zone described above (table A-9). One sample contained 2.5% copper and 20 ppm silver. Short strike length of mineralization does not indicate high tonnages potential. Low mineral development potential for copper and silver.

REFERENCES:

5, 38, 82, 141, 151

TABLE A-9. - ANALYTICAL RESULTS - Carlson Property, Latouche Island Copper Mining Co.

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2533	SL/SS/CG	Chip	2.0	.10	20	2.5%	14	0.15%	---	---	---	21	---	---	---	2 ft wide mineralized shear zone.
2534	SL/SS/CG	Chip	0.6	.16	1.7	98	15	100	---	---	---	41	---	---	---	Mineralized graywacke bed.
2599	SL/SS/CG	Chip	8.5	.07	0.92	.70%	8	90	---	---	---	21	---	---	---	8.5 ft wide mineralized shear zone.
2667	SL/SS/CG	Chip	4.0	.07	4.6	.70%	15	430	---	---	---	25	---	---	---	4 ft wide mineralized shear zone.

--- no data

NAME (other names): Claims: Lin No. 1-201 COMMODITIES: Zinc, Copper

LOCATION: Quadrangle: Seward A-3 SE 1/4 Sec 25 T 1S R 9E  
Meridian: Seward  
Geographic: North end of Latouche Island near Sleepy Bay.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-13	95-391	NA	950012	NA	NA

HISTORY & PRODUCTION:

1970 - Activity year (82).

RESERVES: Unknown.

OPERATING DATA:

No indications of development.

GEOLOGIC SETTING:

The country rock in the area consists of a west-dipping sequence of interbedded graywacke, slate, and shale. A small gabbro mass is exposed on the shoreline one mile SE of Sleepy Bay (52, p. 49). Several small mineralized shear zones cut the sediments along the shoreline in the area.

BUREAU WORK:

Aerial and ground search located no signs of prospecting. It is believed these claims were staked over a geophysical anomaly (83). Almost 6% zinc was noted in one sulfide-rich lense, but the exposure was very small (table A-10). Low mineral development potential for zinc and copper.

REFERENCES:

52, 82-83, 151

TABLE A-10. - ANALYTICAL RESULTS - Lin No. 1-201 Claims

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2535	SL/SS/CG	Rand Chip	---	.07	0.8	700	5	100	---	---	---	26	---	---	Graywacke cut by shear zone. Minor chalcopryrite and pyrite.
2536	SL/SS/CG	Chip	2.0	.06	.61	50	11	150	---	---	---	46	---	---	Schistose slate. Disseminated sulfides.
2537	SedRk/Q	Chip	1.0	.11	9.4	.75%	90	5.9%	---	---	---	28	---	---	Sulfide-rich lense, 1 x 9 ft, in slate.

--- no data

NAME (other names): Unnamed prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward A-3

NE 1/4 Sec 4 T 2S R 9E

Meridian: Seward

Geographic: Along north side of stream, just northwest  
of Lake Hayden, Latouche Island (figure A-2).

Elevation: 180 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-14	NA	NA	NA	NA	NA

HISTORY AND PRODUCTION:

Possibly an attempt at a water diversion tunnel or an attempt to cut the Beatson orebody.

RESERVES: Unknown.

OPERATING DATA:

One adit that is caved 150 ft from the portal.

GEOLOGIC SETTING:

Adit trends N40°W into highly fractured slate and graywacke. Some small quartz veins and iron-stains occur along fractures.

BUREAU WORK:

Went into adit until cave in at 150 ft. Unsafe so no further work was done.

REFERENCES:

None

NAME (other names): Bazard Tunnel                      COMMODITIES: Copper  
                                Claims: West Hillside  
                                Lode, Hillside Lode

LOCATION:    Quadrangle: Seward A-3                      NE 1/4 Sec 4    T 2S R 9E  
                                Meridian: Seward  
                                Geographic: S40°E and 350 ft from the head of Wilson Bay,  
  Latouche Island. Elevation: 50 ft (fig. A-2).

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-15	95-233	257	950009	ND	888

HISTORY AND PRODUCTION:

1904-1908 - Claims staked.

1908 - Tunnel was 1,400-ft-long. Owners: Chicago-Latouche Mining and Power Co. (51, p. 88).

1909 - Claim patent survey made (146).

RESERVES: Unknown.

OPERATING DATA:

Large tunnel containing tracks and ore cars, running S72°E. Water waist deep in portions. Entrance partially collapsed and extremely overgrown.

GEOLOGIC SETTING

Driven to intersect a possible southern extension of the Beatson orebody 0.6 miles to the north. No further mention is made of it in the literature. Indications are that no ore was intersected and the tunnel was abandoned.

BUREAU WORK:

Entrance located but not entered due to deep water.

REFERENCES:

51, 82, 141, 146, 151



NAME (other names): Claim: Hillside Lode    COMMODITIES: Copper

LOCATION:    Quadrangle: Seward A-3                  NE 1/4 Sec 4    T 2S R 9E  
              Meridian: Seward  
              Geographic: 0.1 miles northeast of Wilson Bay, Latouche  
                          Island. Elevation: 180 ft (fig. A-2).

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-16	ND	ND	ND	ND	888

HISTORY AND PRODUCTION:

1909 - Adit shown on Mineral Survey plat (146).

RESERVES: None.

OPERATING DATA:

Development consists of a 126-ft-long adit running S65°E. It may have been started to cut the southern extension of the Beatson orebody 0.5 miles to the north.

GEOLOGIC SETTING:

The adit cuts a N25°E striking, west-dipping graywacke sequence locally containing shale beds. A 60°W dipping gouge-bearing shear roughly 3-in.-wide parallels bedding. No sulfides occur in the shear or wallrock.

BUREAU WORK:

The underground workings were mapped (fig. A-4).

Low mineral development potential for copper.

REFERENCES:

146

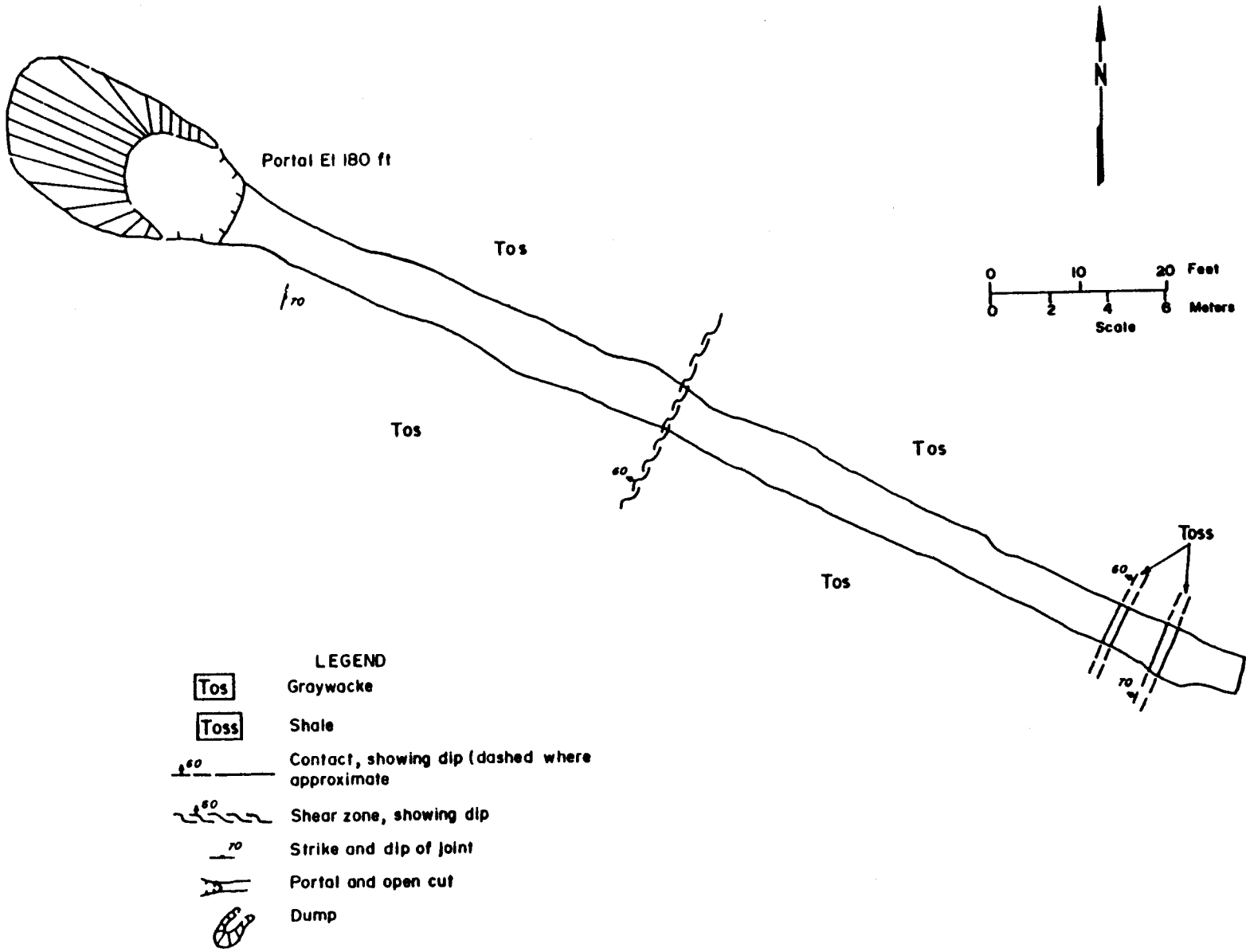


FIGURE A-4. - Hillside Lode Claim, underground geology.

NAME (other names): Beatson Mine  
 Claims: Big Bonanza  
 Eagle

COMMODITIES: Copper, Zinc, Lead,  
 Gold, Silver

LOCATION: Quadrangle: Seward A-3                      NE 1/4 Sec 33 T 1S R 9E  
 Meridian: Seward  
 Geographic: West side of Latouche Island 0.5 miles southeast  
 of Powder Point. Elevation: Sea level to 350  
 ft (fig. A-2).

REFERENCE NUMBERS:

Map            Kx            Tysdal            MAS            BLM            MS  
 S-17            95-88            256            950009            ND            584, A & B

HISTORY AND PRODUCTION: (148)

Year	Tons ore	Copper lbs	%	(Production) Gold		Silver	
				Total oz	oz/ton	total oz	oz/ton
1899	1	385				2	
1900	100	?				?	
1901	32	8,185				63	
1902	19	2,950				35	
1903	103	26,848				159	
1904	1,582	343,786				2,578	
1905	2,960	590,745				4,410	
1906	3,561	587,992				7,248	
1907	10,010	1,021,687		484	0.05	9,113	
1908	6,209	1,201,568				8,547	
1909	5,093	1,264,053				8,821	
1910	10,014	1,621,787				10,937	
1911	25,161	3,078,000				23,166	
1912	32,782	3,255,000				29,470	
1913	47,944	5,179,000				42,479	
1914	51,159	5,287,000				44,414	
1915	106,215	3,558,932				22,099	
1916	205,112	6,872,000				50,653	
1917	300,000	3,000,000	2.44			85,000	
1918	447,951	13,023,366	2.02			102,342	
1919	264,265	8,338,520				64,870	
1920	451,000	13,280,460				118,196	
1921	168,058	5,276,680	1.83			38,544	
1922	274,000	17,585,000	1.88			65,437	
1923	400,000	10,915,620	1.60			88,256	
1924	479,914	13,951,266				102,544	
1925	493,005	13,584,228				106,230	
1926	418,000	11,655,377	1.67			100,713	.325
1927	448,200	11,656,380	1.57			97,171	.307
1928	443,000	8,990,055	1.26			78,632	.264
1929	452,692	9,249,306	1.28			79,835	.243
1930	444,799	8,190,713	1.12			74,685	.233
Totals	5,992,941	182,600,000		484		1,466,649	
		Avg.	1.65				Avg. .279

(History) (148)

- 1897 - Initial discovery made.
- 1899 - Trial ore shipment made.
- 1908 - Major mine development and surface plant.
- 1910 - Property purchased by Kennecott Copper Corp.
- 1914 - Construction begun on new flotation plant.
- 1915 - Flotation plant completed.
- 1923 - Adjacent Girdwood Mine purchased by Kennecott and Latouche Mining System started.
- 1924 - Large scale mining began by use of modified shrinkage.  
At this time 10 miles of underground workings existed divided between five main levels.
- 1927 - Surface geophysical surveys were made to discover possible extensions of the orebody. Anomalies were found and drilling revealed them to be pyrite-bearing graphitic schist. Drilling beneath the existing ore zone proved negative. (5)
- 1930 - Mine closed and last ore shipped.

RESERVES: As of 1930 no mention of economic reserves.

OPERATING DATA:

From its beginning, up to 1924 mining was done by open cut methods. Later underground shrinkage stope methods were used very efficiently. The main portal was at 45 ft above sea level with the main haulage level 150 ft below. The main mining level was 250 ft below the main portal. Ore from the stopes was passed over grizzlies and hoisted up a shaft to the surface. The orebody was mined vertically for approximately 500 ft and 1,000 ft along strike. At the height of production the mine supported a 1,500 ton/day flotation mill. Concentrates along with some high grade crude ore were shipped via boat to the smelter at Tacoma, Washington.

The town of Latouche existed at the mine site which at one time had a population of 400. Power was furnished by diesel generators. After mining stopped, most of the machinery was removed. The underground workings are no longer accessible. Most of the surface buildings were removed by a real estate developer who acquired the surface rights in recent years (4, 10, 78, 88, 123).

GEOLOGIC SETTING:

Country rocks in the mine area consist of a north-trending interbedded sequence of west-dipping slate and graywacke with graywacke predominating. The major structural feature in the area is

the Beatson fault, which cuts slightly across bedding, striking approximately N12°E and dipping an average of 60°W. On the footwall side of the fault occurs a massive and disseminated sulfide zone. The highest grade ore occurs adjacent to the fault. The orebody has dimensions of roughly 400-ft-wide by 500-ft-vertical and extends along strike for 1,000 ft. Sulfides consist of chalcopyrite, pyrrhotite, sphalerite, cubanite, and galena. Associated gangue minerals consist of quartz, sericite, and ankerite. Average mine grades consisted of 1.7% copper and 0.27 oz silver/ton. Records of gold production are incomplete and it is possible that the majority of the production was not reported. Using the 1907 production figure as a very rough average, it is estimated that the mine may have produced as much as 290,000 oz gold.

#### BUREAU WORK:

No sampling was done as underground workings are no longer accessible and detailed production records give grades of the mined out portions of the orebody. Moderate mineral development potential for concealed copper, zinc, and silver-bearing orebodies at depth and along strike of the Beatson Fault.

#### REFERENCES:

5-6, 8, 10, 47, 78, 88, 97, 123, 141, 146, 148, 151

NAME (other names): Claim: Chenega

COMMODITIES: Copper

LOCATION: Quadrangle: Seward A-3

NW 1/4 Sec 34 T 1S R 9E

Meridian: Seward

Geographic: 0.25 miles north of the Beatson Mine

Elevation: 257 ft (figure A-2).

REFERENCE NUMBERS:

Map  
S-18

Kx  
95-274

Tysdal  
255

MAS  
950009

BLM  
ND

MS  
584 A&B

HISTORY AND PRODUCTION:

1897-98 - Original claims located.

RESERVES: Unknown.

OPERATING DATA:

A mud and water-filled adit 95-ft-long running S80°E. An orebody underlying the Chenega Claim was reportedly developed on two levels and was later connected to the Beatson underground workings (98, pp. 64-65).

GEOLOGIC SETTING:

The adit is driven into highly fractured black shale and silicified mudstone. Several gouge zones a few inches wide cut the sediments. Sulfides in the form of pyrite and chalcopyrite are disseminated in the sediments locally occurring as blebs and small stringers. Malachite stain occasionally occurs. The first 65 ft of the adit average 1% chalcopyrite while the last 30 contain <1%.

BUREAU WORK:

Mapped and sampled underground workings (table A-11 and figs. A-2 and A-5). Did not locate any openings to major underground workings. Moderate mineral development potential for disseminated copper.

REFERENCES:

82, 98, 141, 146, 151

TABLE A-11. - ANALYTICAL RESULTS - Chenega Claim adit

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions	
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W		
3893	SL/SS/CG	Cont Chip	2.8	<.03	0.4	290	18	415	<10	---	---	---	---	---	---	---	Silicified shale and mudstone with minor pyrite.
3895	SL/SS/CG	Cont Chip	2.8	<.03	6.4	1.7%	20	1000	<10	---	---	---	---	---	---	---	Silicified shale mudstone with 1% pyrite and chalcopryrite.

--- no data

NAME (other names): Blackbird Mine  
(Also known as Girdwood,  
Barrack, or Ladysmith)

COMMODITIES: Copper, Zinc, Silver

LOCATION: Quadrangle: Seward A-3      NW 1/4 Sec 34 T 1S R 9E  
Meridian: Seward  
Geographic: 0.5 miles north of the Beatson mine  
Elevation 20-480 ft (fig. A-2).

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-19	95-52	254	950009	A001775	970

HISTORY AND PRODUCTION: (5, 148)

- 1902 - Claims staked.
- 1907 - Owner Latouche Copper Mining Co. Ore shipped to Tacoma, WA.
- 1908 - Ore broken in stopes but none shipped.
- 1916 - Development consisted of several open cuts, two tunnels, a raise, and sublevel constituting 1,750 ft of workings. Only a few thousand tons of ore developed.
- 1917 - W. A. Dickey took a lease on the property, made some improvements, and opened up more ore. New workings: 225 ft. Developed four small ore bodies. Ore shipped.
- 1919 - Property run by Ladysmith Smelting and Refining Co.
- 1920 - Installed 150 ton/day flotation plant. No production.
- 1921 - Mill not operated.
- 1923 - Property sold to Kennecott Copper Corp. for a price in excess of \$1,000,000 and added to Latouche Mining System.



(Production) (148)

<u>Year</u>	<u>Tons ore</u>	<u>Copper</u>		<u>Silver total oz</u>
		<u>lb</u>	<u>%</u>	
1907	500	60,000	6.0	---
1908	No ore shipped			
1909	165	---	---	---
1916	Small shipment to Tacoma	---	---	---
1917	2,175	208,800	4.8	2,100
1918	1,000	120,000	6.0	1,000
1919	710	85,808	6.0	478
1920	600	72,510	6.0	402
1921	No production			
1923	Production added to Beatson ore			
Totals	5,150	547,118		3,980

Weighted Average 5.3%

RESERVES: (5)

1917 - Indicated ore: 4,300 tons at 4.85% copper  
Inferred ore: 12,700 tons at 4.8% copper

1920 - Indicated ore? 201,450 tons at 2.2% copper

OPERATING DATA:

Development consists of several open cuts, two tunnels, raise and sublevel, several shafts, and a short adit. Total underground workings comprised 1,750 ft in 1916. Only the short adit is still accessible. A wharf, ore bunkers, 150 ton/day mill, and tramline once existed on the surface. All equipment has since been removed. (5)

GEOLOGIC SETTING:

The Blackbird orebody is thought to be a northern extension of the Beatson and Chenega orebodies. Underground workings disclose a shear zone in graywacke and slate containing chalcopyrite and pyrrhotite.

Exposures in surface cuts and glory holes above the underground workings consist of shear-fault zones containing massive, stringer and disseminated sulfides. The mineralized zones are up to 35-ft-wide and contain pyrrhotite, up to 5% chalcopyrite, sphalerite, some covellite?, and trace galena. Wallrocks consist of silicified shale-mudstone which are locally intensely folded. These mineralized zones are exposed intermittantly for 300 ft along strike. Individual massive sulfide lenses occur up to 10-ft-wide (fig. A-5).

#### BUREAU WORK:

The major underground entrance at an elevation of 20 ft is open for 70 ft and caved beyond (fig. A-5). The next highest adit is caved at the entrance. A 70 ft adit at 420 ft elevation was open with knee-deep water. It was mapped and sampled. Some small glory holes and surface cuts at 480 ft elevation were mapped and sampled. A magnetic and soil geochemical survey was made over the muskeg covered portions of the orebody (table A-12). Moderate mineral development potential for copper, zinc, and silver.

#### REFERENCES:

5, 98, 141, 146-148, 151

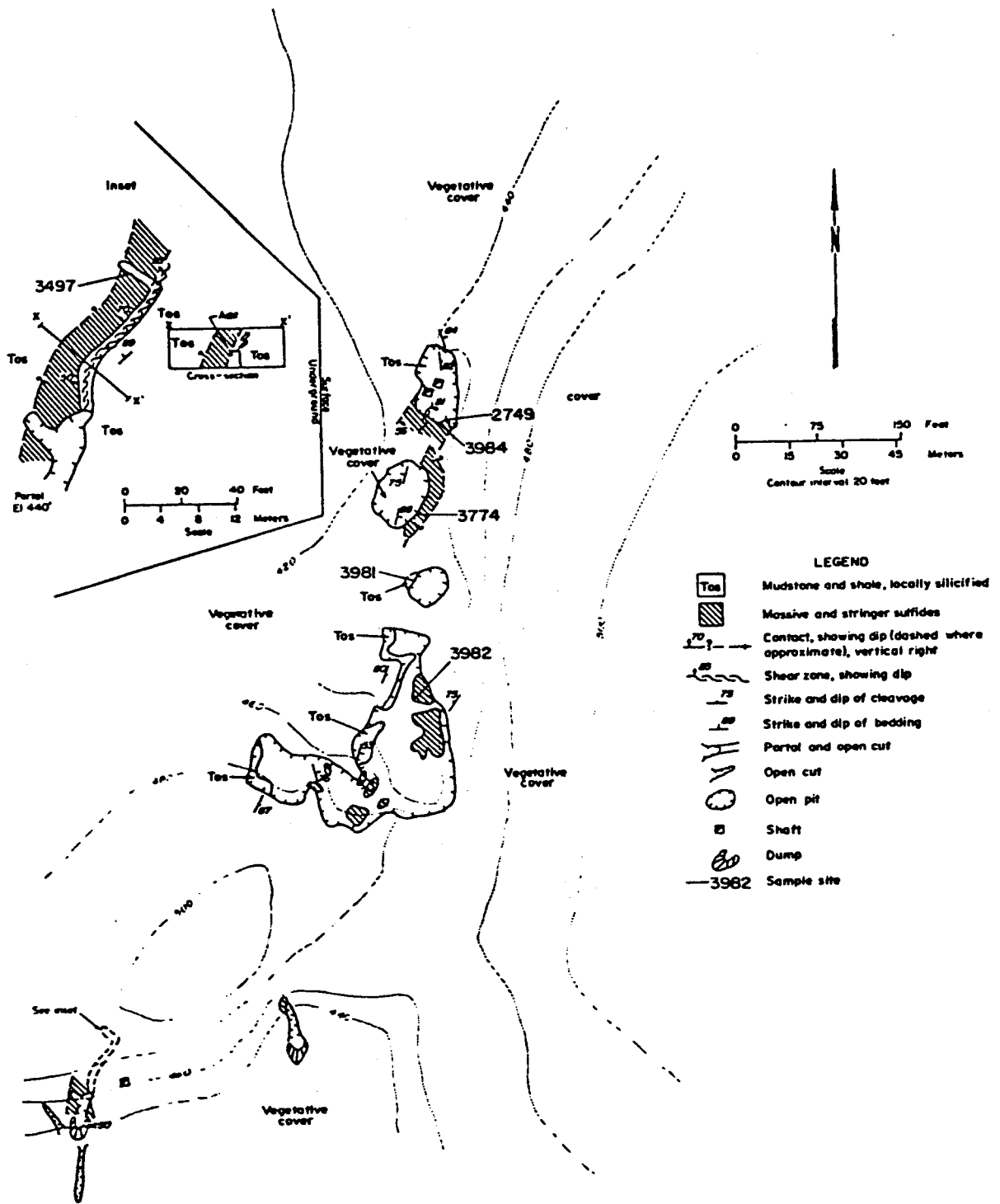


FIGURE A-5. - Blackbird Mine area, sample locations.

TABLE A-12. - ANALYTICAL RESULTS - Blackbird Mine Area

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Cr	Mo	Ni	Sb	Sn	W	
2749	Sulfides	Chip	11.0	0.10	12	1.2%	500	3.7%	---	---	---	13	---	---	---	Massive sulfides in open cut.
3497	Sulfides	Chip	13.0	<.005	<.2	2.55%	600	12.2%	.03	---	---	---	---	---	---	Massive sulfides in adit.
3774	SL/SS/CG	Chip	8.0	.23	0.5	1.6%	1.25	5.8%	580	---	---	---	---	---	---	Massive Sulfides
3981	SL/SS/CG	Chip	6.0	.05	39	2.45%	.26%	3.1%	96	2.5	---	---	---	---	---	Massive Sulfides
3982	Sulfides	Chip	9.0	.09	22.2	2.96%	495	.35%	69	3.0	---	---	---	---	---	Massive Sulfides
3610	SL/SS/CG	Random Chip	---	<.03	0.2	27	24	105	17	---	---	---	---	---	---	Iron-stained mudstone.
3611	SL/SS/CG	Chip	1.5	<.03	0.1	42	23	120	21	---	---	---	---	---	---	Fault-shear zone, quartz stringers.
3984	SL/SS/CG	Chip	9.0	0.22	14.2	1.02%	540	3.7%	900	1.4	---	---	---	---	---	

--- no data

NAME (other names): Mineral occurrence

COMMODITIES: Copper

LOCATION: Quadrangle: Seward A-3

NE 1/4 Sec 1 T 2S R 8E

Meridian: Seward

Geographic: On tidewater at the northeast corner of  
Elrington Island.

REFERENCE NUMBERS:

Map  
S-20

Kx  
NA

Tysdal  
261

MAS  
NA

BLM  
NA

MS  
NA

HISTORY AND PRODUCTION:

Unknown.

RESERVES: None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

Interbedded mudstone and siliceous shale averaging 1% pyrite and trace chalcopyrite occur near a greenstone contact. The sediments are limonite-stained and exposed intermittantly for 400 ft along strike. Rock samples from the area are reported to contain 300 ppm chrome and 200 ppm copper (141).

BUREAU WORK:

The sulfide-bearing sediments were examined and sampled (table A-13). Low mineral development potential for copper.

REFERENCES:

141

TABLE A-13. - ANALYTICAL RESULTS - Mineral occurrence - Northeast Elrington Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3494	SL/SS/CG	Random Chip	5.5	<.03	0.2	45	22	82	<10	---	---	---	---	---	Mudstone, trace chalcop- pyrite near greenstone contact.
3756	SL/SS/CG	Random Chip	---	<.03	2.2	32	33	160	<10	---	---	---	---	---	Siliceous shale with trace chalcoppyrite.

--- no data

NAME (other names): Lucky Girl,  
Murphy Prospect

COMMODITIES: Asbestos(?)

LOCATION: Quadrangle: Seward A-3            SE 1/4 Sec 11 T 2S R 8E  
Meridian: Seward  
Geographic: Near tidewater on the northeast shore of  
Elrington Island 1.4 miles south of the north  
end.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-21	NA	262	NA	NA	NA

HISTORY AND PRODUCTION:

1908 - Map location only given in literature (51).  
Owners: Latouche Island Copper Mining Co.

RESERVES: Unknown.

OPERATING DATA:

About 370 ft of tunneling was reported in the area in 1910 (52).

GEOLOGIC SETTING:

According to Grant and Higgins (52, p. 79) the tunnel described above cuts quartz and calcite veins in greenstone and slate. The veins held a little pyrrhotite. Near the tunnel mouth greenstone fragments contained veins of asbestos mixed with quartz. Some of the veins were 3-in. in width and the asbestos perpendicular to the walls of the veins. Tysdal (141) reported an adit in the area in sheared slate containing pyrite, pyrrhotite, and chalcopyrite.

BUREAU WORK:

No evidence of mine workings was found. In the vicinity a series of parallel quartz veins averaging 6-in.-thick and occurring within intensely fractured greenstones were sampled. The veins are vuggy, barren of sulfides, and locally calcite is mixed in with the quartz (table A-14). No asbestos was found.

REFERENCES:

51-52, 141

TABLE A-14. - ANALYTICAL RESULTS - Lucky Girl

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3493	Quartz	Random Chip	0.5	<.03	0.2	2	15	12	<10	---	---	---	---	---	Average .5 ft thick quartz vein 2% pyrrhotite and local chalcopyrite.
3752	SL/SS/CG	Random Chip	---	.04	0.2	44	24	180	14	---	---	---	---	---	Shale with 1% pyrite-pyrrhotite near greenstone contact.
3753	Maf Volc	Random Chip	---	<.03	0.1	39	17	120	<10	---	---	---	---	---	Greenstone quartz vein margin 2% pyrite-pyrrhotite, with trace chalcopyrite.
3755	Quartz	Cont Chip	2.0	<.03	3	6	<1	32	<10	---	---	---	---	---	Quartz vein 2 ft wide cutting greenstone. No visible sulfide.

--- no data



NAME (other names): Mineral occurrence      COMMODITIES: Copper, Zinc

LOCATION:    Quadrangle:    Seward A-4              NE 1/4 Sec 2    T 2S    R 7E  
                  Meridian:    Seward  
                  Geographic:    South side of Swanson Bay near its head,  
  Bainbridge Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-22	NA	275	NA	NA	NA

HISTORY & PRODUCTION:

Unknown.

RESERVES: None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

Basaltic greenstone is in contact with siliceous shale and slate, containing up to 1% pyrite with trace pyrrhotite in the shale (141). Samples of hornfelsed slate contain 100 ppm copper and 200 ppm zinc.

BUREAU WORK:

The rocks in the area were sampled and a stream silt sample collected (table A-15). Low mineral development potential for zinc.

REFERENCES:

141

TABLE A-15. - ANALYTICAL RESULTS - Mineral occurrence - Swanson Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3972	SL/SS/CG	Random Chip	---	<.03	0.3	15	11	61	<10	---	---	---	---	---	Shale and siliceous shale. Up to 1% pyrite, trace pyrrhotite.
3973	Stream Sed	Stream Silt	---	.03	<.03	49	34	195	<10	---	---	---	---	---	Collected from stream draining mineralized area.
3974	Maf Volc	Random Chip	---	<.03	0.3	58	19	165	14	---	---	---	---	---	Massive greenstone.

--- no data

NAME (other names): Hogg Bay Prospect      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward A-4      NE 1/4 Sec 22 T 1S R 7E  
             Meridian: Seward  
             Geographic: North side of Hogg Bay, Bainbridge Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-23	NA	274	NA	NA	NA

HISTORY AND PRODUCTION:

1924 - Prospecting and development work was done at Hogg Bay (125).

RESERVES: Unknown.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

No geologic data.

BUREAU WORK: Not located.

REFERENCES:

125, 141

NAME (other names): Shoo Fly Prospect      COMMODITIES: Copper, Gold, Silver

LOCATION:    Quadrangle: Seward A-4      NE 1/4 Sec 14 T 1S R 7E  
            Meridian: Seward  
            Geographic: Northeast side at head of Hogg Bay, Bainbridge.  
                          Island. Elevation: 1,380 to 1,465 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-24	95-89	273	0020950072	NA	NA

HISTORY & PRODUCTION:

1924 - Prospecting and development work was done at Hogg Bay (125).

1926 - Domonic Vietti was the owner.

1926 - Recent work had been done by Domonic Vietti (124).

RESERVES: Unknown.

OPERATING DATA:

Two adits, 221-ft-long and 9-ft-long. Two open cuts, 61-ft-long and 6-ft-long (fig. A-6). A reported 405-ft-long adit was not found (124).

GEOLOGIC SETTING:

The 221-ft-long adit exposed several small shear zones (maximum width 2 ft) trending NE to NW cutting through sheared silicified mudstone. The shear zones contain localized quartz stringers and gouge. The 61-ft-long open cut exposes sheared and massive limonite-stained greenstone with chert nodules. The rocks trend N15°E to N27°W and dip 27 to 65°W. They contain 1% pyrrhotite and <1% chalcopyrite.

BUREAU WORK:

Mapped and sampled surface and underground workings (table A-16 and fig. A-6). This prospect has low mineral development potential due to low sample values.

REFERENCES:

124-125, 141

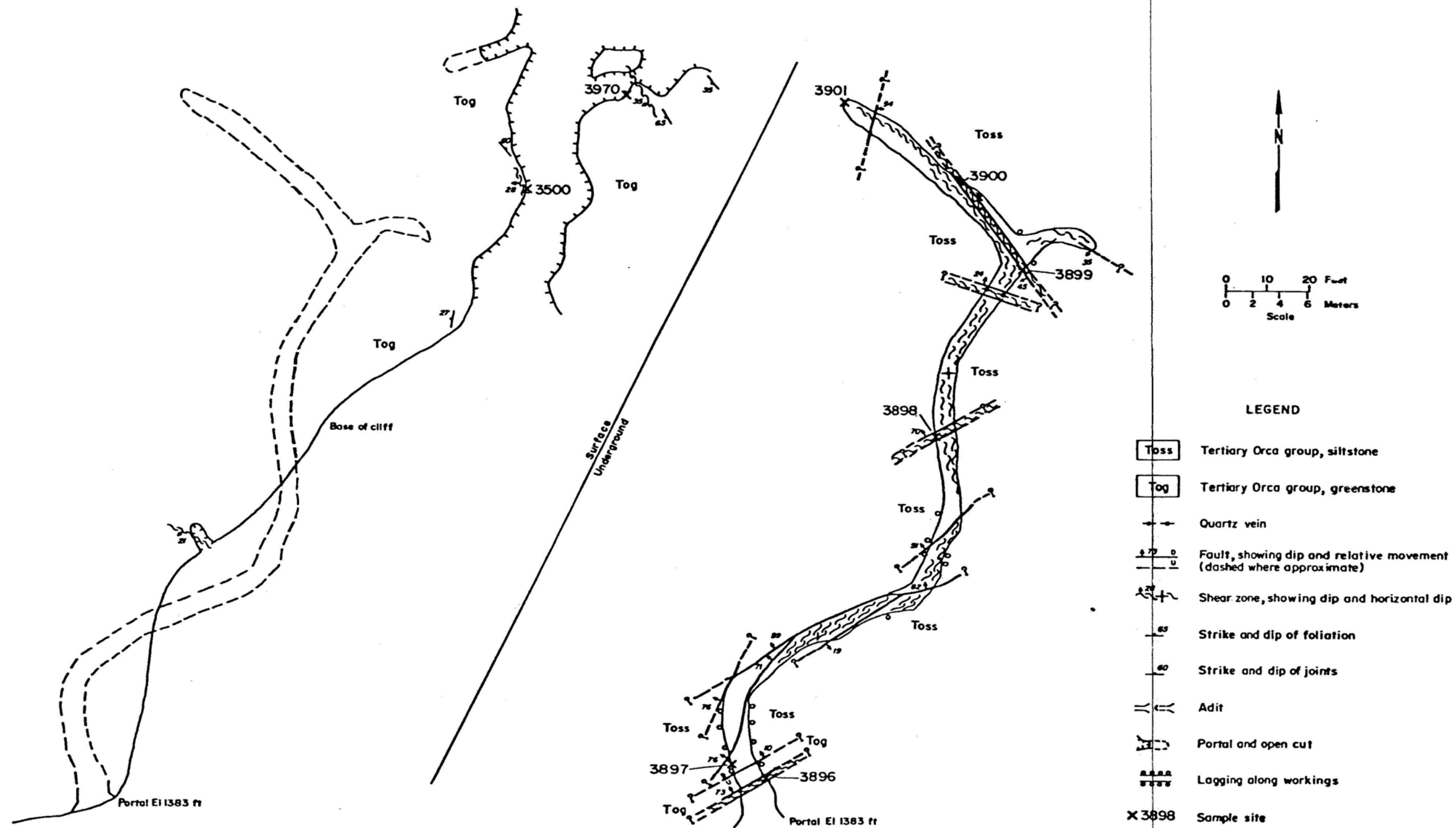


FIGURE A-6. - Shoo Fly Prospect, sample locations.

TABLE A-16. - ANALYTICAL RESULTS - Shoo-Fly Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)										Descriptions
				Au 1/	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	
3500	Maf Volc	Chip	0.4	<.005	<.2	.03%	<.01%	.02%	<.01%	---	---	---	---	Shear zone in greenstone with 1% pyrrhotite, and <1% chalcopryrite in open cut.
3896	SL/SS/CG	Chip	.9	.11	1.5	570	22	130	<10	---	---	---	---	Across limonite-stained shear zone in mudstone.
3897	Sed/Volc	Chip	3.0	.03	.4	500	25	73	<10	---	---	---	---	Limonite-stained fractured greenstone and mudstone with <1% pyrrhotite and 2-in shear zone.
3898	SL/SS/CG	Chip	1.6	<.03	.2	28	22	125	<10	---	---	---	---	Across shear zone in mudstone.
3899	SL/SS/CG	Chip	1.0	<.03	.2	440	19	410	<10	---	---	---	---	Shear zone in mudstone with 1/4-in wide quartz vein.
3900	SL/SS/CG	Chip	1.5	<.03	.1	23	21	125	<10	---	---	---	---	Shear zone in mudstone with 1 1/2-in wide quartz vein.
3901	SL/SS/CG	Chip	3.0	.03	.3	39	25	115	<10	---	---	---	---	Fractured mudstone with trace of limonite stains.
3970	Maf Volc	Random	---	<.03	.1	.07%	24	100	<10	---	---	---	---	Greenstone with chert nodules 1% pyrite-pyrrhotite, and <1% chalcopryrite.

1/ ounces per ton

--- no data

NAME (other names): Unnamed prospect                      COMMODITIES: Gold

LOCATION:    Quadrangle: Seward A-4                      SE 1/4 Sec 14    T 1N    R 7E  
                    Meridian: Seward  
                    Geographic: East side of Whale Bay at Bebe Point.  
                    Elevation: 10 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-25	NA	NA	NA	NA	NA

HISTORY & PRODUCTION:

1911-1912? - Simon Lacy was the owner (45).

INFERRED RESERVES: 200 tons at 0.12 oz gold/ton.

OPERATING DATA:

A 50-ft-long adit 10 ft above the shoreline (fig. A-7).

GEOLOGIC SETTING:

The adit is driven along a 6-ft-(maximum) wide shear zone trending N28°E and dipping 30°NW within the silicified mudstone country rock. Foliation in the mudstone is trending N28°E and dipping 41°NW. The shear zone consists of (hanging wall to footwall); 3- to 4-in.-wide quartz vein; 1/8 in. of gouge; 3 to 4 ft of hard silicified mudstone breccia that contains approximately 15% quartz as veins, stringers, lenses, and pods; and a 2-ft-(maximum) wide gouge shear zone. A few pieces of quartz breccia float along the shoreline outside of the adit contained minor galena, pyrite, pyrrhotite, chalcopyrite, sphalerite, and trace visible gold.

BUREAU WORK:

The adit was mapped and eight samples were collected (table A-17 and fig. A-7). One select grab sample of quartz contained .727 oz gold/ton and .3 oz silver/ton. A 3.5-ft-wide chip sample contained .3 oz gold/ton. A 0.2-ft-wide chip sample contained 1.084 oz gold/ton and 0.3 oz silver/ton. This prospect has moderate mineral development potential.

REFERENCES:

38, 45

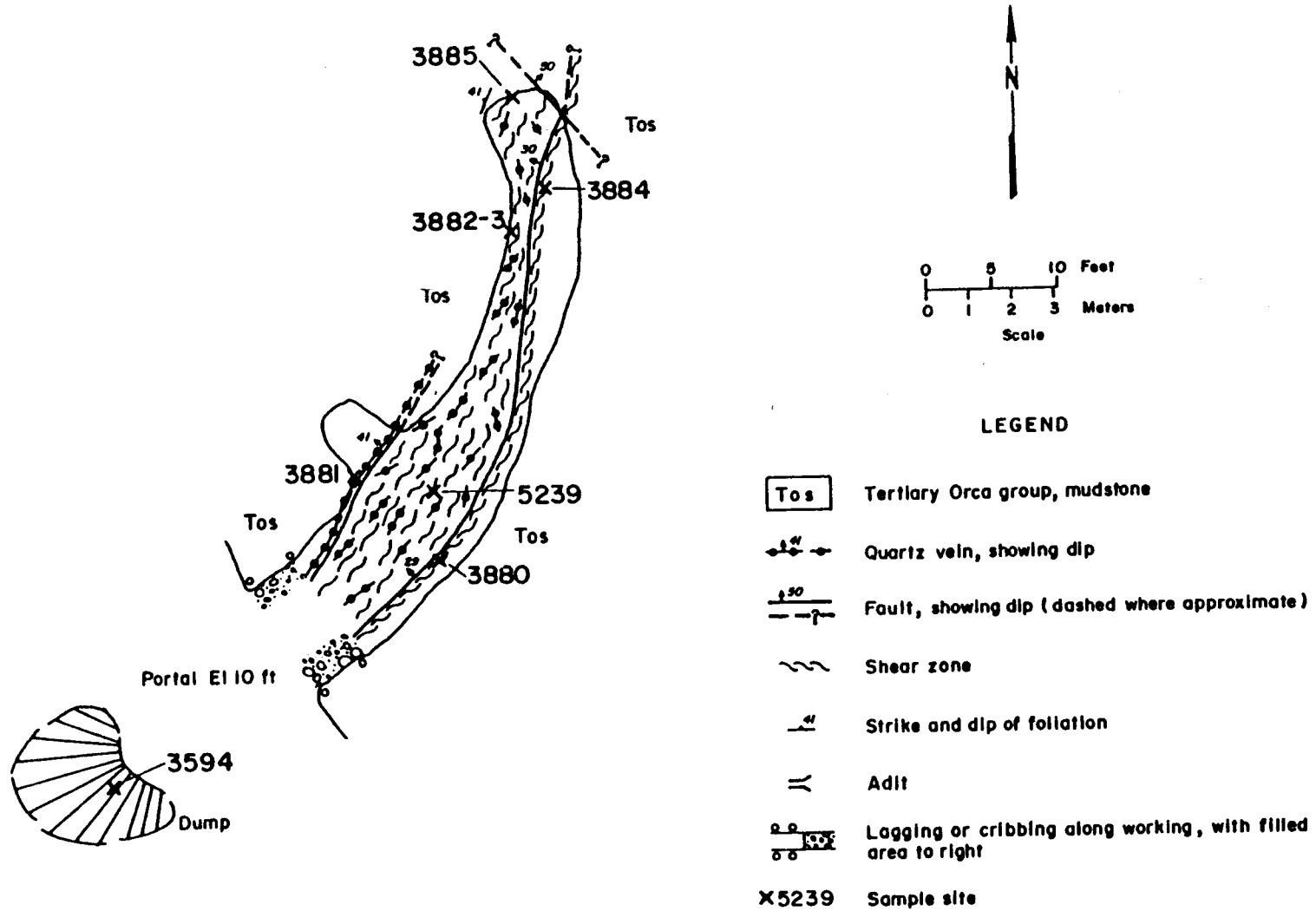


FIGURE A-7. - Unnamed prospect, Whale Bay, sample locations.



TABLE A-17. - ANALYTICAL RESULTS - Unnamed prospect - Whale Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au 1/	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3594	SL/SS/CG	Select	---	<.005	<.2	---	---	---	---	---	---	---	---	---	From dump, brecciated siltstone with vein quartz matrix with <1% sulfides with pyrite, pyrrhotite, sphalerite, galena, trace gold, and trace chalcopyrite.
3880	SedRk/Qz	Chip	2.0	<.005	<.2	26	19	105	24	---	---	---	---	---	Across shear zone of gouge & breccia mudstone.
3881	SedRk/Qz	Chip	1.3	.124	<.2	28	30	81	14	---	---	---	---	---	Across shear zone of silicified mudstone breccia and quartz.
3882	SedRk/Qz	Chip	3.5	.298	<.2	38	34	72	17	---	---	---	---	---	Across shear zone of silicified mudstone breccia and quartz.
3883	SL/SS/CG	Chip	.2	1.084	.3	26	58	105	11	---	---	---	---	---	Gouge and brecciated mudstone with <1% quartz.
3884	SL/SS/CG	Chip	1.5	.016	<.2	23	29	82	23	---	---	---	---	---	Shear zone of gouge and silicified mudstone.
3885	SL/SS/CG	Chip	3.0	<.005	<.2	21	25	115	20	---	---	---	---	---	Silicified mudstone with quartz stringers.
5239	Quartz	Select	---	.727	.10	40	125	75	200	---	<2	---	55	---	Quartz breccia float from adit floor.

1/ ounces per ton

--- no data

NAME (other names): Happy Jack Copper      COMMODITIES: Copper  
Mining and Development Co. Prospect  
Copper Queen Prospect  
Claims: Helena, Ground Hog

LOCATION:    Quadrangle: Seward A-3      NE 1/4 Sec 17 T 1N R 10E  
                 Meridian: Seward  
                 Geographic: South side of Hogan Bay 2.4 miles north of  
   Point Helen. Elevation: 40 to 450 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-26	95-247	253	950017	ND	ND

HISTORY AND PRODUCTION: (98, 148)

- 1908 - Buildings constructed on shore and several adits driven. Several tons of ore reported on dumps and some ore reported shipped. Owners: Happy Jack Copper Mining and Development Company.
- 1917 - Owner: Patton Mining Company. A mill reportedly ran on the property from March 15 to September 1 of this year. Production: 110 tons producing 57 lbs of copper.
- 1923 - Owner: Hogan Bay Copper Co. Only assessment work done.
- 1924 - Kennecott Copper Corp. Stated that the Patton Mining Co. was more or less a promoting scheme.

RESERVES: Unknown.

OPERATING DATA: (98, p. 74)

Development at one time consisted of a steam plant, office, mess, and bunk houses. An adit 40 ft above the beach was reported to be between 1,000- and 1,200-ft-long. At an elevation of 240 ft an adit was driven to a length of 260 ft. It contained several drifts and short raises. One short upper tunnel was reportedly driven at an elevation of 450 ft. A 40 ft adit at an elevation of 320 ft, was the only working found by the Bureau in the vicinity.

GEOLOGIC SETTING:

The reported workings were driven to intersect a vein cutting across slate, graywacke, and greenstone country rock. The vein varied from 1- to 4-ft-thick and contained quartz, chalcopyrite, sphalerite, and pyrrhotite. An approximately 2-ft-thick mineralized zone is reported locally in outcrop (51, p. 91; 78, pp. 219-220).

The adit located by the Bureau (fig. A-8, inset A) runs S25°E along a 60°W dipping shear zone cutting graywackes. The shear contains a gouge breccia zone or fault from 3-in.- to 1-ft-wide. The gouge locally contains massive pyrite, 5 to 10% chalcopyrite, and 1 to 2%

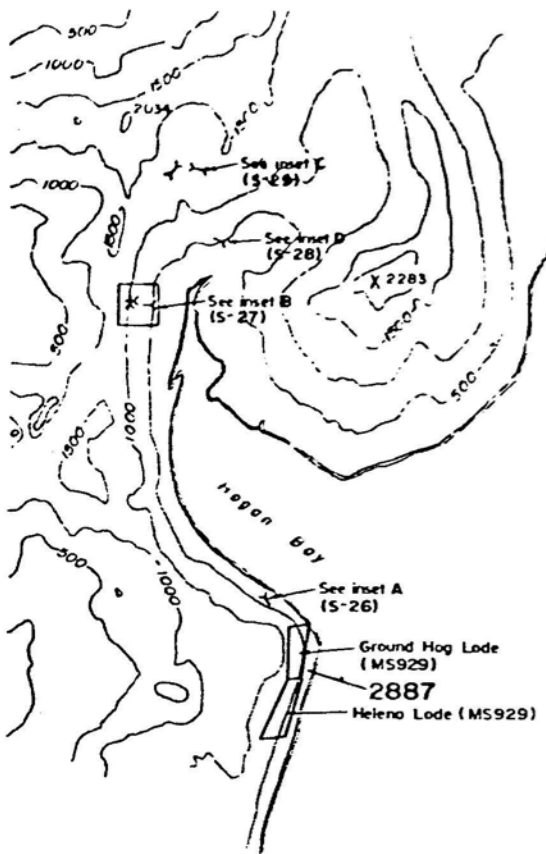
covellite. Some malachite stain occurs. Samples contained up to 7.5% copper, and 0.26 oz silver/ton (table A-18).

**BUREAU WORK:**

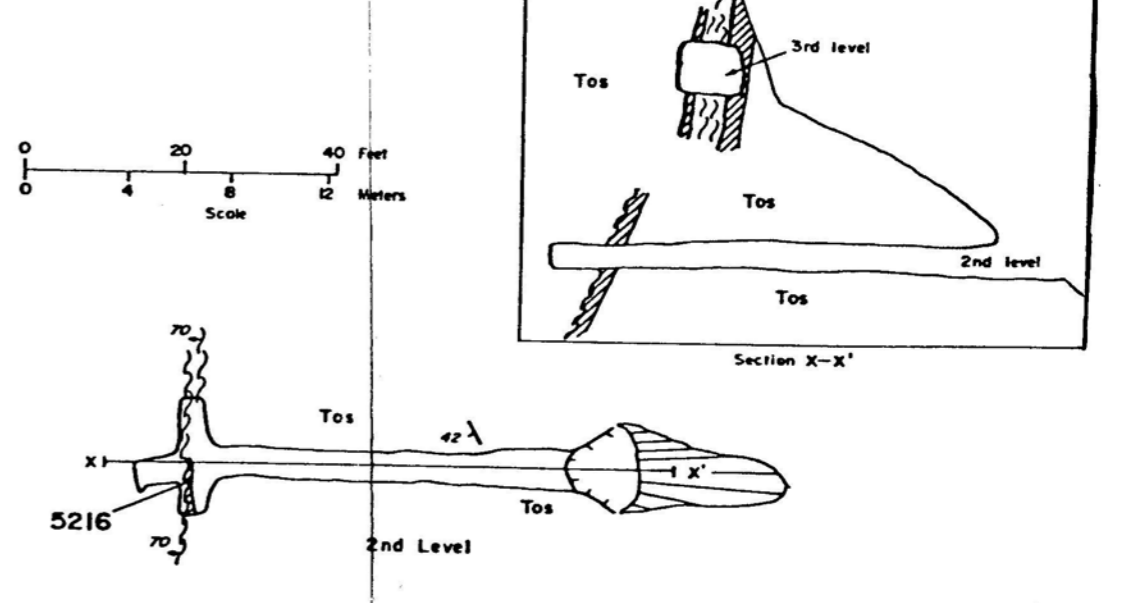
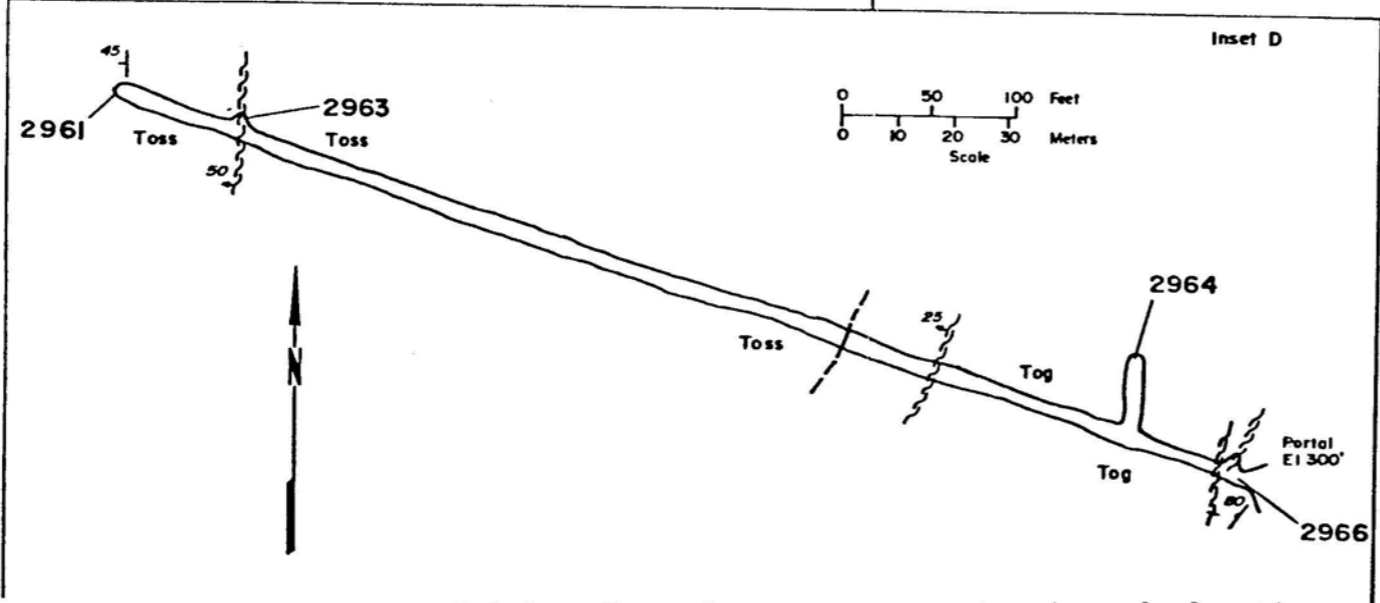
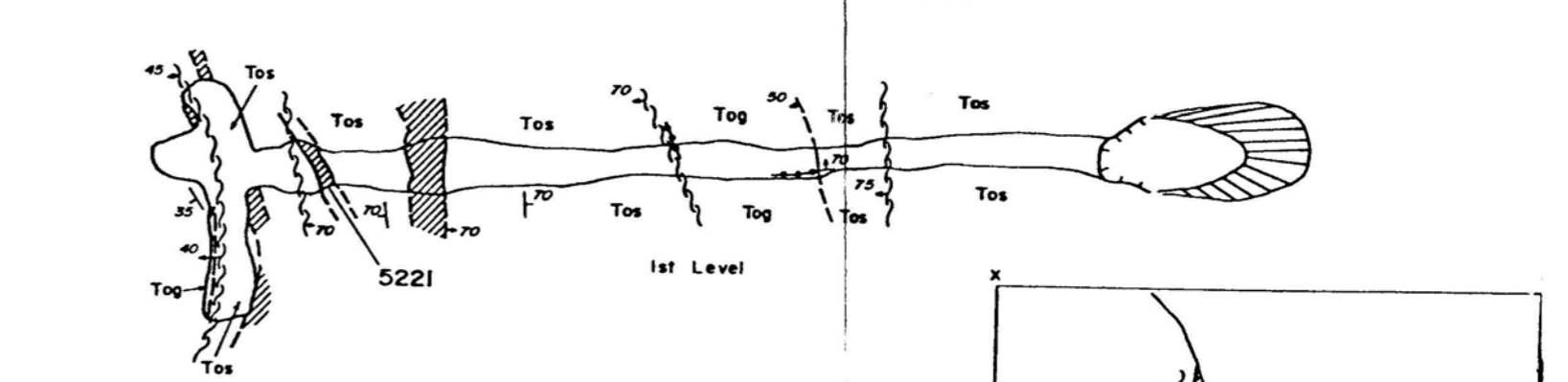
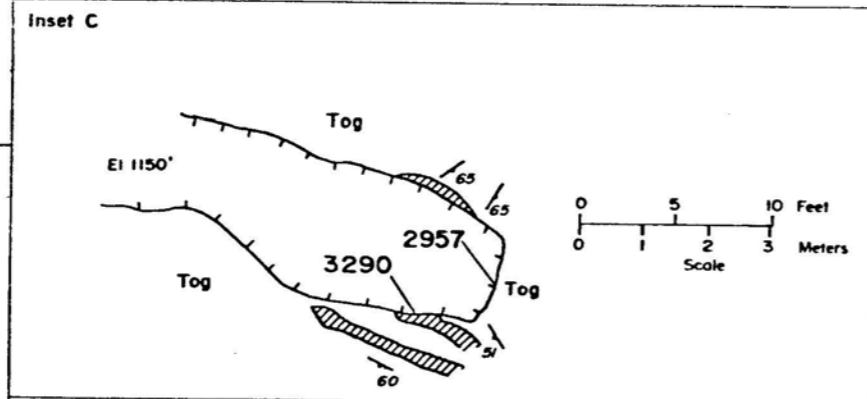
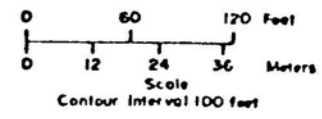
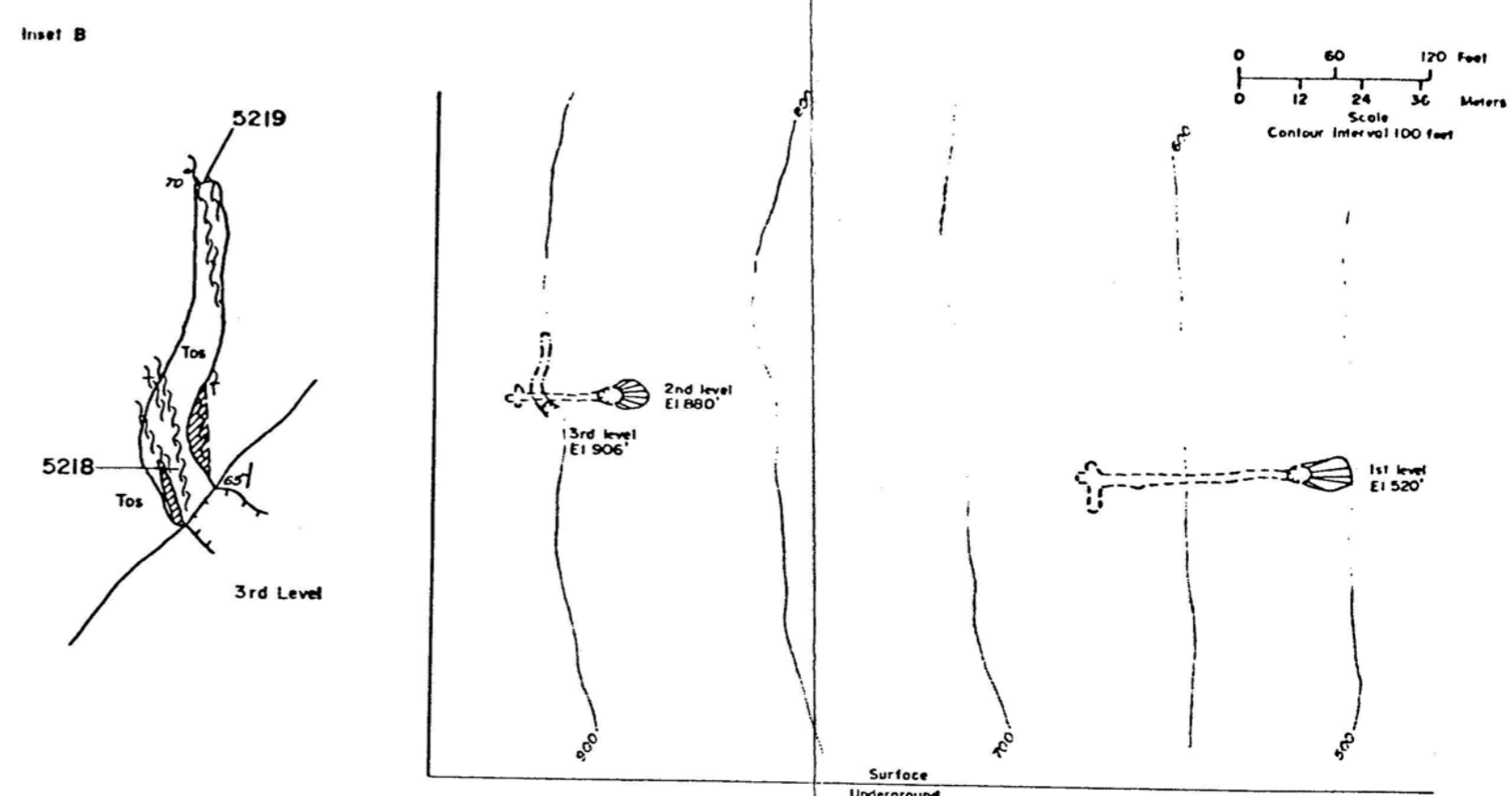
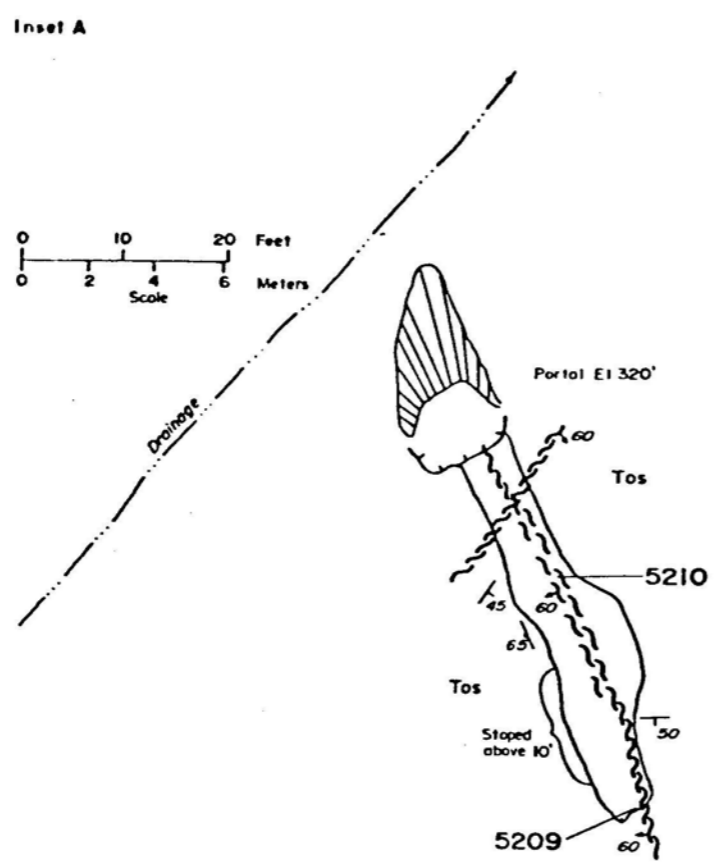
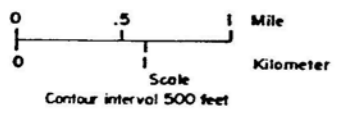
The Bureau could find only one adit in the area and it fits none of the descriptions given above (table A-18 and fig. A-8, inset A). Low mineral development potential due to small deposit size.

**REFERENCES:**

51, 78, 98, 141, 148, 151



Base map adapted from U.S.G.S., Seward (A-2 and A-3) 63,360 quadrangle



- LEGEND**
- Toss Slate
  - Tog Greenstone
  - Tos Graywacke
  - Stringer sulfides
  - Quartz vein, showing dip
  - Contact, showing dip (dashed where approximate)
  - Shear / fault, showing dip
  - Shear zone, showing dip
  - Strike of vertical shear
  - Strike and dip of bedding
  - Strike and dip of cleavage
  - Strike and dip of joints
  - Adit
  - Portal and open cut
  - Open cut
  - Dump
  - 5209 Sample site

FIGURE A-8. - Hogan Bay area, prospect and sample locations.

TABLE A-18. - ANALYTICAL RESULTS - Happy Jack Copper Mining and Development Co.

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)													Descriptions	
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	Ba		
2887	SL/SS/CG	Random Chip	---	.09	6.8	2.0%	24	600	12	---	---	49	---	---	---	---	---	Brecciated shear zone <1 ft wide pyrite, chalcopyrite
5209	SL/SS/CG	Chip	4.0	<.03	2.3	1.65%	28	210	<10	30	---	42	---	---	---	---	206	Gouge and breccia zone
5210	SL/SS/CG	Chip	1.0	.04	9.0	7.5%	34	470	<10	69	---	18	---	---	---	---	85	Gouge and breccia zone

--- no data

NAME (other names): Hogan, Hemple, and Egan Prospect  
COMMODITIES: Copper

LOCATION: Quadrangle: Seward A-3      NE 1/4 Sec 6    T 1N R 10E  
          Meridian: Seward  
          Geographic: 2,300 ft due west from near the head of  
                          Hogan Bay toward Thumb Bay. Elevation: 900  
                          ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-27	95-241	252	950019	NA	NA

HISTORY & PRODUCTION:

1908 - Owners - Hogan, Hemple, Egan (82).

RESERVES: Unknown.

OPERATING DATA:

Three adits, 45-ft, 60-ft, and 140-ft-long (fig. A-8, inset B).

GEOLOGIC SETTING:

The country rock is graywacke which strikes northeasterly and dips 42° to 70°W. In the lower adit diorite forms an irregular contact with the graywacke. Several shear zones, up to 5-ft-wide have approximately the same strike as the graywacke but usually steeper dip. They contain 1- to 5-ft-wide sulfide-bearing zones which contain 1 to 5% chalcopyrite stringers, up to 2% pyrite, minor pyrrhotite, minor bornite, and some quartz veinlets and lenses up to 1/2-ft-wide.

BUREAU WORK:

The adits were mapped and four samples were collected (fig. A-8, inset B and table A-19). Three chip samples collected contained .78%, .89%, and .99% copper. One sample contained 2.2% copper with 8.6 ppm silver. This prospect has medium mineral development potential.

REFERENCES:

51, 82, 122, 141, 151

TABLE A-19. - ANALYTICAL RESULTS - Hogan, Hemple, and Egan Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Hg	Ni	Cr	Ba	
5216	SL/SS/CG	Chip	1.8	<.03	3.1	.89%	31	255	<10	46	0.2	35	150	46	Sheared graywacke with 5% chalcopyrite stringer with quartz veinlets.
5218	SL/SS/CG	Chip	3.6	<.03	8.6	2.2%	36	500	<10	46	---	24	185	22	Iron-stained sheared graywacke with 1% chalcopyrite and 2% pyrite with small quartz stringers.
5219	SL/SS/CG	Chip	3.0	<.03	9.7	.78%	30	279	<10	34	.1	37	235	70	Sheared graywacke with 1-in.-wide quartz veinlets and lenses up to 1/2 ft wide. Locally 2% chalcopyrite and bornite.
5221	SL/SS/CG	Chip	3.0	<.03	4.0	.99%	38	530	<10	74	.1	78	260	87	Iron-stained graywacke with 3% chalcopyrite as stringers and blebs and 1% pyrite.

--- no data

NAME (other names): Wilcox Prospect  
Claims:  
Hogan Bay-Knight 1-6

COMMODITIES: Copper

LOCATION: Quadrangle: Seward A-3                      NW 1/4 Sec 5    T 1N    R 10E  
          Meridian: Seward  
          Geographic: 1,000 ft northeast of the head of Hogan Bay.  
                          Elevation 300 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-28	95-244	251	950018	ND	ND

HISTORY AND PRODUCTION:

1908 - Six claims and a fraction located. Several buildings and three tunnels were located on the property. No ore shipments are reported.  
Owner: James Mullins Coal Co.

RESERVES: Unknown.

OPERATING DATA:

In 1908 four substantial long buildings were located on the property. A 500 ft tunnel was located at 315 ft above sea level. A 70-ft-long tunnel 1,000 ft above sea level, and a third opening that was not described (51, p. 91).

GEOLOGIC SETTING:

A 680-ft-long adit cuts greenstone and porphyritic greenstone for roughly the first 200 ft and then crosses a gradational contact, beginning with a shear zone, into slates. Several other narrow shears cut the workings (fig. A-8, inset D). Some quartz stringers but no sulfides were observed in the shears. Disseminated chalcopyrite was reported in the workings (51, p. 91).

BUREAU WORK:

The Bureau located a 680 ft adit at an elevation of 300 ft. An underground sketch map was made and samples collected (table A-20). The other workings described above were not found. Low mineral development potential because of extremely low copper values.

REFERENCES:

51, 82, 141, 151



TABLE A-20. - ANALYTICAL RESULTS - Wilcox Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2961	SL/SS/CG	Random Chip	---	<.03	.31	60	10	120	<10	---	---	50	---	---	---	Slate at adit face.
2963	SL/SS/CG	Random Chip	---	<.03	.25	35	15	90	<10	---	---	52	---	---	---	Sheared slate with minor quartz blebs.
2964	Maf Volc	Random Chip	---	<.03	.27	75	14	100	<10	---	---	82	---	---	---	Porphyritic greenstone.
2966	Maf Volc	Random Chip	---	<.03	.25	34	10	50	<10	---	---	45	---	---	---	Massive greenstone.

--- no data

NAME (other names): Unnamed prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward A-3

SW 1/4 Sec 32 T 2N R 10E

Meridian: Seward

Geographic: 2,500 ft north of the head of Hogan Bay, Knight Island. Elevation: 1,150 ft.

REFERENCE NUMBERS:

Map  
S-29

Kx  
ND

Tysdal  
ND

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

None known.

RESERVES: Unknown.

OPERATING DATA:

Development consists of a 8 x 20-ft-long open cut at an elevation of 1,150 ft and a 6 x 10 ft open cut 900 ft to the southwest at an elevation of 1,200 ft.

GEOLOGIC SETTING:

In the larger cut, country rock consists of greenstones containing mineralized zones which appear conformable to the flow layers and average 2-ft-thick. Sulfides consist of up to 2% chalcopyrite and 4% pyrrhotite. Total sulfide content averages 1%. In the smaller cut the chalcopyrite content in sheared greenstone averages <1% and trace native copper was observed. Massive, barren, and cherty greenstone is interlayered with the sulfide-bearing zones. This prospect is unique because of the bedded appearance of the mineralization.

BUREAU WORK:

Mapped and sampled open cuts (fig. A-8, inset C and table A-21).

The small size of the mineralized exposures indicates low mineral development potential for copper.

REFERENCES:

None

TABLE A-21. - ANALYTICAL RESULTS - Unnamed prospect - Hogan Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2957	Maf Volc	Discon Chip	---	<.03	.35	120	10	100	<10	---	---	55	---	---	---	Open cut.
3290	Maf Volc	Discon Chip	2.5	<.03	4.1	2.2%	13	350	22	---	---	55	---	---	---	Open cut.
2959	Maf Volc	Discon Chip	---	<.03	8.2	1.4%	20	300	10	---	---	70	---	---	---	Open cut 900 ft southwest of above.

--- no data

NAME (other names): Minnie Prospect  
Claim: Minnie

COMMODITIES: Copper

LOCATION: Quadrangle: Seward A-3                      SW 1/4 Sec 29 T 2N R 10E  
Meridian: Seward  
Geographic: 1,500 ft E of the Head of Northeast Arm, Mummy  
Bay, Knight Island.  
Elevation: 700 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-30	95-240	250	950020 950021	ND	ND

HISTORY AND PRODUCTION:

1900 - Claims located.

INFERRED RESERVES: 200 tons at 0.25% copper.

OPERATING DATA:

South-trending adit 145-ft-long.

GEOLOGIC SETTING:

The adit is driven along a north-south trending 2.5- to 3.0-ft-wide shear zone cutting greenstone. Sulfide mineralization and quartz stringers occur in a 5- to 6-in.-wide zone within the shear. Up to 3% chalcopyrite in stringers and disseminations and up to 1% native copper were observed. Johnson (78, p. 219) states that the greenstone in this area is intrusive.

BUREAU WORK:

The adit was mapped and sampled (fig. A-9 and table A-22). Low mineral development potential due to low copper values.

REFERENCES:

78, 98, 141, 151

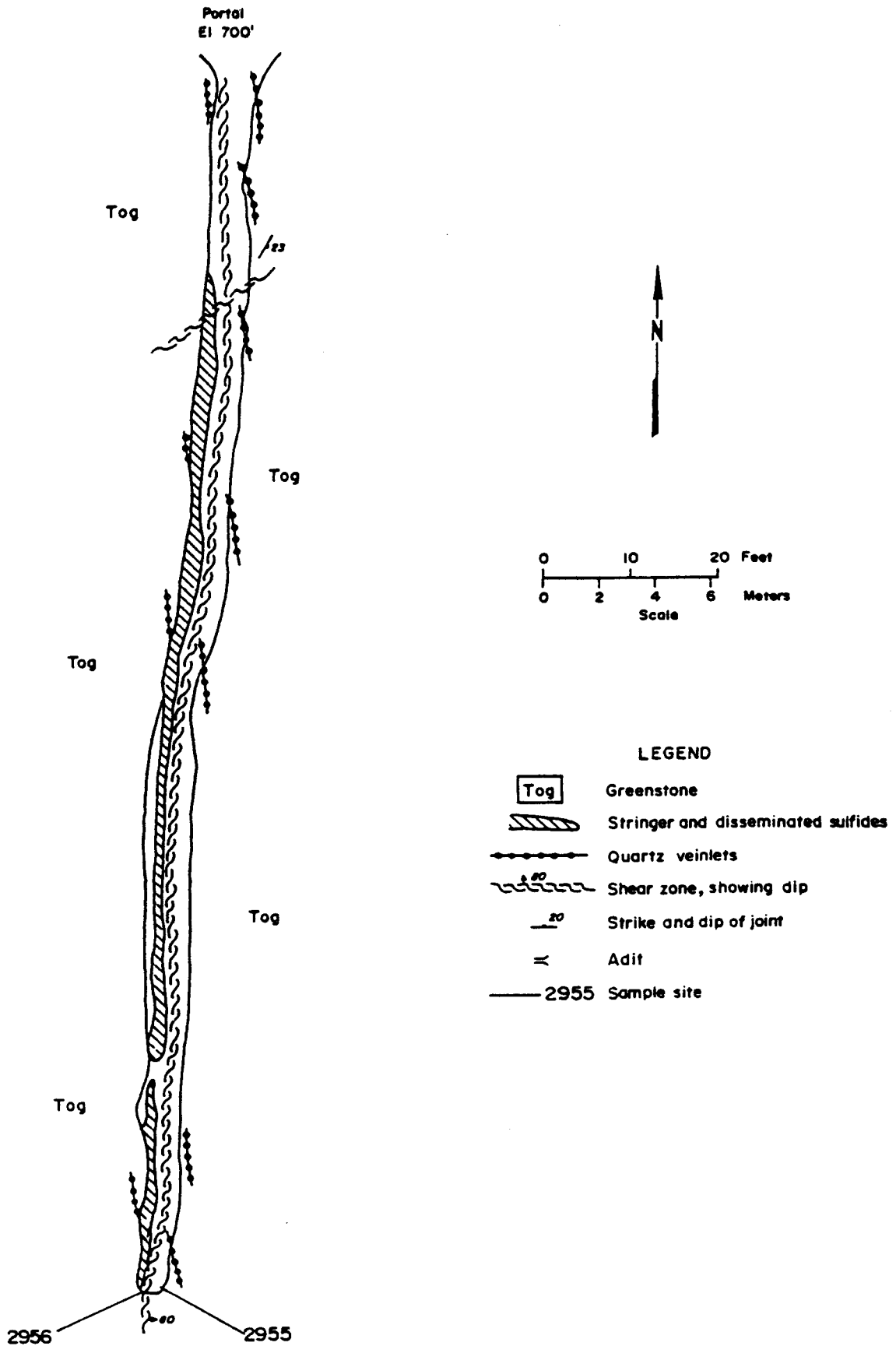


FIGURE A-9. - Minnie Prospect, sample locations.

TABLE A-22. - ANALYTICAL RESULTS - Minnie Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2955	Maf Volc	Chip	3.0	<.03	<.10	300	21	82	<10	---	---	31	---	---	---	Greenstone in adit face.
2956	Maf Volc	Chip	.5	<.03	<.10	.25%	37	285	<10	---	---	50	---	---	---	Shear in adit face.

--- no data

NAME (other names): Mineral occurrence

COMMODITIES: Copper

LOCATION: Quadrangle: Seward A-3

NE 1/4 Sec 36 T 2N R 9E

Meridian: Seward

Geographic: East side of Mummy Bay, 0.5 miles NE of Oceanic,  
Knight Island.

Elevation: tidewater.

REFERENCE NUMBERS:

Map  
S-31

Kx  
ND

Tysdal  
249

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

No development or production.

RESERVES: None exposed.

OPERATING DATA:

No signs of prospecting or mining development were observed.

GEOLOGIC SETTING:

The locality consists of two 10-ft-wide N10°E trending shear zones separated by 20 ft of unsheared greenstone and dipping 80°W. Cataclastic, textures, brecciation, and silicification occur at the shear margins. Sulfides occur in greenstones as well as quartz veinlets. These consist of up to 5% pyrrhotite with trace chalcopyrite.

BUREAU WORK:

The mineralization was sampled (table A-23). Low mineral development potential due to low copper values.

REFERENCES:

141

TABLE A-23. ANALYTICAL RESULTS - Mineral occurrence - Mummy Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions	
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn		W
2735	Maf Volc	---	---	.08	.30	49	4	14	---	---	---	10	---	---	---	Siliceous shear zone 10 ft wide, with pyrrhotite and chalcopyrite.

113

--- no data



NAME (other names): Mineral occurrence      COMMODITIES: Chrome, Copper, Zinc

LOCATION:      Quadrangle: Seward A-3                      NE 1/4 Sec 35 T 2N R 9E  
                    Meridian: Seward  
                    Geographic: North side of Mummy Bay, 1.2 miles NW of  
    Oceanic, Knight Island.  
    Elevation: tidewater.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
<u>S-32</u>	<u>ND</u>	<u>248</u>	<u>ND</u>	<u>ND</u>	<u>ND</u>

HISTORY AND PRODUCTION:

None reported.

RESERVES: Unknown.

OPERATING DATA:

No mention of development.

GEOLOGIC SETTING:

Iron and malachite-stained sheared greenstone are reported in the area. Analysis: 500 ppm copper, 300 ppm chrome, 100 ppm zinc (141).

BUREAU WORK:

Not located.

REFERENCES:

141



TABLE A-24. - ANALYTICAL RESULTS - Home Camp Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2764	Schist	Chip	4.0	.05	.72	17.6%	20	650	14	---	---	110	---	---	---	Open cut with 4 ft wide shear zone, chalcopryrite.
2766	Maf Plut	Random Chip	---	<.03	.30	50	11	38	<10	---	---	37	---	---	---	Basaltic dike.
2768	Maf Volc	Random Chip	---	<.03	.10	81	11	28	<10	---	---	26	---	---	---	Greenstone wallrock.
2770	Maf Volc	Random Chip	---	<.03	<.10	20	11	35	<10	---	---	25	---	---	---	Pillow basalt.

--- no data

NAME (other names): Mineral occurrence      COMMODITIES: Barium, Chrome, Copper

LOCATION:    Quadrangle: Seward A-3                      SW 1/4 Sec 30    T 2N    R 10E  
                    Meridian: Seward  
                    Geographic: 2.1 miles northeast of Oceanic, Knight Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-34	ND	247	ND	ND	ND

HISTORY AND PRODUCTION:

None.

RESERVES: Unknown.

OPERATING DATA:

No mention of development.

GEOLOGIC SETTING:

Tysdal (141) describes an iron-stained greenstone near a shear zone.  
Analysis: 5,000 ppm barium, 500 ppm copper, and 300 ppm chrome.

BUREAU WORK:

Not located.

REFERENCES:

141

NAME (other names): Kilbourn Prospect      COMMODITIES: Copper, Silver

LOCATION:    Quadrangle: Seward A-3      SE 1/4 Sec 19 T 2N R 10E  
            Meridian: Seward  
            Geographic: One mile north of the head of the Northeast Arm of  
                                Mummy Bay, Knight Island. Elevation: 1,500 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-35	NA	244	NA	NA	NA

HISTORY & PRODUCTION:

1910 - First mentioned in literature (52, p. 10).

RESERVES: Unknown.

OPERATING DATA:

One adit 71-ft-long adit and one open cut 15-ft-long (fig. A-10).

GEOLOGIC SETTING:

The adit was driven into an intensely sheared greenstone apparently to intersect at depth an iron-stained zone exposed on the surface above. It intersects a N2°E trending, 80°E dipping, 30-ft-wide, mineralized shear zone. Sulfides consisting of pyrrhotite, pyrite, chalcopyrite, and bornite occur in isolated quartz-rich lenses a few inches wide within the shear. Chalcopyrite averages 1% with local zones up to 20%. The open cut above the adit contains a 2 ft x 8 ft outcrop area with chalcopyrite and minor pyrite blebs.

BUREAU WORK:

Four samples were collected and the adit was mapped (fig. A-10 and table A-25). A grab sample from the dump contained 7.1% copper and 18 ppm silver. Two chip samples 2.5-ft- and 1.5-ft-wide contained 0.16% copper. This prospect has moderate mineral development potential.

REFERENCES:

4, 52, 141

119

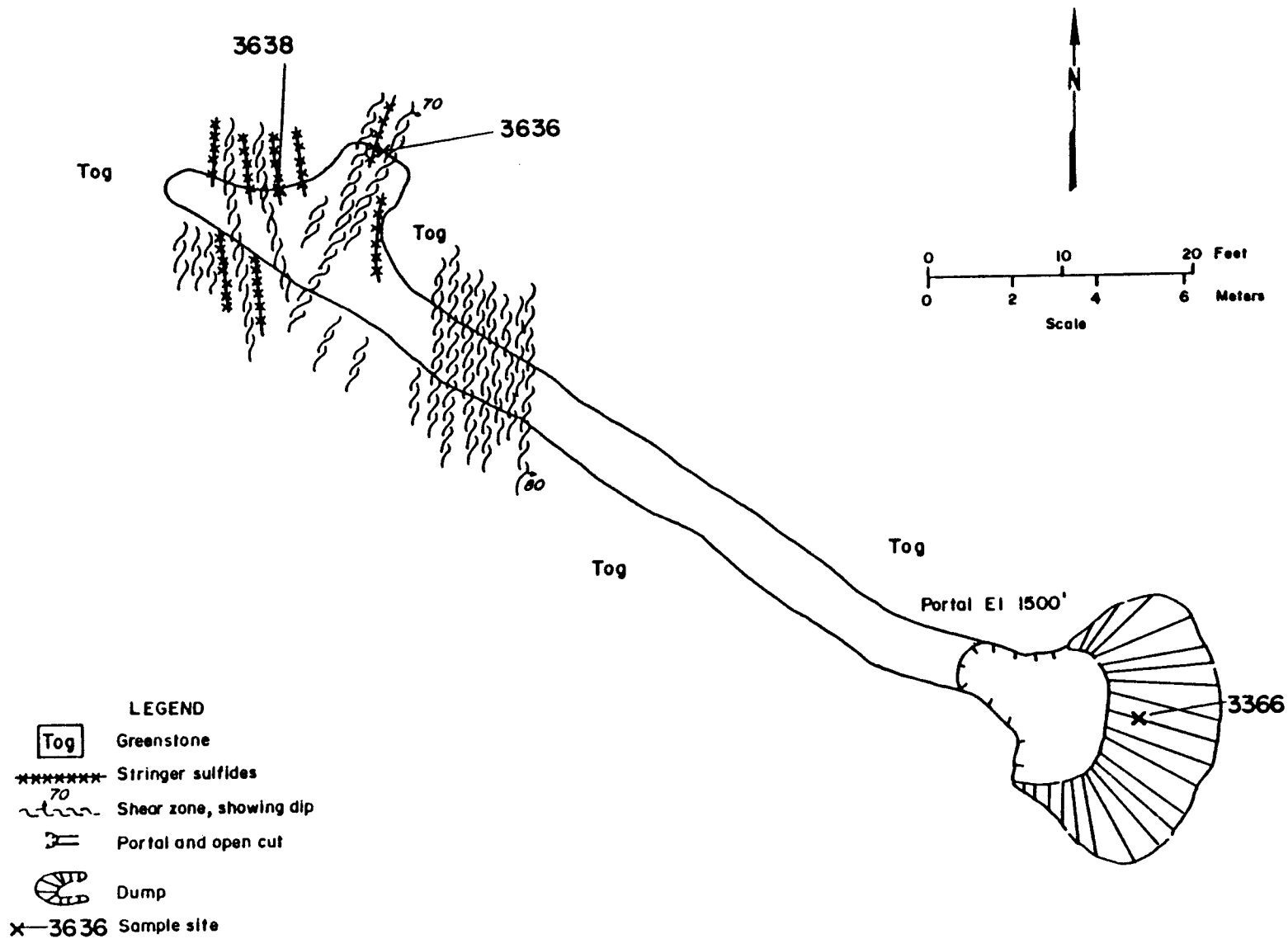


FIGURE A-10. - Kilbourn Prospect, sample locations.

TABLE A-25. - ANALYTICAL RESULTS - Kilbourn Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Cr	Ba	
3366	Maf Volc	Grab	---	.03	18	7.1%	15	.25%	<10	---	---	38	---	---	From dump
3636	Maf Volc	Chip	2.5	.03	.5	1650	34	1250	<10	48	---	46	270	13	Iron-stained sheared greenstone with approx. 1% pyrite and pyrrhotite and 1/4-in quartz veinlets.
3638	Maf Volc	Chip	1.5	.03	.5	.16%	36	1550	<10	64	---	39	220	7	Sheared greenstone with chalcopyrite-pyrrhotite-quartz lenses.

--- no data

NAME (other names): H. J. Harvey Prospect    COMMODITIES: Copper, Nickel

LOCATION:    Quadrangle: Seward B-3

NW 1/4 Sec 19    T 2N    R 10E

Meridian: Seward

Geographic: Located on a south-facing cirque wall 1.0 miles  
northeast of the head of Mummy Bay.

Elevation: 1,100 ft.

REFERENCE NUMBERS:

Map  
S-36

Kx  
95-235

Tysdal  
243

MAS  
950023

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

1908 - First mentioned in literature. No record of production.

RESERVES: Unknown

OPERATING DATA:

Development consists of a collapsed adit at 1,100 ft, with an open cut on the slope above. Grant and Higgins (52, p. 56) report two 150 ft tunnels in the area. Some strippings were reported near the shore at the northwest corner of Mummy Bay one mile to the southwest.

GEOLOGIC SETTING:

The adit appears to cut into an isolated diorite (?) body within greenstone. Disseminated sulfides consist of 2 to 3% pyrrhotite and chalcopyrite. Sulfides were visible in an open cut or collapsed adit just above the caved adit and dump material indicated a high percentage of sulfides underground. The surface exposure is stained reddish-brown.

BUREAU WORK:

The rocks adjacent to the portal were sampled and contained high nickel values for this area (table A-26). The workings mentioned near the shore were not located. Moderate mineral development potential for nickel and copper.

REFERENCES:

51-52, 141, 151



TABLE A-26. - ANALYTICAL RESULTS - H. J. Harvey Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2544	Maf Volc	Random Chip	---	.03	0.3	.24%	27	81	10	---	---	.36%	---	---	Sheared diorite near caved adit. 2-3% pyrrhotite and chalcopyrite.
2546	Maf Volc	Random Chip	---	.04	1.2	1.0%	42	105	10	---	---	.48%	---	---	Diorite (?) near adit. 2-20% pyrrhotite, minor chalcopyrite.

--- no data

NAME (other names): Hendrix, Reavley, COMMODITIES: Copper  
and McMasters Prospect

LOCATION: Quadrangle: Seward B-3 SE 1/4 Sec 18 T 2N R 10E  
Meridian: Seward  
Geographic: 0.1 miles west of the head of Snug Harbor, Knight  
Island. Elevation: unknown.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-37	ND	242	ND	ND	ND

HISTORY AND PRODUCTION:

1909 - First mentioned in literature (51).

RESERVES: Unknown.

OPERATING DATA:

Grant and Higgins (51, plate IV) give only a map location with no description.

GEOLOGIC SETTING:

The country rock in the area consists of greenstone.

BUREAU WORK:

Not located.

REFERENCES:

51, 141

NAME (other names): Unnamed prospect                            COMMODITIES: Copper, Zinc  
 Owner in 1908: J. J. Bettles

LOCATION:    Quadrangle: Seward B-2                    NE 1/4 Sec 16  T 2N  R 10E  
               Meridian: Seward  
               Geographic: North side of Snug Harbor 1.5 miles northwest  
   of Discovery Point, at shoreline Knight Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-38	95-250	241	950024	ND	ND

HISTORY AND PRODUCTION:

1900 - Claims located.

RESERVES: Unknown.

OPERATING DATA:

A 70-ft-long adit trends N25°E.

GEOLOGIC SETTING:

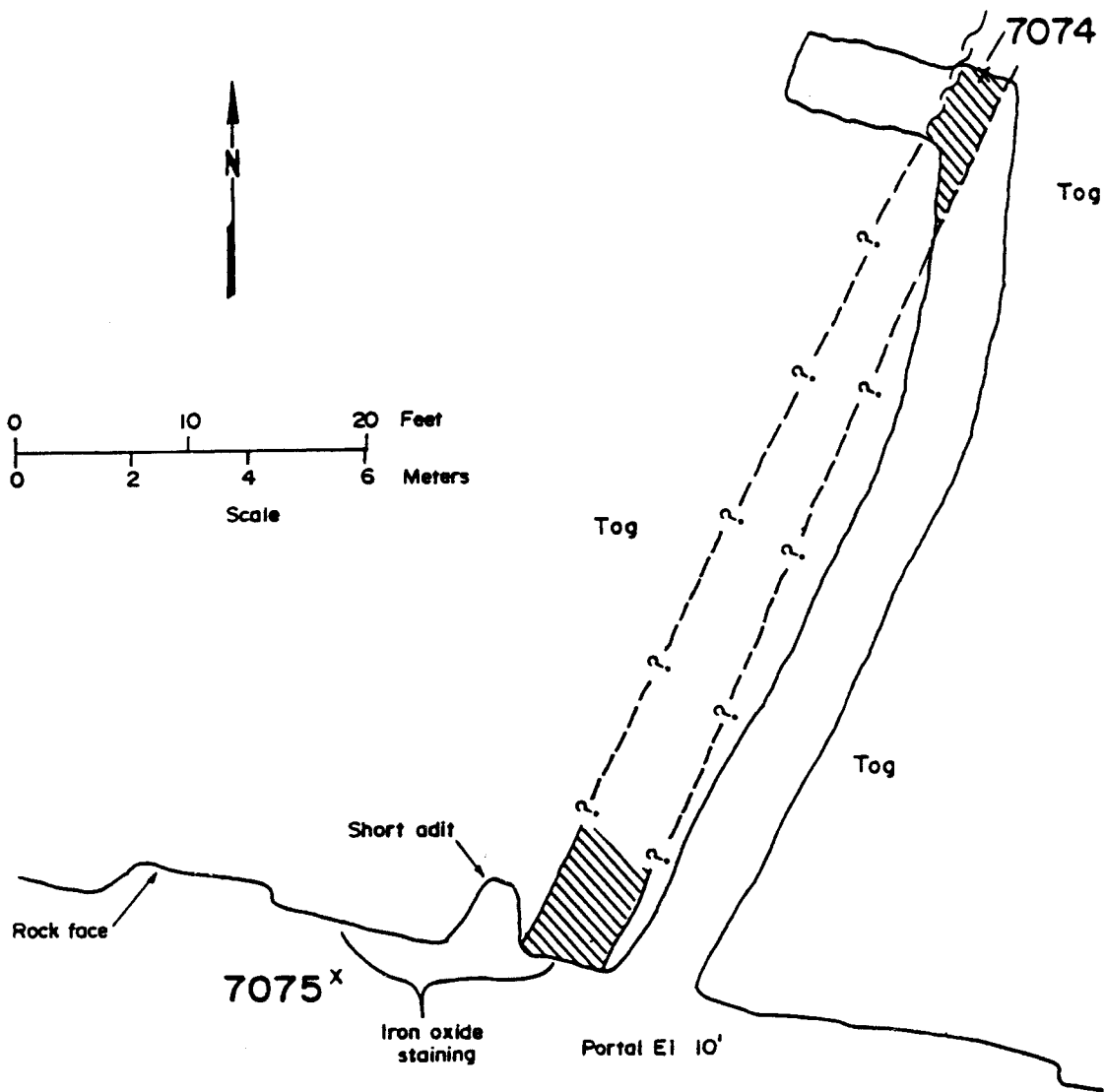
A 3- to 5-ft-wide N20°E trending mineralized shear zone occurs in slate and graywacke. The surface exposure is iron oxide-stained. Sulfides consisting of pyrrhotite, followed by chalcopyrite and sphalerite occur in fractures and brecciated zones along with quartz. An adit appears to parallel the trend of the mineralized zone for 55 ft and then crosscuts it. In the vicinity of the prospect the Bureau found greenstone containing slate and graywacke lenses. The contacts between the greenstone and sediments are locally sheared and contained minor pyrite and malachite staining.

BUREAU WORK:

The adit was mapped and sampled. The shoreline in the vicinity was also sampled (table A-27 and fig. A-11). Low mineral development potential for copper due to lower copper content and small size of mineralized zone.

REFERENCES:

51, 78, 82, 98, 141, 151



- LEGEND
- Tog Slate and graywacke
  - Stringer sulfides
  - Contact, dashed where approximate
  - ?-?-?-? Probable contact
  - ~~~~~ Shear zone
  - ≡ Adit
  - x 7075 Sample site

FIGURE A-11. - Unnamed prospect, Snug Harbor, sample locations.

TABLE A-27. - ANALYTICAL RESULTS - Unnamed prospect - Snug Harbor

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2898	Maf Volc	Random Chip	4.0	<.03	0.1	110	19	53	<10	---	---	33	---	---	---	Shear zone, malachite stain.
2900	Sed Volc	Random Chip	2.0	<.03	0.2	85	19	54	<10	---	---	38	---	---	---	Shear zone, malachite stain.
7074	SL/SS/CG	Chip	8.0	---	2	0.37%	135	0.82%	<500	---	---	10	---	---	---	Iron-stained shear zone 3 ft wide.
7075	Sulfides	Select Grab	---	---	30	2.5%	630	8.3%	<500	---	---	15	---	---	---	Massive sulfide float, pyrrhotite, chalcopyrite.

--- no data

NAME (other names): Sponberg, Sanberg,  
and Simpson Prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-2  
Meridian: Seward

NE 1/4 Sec 16 T 2N R 10E

Geographic: 1.7 miles northwest of Discovery Point, Knight  
Island.

REFERENCE NUMBERS:

Map  
S-39

Kx  
ND

Tysdal  
240

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

Claims located before 1908.

RESERVES: ?

OPERATING DATA:

Grant and Higgins (51, plate IV) give only a map location.

GEOLOGIC SETTING:

The rocks in the reported prospect area consist of sandstone, siltstone, and mudstone near a contact with greenstone (143).

BUREAU WORK:

Not located. Rocks in the area were sampled (table A-28).

REFERENCES:

51, 141, 143

TABLE A-28. - ANALYTICAL RESULTS - Sponberg, Sanberg, Simpson Propect Area

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2898	Maf Volc	Random Chip	4.0	.03	0.1	110	19	53	10	---	---	33	---	---	4 ft wide shear zone with minor pyrite and malachite staining.
2900	Sed Volc	Random Chip	2.0	.03	0.2	85	19	54	10	---	---	38	---	---	2 ft wide shear zone with minor pyrite.

--- no data

NAME (other names): Graham and Harrison  
Prospect

COMMODITIES: Copper, Silver

LOCATION: Quadrangle: Seward B-2

NW 1/4 Sec 16 T 2N R 10E

Meridian: Seward

Geographic: In saddle 2 miles northwest of Discovery Point,  
Snug Harbor, Knight Island. Elevation: 1,300 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-40	95-245 a,b	238	950025	ND	ND

HISTORY AND PRODUCTION:

1908 - First mentioned in literature (51).

RESERVES: Unknown.

OPERATING DATA:

Two open cuts were located in a saddle at 1,300 ft. Grant and Higgins (51, p. 92) describe a 60 ft adit in the area.

GEOLOGIC SETTING:

The two open cuts described above are driven along a N45°E trending 3- to 6-ft-wide shear zone dipping from vertical to 80°SE. The shear cuts greenstone and contains pyrrhotite, pyrite, and chalcopyrite blebs along cleavage planes. Sulfides average <1% along a 50 ft strike length exposure of the shear. Dump samples contain up to 4% chalcopyrite. Grant and Higgins (51, p. 92) stated that the mineralized shear had been traced for several hundred feet.

BUREAU WORK:

A sample was collected from mineralized shear zone (table A-29). Low mineral development potential for copper due to small exposure size.

REFERENCES:

51, 82, 141, 151



TABLE A-29. - ANALYTICAL RESULTS - Graham and Harrison Prospect

Sample No.	Material Type	Sample Type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
3368	Maf Volc	Random Chip	---	.03	20	1.4%	22	100	10	---	---	120	---	---	---	Sheared greenstone with pyrrhotite and chalcopyrite blebs.

--- no data

NAME (other names): Mineral occurrence

COMMODITIES: Copper, Zinc

LOCATION: Quadrangle: Seward B-2  
Meridian: Seward

NW 1/4 Sec 10 T 2N R 10E

Geographic: On shoreline 2.6 miles north of Discovery Point,  
Knight Island.

REFERENCE NUMBERS:

Map  
S-41

Kx  
ND

Tysdal  
239

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

No historical data or production.

RESERVES: Unknown.

OPERATING DATA:

No evidence of development.

GEOLOGIC SETTING:

Greenstones in the area enclose slate lenses less than 50 ft in length and up to 20-ft-wide. The slate contains up to 1% chalcopyrite. A tuffaceous zone 25-ft-wide contains up to 5% chalcopyrite. A greenstone-slate breccia zone with quartz matrix contained trace chalcopyrite.

BUREAU WORK:

The mineralized slates were sampled (table A-30). Low mineral development potential for zinc and copper due to small exposure size.

REFERENCES:

141

TABLE A-30. - ANALYTICAL RESULTS - Mineral occurrence - Knight Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2783	Sed Volc	Random Chip	20.0	<.03	.85	480	20	580	14	---	---	78	---	---	20 ft wide slate body enclosed in greenstone.
2785	Sed Volc	Random Chip	25.0	<0.03	0.6	.24%	33	1.1%	10	---	---	42	---	---	25 ft wide tuffaceous layer in greenstone.

--- no data

NAME (other names): Unnamed prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-3

SE 1/4 Sec 7 T 2N R 10E

Meridian: Seward

Geographic: 0.8 miles northwest of the head of Snug Harbor,  
Knight Island. Elevation: approximately 1,500  
ft.

REFERENCE NUMBERS:

Map  
S-42

Kx  
ND

Tysdal  
237

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

Located before 1908.

RESERVES: Unknown.

OPERATING DATA:

Grant and Higgins (51, Plate IV) only give a map location with no explanatory text. No signs of development were found.

GEOLOGIC SETTING:

A north-south trending 30-ft-wide shear zone cuts greenstone in a saddle just west of the map location. The greenstone is intensely fractured and contains up to 5% pyrrhotite and trace chalcopyrite.

BUREAU WORK:

The prospect was not located but rocks in the area were sampled (table A-31).

REFERENCES:

51, 141

TABLE A-31. - ANALYTICAL RESULTS - Unnamed prospect - Snug Harbor

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
3251	Maf Volc	Chip	---	.03	.26	14	10	50	10	---	---	51	---	---	---	30 ft wide shear zone in greenstone

--- no data

NAME (other names): Claim: Mallard Group

COMMODITIES: Copper, Gold

LOCATION: Quadrangle: Seward B-3

SE 1/4 Sec 11 T 2N R 9E

Meridian: Seward

Geographic: Along a gap in the ridge 0.8 miles Southwest  
of the head of Mallard Bay, Knight Island.

Elevation: 1,500 ft.

REFERENCE NUMBERS:

Map  
S-43

Kx  
95-229

Tysdal  
236

MAS  
950028

BLM  
NA

MS  
NA

HISTORY AND PRODUCTION:

1900 - Claim recorded (82).

RESERVES: Unknown.

OPERATING DATA:

One shallow shaft reported (78, p. 217), but was not seen. Possibly still snow covered. Several small open cuts and some drill steel were located.

GEOLOGIC SETTING:

An iron-stained shear zone occurs in greenstone with smaller shears wrapping around horsts of massive greenstone. The footwall of the main shear zone, a steep bluff, strikes N35°E to N80°E and dips 60° to 75°NW. The main shear zone is approximately 20-ft-wide (78, p. 217).

A series of west to northeast trending, steeply dipping, shear zones cut the main shear zone. The shears vary from 1 ft to over 5-ft-wide and are intermittently exposed for approximately 200 ft along the bluff. The shear zones contain numerous quartz veinlets <1-in.-wide. Sulfides occur as disseminations and stringers, with up to 10% pyrite/pyrrhotite and <5% chalcopyrite. Blebs of chalcopyrite occur locally and also traces of native copper.

BUREAU WORK:

Six samples were collected from the prospect (table A-32). This prospect has low mineral development potential due to limited exposure and low sample results.

REFERENCES:

78, 82, 98, 141, 151

TABLE A-32. - ANALYTICAL RESULTS - Mallard Group Claims

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Cr	W	
3387	Maf Volc	Random Chip	---	<.03	1.6	260	5	60	<10	---	---	35	---	---	---	Across greenstone with minor pyrite and chalcopyrite.
3388	Maf Volc	Random Chip	---	<.03	10	2.0%	15	160	<10	---	---	72	---	---	---	Across sheared greenstone with disseminated blebs of chalcopyrite and pyrite also epidote and quartz alteration.
3450	Maf Volc	Random Chip	---	.03	2.5	85	5.0	50	10	---	---	70	---	---	---	Across aphanitic greenstone dike with slight brecciation and approximately 5% quartz.
3451	Maf Volc	Random Chip	---	<.03	.75	21	10	50	<10	---	---	140	---	---	---	Across schistose greenstone.
5246	Maf Volc	Chip	5.0	.007	3.32	1.3%	<200	760	81	44	---	110	---	<40	---	Across sheared iron-stained greenstone with quartz and approximately 2% sulfide containing pyrite, pyrrhotite, and chalcopyrite.
5248	Maf Volc	Chip	4.0	<.007	<.3	1.1%	<200	360	96	110	---	110	---	60	---	Across sheared greenstone with quartz veinlets pyrite, pyrrhotite chalcopyrite, and minor sphalerite.

--- no data

NAME (other names): Larson Prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-3

NW 1/4 Sec 14 T 2N R 9E

Meridian: Seward

Geographic: Near shoreline at East end of Copper Bay,  
Knight Island.

REFERENCE NUMBERS:

Map  
S-44

Kx  
ND

Tysdal  
235

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

1909 - First appears in literature but only as a map location with no explanatory text (51, plate IV).

RESERVES: Unknown.

OPERATING DATA:

No signs of development found.

GEOLOGIC SETTING:

Selected greenstones in the vicinity contain 1% disseminated chalcopryrite and 1 to 5% pyrrhotite.

BUREAU WORK:

Made both shoreline and aerial search but did not locate any signs of prospecting. Collected samples of mineralized greenstone in the area (table A-33).

REFERENCES:

51, 141



TABLE A-33. - ANALYTICAL RESULTS - Larson Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2717	Maf Volc	Random Chip	--	<.03	.25	94	22	78	---	---	---	82	---	---	---	Greenstone.

--- no data

NAME (other names): Larson, Erickson      COMMODITIES: Copper, Zinc  
                                and Allen Prospect

LOCATION:    Quadrangle: Seward B-3                  SE 1/4 Sec 10 T 2N R 9E  
                                Meridian: Seward  
                                Geographic: Northeast corner of Copper Bay, Knight Island,  
  near tidewater.

REFERENCE NUMBERS:

Map            Kx            Tysdal            MAS            BLM            MS  
          S-45          95-224            234            950026            ND            ND

HISTORY AND PRODUCTION:

1900 - Claims located (82).

1916 - Tunnel and several buildings on property (78).

RESERVES: Unknown.

OPERATING DATA:

An adit of undetermined length was driven just above hightide line.  
Several camp buildings were erected just east of the adit (78, p. 218).

GEOLOGIC SETTING:

The country rock in the area consists of pillow basalts locally containing epidote and quartz-filled amygdules. No sulfides were found in the basalts. Johnson (78, p. 218) described the above mentioned tunnel as being driven into slightly shattered greenstone. Some of the fractures were healed by epidote stringers or by small quartz veins containing epidote and sulfides associated with slight sulfide impregnation of the adjacent country rock. No definite ore body had been outlined and little ore could be seen underground or on the dump. Reported sulfides present included pyrrhotite, chalco-pyrite, sphalerite, and pyrite(?).

BUREAU WORK:

Both aerial and shoreline search found no signs of prospecting. The basalt in the area was sampled (table A-34).

REFERENCES:

78, 82, 141, 151

TABLE A-34. - ANALYTICAL RESULTS - Larson, Erickson, and Allen Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2720	Maf Volc	Random Chip	--	<.03	0.37	18	8	99	---	---	---	25	---	---	Pillow basalt with minor sulfides, quartz, and epidote.

--- no data

NAME (other names): Cathead Bay

COMMODITIES: Copper, Zinc

LOCATION: Quadrangle: Seward B-3

NE 1/4 Sec 10 T 2N R 9E

Meridian: Seward

Geographic: Near shoreline in southwest corner of Cathead Bay,  
Knight Island. Elevation: 15 ft.

REFERENCE NUMBERS:

Map  
S-46

Kx  
95-228

Tysdal  
233

MAS  
950027

BLM  
NA

MS  
NA

HISTORY & PRODUCTION:

1900 - Claim recorded. (82).

RESERVES: Unknown.

OPERATING DATA:

One 41-ft-long adit (fig. A-12).

GEOLOGIC SETTING:

Disseminated and stringer pyrite occurs within greenstones at various locations in Cathead Bay. The adit trends SE and is driven through a highly fractured limonite-stained greenstone (fig. A-12). Numerous quartz veinlets up to 1/2-in.-thick occur in the greenstone and the limonite-stained greenstone contains 5 to 10% pyrite and trace of chalcopyrite.

BUREAU WORK:

The adit was mapped and three samples collected from it. Three samples were taken from surrounding wall rocks (fig. A-12 and table A-35). This prospect has low mineral development potential due to limited exposure and low sample results.

REFERENCES:

82, 98, 141, 151

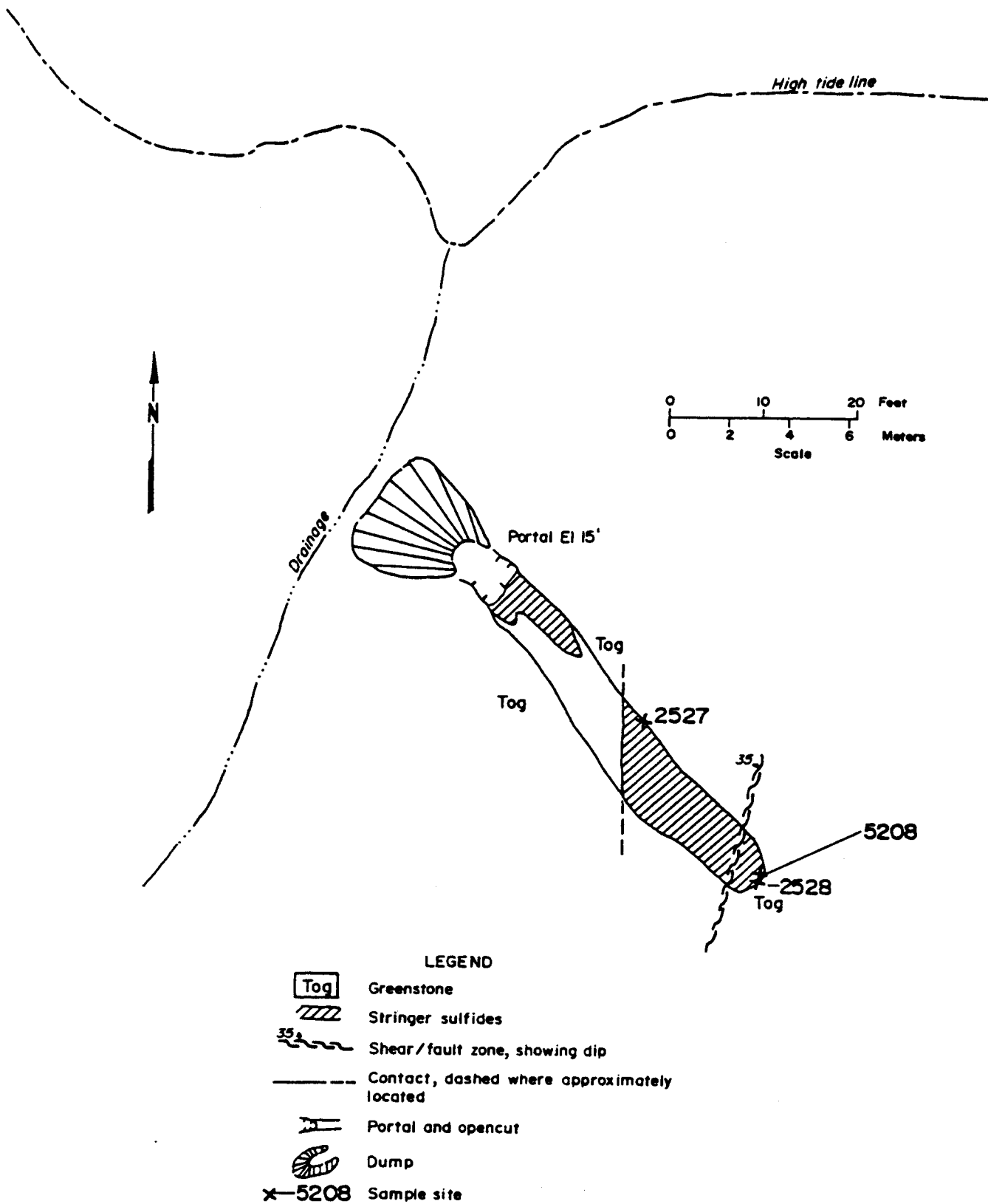


FIGURE A-12. - Unnamed prospect, Cathead Bay, sample locations.

TABLE A-35. - ANALYTICAL RESULTS - Unnamed prospect - Cathead Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2505	Quartz	Select	---	.25	.33	14	16	240	---	---	---	61	---	---	Quartz boulder with pyrite.
2527	Maf Volc	Random Chip	---	.09	.55	135	18	100	---	---	---	16	---	---	Highly fractured greenstone with pyrite in adit.
2528	Maf Volc	Random Chip	---	.06	.46	105	29	.16%	---	---	---	22	---	---	Iron-stained fractured greenstone with pyrite stringers in adit.
2630	Maf Volc	Chip	15	<.03	.46	520	10	100	---	---	---	74	---	---	Iron-stained fractured greenstone with pyrite stringers and pods.
2631	Quartz	Chip	---	<.03	.32	20	14	100	---	---	---	49	---	---	Across quartz & pyrite in trench.
5208	MafVolc/ Q	Chip	---	<.03	.1	120	43	1300	510	34	---	11	---	---	Greenstone with quartz veins and pyrite stringers in adit.

--- no data

NAME (other names): Harry Moore Prospect      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward B-3                      NW 1/4 Sec 12 T 2N R 9E  
                    Meridian: Seward  
                    Geographic: Southwest side of the head of Mallard Bay,  
    Knight Island.    Elevation: Unknown.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-47	95-225	232	950132	ND	ND

HISTORY AND PRODUCTION:

1909 - First appeared in literature as map location with no description.

1917 - Reported ore shipment (80, p. 146).

1917 - One 20-ton ore shipment which yielded 1,452 lbs copper (43).

RESERVES: Unknown.

OPERATING DATA:

No description of mine workings.

GEOLOGIC SETTING:

The country rock in the area consists of greenstone. Abundant sulfide-bearing greenstone float was found along the major stream draining into the head of the bay from the west. Sulfides consisted of 1 to 5% pyrrhotite and <1% chalcopyrite.

BUREAU WORK:

No mine workings were located. Samples were collected from sulfide-bearing rocks in the area which contained no significant mineralization (table A-36). A sample containing 0.5% copper and 0.3% nickel was reportedly collected by the USGS from an open cut in the area (102).

REFERENCES:

43, 51, 80, 82, 102, 141, 151

TABLE A-36. - ANALYTICAL RESULTS - Harry Moore Prospect Area

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2723	Maf Volc	Random Chip	---	.06	.40	70	9.0	75	---	---	---	44	---	---	---	Massive greenstone <1% pyrrhotite.
2724	Maf Volc	Random Chip	---	.09	.41	50	11	75	---	---	---	35	---	---	---	Massive greenstone <1% pyrrhotite.

--- no data



NAME (other names): Mineral occurrence      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward B-3                      NE 1/4 Sec 1    T 2N    R 9E  
                    Meridian: Seward  
                    Geographic: East side of Mallard Bay.  
                    Elevation: sea level - 250 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-48	NA	NA	NA	NA	NA

HISTORY & PRODUCTION:

Unknown.

Possibly near the location of the Hubbard & Elliot prospect (S-49) (51).

RESERVES: None.

OPERATING DATA:

No signs of prospecting were found.

GEOLOGIC SETTING:

Near the shoreline several iron-stained irregular mineralized zones occur in the greenstones. The sulfides are of the stringer-type with disseminated sulfides in the surrounding greenstones. These are concentrated along narrow shears in the area and contain up to 20% sulfide. They are composed of pyrite and chalcopyrite. A gabbro-greenstone contact occurs nearby but contains no concentrations of mineralization. A 1-ft-wide unmineralized breccia was in the greenstone and epidote fracture fillings.

BUREAU WORK:

The area from the beach up to an elevation of 250 ft was searched, but no signs of prospecting were found. Three samples were collected in the area (table A-37). This area has low mineral development potential.

REFERENCES:

51

TABLE A-37. - ANALYTICAL RESULTS - Mineral occurrence - Mallard Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)										Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	
2586	Maf Volc	Chip	5.0	.06	.42	50	6	130	---	---	---	11	---	Across iron-stained sulfide rich greenstone.
2787	Sulfides	Chip	3.5	.05	.53	3.3%	6	39	---	---	---	11	---	Across massive sulfides in greenstone, approximately 1% chalcopyrite.
2610	Maf Volc	Chip	12.0	.05	.21	54	5	140	---	---	---	19	---	Across highly fractured greenstone with up to 20% epidote stringers, pyrite <1%, pyrrhotite up to 20%, and some quartz veins.

--- no data

NAME (other names): Hubbard & Elliot Prospect ? COMMODITIES: Copper, Nickel

LOCATION: Quadrangle: Seward B-3                      SW 1/4 Sec 6    T 2N    R 10E  
                    Meridian: Seward  
                    Geographic: Located in stream gully below Lake 925.  
                    Elevation: 830 to 860 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-49	NA	231	NA	NA	NA

HISTORY & PRODUCTION:

Unknown.

RESERVES: Unknown.

OPERATING DATA:

One 63-ft- and one 10-ft-long adit (fig. A-13).

GEOLOGIC SETTING:

The area consists of a moderately sheared medium grained greenstone lense or layer enclosed within fine-grain greenstone and a finely laminated tuffaceous sediment. Several shear zones up to 10-ft-wide maximum, cut the greenstone. Some shears underground contain a trace of malachite. Total sulfide content of the greenstone averages 1 to 2% (locally up to 5%), consisting mainly of pyrrhotite with <1% chalcopyrite.

BUREAU WORK:

The workings were mapped and five samples collected (fig. A-13 and table A-38). Three random chip samples contained .14%, .16%, and .24% copper. Two random chip samples contained .70%, and .50% nickel. This prospect has moderate mineral development potential for nickel.

REFERENCES:

51, 141

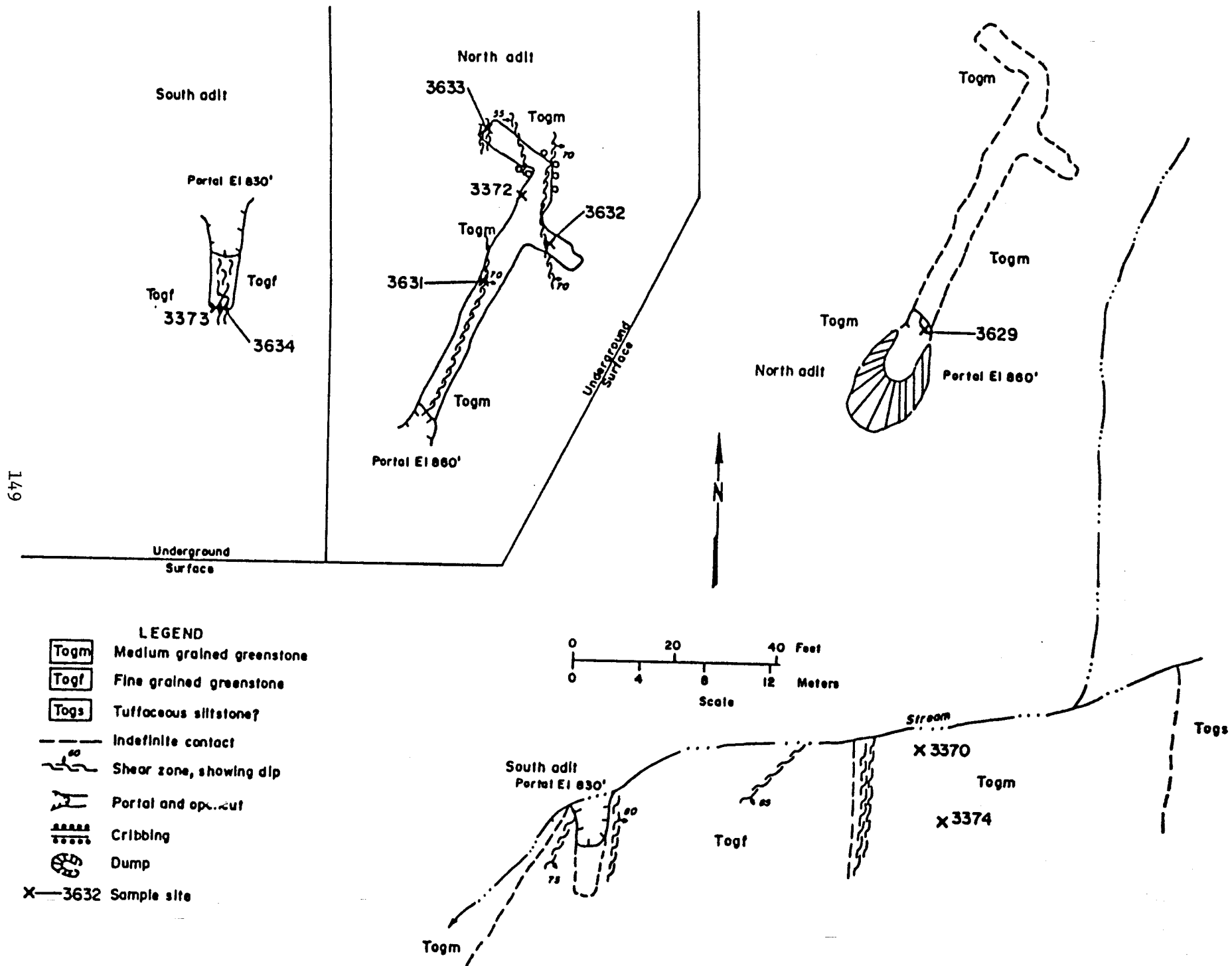


FIGURE A-13. - Hubbard and Elliot Prospect, sample locations.

TABLE A-38. - ANALYTICAL RESULTS - Hubbard &amp; Elliot

Sample	Material type	Sample Type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Cr	Ni	Ba	Sn	
3370	Maf Volc	Random Chip	---	<.03	3.5	.24%	23	50	<10	---	---	.70%	---	---	Basaltic dike with blebs of pyrrhotite and chalcopyrite in adit.
3372	Maf Volc	Random Chip	---	<.03	1.6	.16%	21	90	12	---	---	.50%	---	---	Basaltic dike with blebs of pyrrhotite and chalcopyrite.
3373	Maf Volc	Random Chip	---	<.03	4.2	.14%	21	110	<10	---	---	750	---	---	Shear zone with trace of chalcopyrite in adit.
3374	Maf Volc	Random Chip	---	<.03	1.9	75	6	40	17	---	---	55	---	---	Greenstone with stringers of pyrite, quartz, and epidote.
3629	Maf Volc	Chip	2.4	<.03	1.1	.14%	53	66	<10	48	1250	1150	<10	---	Sheared greenstone with 5% pyrrhotite and up to 1% chalcopyrite and quartz veinlets.
3631	Maf Volc	Chip	.4	<.03	.5	.14%	31	210	<10	69	1150	1200	<10	---	Sheared greenstone with trace of malachite and pyrrhotite.
3632	Maf Volc	Chip	.3	<.03	.2	760	57	54	<10	74	1100	1550	<10	---	Sheared greenstone with trace of pyrrhotite, arsenopyrite, and quartz stringers.
3633	Maf Volc	Chip	4.0	<.03	.1	135	29	165	<10	61	1150	740	<10	---	Sheared greenstone with 1-2% pyrrhotite.
3634	Maf Volc	Chip	3.4	<.03	.1	320	28	195	<10	58	1100	720	<10	---	Sheared greenstone with trace of pyrrhotite and quartz veinlets.

--- no data

NAME (other names): Russell Ball Copper Co. Prospect    COMMODITIES: Copper,  
Claims: Copper Coin Group                                         Zinc  
Rex and Eureka

LOCATION:    Quadrangle: Seward B-3                        NE 1/4 Sec 31 T 3N R 10E  
Meridian: Seward  
Geographic: Located 1/2 mile southwest of Barnes Cove along  
Drier Bay, Knight Island. Elevation 518 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-50	95-238	230	950029	NA	928

HISTORY & PRODUCTION:

- Oct. 29, 1906 - Rex and Eureka Lode Claims located by Russell Ball Copper Mining Company.
- July 1908 - Russell Ball Copper Co. had located six claims, four on Drier Bay and two over the ridge toward Snug Harbor. The claims on Drier Bay are developed by four openings. A wire-rope aerial tram operated by a windlass from upper 60-ft-long tunnel to shore. The three other openings vary from 12- to 30-ft in length and are intended to cut the vein, but aren't long enough to strike it. A small shipment of ore was made in July 1908 (52, p. 68).
- July 29, 1910 - Recorded.
- Aug. 18, 1910 - Application for Mineral Survey.
- Sept. 1-5, 1910 - Surveyed; workings consisted of 2 cuts, 2 tunnels and adit.
- 1916 - The Copper Coin Group is on a prospect formerly the property of the Russell Ball Copper Co. Little development work done since 1908. A cabin stands near shore and a trail leads to the workings. A wire-rope aerial tram is now out of commission. Small shipments were made from the Copper Coin Group (78, pp. 216-217).
- 1917 - "A small wharf was erected in the spring, and a compressor and supplies were placed on the ground but not installed."  
Only two or three men were at work on the property during the year, and no underground work is known to have been done (80, p. 146).
- 1943 - The buildings at the beach and the wire tram have all disappeared. Apparently has not been active since 1916 (98, pp. 72-73).

RESERVES: Indicated: 700 short tons at 3.3% copper.  
Inferred: 5,200 short tons at 2.3% copper.

OPERATING DATA:

One 60 ft adit at 518 ft elevation, one 6 ft adit at 435 ft elevation and one open cut at 560 ft elevation were located (fig. A-14). Another open cut and adit are reported to be from 12- to 30-ft in length (52).

GEOLOGIC SETTING:

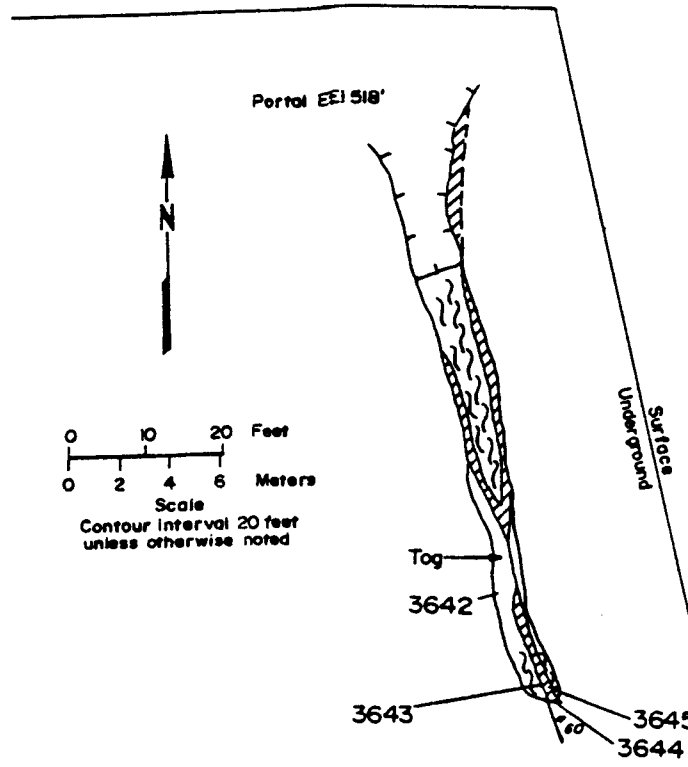
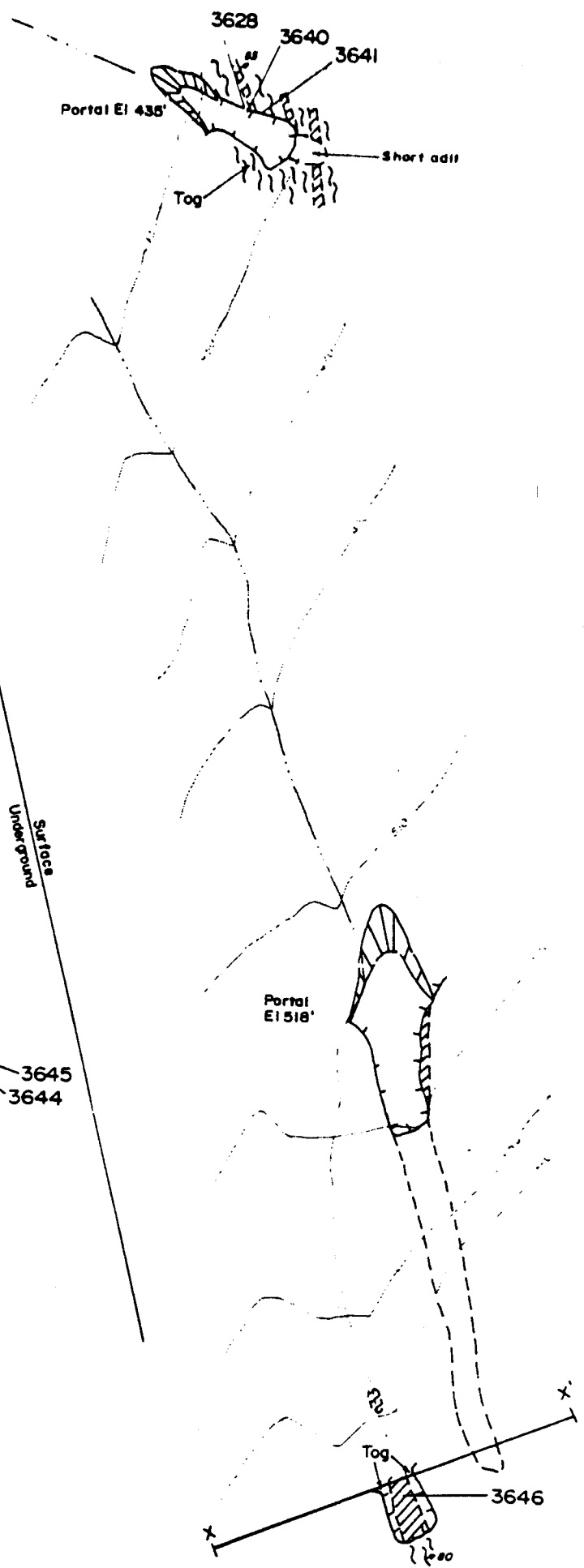
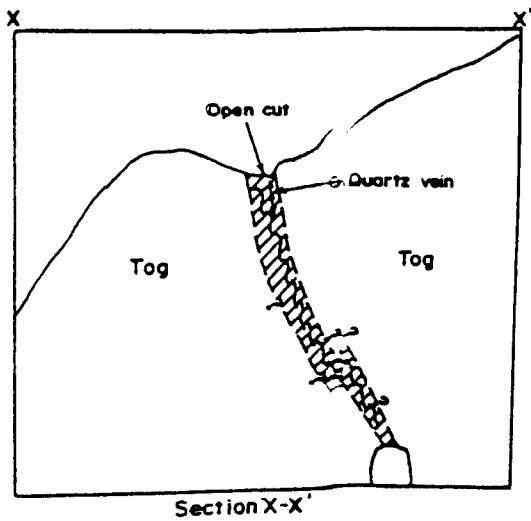
The workings are along a steeply dipping iron-stained shear zone that strikes N15°W, dips 40° to 80° to the northwest, and averages 4-ft-wide (fig. A-14). There are massive and stringer sulfides consisting of 5 to 10% chalcopyrite, 1% sphalerite and minor covellite. Quartz veins from a few inches to 1/2-ft-wide occur within the shears and contain the majority of the sulfides. The sheared greenstone undergoes varying degrees of chloritization. Massive sulfides contain greenstone and quartz fragments. In places the sulfide zones pinch and swell. Mineralization can be traced intermittently for 240 ft along strike.

BUREAU WORK:

The workings were mapped and sampled (fig. A-14 and table A-39). One 4-ft-wide chip sample contained 2.55% copper and another 2-ft-wide chip sample contained 1.6% copper. A 1.2-ft-wide chip sample contained 13% copper. This prospect has moderate mineral development potential for copper.

REFERENCES:

51-52, 78, 80, 82, 98, 141, 151



- LEGEND
- Tog Greenstone
  - Massive and stringer sulfides, showing dip
  - Contact, dashed where approximate
  - Shear zone, showing dip
  - Portal and open cut
  - Dump
  - Drainage
  - 3645 Sample site

FIGURE A-14. - Copper Coin Claims, sample locations



TABLE A-39. - ANALYTICAL RESULTS - Copper Coin Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Ba	Cr	
3628	Maf Volc	Chip	2.5	<.03	0.3	.38%	45	310	<10	125	---	85	<10	290	Across chloritized sheared greenstone w/ pyrr & 10% chalcopyrite as lenses and stringers.
3640	Maf Volc	Chip	2.0	<.03	.3	1.6%	36	89	<10	190	---	79	<10	170	Sheared greenstone, 1-in. to 2-in. wide, quartz veins, 5-10% chalcopyrite and pyrrhotite.
3641	Maf Volc	Chip	2.5	<.03	<.1	.15%	37	175	<10	63	---	58	<10	280	Sheared greenstone, sulfide and quartz stringers, pyrrhotite and chalcopyrite.
3642	Maf Volc	Chip	1.5	<.03	<.1	280	10	48	<10	8	---	6	23	105	Greenstone with a few quartz veinlets.
3643	Maf Volc	Chip	.25	<.03	.1	2950	43	335	<10	75	---	32	<10	155	Sheared greenstone, chalcopyrite/pyrite stringers, trace malachite.
3644	Sulfides	Chip	1.2	.10	8.4	13%	40	920	23	530	---	17	5	54	Massive sulfide, 15% chalcopyrite, 10% fragments and stringers, quartz.
3645	Maf Volc	Chip	2.5	.05	.6	1250	15	135	<10	39	---	6	<10	165	Sheared greenstone, chalcopyrite/pyrite stringers, trace malachite.

--- no data

TABLE A-39. - ANALYTICAL RESULTS - Copper Coin Prospect - Continued

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Ba	Cr	
3646	Sulfides	Chip	4.0	.05	1.8	2.55%	22	145	<10	96	---	9	<10	82	Massive and stringer sulfides within sheared greenstone. Contains 5% chalcopyrite along with pyrite, pyrrhotite, minor covellite/bornite, & quartz veins up to .5-ft-wide.

--- no data

NAME (other names): Hemple Prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-3

NW 1/4 Sec 25 T 3N R 9E

Meridian: Seward

Geographic: Near tidewater 0.8 miles due west of Chase Island on north side of Drier Bay, Knight Island.

REFERENCE NUMBERS:

Map  
S-51

Kx  
ND

Tysdal  
224

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

1910 - Grant and Higgins (52, Plate I) show a map location with no description.

RESERVES: Unknown.

OPERATING DATA: Unknown.

GEOLOGIC SETTING:

Several 3-ft-wide shear zones cutting greenstones occur on the shoreline in the area. Some are intensely fractured and brecciated. These zones contain <5% pyrrhotite and no observable chalcopyrite. The breccias also contain quartz and epidote veinlets.

BUREAU WORK:

Ground and aerial searches were conducted but located no signs of prospecting. Some samples were collected in the area but contained no significant mineralization (table A-40).

REFERENCES:

52, 141

TABLE A-40. - ANALYTICAL RESULTS - Hemple Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2797	Maf Volc	Random Chip	---	<.03	<.1	8	12	30	<10	---	---	6	---	---	---	Greenstone.
2798	Maf Volc	Chip	3.0	<.03	<.1	50	21	84	<10	---	---	7	---	---	---	Sheared greenstone <5% pyrrhotite.
2859	Maf Volc	Random Chip	---	.04	0.1	61	18	78	<10	---	---	38	---	---	---	Greenstone.

--- no data

NAME (other names): Knight's Island Copper Mining Co. Prospect  
COMMODITIES: Copper  
Knight Island Copper Co.

Patented Claims: Hercules, Mogul,  
One Dime, Bald Knob

Unpatented Claims: Appolla, One Dime No. 2,  
Una Group, Grove and  
Walters (?)

LOCATION: Quadrangle: Seward B-2                    NE 1/4 Sec 32 T 3N R 10E  
Meridian: Seward  
Geographic: 0.5 miles southeast of Barnes Cove, Knight  
Island. Elevation 300 to 1,100 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-52	95-243	229	950031		736

HISTORY AND PRODUCTION:

Jan. 22, 1902-July 30, 1903 - Claims staked.

March 11, 1902-Oct. 17, 1903 - Claims recorded.

1905 - Work done on a prospect near the divide, near the head of Drier Bay, was examined by Sidney Paige, who reported a lens of ore (chalcopryrite and pyrrhotite in greenstone) approximately 30-ft-wide and 40-ft-high (47, p. 85).

Sept. 14-18, 1906 - Mineral Survey No. 736 (146).  
Mining claim of Knight's Island Copper Mining Co.  
Appolla, Hercules, Bald Knob, Mogul, One Dime, and  
One Dime No. 2 Lode claims.  
Two tunnels, one shaft, and one open cut.

1908 - A tunnel, about 100 ft below the ore lens mentioned by Sidney Paige (47) is being driven to intersect it. A tunnel over 100-ft-long has been driven along a schistose zone carrying quartz, chalcopryrite, pyrrhotite, and pyrite (51, p. 90).

1911 - Development included an air compressor, drills run by water pressure, and two tunnels totalling 450 ft in length and a 60-ft-deep shaft. Plans are made to put in a wharf and connect it to the mine by aerial trams (13, p. 28). Production: 240 lb of copper, 3 oz silver, and 2 oz gold, from one ton of ore. Grade: 12.0% copper (43, 148).

1912 - A 50-ft drift was driven in October and September (14, p. 34).

1914 - 25 ft of drifting, some open cut work and prospecting. Assessment work was done on the Una group, which is now developed by 65 ft of tunnel.

Oct. 14, 1915 - Hercules, Bald Knob, Mogul, and One Dime claims were patented (146).

1943 - 1/4 miles southeast of Barnes Cove and 300 ft above it are two tunnels. The upper tunnel is only 15-ft-long but the lower one, which was buried in snow when visited, was evidently much longer (98, p. 73).

1963 - At the head of Barnes Cove were many ruined buildings, large piles of rusting pipe, mine rails, and other mining equipment. Only one 25 ft adit was found at approximately 300 ft elevation 1/4 mi due east of the head of the cove (111, p. 21).

1982 - Claims staked by John Peterson (82).

RESERVES: Unknown.

#### OPERATING DATA:

Three adits and a prospect pit were located (fig. A-15). There is a 78-ft-long adit at 300 ft elevation, 113-ft-long adit at 900 ft elevation and a 117-ft-long adit at 1,100 ft elevation. There is reported to be two tunnels totaling 450-ft in length (13, p. 28), a 15-ft tunnel (98, p. 73), and a 60-ft-deep shaft (13, p. 28).

#### GEOLOGIC SETTING:

Two major rock types occur in the area, a light gray aphanitic intermediate volcanic and a porphyritic dark gray-green greenstone. Small layers of slate occur also. The workings are all within the Nellie shear zone, a major structure trending approximately N20°E here (111, p. 22).

Three adits have been driven along individual mineralized shears included within the Nellie shear zone. The lower adit follows a north-south trending, vertical dipping, shear zone containing some 1-in.-wide quartz veins with a trace of pyrrhotite and chalcopyrite.

The adit at 900 ft elevation is driven into a N25°E trending, vertical dipping, shear. It varies between 1- to 5-ft-wide and is pinching out at the face. It contains lenses of unsheared greenstone. Approximately 1% pyrrhotite and 5% chalcopyrite occur locally within the shear.

The upper adit is a cross-cut to a 9-ft-wide shear trending N5°E and dipping 70° to 80°NE. It contains 10% disseminated pyrrhotite and 1% chalcopyrite. A 10 ft x 20 ft lense of similar sulfide-rich greenstone occurs at the base of a cliff 60 ft higher than the portal.

BUREAU WORK:

Three adits were located and these were mapped and sampled (fig. A-15 and table A-41). One 4 ft. chip sample contained 1.6% copper and a random chip sample contained 1.0% copper and .83% nickel. This prospect has moderate mineral development potential for copper and nickel.

REFERENCES:

13-14, 43, 47, 51, 74, 82, 98, 111, 141, 146, 151

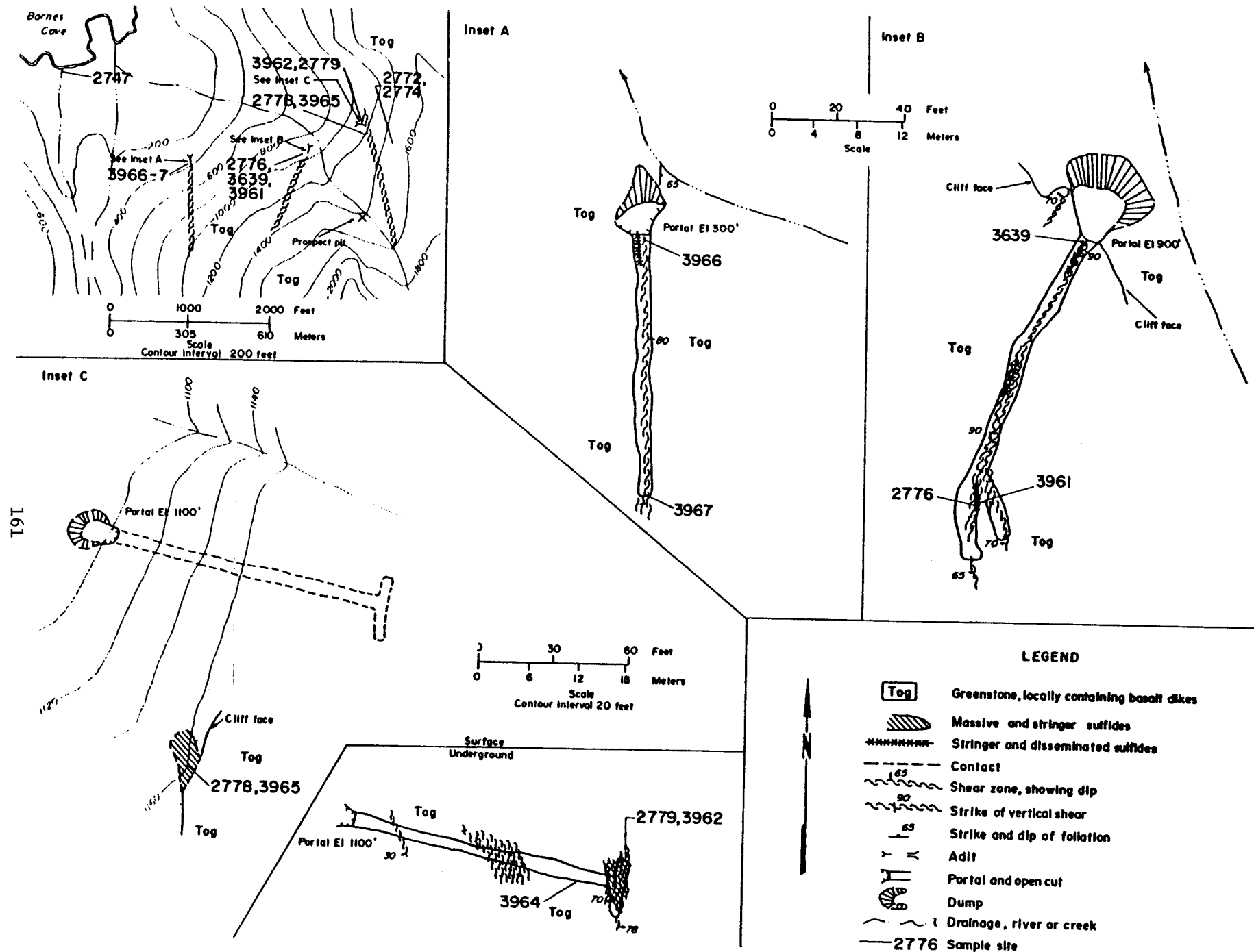


FIGURE A-15. - Knight's Island Copper Mining Co. Prospect, sample locations.



TABLE A-41. - ANALYTICAL RESULTS - Knight's Island Copper Mining Co. Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Ba	Cr	
2747	Stream Sed	Stream	---	0.14	0.28	160	7.0	75	---	---	---	54	---	---	Stream sediment.
2772	Maf Volc	Grab	---	<.03	<.1	45	14	40	<10	---	---	21	---	---	Aphanitic intermediate volcanic.
2774	Maf Volc	Grab	---	<.03	<.1	15	12	105	<10	---	---	2.0	---	---	Aphanitic intermediate volcanic.
2776	Maf Volc	Chip	4.0	.03	5.1	1.6%	20	650	20	---	---	110	---	---	Schistose greenstone in adit.
2778	Maf Volc	Random Chip	---	<.03	.9	1.0%	29	105	<10	---	---	8300	---	---	Greenstone near adit.
2779	Maf Volc	Random Chip	---	.10	1.1	3500	18	32	<10	---	---	4000	---	---	Greenstone in adit.
3639	Maf Volc	Chip	2.5	<.03	.7	.05%	33	100	<10	47	---	48	37	240	Across limonite-stained sheared greenstone with trace of chalcopyrite and pyrrhotite.
3961	Maf Volc	Chip	3.5	<.03	.6	.26%	31	590	<10	64	---	130	<10	295	Across iron-stained sheared greenstone with trace of pyrrhotite and malachite.
3962	Maf Volc	Chip	4.0	.03	1.1	.46%	28	53	<10	160	---	6700	<10	1400	Across iron-stained sheared greenstone with 4% pyrrhotite and less than 1% chalcopyrite.

--- no data

TABLE A-41. - ANALYTICAL RESULTS - Knight's Island Copper Mining Co. Prospect - Continued

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Ba	Cr	
3965	Maf Volc	Chip	8.0	.04	2.7	.64%	29	145	<10	97	---	4000	<10	1500	Across iron-stained pod of sulfide-bearing greenstone, with 5-10% pyrrhotite and 1-2% chalcopyrite.
3966	Maf Volc	Chip	4.0	<.03	.3	.33%	22	76	<10	37	---	61	<10	285	Across iron-stained sheared greenstone with a few quartz veinlets and chalcopyrite stringers.
3967	Maf Volc	Chip	3.0	<.03	.1	560	78	77	<10	35	---	51	<10	255	Across iron-stained sheared greenstone with trace of pyrrhotite.

--- no data

NAME (other names): Twentieth Century      COMMODITIES: Copper  
Knight Island  
Copper Mining Co. Prospect

LOCATION:    Quadrangle: Seward B-2      SE 1/4 Sec 29 T 3N R 10E  
            Meridian: Seward  
            Geographic: 0.5 miles southwest of the head of Northeast  
                         Cove in Drier Bay, Knight Island. Elevation:  
                         710 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-53	95-248	226	950030	ND	ND

HISTORY AND PRODUCTION:

1908 - First mentioned in literature.  
          Owner: Knight Island Copper Mining Co. (51).

No recorded production.

INFERRED RESERVES: 30 tons at 2.6% copper.

OPERATING DATA:

Grant and Higgins (51, p. 90) mention that nine claims had been staked in the area and a bunk house and small wharf were located on the shore. Above the shore a lower 30-ft-long tunnel had been driven at an elevation of 250 ft. An upper tunnel at 350 ft elevation had been driven 390 ft and a raise of 70 ft made off it. The only working located was a 68-ft-long adit cut in a due south direction at an elevation of 710 ft.

GEOLOGIC SETTING:

According to Grant and Higgins (51) the upper tunnel described above followed a 6-ft-wide north-south trending vertical shear zone containing numerous lens-shaped masses and stringers of chalcopyrite. In the one adit located by the Bureau a 4- to 5-ft-wide shear zone composed of schistose greenstone was followed for 68 ft (fig. A-16). A sulfide-bearing zone within the shear is exposed for 30 ft along strike and varies from 2- to 6-in. in width. Stringer and massive sulfides consist of pyrrhotite and chalcopyrite.

BUREAU WORK:

The only adit located was mapped and sampled (fig. A-16 and table A-42). Moderate mineral development potential for copper.

REFERENCES:

51, 82, 98, 111, 141, 151

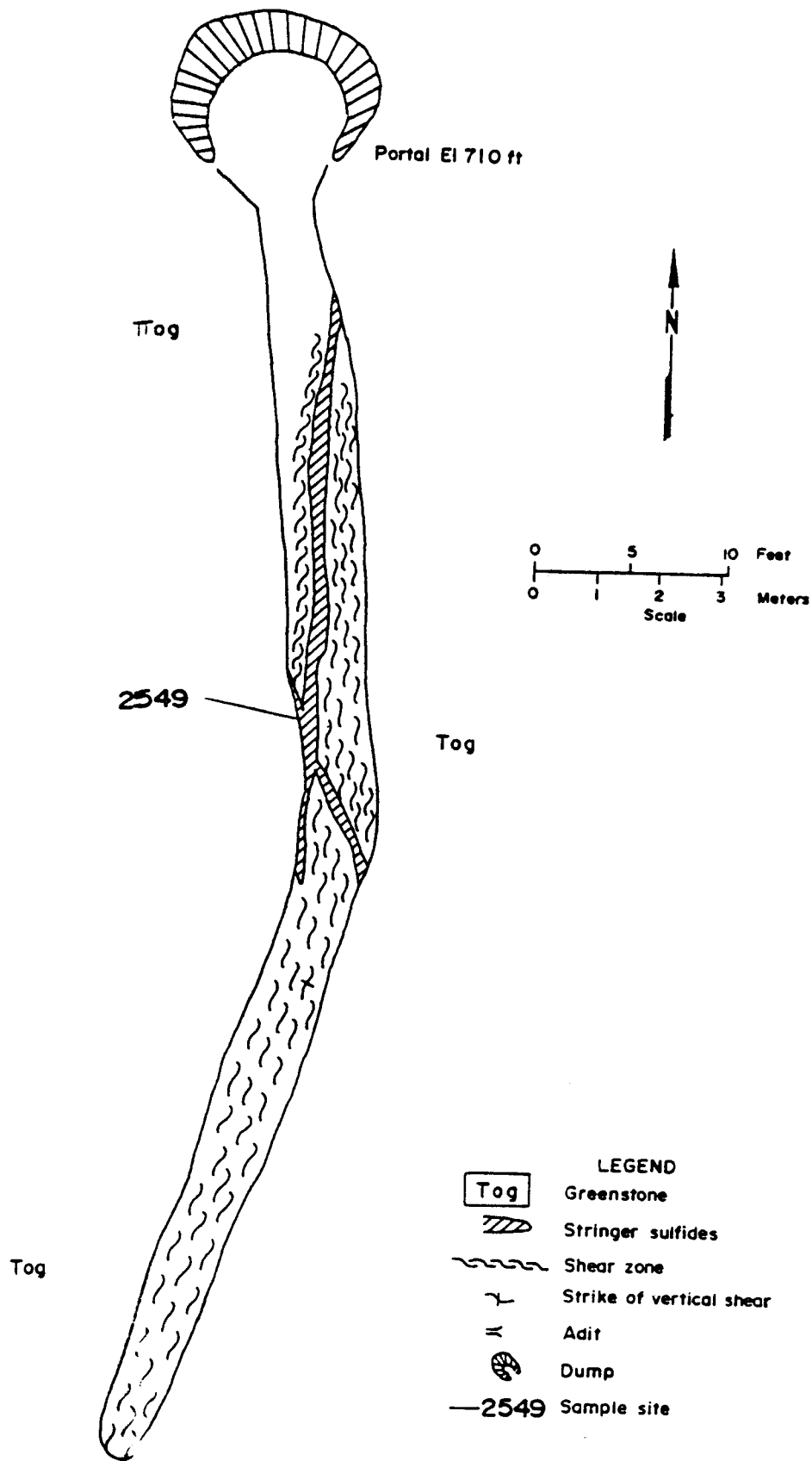


FIGURE A-16. - Twentieth Century Knight Island Copper Mining Co. Prospect, sample locations.

TABLE A-42. - ANALYTICAL RESULTS - Twentieth Century Knight Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2549	Maf Volc	Random Chip	---	.17	3.2	2.6%	40	115	22	---	---	140	---	---	2-in.-wide sulfide zone, pyrrhotite, chalcopyrite

--- no data

NAME (other names): Claims: Alhambra,  
U and I, Ura

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-2            SE 1/4 Sec 28 T 3N R 10E  
          Meridian: Seward  
          Geographic: 0.4 miles south of the head of Northeast Cove,  
                          Knight Island. Elevation: 585 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-54	95-230	227	950133	ND	ND

HISTORY AND PRODUCTION:

1900 - Claims staked.

1916 - Assessment work consisting of tunneling and open cuts by Nick  
          Hihnala (148).

No recorded production.

RESERVES: Unknown.

OPERATING DATA:

Johnson (78, p. 218) reports two tunnels, 60 and 100 ft in length and  
four open cuts. Two small open cuts were found on the east side of a  
stream at the 585 ft elevation by the Bureau.

GEOLOGIC SETTING:

Country rock in the area consists of greenstones locally enclosing  
shale and slate bodies. Two open cuts in the sediments on the east  
side of a stream contained sheared limonite-stained shale and some  
quartz veinlets. Trace pyrite was observed. The bedding strikes N3°E  
and dips 70 to 80°E.

BUREAU WORK:

The two open cuts described above were sampled (table A-43). These  
may be some of the same ones described by Johnson. Neither of the two  
adits described above were located. The cuts have low mineral  
development potential.

REFERENCES:

78, 82, 141, 148, 151

TABLE A-43. - ANALYTICAL RESULTS - Alhambra Claims

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Cr	Ba	W	
6382	SL/SS/CG	Cont Chip	5.0	<.03	0.1	68	24	77	93	22	---	93	155	679	---	Fractured shale.
6383	SL/SS/CG	Random Chip	1.0	<.03	<.10	44	20	58	<10	20	---	42	155	679	---	Shear zone cutting shale, trace pyrite.

--- no data

NAME (other names): Unnamed prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-2  
Meridian: Seward

NE 1/4 Sec 27 T 3N R 10E

Geographic: At tidewater on the south side of Marsha Bay  
1.0 miles west of the bay entrance, Knight  
Island.

REFERENCE NUMBERS:

Map  
S-55

Kx  
ND

Tysdal  
215

MAS  
950032

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

Unknown.

RESERVES: Unknown.

OPERATING DATA:

Richter (111, p. 24) mentions finding scars of very old superficial pits and trenches in the area. Some of the outcrops on the bluff above the beach show possible signs of prospecting.

GEOLOGIC SETTING:

Several narrow northeast-trending shear zones cutting greenstone occur near the mouth of a small creek. One 12-in.-wide shear locally contained silicified and schistose greenstone. The silicified shear contained scattered amounts of disseminated pyrite and pyrrhotite. Chalcopyrite blebs occur in some of the greenstone wallrocks.

BUREAU WORK:

The chalcopyrite-bearing greenstones were sampled (table A-44). Low mineral development potential due to small size of mineralized exposures.

REFERENCES:

111, 141, 151



TABLE A-44. - ANALYTICAL RESULTS - Unnamed prospect - Marsha Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2870	Maf Volc	Random Chip	---	<.03	4.9	1.42%	36	250	<10	---	---	41	---	---	---	Greenstone with chalcopyrite blebs.

--- no data

NAME (other names): Knight Island Alaska      COMMODITIES: Copper, Silver, Zinc  
 Copper Co. Prospect  
 Patented claims:  
 Tremont, Hillside Lode  
 Anna  
 Ajax  
 Lakeview  
 Legal Tender  
 Bully Boy

LOCATION:    Quadrangle: Seward B-2                      NW 1/4 Sec 28    T 3N    R 10E  
                  Meridian: Seward  
                  Geographic: 0.4 miles northeast of the head of Northeast  
                  Cove.    Elevation: 950 and 1,200 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-56	95-249	232	950033	A001564	954

HISTORY AND PRODUCTION: (148)

- 1907 - Property under development by Knight Island, Alaska Copper Mining Co.
- 1908 - -----"
- 1909 - Buildings installed.
- 1910 - Tunnel driven 30 ft. Buildings destroyed by avalanche.
- 1911 - 200 tons of ore on dump. Made test shipment to smelter in Tacoma, Washington.
- 1912 - Drove 50 ft of drift. Operated for 60 days.
- 1913 - Drove 60 ft of drift. Operated for 75 days.
- 1916 - Claims patented.
- 1957 - Activity reported in the area.
- 1964 - -----"
- 1969 - -----"

RESERVES: A reported 200 tons of ore lies on the adit dump.

OPERATING DATA:

Development consists of a 742-ft-long adit at an elevation of 950 ft with 160 ft of crosscuts and a winze. At an elevation of 1,200 ft several open cuts occur. A collapsed cabin lies below the adit in a saddle at 70 ft (fig. A-17).

#### GEOLOGIC SETTING:

The adit described above cuts through greenstones containing irregular bodies of porphyritic greenstone and a basalt dike. Several shear zones cut the greenstones. A 10-ft-wide shear, contains <5% pyrrhotite/pyrite and some malachite staining. The shears cut greenstone wallrock which becomes schistose in the shear interior. The adit was driven to intercept at depth several shear zones that occur on the surface at an elevation of 1,200 ft. A series of open cuts also at 1,200 ft intermittently expose a N20°E trending shear zone for 200 ft along strike. Within the shear a 1-ft-wide massive sulfide zone occurs within a 5-ft-wide disseminated sulfide zone. Sulfides consist of pyrrhotite, and chalcopyrite. A trace native copper is present. Chalcopyrite content varies from 20% in the massive zones to 5% in the disseminated zones. Locally basalt dikes cut both the shears and sulfide zones.

#### BUREAU WORK:

The Bureau mapped the underground workings and sampled the sulfide mineralization (fig. A-17 and table A-45). Low mineral development potential due to low copper values.

#### REFERENCES:

51, 78, 82, 98, 141, 146-148, 151

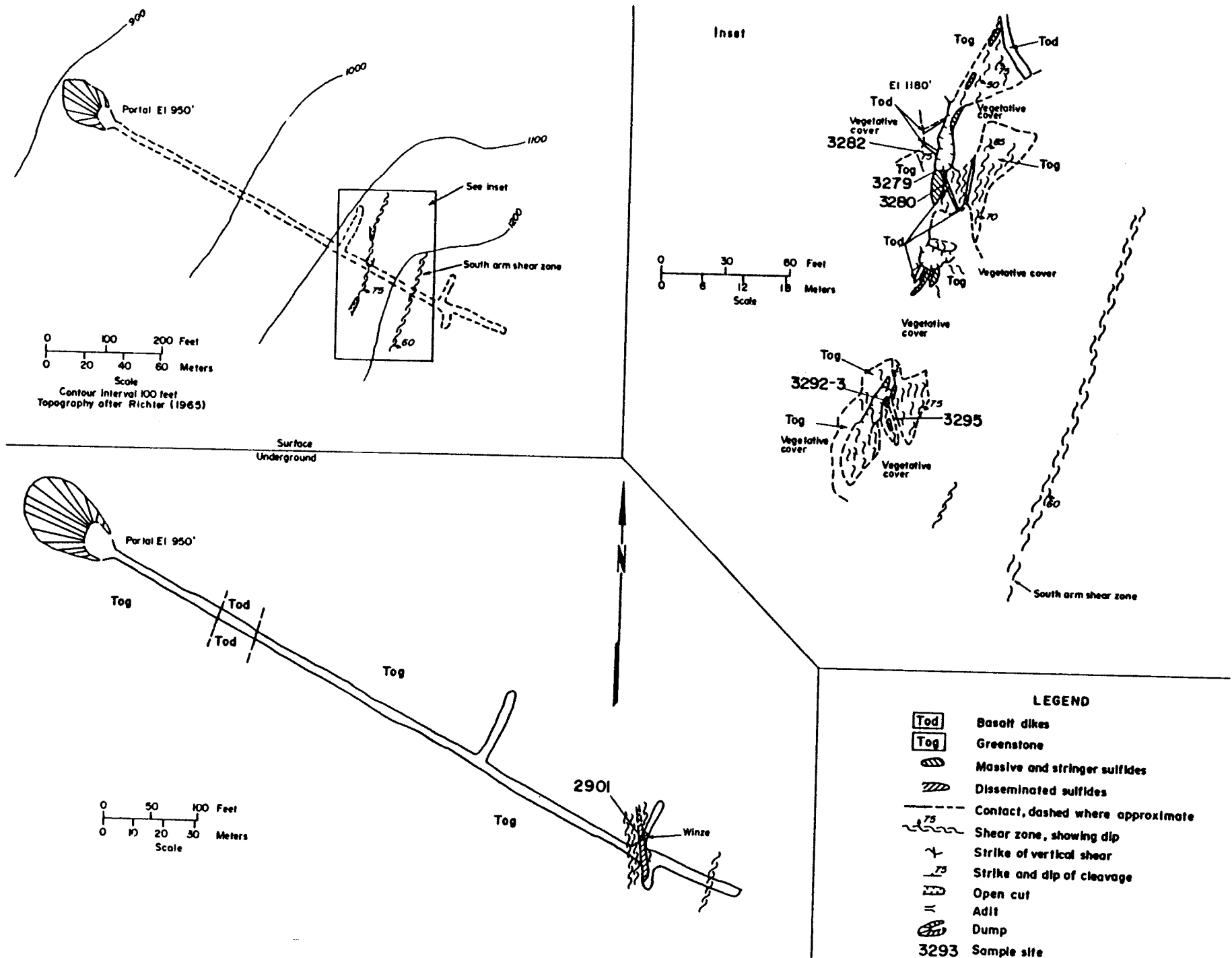


FIGURE A-17. - Knight Island Alaska Copper Co. Prospect, sample locations.

TABLE A-45. - ANALYTICAL RESULTS - Knight Island Alaska Copper Co. Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2901	Maf Volc	Chip	6.0	<0.03	0.30	420	34	111	<10	---	---	78	---	---	6-ft-wide shear zone 5% pyrrhotite, pyrite.
3279	Maf Volc	Cont Chip	5.0	<.03	1.9	.15%	15	200	<10	---	---	72	---	---	Open cut 5-ft-wide zone 10% pyrrhotite, 5% chalcopyrite.
3280	Maf Volc	Cont Chip	.5	<.03	.31	175	16	50	<10	---	---	70	---	---	Basaltic dike 4-in.-thick.
3282	Maf Volc	Chip	---	<.03	.26	50	8	40	10	---	---	45	---	---	Sheared greenstone.
3292	Maf Volc	Grab	---	<.03	11.0	1.3%	15	.30%	12	---	---	61	---	---	Select material 5-30% chalcopyrite.
3293	Maf Volc	Cont Chip	3.0	<.03	3.2	.20%	16	300	<10	---	---	55	---	---	Sheared greenstone.
3295	Maf Volc	Cont Chip	4.0	<.03	.36	110	10	50	<10	---	---	36	---	---	Porphyritic greenstone dike 1-2.5-ft-wide. Pillow greenstone.

--- no data

NAME (other names): Unnamed prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-2

SW 1/4 Sec 21 T 3N R 10E

Meridian: Seward

Geographic: 0.5 miles north of the head of Northeast Cove,  
Knight Island. Elevation: 990 ft.

REFERENCE NUMBERS:

Map  
S-57

Kx  
ND

Tysdal  
ND

MAS  
ND

BLM  
ND

MS  
ND

HISTORY AND PRODUCTION:

Unknown.

RESERVES: Unknown.

OPERATING DATA:

Development consists of a 4 x 20-ft open cut.

GEOLOGIC SETTING:

The open cut exposes a sulfide-bearing, silicified, and apparently stratabound zone within slates. The slates are part of a previously unmapped sedimentary sequence also containing graywacke, argillite, and siltstone. The exposure has dimensions of roughly 300 x 1,600 ft and apparently is enclosed within greenstones. The siliceous mineralized zone varies from 6-in.- to 3-ft-thick and contains from 5 to 30% sulfides consisting of chalcopyrite, pyrite, and some covellite. A smaller exposure of similar mineralization was found approximately 100 ft to the southwest.

BUREAU WORK:

The open cut was mapped and sampled (table A-46 and fig. A-18). Low mineral development potential due to small mineralized exposure size.

REFERENCES:

None

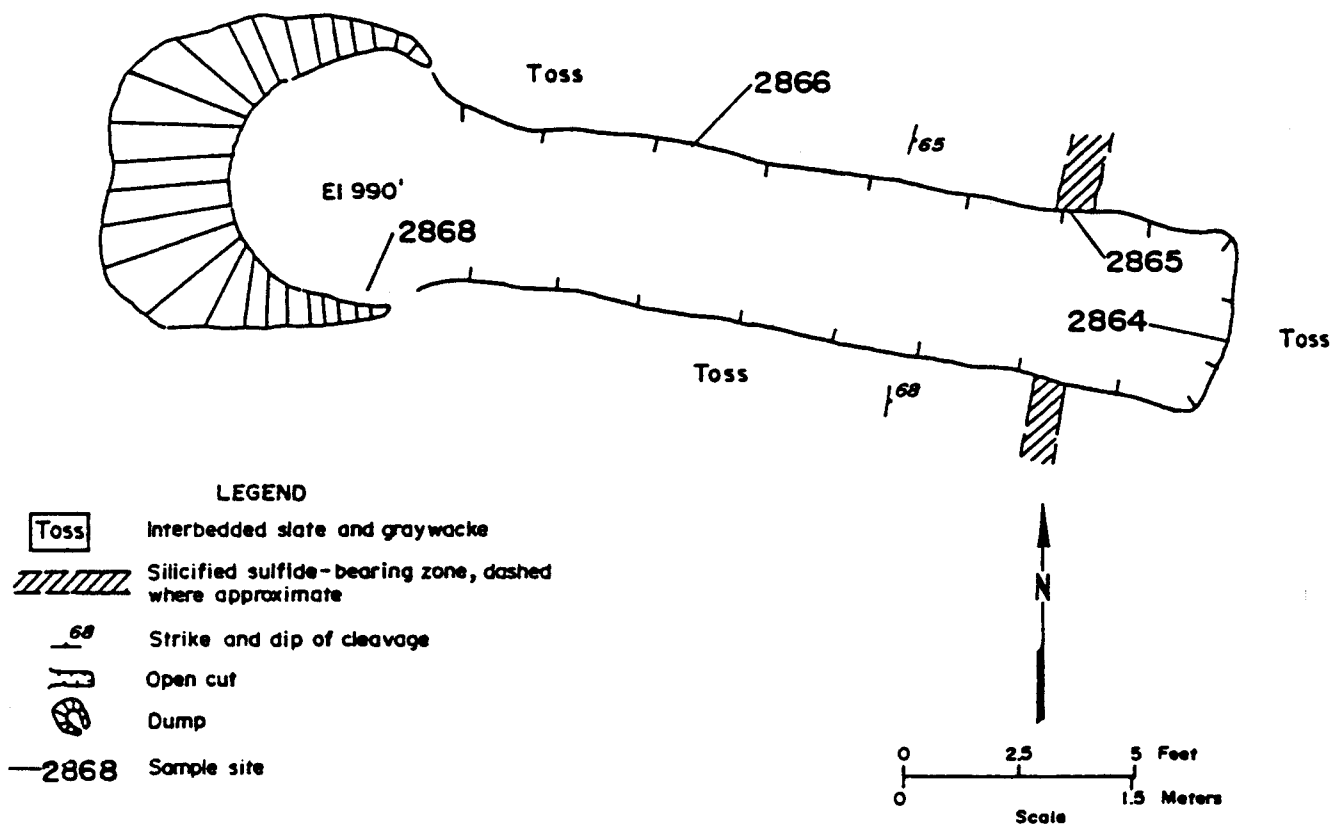


FIGURE A-18. - Unnamed prospect, Northeast Cove, sample locations.

TABLE A-46. - ANALYTICAL RESULTS - Unnamed prospect - Northeast Cove

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2864	SL/SS/CG	Random Chip	---	<.03	<0.1	25	19	25	<10	---	---	36	---	---	---	Open cut, siliceous slate.
2865	SL/SS/CG	Random Chip	---	<.03	1.4	3.8%	28	240	<10	---	---	60	---	---	---	Open cut, pyrite, pyrrhotite, chalcopyrite.
2866	SL/SS/CG	Random Chip	---	0.05	0.2	100	23	58	<10	---	---	27	---	---	---	Open cut, slate, pyrite.
2868	Quartz	Select Grab	---	0.05	2.1	2.3%	16	68	<10	---	---	5.0	---	---	---	Quartz vein float.

--- no data



NAME (other names): Claims: Nellie Group                      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward B-2                      NW 1/4 Sec 21 T 3N R 10E  
                    Meridian: Seward  
                    Geographic: 1.1 miles southeast of the head of Port Audrey,  
   Knight Island.    Elevation: 650 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-58	95-246	233	950034	ND	ND

HISTORY AND PRODUCTION:

1900 - Claims staked at approximately this time (82).

1916 - First mentioned in literature (78, p. 217).

RESERVES: Unknown.

OPERATING DATA:

Johnson (78, p. 217) describes development on the property consisting of five open cuts, a 6 ft shaft and a 36 ft adit.

GEOLOGIC SETTING:

Johnson (78, p. 217) describes a mineralized N25°E trending shear zone dipping 75°E and cutting greenstone country rock. The above mentioned adit is driven along this shear zone. At the adit face the shear zone is 9-ft-wide and a 2-in. band of solid sulfides lies along the west shear margin. On the mountain north of the adit a N7° to 25°E trending shear zone is traced for 3/4 of a mile by scattered outcrops and a few open cuts. At an elevation of 1,200 ft on the mountain north of the adit a 5-ft shaft has been sunk on a 10-ft shear zone. Chalcopyrite was observed in the shaft.

BUREAU WORK:

None of the above described workings were located but they could easily be buried under rubble occurring in many places along the stream bottom in the area. What appears to be the mineralized zone described by Richter (111, p. 21) was located. It consists of a 3 x 6 ft partially rubble-obscured exposure of limonite-stained sheared black slate or sheared greenstone containing boudin-like lenses of massive greenstone averaging 1 to 1.5 ft in length. Massive greenstone surrounds the sheared area and locally becomes schistose. No sulfides were observed within the shear. Pyrrhotite-bearing greenstone float was found downstream from the shear. It was followed 1,800 ft south from the stream bottom and no mineralization was found. The shear zone and float were sampled and contained very low copper values (table A-47).

REFERENCES:

78, 82, 111, 141, 151

TABLE A-47. - ANALYTICAL RESULTS - Nellie Claims

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2790	SL/SS/CG	Random Chip	---	<.03	0.1	41	21	89	10	---	---	38	---	---	---	Slate.
2791	Maf Volc	Random Chip	---	<.03	0.1	9	14	25	<10	---	---	35	---	---	---	Greenstone.
2844	Maf Volc	Random Chip	---	<.03	<.1	150	19	38	<10	---	---	50	---	---	---	Slate-shear greenstone.
2845	Maf Volc	Random Chip	---	<.03	<.1	61	29	150	<10	---	---	115	---	---	---	Sheared greenstone.
2846	Maf Volc	Random Chip	---	<.03	0.1	62	17	56	<10	---	---	54	---	---	---	Pyrrhotite-bearing greenstone float.

--- no data

NAME (other names): Claims: Jonesy Group,  
Bald Eagle

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-2  
Meridian: Seward

SE 1/4 Sec 17 T 3N R 10E

Geographic: Located 0.7 miles southeast of the head of  
Port Audrey on the south side of a steep-walled  
gully. Elevation: 1,000 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-59	95-242	222	950035	ND	ND

HISTORY AND PRODUCTION:

1900 - Claims staked (82).

1905-1908 - First mentioned in literature. A few hundred tons of ore  
were mined at this time (51, pp. 89-90).

INFERRED RESERVES: 1,300 tons at 3.3% copper. A few tons of ore are  
still stockpiled on the shore below the prospect.

OPERATING DATA:

Development consists of an adit at an elevation of 1,000 ft which  
contains 254 ft of crosscuts and drifts, 2 stopes and a water-filled  
winze. An open cut is located near the adit entrance. Grant and  
Higgins (52, pp. 67-68) report several buildings, a wharf, and stream  
plant on the shore below the mine workings. A wire-rope aerial  
tramway connected to the mine workings. A rough estimate indicates up  
to 330 tons of ore may have been mined out of the stopes.

GEOLOGIC SETTING:

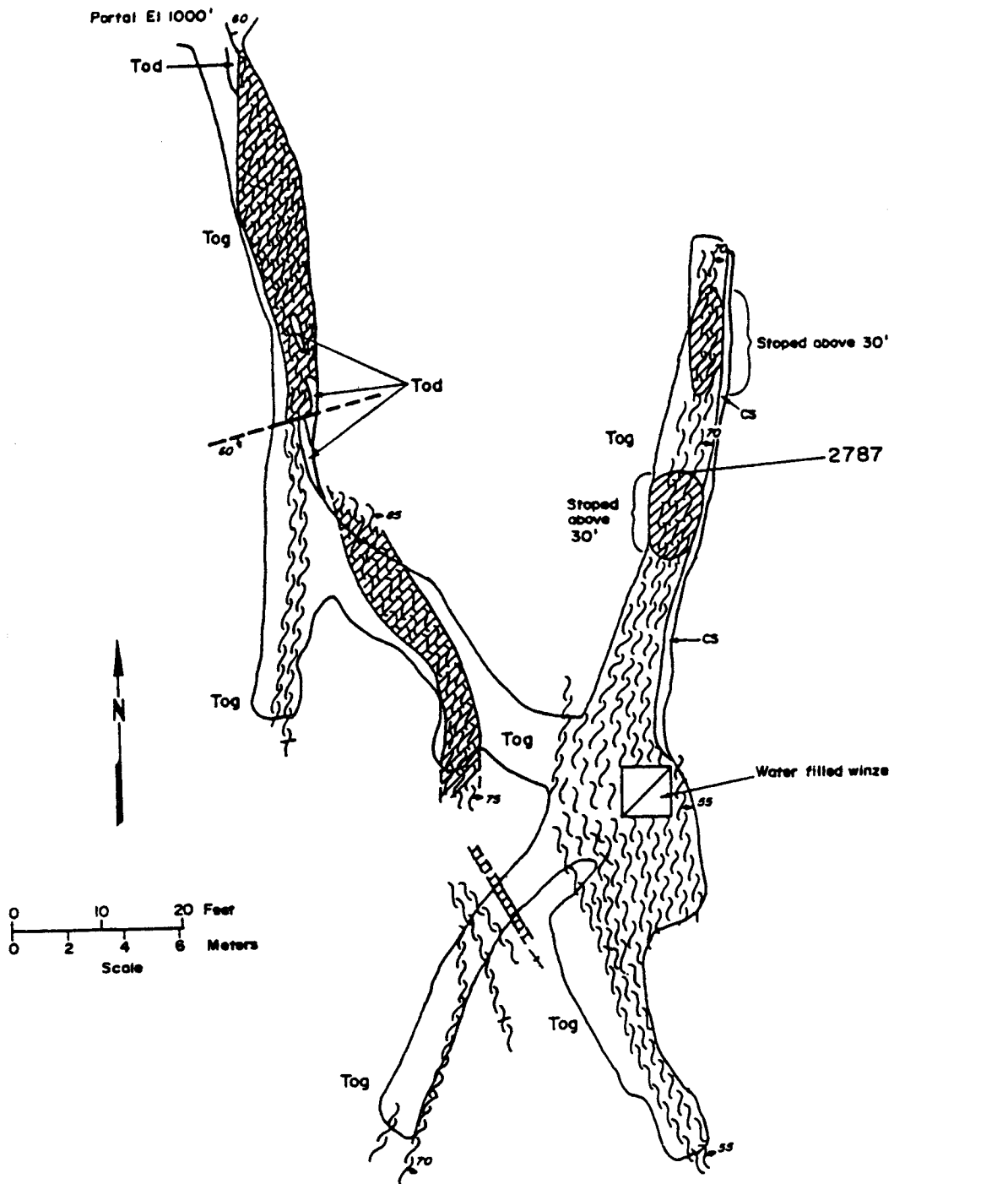
The underground workings are driven along a 60-ft-wide N-S trending  
steeply east-dipping subparallel set of shear zones. Individual shear  
zones are up to 16-ft-wide with massive greenstone and chlorite schist  
separating them (fig. A-19). Massive, stringer, and disseminated  
sulfides occur locally within the shears. Sulfides consist of  
pyrrhotite and locally 5% chalcopyrite.

BUREAU WORK:

The underground workings were mapped and sampled (fig. A-19 and table  
A-48). Moderate mineral development potential for copper.

REFERENCES:

51-52, 78, 82, 95, 98, 111, 141, 151



- LEGEND**
- |   |   |  |   |
|---|---|--|---|
| <span style="border: 1px solid black; padding: 2px;">Tod</span> | Basalt dikes  |  | Fault, showing dip (dashed where approximately located) |
| <span style="border: 1px solid black; padding: 2px;">cs</span>  | Chlorite schist   |  | Shear zone, showing dip                                 |
| <span style="border: 1px solid black; padding: 2px;">Tog</span> | Greenstone  |  | Strike of vertical shear                                |
|   | Stringer and disseminated sulfides                        |  | Adit  |
|   | Contact, showing dip (dashed where approximately located) |  | Sample site   |
|   | Strike of vertical contact                                |  |   |

FIGURE A-19. - Jonsey Claim Group, sample locations.

TABLE A-48. - ANALYTICAL RESULTS - Jonsey Group Claims

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2787	Sulfide	Chip	4.0	.15	3.8	3.3%	39	130	<10	---	---	22	---	---	---	Massive sulfide in adit.

--- no data





TABLE A-49. - ANALYTICAL RESULTS - Knight Island Consolidated Copper Co. Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2550	Quartz	Chip	5.5	.07	1.3	470	19	36	42	---	---	22	---	---	---	Massive quartz with 10% pyrite.
2552	Schist	Chip	0.5	.05	.55	490	19	185	16	---	---	100	---	---	---	Chlorite schist with pyrite and trace chalcopyrite.
2554	Maf Volc	Random Chip	---	.05	.50	20	18	63	<10	---	---	76	---	---	---	Greenstone.

--- no data



NAME (other names): Monarch Prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-3

NE 1/4 Sec 18 T 3N R 10E

Meridian: Seward

Geographic: 0.6 miles northwest of head of Port Audrey,  
Knight Island. Elevation: 680 ft.

REFERENCE NUMBERS:

Map  
S-62

Kx  
95-236

Tysdal  
217

MAS  
950039

BLM  
NA

MS  
NA

HISTORY & PRODUCTION:

1908 - First mentioned in literature as having 350 ft of underground development (51, p. 89).

RESERVES: Johnson (78, p. 215) mentions that no definite ore body was seen underground.

OPERATING DATA:

A caved adit is reported to contain 350 feet of underground workings (51, p. 89).

GEOLOGIC SETTING:

A N10° to 15°E trending shear zone outcrops above the caved adit entrance. It contained epidote stringers and disseminated sulfides consisting of 5% pyrite, minor covellite, and trace chalcopyrite.

BUREAU WORK:

The shear zone exposed above the caved adit was sampled and it contained low copper values (table A-50). Unevaluated due to caved underground workings.

REFERENCES:

44, 51, 78, 82, 98, 111, 141, 151

TABLE A-50. - ANALYTICAL RESULTS - Monarch Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2555	Maf Volc	Chip	1.0	<0.03	0.2	360	23	195	<10	---	---	62	---	---	---	Sheared greenstone with trace chalcop- pyrite.

--- no data



TABLE A-51. - ANALYTICAL RESULTS - Mineral occurrence - Port Audrey

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2907	Maf Volc	Random Chip	20	<0.03	0.1	57	19	71	<10	---	---	24	---	---	Basic dike. 5% pyrite, pyrrhotite and chalcopryrite.
2909	Maf Volc	Random Chip	---	< .03	0.1	44	15	62	<10	---	---	20	---	---	Schistose greenstone 5% pyrite and chalcopryrite.
2910	SL/SS/CG	Random Chip	---	< .03	0.1	110	37	105	<10	---	---	72	---	---	Slate lens.
2911	Maf Volc	Random Chip	---	< .03	0.1	100	22	92	<10	---	---	56	---	---	Basic dike with scattered disseminated sulfides.

--- no data

NAME (other names): Mineral occurrence                      COMMODITIES: Copper, Zinc

LOCATION:    Quadrangle: Seward B-2                      SW 1/4 Sec 9 T 3N R 10E  
                    Meridian: Seward

                    Geographic: In a saddle, 1.2 mile due west of the head of south  
    arm, Bay of Isles, Knight Island.  
    Elevation: 1,350 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-64	NA	NA	NA	NA	NA

HISTORY & PRODUCTION:

Unknown.

RESERVES: None exposed.

OPERATING DATA:

Some minor diggings and scrapings were found in the area.

GEOLOGIC SETTING:

A mineralized north-south trending shear zone is exposed in a saddle along a ridge at an elevation of 1,350 ft. A 2.5 x 25 ft outcrop of iron stained schistose greenstone contained pyrite, pyrrhotite, 1% chalcopyrite, and up to 20% sphalerite. Quartz and epidote stringers also occur within the sheared rocks. The shear zone is exposed intermittently for several hundred yards across the saddle.

BUREAU WORK:

Several mineralized exposures in the area were sampled (table A-52) and the 5.0% zinc content of sample number 2848 is very high grade for the area. Mineralized exposures in the saddle are small due to extensive cover. Low mineral development potential for zinc and copper due to small size of exposures.

REFERENCES:

TABLE A-52. - ANALYTICAL RESULTS - Mineral occurrence - Bay of Isles

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Ba	Ni	Cr	Sn	
2848	Maf Volc	Chip	2.5	<0.03	5.1	0.8%	30	5.0%	<10	---	---	44	---	---	2.5 x 30 ft siliceous sheared greenstone mass, chalcopyrite, sphalerite
5240	Maf Plut	Grab	---	.03	<.1	20	53	30	11	12	51	<1	36	---	20 x 40 ft gabbro exposure minor pyrite.
5241	Maf Volc	Chip	4.0	.03	0.6	215	28	780	<10	26	651	34	260	---	7 x 18 ft greenstone mass, minor pyrite.

--- no data



Sulfides consist of pyrrhotite, chalcopyrite, and pyrite. Chalmersite is also reported. Chalcopyrite occurs as stringers and blebs in concentrations of up to 15%. The mineralized zone is reported to be drifted along underground for a distance of 110 ft (78, p. 213).

Sampling by Poy (108) indicates an average of 2.2% copper over an average 18 ft width underground.

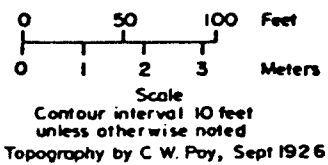
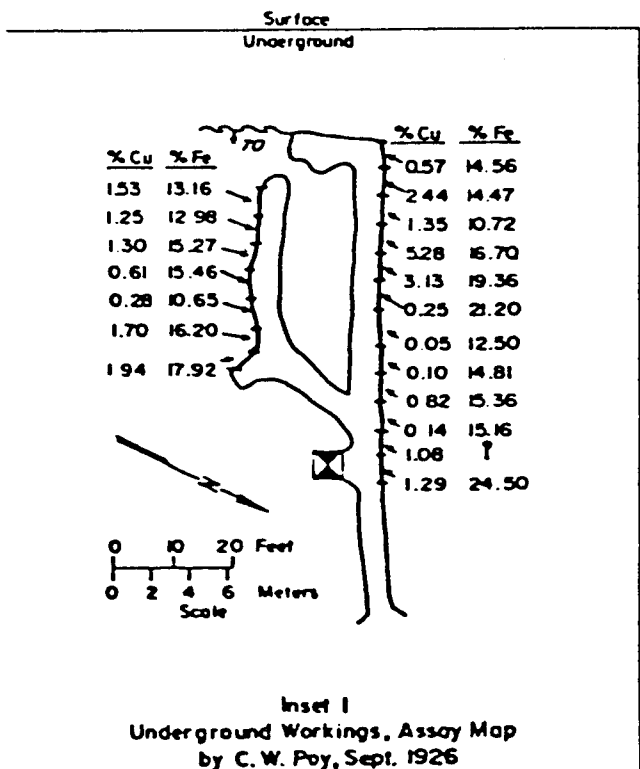
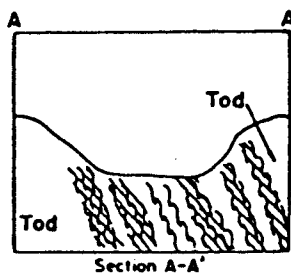
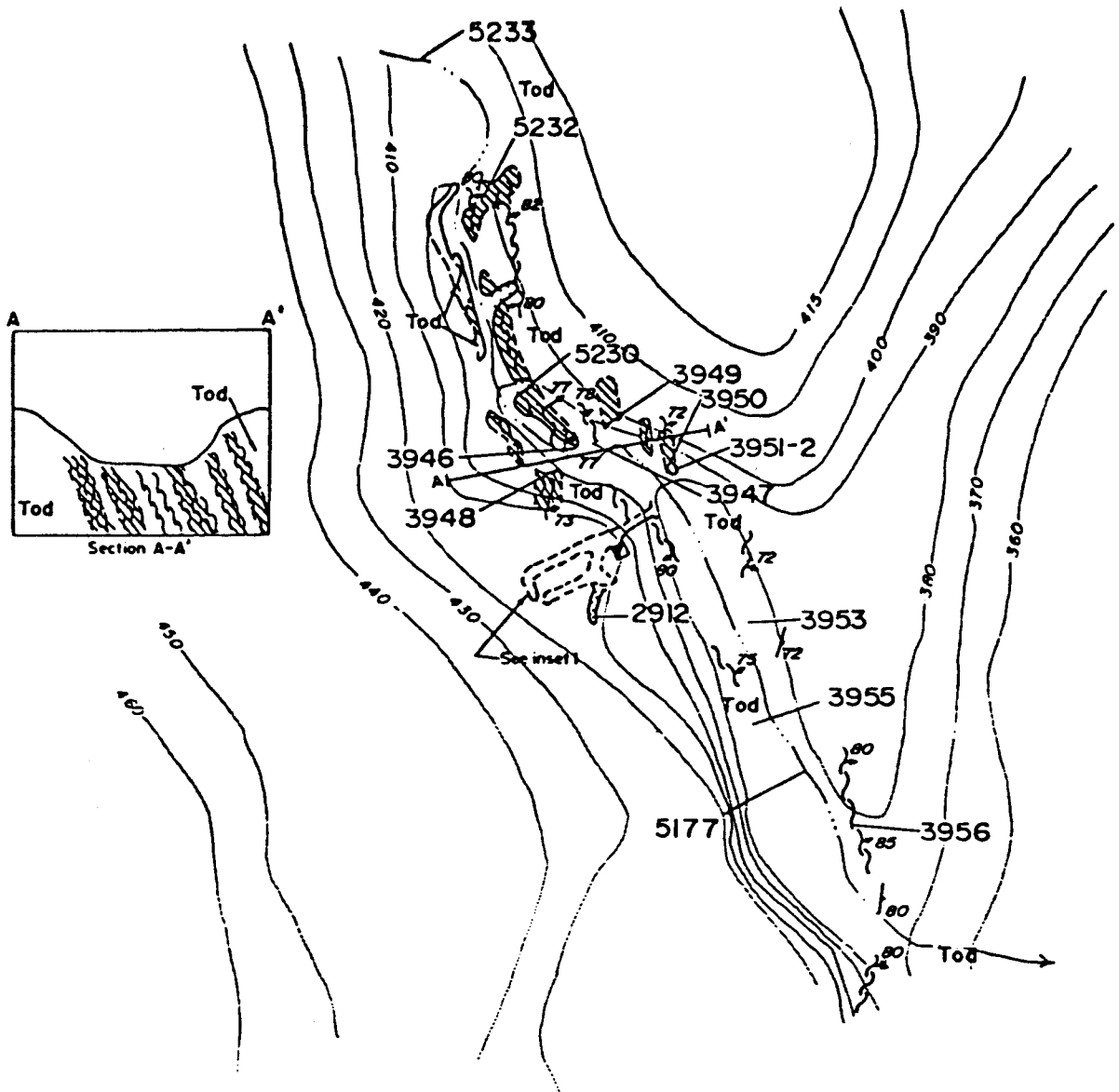
#### BUREAU WORK:

The surface exposures were mapped and sampled since none of the underground workings are presently accessible. Soil samples were collected and a ground magnetic survey run over the north and south muskeg covered extensions of the exposed sulfides. These indicate that sulfides may extend a total of 410 ft along strike (table A-53 and fig. A-20). The results of the soil sampling are not shown here. Moderate mineral development potential due to high copper values and mineralization exposure length.

#### REFERENCES:

51, 78, 82, 98, 108, 111, 141, 146-147, 151





- LEGEND**
- Tod Greenstone, locally containing basalt dikes
  - Stringer and disseminated sulfides
  - Shear zone, showing dip
  - Contact, dashed where approximate
  - Strike and dip of cleavage
  - Shaft at surface
  - Shaft above and below levels
  - Adit
  - Open cut
  - 3956 Sample site

FIGURE A-20. - Pandora Prospect, sample locations  
194

TABLE A-53. - ANALYTICAL RESULTS - Pandora Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Cr	Ni	Sb	Sn	
2912	Maf Volc	Chip	5.0	.03	3.5	4.0%	21	200	14	---	---	21	---	---	Sheared greenstone <5% sulfides.
3946	Maf Volc	Chip	6.0	.07	1.8	.47%	39	130	<10	56	210	51	---	---	Sheared greenstone trace sulfides.
3947	Maf Volc	Chip	2.5	.04	6.0	4.0%	48	160	<10	75	140	28	---	---	Sheared greenstone 10% chalcopryrite.
3948	Maf Volc	Chip	3.5	.03	1.0	.37%	36	130	<10	52	180	25	---	---	Sheared greenstone 10% chalcopryrite.
3949	Maf Volc	Chip	2.0	.05	<.03	150	18	46	<10	24	320	37	---	---	Massive greenstone with quartz stringers and sulfide.
3950	Maf Volc	Chip	3.0	.04	3.6	3.1%	38	400	<10	105	270	110	---	---	Sheared greenstone up to 10% chalcopryrite.
3951	Maf Volc	Chip	2.4	.05	2.5	1.7%	48	240	<10	100	275	93	---	---	Sheared greenstone up to 10% chalcopryrite.
3952	Maf Volc	Chip	1.0	<.03	0.2	72	26	44	<10	46	.13%	310	---	---	Gouge in sheared greenstone.
3953	Maf Volc	Random Chip	---	<.03	0.5	96	20	58	<10	31	305	80	---	---	Laminated tuff (?) sediment with 1% pyrite.
3955	Maf Volc	Chip	2.0	<.03	0.1	.11%	40	150	<10	71	305	93	---	---	Sheared greenstone 1% chalcopryrite.
3956	Maf Volc	Chip	0.7	.05	0.2	81	16	100	<10	15	120	32	---	---	Silicified claystone chalcopryrite on fracture surface.

--- no data

TABLE A-53. - ANALYTICAL RESULTS - Pandora Prospect - Continued

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Cr	Ni	Sb	Sn	
5177	Str Sed	Str. Silt	---	<.03	<.03	140	30	52	<10	17	350	45	---	---	Collected below mineralized zone.
5230	Maf Volc	Chip	15	<.03	0.9	1.45%	42	98	<10	47	195	37	---	---	Sheared greenstone up to 10% chalcopyrite.
5232	Maf Volc	Chip	1.5	<.03	1.2	.42%	38	160	<10	8	115	32	---	---	Sheared chloritized greenstone 1% stringer chalcopyrite.
5233	Str Sed	Str. Silt	----	<.03	<.03	50	23	53	<10	17	325	45	---	---	Collected above mineralized zone.

--- no data



TABLE A-54. - ANALYTICAL RESULTS - Marsha Bay Claims

Sample No.	Material Type	Sample Type	Width (feet)	Elements ppm, (unless otherwise indicated)												Decriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2560	Maf Volc	Chip	5.0	<.03	0.2	160	12	150	<10	---	---	11	---	---	---	Sheared greenstone.
2561	Maf Volc	Random Chip	---	<.03	0.3	340	21	130	<10	---	---	36	---	---	---	Greenstone wall-rock.
2562	Maf Volc	Random Chip	---	<.03	0.1	44	15	66	<10	---	---	18	---	---	---	Sheared greenstone.
2945	Maf Volc	Random Chip	---	<.03	0.1	85	24	100	<10	---	---	18	---	---	---	Basaltic dike.
2947	Maf Volc	Random Chip	---	<.03	<0.1	65	19	63	<10	---	---	19	---	---	---	Basaltic dike.

--- no data

NAME (other names): Rua Cove Prospect      COMMODITIES: Copper, Zinc, Iron,  
Patented Claims: Copper Bullion      Sulfur  
Nos. 1 and 2  
16 unpatented claims.

LOCATION: Quadrangle: Seward B-2      NW 1/4 Sec 13 T 3N R 10E  
Meridian: Seward  
Geographic: 0.3 miles west of Rua Cove, Knight, Island.  
Elevation: 170 to 1,250 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-67	95-98 95-99	213	950037	A001618	993

HISTORY AND PRODUCTION: (83, 148)

- 1905 - Initial discovery and claim staking by C. T. Rua.
- 1908 - Property first examined by USGS. Development begun by C. T. Rua and J. J. Bettles.
- 1909 - 422 ft of tunneling done and 1,000 lb of ore reportedly shipped for testing. It contained 1.68% copper, 47.9% iron, 31.5% sulfur, 15% SiO<sub>2</sub>.
- 1912 - 2 claims patented by Fred Liljegren.
- 1916 - W. A. Dickey acquired control of property. A cabin was built on the property and development consisted of numerous open cuts, and a tunnel 365-ft-long with four crosscuts.
- 1926 - Several buildings had been erected, a water-power plant and compressor installed, and underground development totaled 1,750 ft of tunnel and crosscuts. Property sampled by Kennecott Copper Corp. which did no further work on it.
- 1929-30 - The Solar Development Co., a subsidiary of the Consolidated Mining and Smelting Co. of Canada Ltd., took an option on the claims early in 1929 but dropped it in May, 1930. Development work done by this company included repairing of camp facilities, installation of a diesel compressor plant and erection of a bunk house. The existing tunnel was extended 670 ft and a second tunnel 200 ft vertically below the first driven 590 ft. Underground diamond drilling totalling 2,325 ft was also done and the ore body was also thoroughly sampled.
- 1938 - Property evaluated by the E. J. Longyear Co. The only work done consisted of a compilation report using previous data.
- 1942 - Property examined by the Bureau as part of war minerals studies program. Work consisted of mapping existing workings. No further sampling or drilling were recommended to determine grade and tonnage at that time (65).

1943 - Geology of the underground workings mapped by the U.S. Geological Survey (130).

1948-49 - Underground workings sampled by the Bureau and 897 ft of diamond drilling done (113, 114).

1963 - Option obtained on property by N. W. Exploration (93).

1964 - The Bureau conducted geophysical studies on the ore body (111, p. 26).

1972-73 - Drilling done by Northwest Exploration.

1976 - Texas Gulf Inc. did core drillings in the area (93).

#### RESERVES:

After Stefansson and Moxham. (130)

<u>Measured</u>		<u>Indicated</u>		<u>Inferred</u>		<u>Total tons</u>	<u>% Cu</u>
<u>Tons</u>	<u>% Cu</u>	<u>Tons</u>	<u>% Cu</u>	<u>Tons</u>	<u>% Cu</u>		
25,000	1.25	1,100,000	1.25	200,000	1.25	1,325,000	1.25

After Rutledge (114)

<u>Indicated</u>		<u>Inferred</u>		<u>Total tons</u>	<u>% Cu</u>
<u>Tons</u>	<u>% Cu</u>	<u>Tons</u>	<u>% Cu</u>		
272,000	1.24	320,000	1.24	592,000	1.24
918,000	0.57	1,080,000	0.57	1,998,000	0.57

Additional Commodities: 42.4% Fe, 25.8% S, .005 oz gold/ton, and 0.1 oz silver/ton.

#### OPERATING DATA:

Development consists of a main adit at an elevation of 320 ft containing a total of 2,420 ft of drifts and crosscuts. At an elevation of 170 ft and 600 ft to the southeast a second adit has been driven 590 ft. A series of open cuts exposed the ore body to an elevation of 750 ft above the upper adit. Several buildings have existed at the site throughout the years but only one is still standing. A water-powered air compressor was set up at one time. Boxes of drill core are still at the site.

#### GEOLOGIC SETTING:

Country rock in the prospect area consists mainly of abundant fine-grained greenstone, and subsidiary porphyritic greenstone locally containing pillow structures, and quartz diorite. Sulfide mineralization occurs adjacent to faults and fracture planes within a roughly N15°E trending steeply west-dipping shear zone. The gangue consists of greenstone and some quartz. Pyrrhotite, chalcopyrite, and

minor sphalerite are the major sulfides and occur in several subparallel massive and stringer sulfide lenses. The thickest lens is 30- to 50-ft-wide, extends for 400 ft along strike and sulfides extend for at least 200 ft vertically. Massive and stringer sulfides are only found in the upper adit. The lower adit was apparently driven to intercept the downward extension of mineralization and did not do so. Johnson (78, p. 214) believed the ore body to be a linked system of mineralized shear zones enclosing large masses of unmineralized greenstone. Stefansson (130) considered it to have formed largely by replacement of sheared greenstone rather than by filling of open cavities.

#### BUREAU WORK:

The Rua Cove property was previously examined by the Bureau in 1942, 1948, 1949, and 1964. (65, 111, 113, 114) Little work was done in 1980 by the Bureau due to the extensive sampling, drilling, and geophysics done previously. Samples of the sulfides and wallrocks were collected at random intervals in the underground and surface workings (table A-55 and fig. A-21). Zinc has not been included in any previous ore reserve calculations presumably due to its low values. Two samples were collected that averaged 0.65% zinc. Moderate mineral development potential for copper.

#### REFERENCES:

5, 51-52, 65, 78, 82-83, 93, 111, 113-114, 130, 141, 146-148, 151, 161



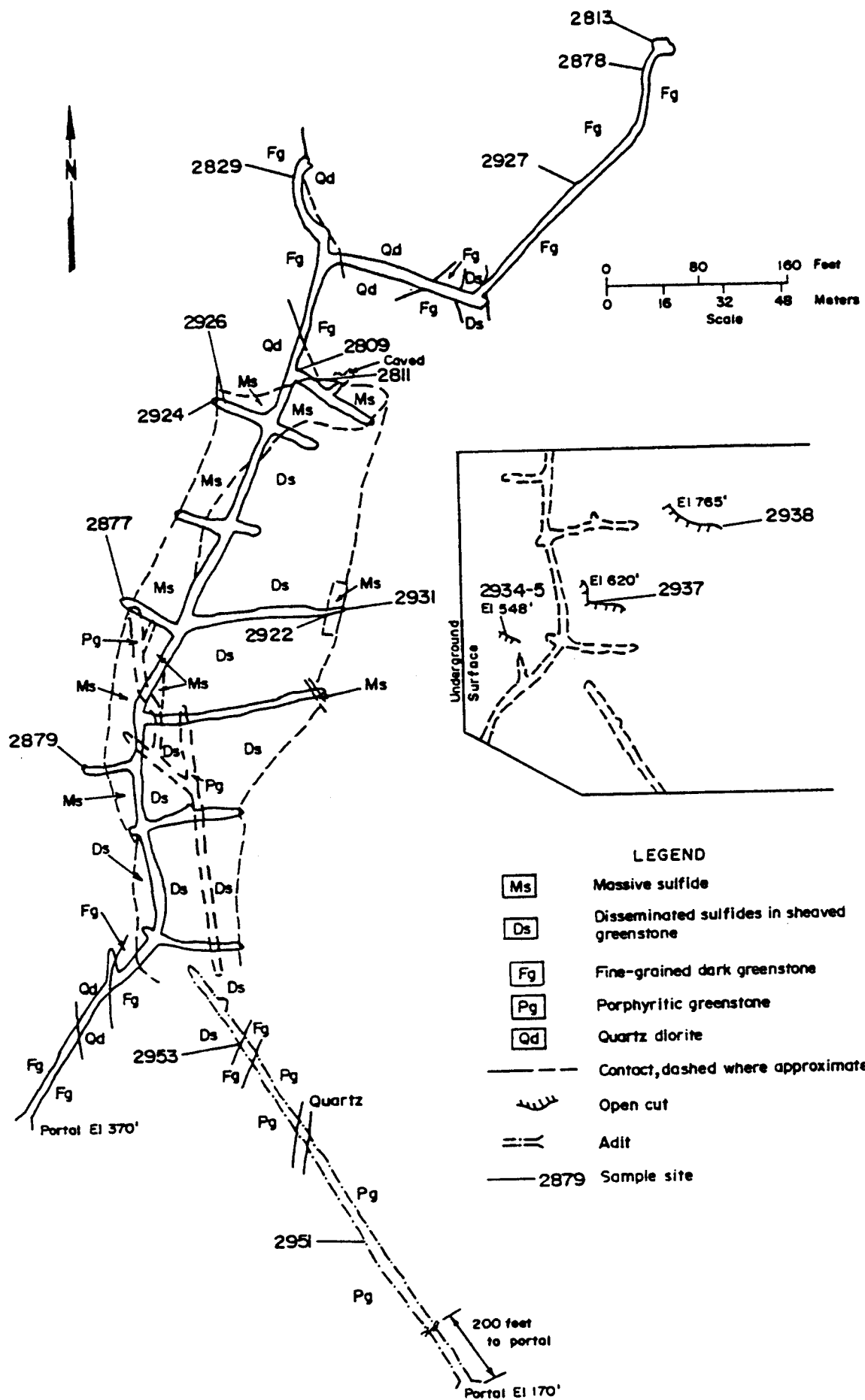


FIGURE A-21. - Rua Cove Prospect, sample locations.

TABLE A-55. - ANALYTICAL RESULTS - Rua Cove Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2809	Maf Volc	Random Chip	---	<.03	<0.1	38	24	89	<10	---	---	75	---	---	---	Quartz diorite in adit.
2811	Maf Volc	Random Chip	---	<.03	<.1	105	22	70	<10	---	---	58	---	---	---	Porphyritic greenstone.
2813	Maf Volc	Random Chip	---	<.03	<.1	190	24	66	<10	---	---	86	---	---	---	Pillow greenstone.
2829	Sulfides	Random Chip	---	<.03	0.4	1.25%	42	135	<10	---	---	29	---	---	---	Mineralized greenstone.
2877	Maf Volc	Random Chip	---	<.03	0.1	350	27	135	<10	---	---	89	---	---	---	Greenstone wallrock.
2878	Maf Volc	Random Chip	---	<.03	<.1	85	25	85	<10	---	---	66	---	---	---	Greenstone wallrock.
2879	Maf Volc	Random Chip	---	<.03	<.1	62	23	140	<10	---	---	66	---	---	---	Greenstone wallrock.
2922	Sulfides	Random Chip	---	<.03	1.6	1.6%	35	210	<10	---	---	45	---	---	---	Massive sulfides with 5% chalcopryrite.
2924	Maf Volc	Random Chip	---	<.03	<.01	50	18	105	<10	---	---	48	---	---	---	Greenstone wallrock.
2926	Sulfides	Random Chip	---	2.05	15	1.6%	35	0.83%	<10	---	---	35	---	---	---	Massive sulfides.
2927	Maf Volc	Random Chip	---	.03	0.7	720	15	47	<10	---	---	41	---	---	---	Greenstone wallrock.

--- no data

TABLE A-55. - ANALYTICAL RESULTS - Rua Cove Prospect -- Continued

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
2931	Maf Volc	Random Chip	---	<.03	<.1	170	24	150	<10	---	---	67	---	---	---	Greenstone near contact with sulfide.
2934	Sulfides	Random Chip	---	.03	0.2	0.18%	37	46	<10	---	---	10	---	---	---	Gossan above adit.
2935	Maf Volc	Chip	---	<.03	.1	71	36	125	<10	---	---	55	---	---	---	Sheared greenstone in open cut.
2937	Sulfides	Random Chip	---	<.03	4	1.13%	36	.48%	<10	---	---	31	---	---	---	Massive sulfides in open cut.
2938	Maf Volc	Random Chip	---	<.03	<.1	81	24	70	<10	---	---	49	---	---	---	Greenstone near open cut.
2951	Maf Volc	Random Chip	---	<.03	0.1	600	29	68	<10	---	---	53	---	---	---	Adit.
2953	Maf Volc	Random Chip	---	<.03	<.1	21	29	79	<10	---	---	52	---	---	---	Sheared greenstone.

--- no data

NAME (other names): Mineral occurrence      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward B-2      NE 1/4 Sec 12 T 3N R 10E  
             Meridian: Seward  
             Geographic: At tidewater 1.3 miles northeast of Rua Cove,  
                         Knight Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-68	NA	212	NA	NA	NA

HISTORY & PRODUCTION:

Unknown.

RESERVES: Unknown.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

An iron oxide-stained zone occurs near the contact between sheared chloritized greenstone and diorite (?). The diorite contains 1 to 2% chalcopyrite and pyrrhotite. One sulfide-rich lense averaging 9-in. thick contained up to 12% total sulfides. Numerous shears up to 2-ft-thick cut the diorite and minor chalcopyrite was observed in a 1-ft-wide northwest-trending shear. The diorite is cut by numerous basalt dikes up to 6-in.-thick. Tysdal (141) mentions a shear zone in the area 18-ft-wide.

BUREAU WORK:

The mineralization was sampled (table A-56). Low mineral development potential due to low copper values.

REFERENCES:

141

TABLE A-56. - ANALYTICAL RESULTS - Mineral occurrence - Northeast Rua Cove

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
3296	Maf Plut	Random Chip	---	<.03	4.9	940	15	110	<10	---	---	35	---	---	---	Sheared greenstone.
3298	Maf Volc	Cont Chip	10	<.03	2.4	35	14	100	<10	---	---	92	---	---	---	Sheared greenstone.
3299	Maf Plut	Cont Chip	.5	<.03	10	.45%	22	340	14	---	---	48	---	---	---	Sheared diorite.
3386	Maf Volc	Random Chip	---	<.03	7.4	550	10	120	<10	---	---	105	---	---	---	Sheared greenstone.
3387	Maf Volc	Random Chip	---	<.03	1.6	260	5	60	<10	---	---	35	---	---	---	Siliceous greenstone.

--- no data

NAME (other names): Claims: HA No. 3-14      COMMODITIES: Copper  
Owner: Northwest Exploration

LOCATION:    Quadrangle: Seward B-2              NW 1/4 Sec 11    T 3N    R 10E  
            Meridian: Seward  
            Geographic: Head of Short Arm, Bay of Isles, Knight Island.  
            Elevation:    Unknown.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-69	95-392, B	950047	NA	NA	NA

HISTORY AND PRODUCTION:

1970 - Reported activity year (82).

RESERVES:    Unknown.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

Country rock consists of basalt dikes and sills, intruding slate and sandstone.

BUREAU WORK:

An aerial search found no signs of prospecting.

REFERENCES:

82, 151

NAME (other names): Mineral occurrence      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward B-2                    SW 1/4 Sec 4    T 3N    R 10E  
                    Meridian: Seward  
                    Geographic: At tide water on the west side of South Arm,  
   1 mile from its head, Knight Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-70	NA	209	NA	NA	NA

HISTORY & PRODUCTION:

Unknown.

RESERVES: None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

At this location a narrow chert lense a few feet long is surrounded by graywacke. Up to 1% pyrite is concentrated at the chert and graywacke contact. No chalcopyrite was observed.

BUREAU WORK:

The site was sampled but no significant mineralization found (table A-57). Low mineral development potential.

REFERENCES:

111, 141

TABLE A-57. - ANALYTICAL RESULTS - Mineral occurrence - South Arm

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Ba	Ni	Cr	Sn	W	
5212	SL/SS/CG	Random Chip	---	<.03	0.6	125	31	87	12	21	481	38	150	---	---	Graywacke with up to 1% pyrite.

--- no data



NAME (other names): Fergusson, Johnson,  
and Harvey Prospect      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward B-3      SE 1/4 Sec 5    T 3N    R 10E  
             Meridian: Seward  
             Geographic: 0.2 miles southeast of the head of West Arm,  
                                 Knight Island.    Elevation: Unknown.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-71	NA	208	NA	NA	NA

HISTORY & PRODUCTION:

1908 - First mentioned in literature (51, Plate IV).

RESERVES:    Unknown.

OPERATING DATA:

Grant & Higgins (51, Plate IV) give only a map location with no description.

GEOLOGIC SETTING:

Country rock in the area consists predominately of greenstone with lesser pillow basalts. A major northeast-trending shear zone projects through the area.

BUREAU WORK:

An aerial and ground search found no signs of prospecting.

REFERENCES:

51-52, 141

NAME (other names): Kaczanowski & Wilson      COMMODITIES: Copper Prospect

LOCATION:      Quadrangle: Seward B-3                  NE 1/4 Sec 31 T 4N R 10E  
                    Meridian: Seward  
                    Geographic: On the east shore 1 mi southwest of the head of Lower Herring Bay, Knight Island at tidewater.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-72	95-239	207	950041	NA	NA

HISTORY & PRODUCTION:

1900 - Earliest activity year.

1908 - First mentioned in literature (78, p. 213).

RESERVES: None.

OPERATING DATA:

Development consists of a 19-ft S65°E trending adit driven into a west facing cliff face.

GEOLOGIC SETTING:

The adit is driven into a nearly flat-lying pillow basalt flow. It follows an average 3-in.-thick light-green siliceous layer which is subparallel to the flow attitude. Sulfides consisting of up to 10% pyrrhotite and up to 1% chalcopyrite are concentrated in this layer. This same layer is exposed on the cliff face to the north of the adit and is malachite stained in pillow flow exposures further along the shoreline. To the north, trace chalcopyrite is found in the siliceous matrix between individual pillows.

BUREAU WORK:

The adit was mapped and the mineralization sampled (fig. A-22 and table A-58). Low mineral development potential due to low copper values.

REFERENCES:

51, 78, 82, 141, 151

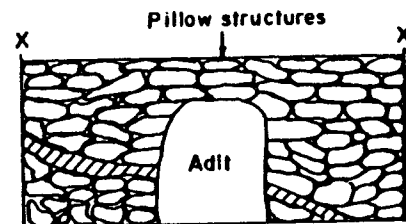
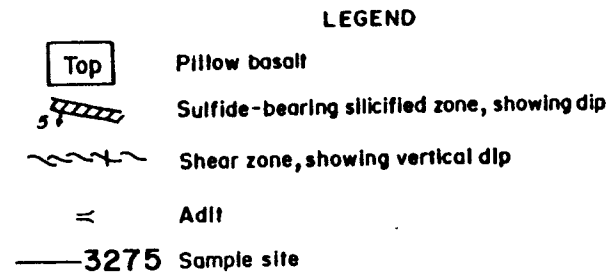
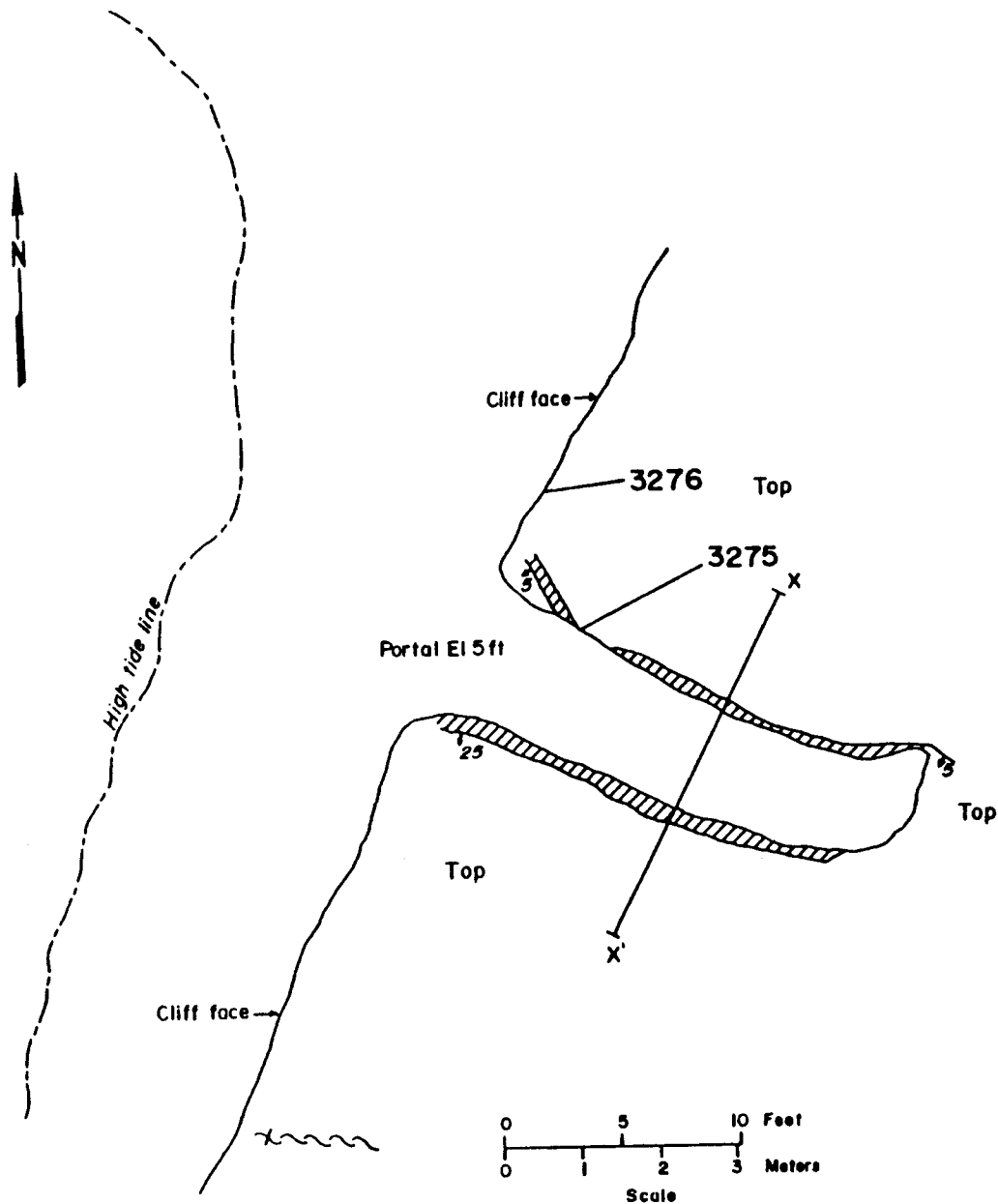


FIGURE A-22. - Kaczanowski and Wilson Prospect, sample locations.

TABLE A-58. - ANALYTICAL RESULTS - Kaczanowski & Wilson Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
3275	Maf Volc	Chip	.3	.12	2.2	175	10	70	<10	---	---	71	---	---	---	Silicified greenstone.
3276	Maf Volc	Random Chip	---	<.03	.28	78	14	70	<10	---	---	85	---	---	---	Pillow basalt.

--- no data

NAME (other names): Unnamed prospect  
(Herring Bay)

COMMODITIES: Copper, Zinc

LOCATION: Quadrangle: Seward B-2                      SW 1/4 Sec 28 T 4N R 10E  
          Meridian: Seward  
          Geographic: 1.3 mi southeast of the east arm of Lower Herring  
                          Bay, Knight Island.  
                          Elevation: 500 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-73	NA	NA	NA	NA	NA

HISTORY & PRODUCTION:

Unknown.

RESERVES: None exposed.

OPERATING DATA:

Two adits 5- to 6-ft-long at 450 and 550 ft elevations.

GEOLOGIC SETTING:

A shear zone cutting greenstones is exposed for an 80 ft width in a stream bottom. Iron oxide-staining is abundant and minor pyrite was seen in outcrop. The shear zone trends roughly N15°E and dips 70 to 80°E. No chalcopyrite was found.

BUREAU WORK:

The pyrite-bearing shear zone was sampled (table A-59). Low mineral development potential due to low copper values.

REFERENCES:

None

TABLE A-59. - ANALYTICAL RESULTS - Unnamed prospect - Herring Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3376	Maf Volc	Random Chip	---	<.03	1.7	95	20	150	17	---	---	70	---	---	Sheared greenstone with pyrite along cleavage.
3377	Maf Volc	Random Chip	---	<.03	1.8	80	10	50	<10	---	---	60	---	---	Sheared greenstone with pyrite blebs and quartz.

--- no data

NAME (other names): Wallace, McPherson, COMMODITIES: Copper  
Valentine prospect, claims: Snowstone group

LOCATION: Quadrangle: Seward B2 NE 1/4 Sec 27 T 4N R 10E  
Meridian: Seward  
Geographic: 2.5 mi northwest of Cape Poi, on north side of  
Bay of Isles, Knight Island. Located 1/4  
mile from shore at an elevation of 200 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-74	95-253	206	950048	NA	NA

HISTORY & PRODUCTION:

1900 - First activity year.

1908 - Development activity reported (51, p. 92).

RESERVES: Unknown.

OPERATING DATA:

Grant and Higgins (51, p. 92) report two adits 55 and 25 ft in length.

GEOLOGIC SETTING:

Bedrock in the area consists of gabbroic dikes cutting greenstone.  
The dikes contain disseminated magnetite and trace pyrrhotite.

BUREAU WORK:

An aerial and ground search found no signs of prospecting. Rocks in  
the area were sampled (table A-60) and contained no significant  
mineralization.

REFERENCES:

5, 82, 141, 151

TABLE A-60. - ANALYTICAL RESULTS - Wallace, McPherson, & Valentine Prospect Area

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2946	Maf Plut	Random Chip	---	<.03	<.1	43	23	45	<10	---	---	22	---	---	Gabbro dike surrounded by greenstone.
2947	Maf Volc	Random Chip	---	<.03	<.1	65	19	63	<10	---	---	19	---	---	Greenstone with trace sulfides.

--- no data



NAME (other names): Unnamed prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-2

NE 1/4 Sec 26 T 4N R 10E

Meridian: Seward

Geographic: North side of the Bay of Isles at tidewater,  
1.8 miles northwest of Cape Poi, Knight Island.

REFERENCE NUMBERS:

Map  
S-75

Kx  
NA

Tysdal  
205

MAS  
NA

BLM  
NA

MS  
NA

HISTORY & PRODUCTION:

Unknown.

RESERVES: Unknown.

OPERATING DATA:

Richter, (111, p. 30) reports a 30 ft adit heading N20°W a few feet above sea level.

GEOLOGIC SETTING:

The country rock in the area is composed of a series of dikes, varying in composition and texture from fine grained greenstone to diabase and gabbro. Gabbroic rocks were found to contain pyrrhotite and a massive 0.2 x 2 ft pyrite pod occurred in diabasic dike rock. A massive quartz pod 10 ft in diameter was found to contain pyrrhotite blebs and epidote stringers.

BUREAU WORK:

The reported adit was not located but samples collected from the rocks in the area contained no significant mineralization (table A-61).

REFERENCES:

111, 141

TABLE A-61. - ANALYTICAL RESULTS - Unnamed prospect - Bay of Isles

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2874	Maf Plut	Random	---	.04	0.1	100	15	15	<10	---	---	14	---	---	Gabbro with pyrrhotite blebs.
2876	Quartz	Random Chip	---	<.03	<.1	30	12	15	<10	---	---	16	---	---	Greenstone with pyrrhotite blebs, quartz and epidote veinlets.

--- no data

NAME (other names): Crown Copper Co.  
Prospect

COMMODITIES: Copper. Zinc

LOCATION: Quadrangle: Seward B-2            SE 1/4 Sec 21 T 4N R 10E  
          Meridian: Seward  
          Geographic: Southeast corner of Herring Bay, Knight Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-76	NA	203	NA	NA	NA

HISTORY & PRODUCTION:

1908 - First appears in literature (51, p. 93).

RESERVES: Unknown.

OPERATING DATA:

Grant and Higgins (51, p. 93) describe two bunk and mess houses on the beach and a floating dock. They further describe a 25 ft adit 1/4 mi to the south of the camp buildings. Also other prospects were reported in the southeast arm. At one locality a 50 ft tunnel is reported. Johnson (78, p. 212) describes a 30 ft tunnel with a 10 ft drift to the north driven at an elevation of 110 ft only a short distance from the shoreline. He further mentions some strippings and open cuts across the south end of a low hill west of the adit. Another open cut 15-ft-wide lies on the same ridge (?) a little further north.

GEOLOGIC SETTING:

Grant and Higgins (51, p. 93) state that the 50 ft adit described above was driven into greenstone containing cracks filled with quartz, pyrite, sphalerite, and chalcopyrite.

The 30 ft adit was driven in slightly shattered massive greenstone. Epidote stringers occurred in the country rock but no well defined vein or shear zone was seen. No ore was found in place. A 15-ft-wide cut exposed irregular mineralization consisting of chalcopyrite, sphalerite, and pyrite.

BUREAU WORK:

None of the workings described above were located.

REFERENCES:

51, 78, 98, 141

NAME (other names): Unnamed prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-2

SW 1/4 Sec 21 T 4N R 10E

Meridian: Seward

Geographic: Near tidewater on the east shore of a lake 1  
mile south of the head of the east arm of  
Herring Bay.

REFERENCE NUMBERS:

Map  
S-77

Kx  
95-251

Tysdal  
204

MAS  
950042

BLM  
NA

MS  
NA

HISTORY & PRODUCTION:

1908 - First mentioned in literature (51, p. 93).

RESERVES: Unknown.

OPERATING DATA:

Grant and Higgins (51, p. 93) describe a 100 ft adit near tidewater.

GEOLOGIC SETTING:

The adit was driven to intersect some veins that outcrop on the ridge to the northeast (51, p. 93).

BUREAU WORK:

Some cabin ruins were located along the east shore of the lake but no indications of prospecting were found.

REFERENCES:

51, 82, 141, 151

NAME (other names): Malack Prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-2

NE 1/4 Sec 21 T 4N R 10E

Meridian: Seward

Geographic: Southeast arm of Herring Bay near tidewater, Knight Island.

REFERENCE NUMBERS:

Map  
S-78

Kx  
NA

Tysdal  
202

MAS  
NA

BLM  
NA

MS  
NA

HISTORY & PRODUCTION:

1908 - First appears in literature (51, Plate IV).

RESERVES: Unknown.

OPERATING DATA:

Grant and Higgins (51, Plate IV) give only a map location with no description.

GEOLOGIC SETTING:

The country rock in the area consists of pillow basalt flows. These are cut by shear zones containing up to 50% epidote and 1% disseminated pyrrhotite. No chalcopyrite was observed.

BUREAU WORK:

No indications of prospecting were located, but one 3-ft-wide vertical shear zone trending N75°W was found near tidewater and sampled (table A-62). It contained no significant mineralization.

REFERENCES:

51, 141

TABLE A-62. - ANALYTICAL RESULTS - Malack Prospect Area

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2971	Maf Volc	Cont Chip	3.0	<.03	.31	260	15	50	10	---	---	28	---	---	3-ft-wide shear zone in pillow basalt. Trace pyrrhotite.

--- no data

NAME (other names): Boyle Prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-3

NW 1/4 Sec 19 T 4N R 10E

Meridian: Seward

Geographic: Near tidewater on the southwest of Herring Bay.  
0.4 mi northwest of Peak 1562.

REFERENCE NUMBERS:

Map  
S-79

Kx  
NA

Tysdal  
201

MAS  
NA

BLM  
NA

MS  
NA

HISTORY & PRODUCTION:

1908 - First appears in literature (51, Plate IV).

RESERVES: Unknown.

OPERATING DATA:

No signs of development. Grant and Higgins (51, Plate IV) give only a map location with no description.

GEOLOGIC SETTING:

Country rock in the area consists of pillow basalts.

BUREAU WORK:

No signs of prospecting were located.

REFERENCES:

51, 141

NAME (other names): Big Passage Copper  
Mining Co. Prospect

COMMODITIES: Copper

LOCATION: Quadrangle: Seward B-2                      SW 1/4 Sec 14 T 4N R 10E  
Meridian: Seward  
Geographic: 1.0 mile northwest of Otter Lake at 1,300 ft  
elevation, Knight Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-80	NA	200	NA	NA	NA

HISTORY & PRODUCTION:

1908 - First reported in literature (51, Plate IV).

RESERVES: Unknown.

OPERATING DATA:

Grant and Higgins (51, Plate IV) gives only a map location with no description.

GEOLOGIC SETTING:

The country rock in the area consists of N10° to 25°W trending pillow basalt flows with near vertical dips. A 5-ft-long adit (?) cuts an iron oxide-stained zone on a cliff face. Rocks in the adit contained <1% pyrite.

BUREAU WORK:

No signs of prospecting were located other than the possible short adit described above which was sampled (table A-63) and contained very low copper values.

REFERENCES:

51, 151



TABLE A-63. - ANALYTICAL RESULTS - Big Passage Copper Mining Co.

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
2982	Maf Volc	Random Chip	5.0	<0.03	0.422	145	6	65	40	---	---	19	---	---	5 ft adit? in cliff. Pillow basalts, <1% pyrite.

--- no data

NAME (other names): Knight Island Mining and  
Development Co. Prospect  
Claims: Louis Bay

COMMODITIES: Copper, Zinc,  
Lead

LOCATION: Quadrangle: Seward B-2            E 1/2 Sec 15 T 4N R 10E  
Meridian: Seward  
Geographic: 1.5 miles southwest of head of Louis Bay,  
Knight Island. Elevation: 600 to 1,100 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-81	95-256	199	950044	NA	NA

HISTORY AND PRODUCTION:

1908 - A small steam sawmill and electric plant were at the southeast corner of Louis Bay. Electric drills were worked in two tunnels 1 1/2 miles south of the bay. One tunnel is 85-ft-long and cuts five schistose zones, 2- to 18-in.-wide in greenstone, that contain pyrite, chalcopyrite, and pyrrhotite. A lower crosscut tunnel was 160-ft-long. A small water-power sawmill was being constructed (51, p. 93).

1908 - Claim recorded (82).

1916- Reached over a graded trail at the head of the valley the lower tunnel at 510 ft elevation was about 90-ft-long, with a 15 ft crosscut. At an elevation of 830 ft there was a 75-ft-long tunnel with a water-filled short drift and winze at the junction (78, p. 212).

1943 - There were two tunnels at the south end of the valley at elevations of approximately 550 ft and 900 ft. The lower tunnel was inaccessible. Only the ruins remain of facilities for housing miners at the mine and the beach, small hydroelectric plants, and a small sawmill at the beach. The road was overgrown with brush and trees (98, pp. 68-69).

RESERVES: Unknown.

OPERATING DATA:

Four adits occur in the area (fig. A-23). The lower one at 640 ft elevation was collapsed. Mine rails were coming out of it. It is probably the 160-ft-long adit described by Grant and Higgins (51). Another adit was located at 1,000 ft elevation. It was full of water and had a drift and winze in it. It is probably the same one described by Johnson (78, p. 212) as being 75-ft-long.

The two other adits located may or may not have been part of Knight Island Mining and Development Co. One is at 1,040 ft elevation and 28-ft-long. The other one is 6-ft-long at 680 ft elevation.

#### GEOLOGIC SETTING:

The country rock consists dominantly of pillow basalt greenstones interbedded with a little slate. The workings are along northerly trending, steeply dipping, shear zones, up to 4-ft-wide. Pyrrhotite and chalcopyrite are the dominant sulfides, with pyrite, sphalerite, quartz, epidote, and chlorite being subordinate (fig. A-23).

The 1,040-ft elevation adit follows a southeast trending shear zone containing massive pyrrhotite and up to 20% chalcopyrite in veins 4- to 10-in.-wide along with pyrite stringers, quartz veinlets, and slate fragments. The shear zone extends along the cliff face above the adit for 45 ft and contains several small open cuts.

The small 6-ft-long adit is driven into a vertical dipping N55° to 60°W trending shear zone that contains a trace of native copper along with pyrite and pyrrhotite.

#### BUREAU WORK:

Four adits were located and the accessible adits were mapped and samples collected (fig. A-23 and table A-64). One .8-ft-wide chip sample contained 3.25% copper. Another 1-ft-wide chip sample contained .48% zinc and .83% lead. This prospect has moderate mineral development potential.

#### REFERENCES:

51-52, 78, 82, 98, 141, 151

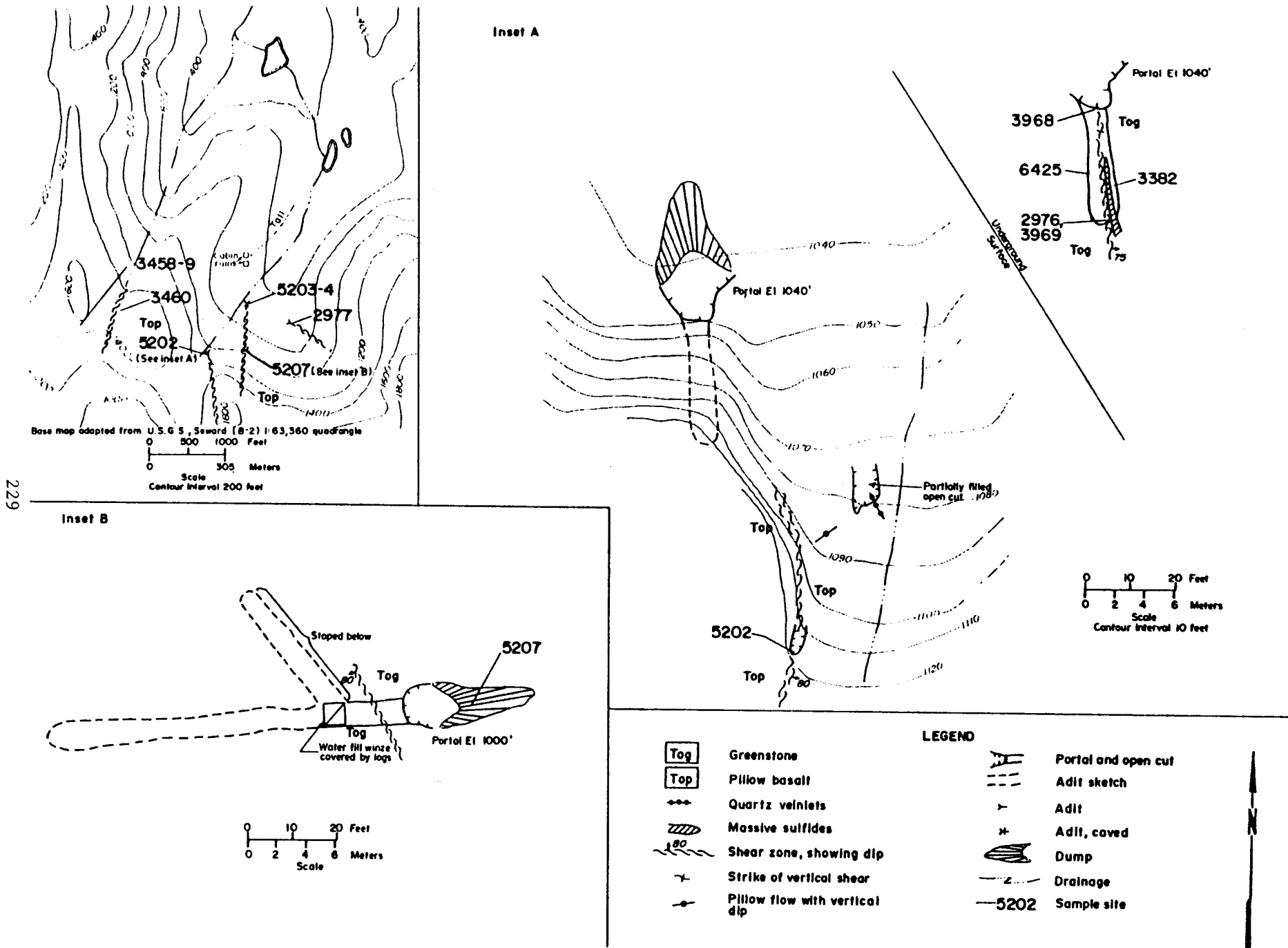


FIGURE A-23. - Knight Island Mining and Development Co. Prospect, sample locations.

TABLE A-64. - ANALYTICAL RESULTS - Knight Island Mining and Development Co. Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Ba	Cr	
2976	Maf Volc	Chip	4.0	<.03	3.5	0.65%	15	320	25	---	---	46	---	---	Across sheared greenstone with pyrrhotite, pyrite, and chalcopyrite.
2977	Maf Volc	Chip	1.0	<.03	2.9	.95%	16	1000	21	---	---	46	---	---	Sheared greenstone with pyrite, pyrrhotite, and trace native copper.
3382	Sulfides	Select	----	<.03	8.9	1.4%	27	740	19	---	---	80	---	---	Massive pyrrhotite and chalcopyrite.
3458	Maf Volc	Random Chip	----	<.03	3.8	25	6.0	50	<10	---	---	41	---	---	Sheared greenstone with numerous epidote/quartz veins.
3459	Maf Volc	Grab	----	.20	1.8	23	10	240	<10	---	---	60	---	---	Massive greenstone float with 10% pyrrhotite stringers.
3460	Maf Volc	Random Chip	----	<.03	2.8	110	7.0	50	<10	---	---	55	---	---	Pillow basalt greenstone with epidote stringers.
3968	Maf Volc	Chip	3.8	<.03	.2	695	44	380	<10	54	---	39	<10	140	Iron-stained sheared greenstone with <1% pyrite.
3969	Sulfides	Chip	.8	<.03	12.4	3.25%	57	1100	<10	225	---	37	<10	84	Across massive sulfide lense within greenstone. Contain approx. 45% pyrrhotite, 15% chalcopyrite stringers, and blebs and 10% chalcopyrite.

---- no data

TABLE A-64. - ANALYTICAL RESULTS - Knight Island Mining and Development Co. Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Ba	Cr	
5202	Maf Volc	Chip	5.0	<.03	3.3	.86%	43	900	<10	96	---	36	26	155	Across sheared greenstone with a 4-in.-wide massive pyrrhotite zone with 5-10% chalcopyrite.
5203	Maf Volc	Grab	----	<.03	.3	357	315	445	11	26	---	34	17	170	Greenstone with quartz veins 0.1-in.-wide <1% pyrrhotite.
5204	Maf Volc	Chip	1.0	<.03	5.7	.48%	.83	.97	10	32	---	26	34	84	Across shear zone with about 2% pyrite, trace of chalcopyrite and quartz matrix.
5207	Sulfides	Select	---	.03	14	3.1%	52	620	<10	380	---	51	15	92	Massive sulfide from dump.

--- no data

NAME (other names): Von Gunther or Malack Prospect      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward B-2                      SW 1/4 Sec 2    T 4N    R 10E  
            Meridian: Seward  
            Geographic: Near south end of Louis Bay, Knight Island along  
   shore. Elevation: 4 to 15 ft above sea level.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-82	NA	198	NA	NA	NA

HISTORY AND PRODUCTION:

1908 - Prospect site shown on map by Grant and Higgins (51, Plate IV).

1916 - Two 10 ft tunnels have been driven just above hightide level on small shear zones in greenstones. A short distance north of these tunnels and a little higher is an open cut (78, p. 211).

1980 - A collapsed cabin (?) was found near the adits.

RESERVES: Unknown.

OPERATING DATA:

Two 10-ft-long adits and a 14 ft open cut.

GEOLOGIC SETTING:

The workings are driven into northeast trending quartz-sulfide veins within a medium grained porphyritic greenstone (fig. A-24). Pillow flows predominate in the area and pyrite occurs as fracture fillings for at least 1/4 mile north of the open cut along the shoreline.

The south adit followed a 2- to 8-in.-wide quartz vein, containing epidote, chalcopyrite blebs and wallrock breccia. The vein dips 50° to the southeast. The mineralization was not extensive.

The north adit exposed a 6- to 8-in.-wide breccia zone, dipping 65° to the southeast, with quartz, epidote, chalcopyrite, and malachite.

The open cut exposes a 6-in.-wide breccia zone with quartz matrix and an adjacent 2-ft-wide siliceous zone. The siliceous zone contained 5 to 10% pyrite, <1% chalcopyrite, some pyrrhotite, and trace of sphalerite.

This breccia zone dips 75° to the southeast.

BUREAU WORK:

The two adits and open cut were mapped and samples collected (fig. A-24 and table A-65). Two random chip samples contained .98% and 1.0% copper respectively. This prospect has low mineral development potential due to the small size of the mineralized zones.

REFERENCES:

51, 78, 141



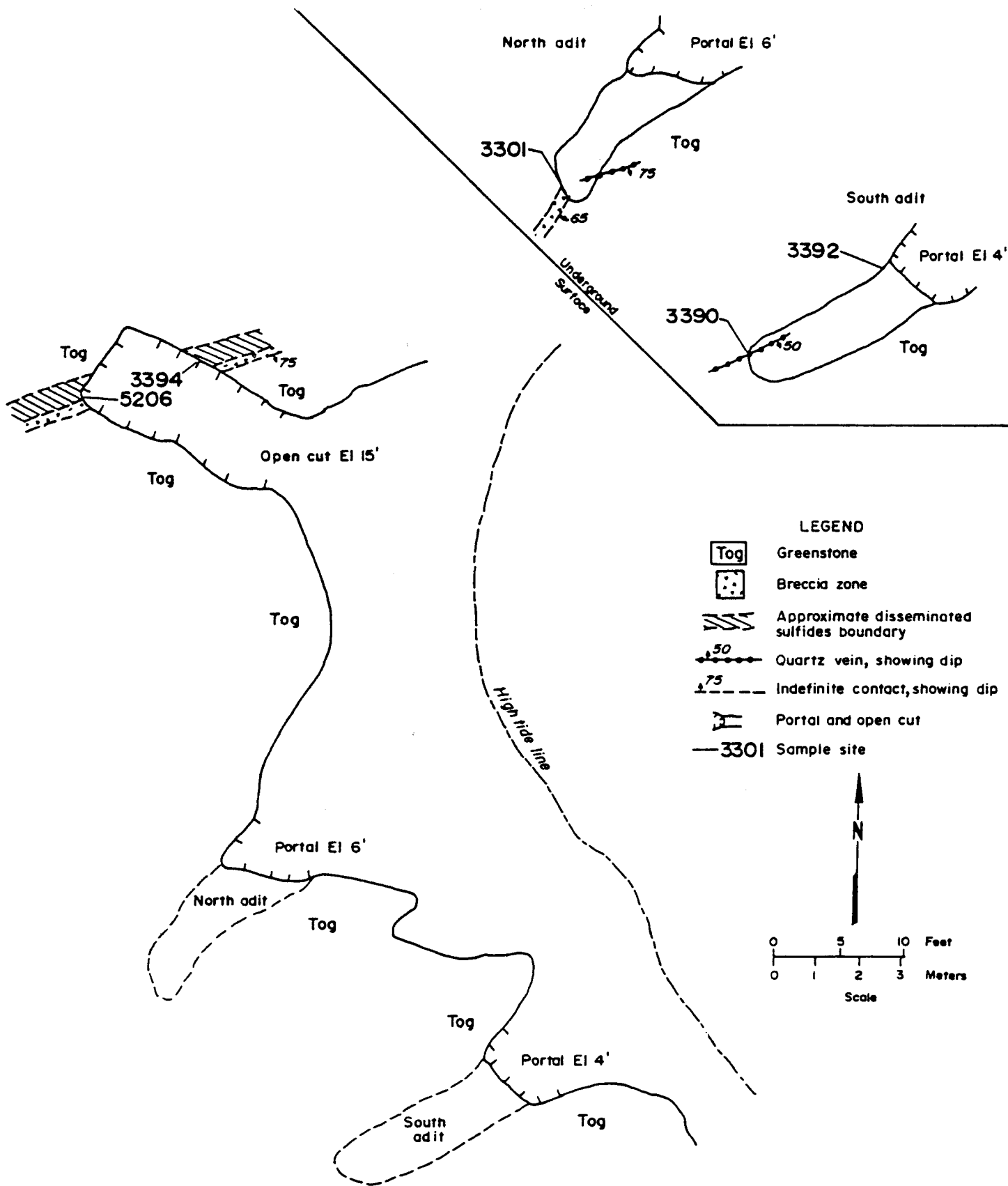


FIGURE A-24. - Von Gunther or Malack Prospect, sample locations.

TABLE A-65. - ANALYTICAL RESULTS - Von Gunther or Malack Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Ba	Cr	
3301	Maf Volc	Random Chip	---	<.03	5.9	1.9%	6	100	<10	---	---	35	---	---	Greenstone breccia with quartz epidote, approximately 3% chalcopryrite and trace of malachite.
3390	Quartz	Random Chip	---	<.03	4.8	.98%	6	30	<10	---	---	20	---	---	Quartz vein with epidote and blebs of chalcopryrite.
3392	Maf Volc	Grab	---	<.03	1.5	220	10	150	<10	---	---	70	---	---	Greenstone with blebs of pyrite.
3394	Maf Volc	Random Chip	---	<.03	6.3	1.0%	13	80	<10	---	---	35	---	---	Greenstone with quartz pyrite and chalcopryrite.
5206	Maf Volc	Chip	2.5	<.03	.3	670	41	750	<10	44	---	48	215	172	Across iron-stained brecciated greenstone with approximately 5-10% pyrite-pyrrhotite and <1% chalcopryrite and sphalerite.

--- no data

NAME (other names): Singletary Prospect      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward B-2                      NE 1/4 Sec 3 T 4N R 10E  
                            Meridian: Seward  
                            Geographic: West side at the head of the west arm of Louis  
    Bay near tidewater, Knight Island.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-83	95-256A	197	950045	NA	NA

HISTORY & PRODUCTION:

1908 - First appears in literature (51, Plate IV).

RESERVES: Unknown.

OPERATING DATA:

Unknown.

GEOLOGIC SETTING:

The country rock in the area consists mainly of pillow basalts with intermixed greenstone. Several shears containing <1% chalcopyrite were found on the shoreline in the vicinity of the reported prospect.

BUREAU WORK:

No signs of prospecting were found but the rocks in the area were sampled (table A-66). The samples contain very low copper values.

REFERENCES:

51, 82, 141, 151

TABLE A-66. - ANALYTICAL RESULTS - Singletary Prospect Area

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3310	Maf Volc	Random Chip	---	<.03	0.72	43	5	230	<10			52			Pillow basalt with quartz and epidote stringers. 5% chalcopryrite.
3311	Maf Volc	Random Chip	---	<.03	2.0	155	15	180	<10			63			Sheared greenstone. Up to 15% pyrite and 1% chalcopryrite.

--- no data

NAME (other names): Disk Island Prospect COMMODITIES: Copper, Zinc

LOCATION: Quadrangle: Seward B-2                      SW 1/4 Sec 26 T 5N R 10E  
          Meridian: Seward  
          Geographic: In small cove on south end of Disk Island just  
                          above tidewater.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-84	95-256C	196	950046	NA	NA

HISTORY & PRODUCTION:

1918 - First mentioned in literature (78, p. 211).

RESERVES: Unknown.

OPERATING DATA:

A 10-ft-long N55°E trending adit near tidewater.

GEOLOGIC SETTING:

Several mineralized areas occur on the southeast shore of Disk Island as evidenced by the limonite and malachite staining observed along the shoreline. Figure A-25 shows mineralized zones and samples collected. Sulfide mineralization consists of pyrite (?), pyrrhotite, and trace chalcopyrite irregularly distributed throughout breccia, shear, and fracture zones within massive greenstone and pillow basalts. The largest occurrence consists of a 15 x 40 ft exposure of intensely fractured pillow flow containing trace chalcopyrite and an average of 5% pyrite as blebs, fracture fillings, and fine disseminations. The majority of the mineralized zones are oriented in a northeast direction as are the major air photo lineament trends. The only definite sign of prospecting in the area consists of a 10-ft-long adit driven along a 2.5-ft-wide greenstone breccia zone, containing epidote, quartz, chalcopyrite, and 3% pyrite. This breccia zone contained the highest copper values in the area.

BUREAU WORK:

The adit mentioned above was mapped and sampled. Samples were also collected from mineralized areas along the southeast shore of the island (fig. A-25 and table A-67). Low mineral development potential due to low copper and zinc values.

REFERENCES:

78, 82, 141, 151

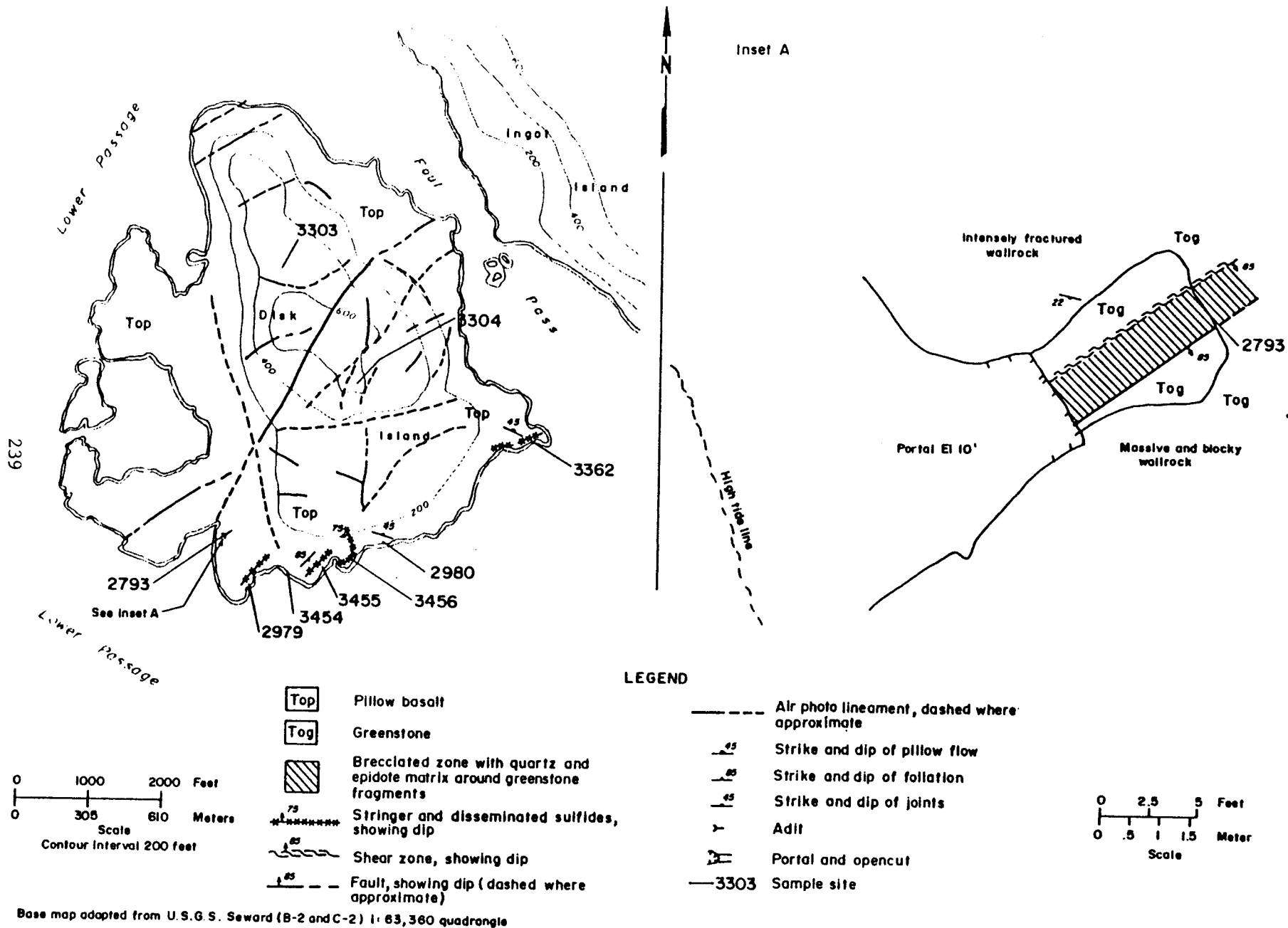


FIGURE A-25. - Disk Island, sample locations.

TABLE A-67. - ANALYTICAL RESULTS - Disk Island Prospect

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Cr	
2793	Maf Volc	Chip	3.0	<.03	0.3	.43%	23	195	<10	---	---	34	---	---	Brecciated greenstone. In 10 ft adit. Up to 10% pyrite, epidote, quartz.
2979	Maf Volc	Chip	10	<.03	0.37	570	18	150	<10	---	---	60	---	---	Malachite stained pillow basalt
2980	Maf Volc	Chip	0.5	.10	.40	220	10	100	<10	---	---	35	---	---	3-ft-wide shear cutting greenstone. 6-in.-wide zone with 4% pyrite.
3303	Maf Volc	Random Chip	---	<.03	1.1	110	21	.50%	<10	---	---	65	---	---	Quartz veins up to 3-in. thick cutting greenstone
3304	Maf Volc	Random Chip	---	<.03	1.0	160	28	.81%	<10	---	---	105	---	---	Greenstone. Trace to 1% chalcopryrite.
3362	Maf Volc	Chip	5.5	.03	1.2	33	15	69	< 2	12	---	18	---	140	Fractured 15x40 ft iron-oxide stained pillow flow with 5% pyrite, trace chalcopryrite.
3454	Maf Volc	Random Chip	---	<.03	1.0	54	10	70	<10	---	---	76	---	---	Greenstone with quartz veinlets. No sulfides.
3455	Maf Volc	Chip	1.0	<.03	2.0	550	14	50	12	---	---	85	---	---	Pillow basalt with 1 ft wide pyrrhotite-rich zone, 5% chalcopryrite
3456	Maf Volc	Chip	10	<.03	1.1	68	14	250	<10	---	---	35	---	---	Fractured pillow basalt. 10 ft wide zone. 5% pyrrhotite, 1% chalcopryrite.

--- no data

NAME (other names): Unnamed prospect

COMMODITIES: Zinc, Copper

LOCATION: Quadrangle: Seward C-2

SW 1/4 Sec 8 T 5N R 11E

Meridian: Seward

Geographic: Near shoreline on the southeast side of Eleanor Island.

REFERENCE NUMBERS:

Map  
S-85

Kx  
NA

Tysdal  
195

MAS  
NA

BLM  
NA

MS  
NA

HISTORY & PRODUCTION:

Unknown.

Probably prospected during the early 1900's.

RESERVES: No economic reserves exposed.

OPERATING DATA:

Approximately 10 ft above sea level two adits are driven and they connect underground. Underground workings total 80 ft.

GEOLOGIC SETTING:

A sequence of laminated blocky mudstone is cut by a series of mainly northwest-trending shear zones and faults (fig. A-26). These average 1-ft-wide and contain 5 to 10% pyrrhotite in fracture fillings and blebs. Locally up to 1% chalcopyrite was observed. The unsheared mudstones are for the most part barren of sulfides except near the east adit opening where they contain up to 1% finely disseminated pyrrhotite. The mineralized shears outcrop as yellowish limonite-stained exposures containing 3% finely disseminated pyrrhotite. Near the west adit entrance the mudstones dip under an overlying pillow flow basalt in an irregular contact. The mudstones are locally limonite-stained and contain sulfides below the flow contact but no limonite staining and only trace sulfides were observed in the volcanics. Thin sections show the sulfides to be finely disseminated throughout the mudstones and not concentrated within specific laminations. Graded bedding occurs within the layering.

BUREAU WORK:

The underground workings and nearby surface exposures were mapped and sampled (fig. A-26 and table A-68). Low mineral development potential due to low zinc and copper values.

REFERENCES:

141



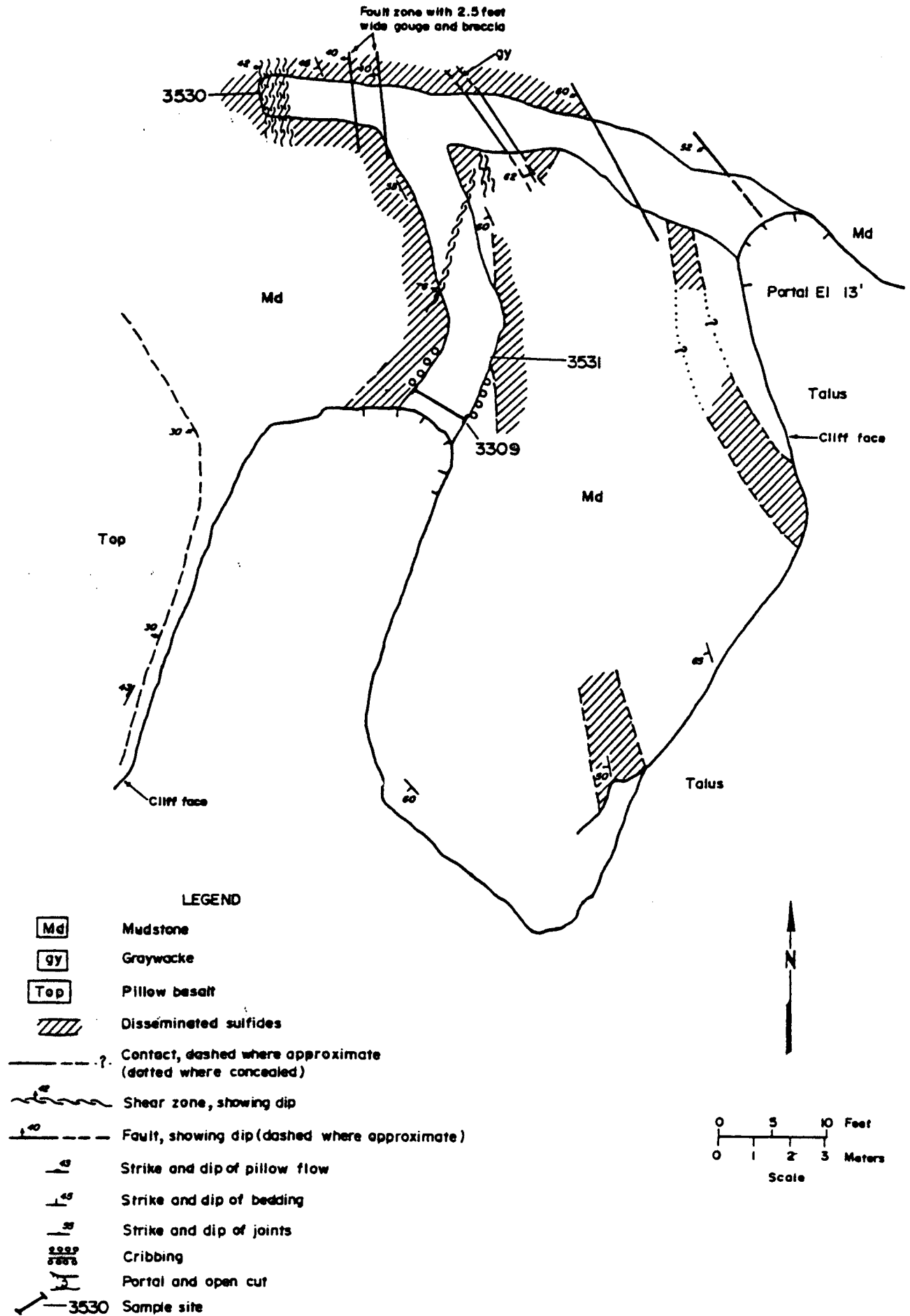


FIGURE A-26. - Unnamed prospect, Eleanor Island, sample locations.

TABLE A-68. - ANALYTICAL RESULTS - Unnamed prospect - Eleanor Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3309	Sed Volc	Rand Chip	---	>.03	2.7	550	60	0.12%	17	---	---	92	---	---	Mudstone w/up to 5% cpy and pyrite.
3530	SL/SS/CG	Chip	5	<.03	1.6	45	33	110	16	---	---	---	---	---	Mudstone w/up to 5% pyrr in blebs and fracture fillings.
3531	SL/SS/CG	Chip	5	.04	.90	515	38	460	22	---	---	---	---	---	Sheared mudstone in adit face. No visible sulfide.

--- no data

NAME (other names): Mineral occurrence

COMMODITIES: Gold

LOCATION: Quadrangle: Seward B-4

SE 1/4 Sec 6 T 2N R 8E

Meridian: Seward

Geographic: At tidewater on the southwest side of Chenega Island.

REFERENCE NUMBERS:

Map  
S-86

Kx  
NA

Tysdal  
175

MAS  
NA

BLM  
NA

MS  
NA

HISTORY AND PRODUCTION: None.

RESERVES: None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

Tysdal (141) reports a quartz vein in sandstone containing 5 ppm gold (atomic absorption). The Bureau located several narrow quartz veinlets up to 1-in.-wide in the area. One veinlet contained a few hematite grains.

BUREAU WORK:

The hematite-bearing quartz veinlet was sampled (table A-69) and others searched for in the area. Low mineral development potential due to low gold values.

REFERENCES:

141

TABLE A-69. - ANALYTICAL RESULTS - Mineral occurrence - Southwest Chenega Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
3729	Quartz	Random Chip	---	<.03	1.1	1	11	16	<10	---	---	4	---	---	---	1-in.-wide hematite-bearing quartz vein.

--- no data

NAME (other names): Mineral occurrence      COMMODITIES: Chrome, Nickel,  
Manganese, Iron

LOCATION:    Quadrangle: Seward B-3      SE 1/4 Sec 28    T 3N    R 8E  
                 Meridian: Seward  
                 Geographic: Central part of Chenega Island.  
                 Elevation: 1,660 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-87	NA	221	NA	NA	NA

HISTORY AND PRODUCTION:

RESERVES: None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

Greenstone with remnant pillow structure is interbedded with shale and contains quartz stringers, epidote blebs, and trace pyrite. The rocks trend N5°E with a vertical to steep westward dip.

BUREAU WORK:

Collected two samples in the area (table A-70). The highest values from two random chip samples were 520 ppm chrome, 115 ppm nickel and 1,350 ppm manganese. This prospect has low mineral development potential due to low metal values.

REFERENCES:

141

TABLE A-70. - ANALYTICAL RESULTS - Mineral occurrence - Central Chenega Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Cr	Ni	Sb	Mn	
3733	Maf Volc	Random Chip	---	<0.03	2.3	54	20	116	<10	53	520	115	2	1250	Across greenstone with some quartz and epidote blebs and stringers with trace of pyrite cubes.
3875	Maf Volc	Random Chip	---	<.03	<.1	73	13	73	<10		420	115	3	1350	Across greenstone with trace of iron-stains and epidote.

--- no data

NAME (other names): Mineral occurrence      COMMODITIES: Iron, Manganese,  
Copper

LOCATION:    Quadrangle: Seward B-3      NE 1/4 Sec 22 T 3N R 8E  
                  Meridian: Seward  
                  Geographic: Northern half of Chenega Island.  
                  Elevation: 1,600 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-88	NA	220	NA	NA	NA

HISTORY AND PRODUCTION:

None.

RESERVES:    None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

Exposed along the ridgetop is a 15-ft-wide shear zone that contains minor iron-stains and epidote with a trace of disseminated pyrite. It strikes N5°E with a vertical dip. A few quartz veins and lenses occur with maximum dimensions of 4 in. x 2 ft. Relict pillow structures can be seen in unshered greenstone.

BUREAU WORK:

One 15 ft chip sample contained 125 ppm copper and 1,400 ppm manganese. A random chip sample contained 115 ppm copper and 1,600 ppm manganese. Samples were collected from the shear zone and country rock (table A-71). This area has low mineral development potential due to low metal values.

REFERENCES:

141

TABLE A-71. - ANALYTICAL RESULTS - Mineral occurrence - North Chenega Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Cr	Ni	Sb	Mn	
3732	Maf Volc	Chip	15	<.03	.2	125	23	94	10	49	120	73	6	1400	Across sheared greenstone with trace of disseminated pyrite.
3874	Maf Volc	Random Chip	---	<.03	<.1	115	13	110	<10	55	130	65	3	1600	Across greenstone with remnant pillow structure and trace of iron-stains and epidote.

--- no data



NAME (other names): Mineral occurrence      COMMODITIES: Chrome, Copper,  
Nickel

LOCATION:    Quadrangle: Seward B-3              SE 1/4 Sec 16    T 3N    R 8E  
             Meridian: Seward  
             Geographic: Northern half of Chenega Island.  
             Elevation: 1,800 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-89	NA	219	NA	NA	NA

HISTORY AND PRODUCTION:

None.

RESERVES: None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

Exposed along a ridge top is a 50-ft-wide area of alternating slightly sheared and massive greenstone with some remnant pillow structures. A shale interbed had a trace of disseminated pyrite and some quartz veins <1-in. wide parallel to bedding.

BUREAU WORK:

Four samples were collected from the area (table A-72). The area has low mineral development potential due to low metal values.

REFERENCES:

141

TABLE A-72. - ANALYTICAL RESULTS - Mineral occurrence - North Chenega Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Cr	Ni	Sb	Mn	
3730	Maf Volc	Random Chip	---	<.03	0.2	80	12	47	<10	28	580	73	4	1250	Across sheared and massive greenstone with some pillow remnants.
3731	SL/SS/CG	Random Chip	---	<.03	.2	17	16	140	12	17	120	34	6	780	Across shale interbed with some quartz veins and trace of pyrite.
3871	Maf Volc	Chip	5.0	<.03	<.1	74	11	56	<10	---	460	---	<1	1350	Across greenstone with remnant pillow structure.
3872	Maf Volc	Random Chip	---	<.03	.1	100	14	73	<10	60	450	150	2	1450	Across greenstone with minor iron-stains and epidote.

--- no data

NAME (other names): Mineral occurrence      COMMODITIES: Manganese

LOCATION:    Quadrangle: Seward B-3                      NW 1/4 Sec 12 T 3N R 8E  
                    Meridian: Seward  
                    Geographic: Northeast side of Chenega Island at tidewater.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-90	NA	NA	NA	NA	NA

HISTORY AND PRODUCTION:

Unknown.

RESERVES: Inferred: 700 tons.

OPERATING DATA:

No signs of prospecting were found.

GEOLOGIC SETTING:

Manganese minerals rhodochrosite and pyroxmangite occur in a weather-resistant calcareous chert bed exposed between beach gravel and muskeg vegetation in a small bay on the northeast end of Chenega Island. Other minerals found include magnetite, pyrrhotite, and a trace of pyrite. The exposure is 6-ft-wide, 50-ft-long, strikes N10°E, dips 80°W, and is interbedded with calcareous shales and phyllites.

BUREAU WORK:

A 3.5 ft continuous chip sample contained 17% manganese. Two grab samples contained 36% and 37% manganese (table A-73).

REFERENCES:

84

TABLE A-73. - ANALYTICAL RESULTS - Mineral occurrence - Northeast Chenega Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Cr	Mn	Ni	Sb	Sn	
3445	Stream Sed	Stream	---	0.03	2.55	43	21	125	---	165	1090	41	2	---	Collected near manganese bearing outcrop.
3724	Maf Volc	Select Grab	---	---	---	---	---	200	---	---	37%	---	---	---	High grade grab sample from outcrop.
3725	Maf Volc	Select Grab	---	---	---	---	---	80	---	---	36%	---	---	---	High grade grab sample from outcrop.
3726	Maf Volc	Chip	---	<.02	0.2	115	20	70	---	35	17%	130	4	---	3.5-ft-wide chip sample across calcareous chert bed.

--- no data

NAME (other names): Unnamed prospect

COMMODITIES: Gold, Lead, Silver,  
Zinc, Copper

LOCATION: Quadrangle: Seward B-4                      SW 1/4 Sec 29 T 3N R 7E  
          Meridian: Seward  
          Geographic: The south side of the head of Jackpot Bay,  
                          1/4 mile from the shore.  
          Elevation: approximately 770 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-91	95-202	174	950071	NA	NA

HISTORY & PRODUCTION:

1908 - Activity date (82).

RESERVES: Unknown.

OPERATING DATA:

At approximately 770 ft above sea level an opening penetrates 8 ft into a quartz vein and runs up the cliff side for 12 ft (48, p. 97).

GEOLOGIC SETTING:

Grant (48, p. 97) reported an opening cut along a quartz vein 20- to 28-in.-wide in graywacke and slate striking N52°W and dipping 67°W. The central zone of the vein 6- to 11-in.-thick contained arsenopyrite, galena, and sphalerite. Two samples averaged 1.5 oz gold/ton and 3.1 oz silver/ton. The vein was small and its extent not known.

BUREAU WORK:

The workings described above were not located. In the streams draining the reported prospect location iron-stained brecciated quartz float was found intermittently. Some of the float contained up to 25% pyrrhotite along with minor chalcopyrite and sphalerite along fracture surfaces. Located 0.7 miles to the northwest of the reported location a 6-in.-wide N37°E trending barren quartz vein was found with a rock cairn nearby (table A-74). This vein also cut graywacke country rock. The sulfide-bearing float and quartz vein contained low metal values but the reported high gold and silver values warrant further prospecting in the area. Unevaluated.

REFERENCES:

44, 48, 51, 73, 82, 141, 151

TABLE A-74. - ANALYTICAL RESULTS - Unnamed prospect - Jackpot Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3481	Quartz	Random Chip	.5	$\frac{1}{1000}$	<0.2	.001%	---	---	---	---	---	---	---	---	6-in.-wide barren quartz vein.
3482	Quartz	Grab	---	<.005	<0.2	0.2%	0.05%	0.5%	---	---	---	---	---	---	Quartz float. 25% pyrrhotite, chalcopyrite sphalerite.
3483	Stream Sed	Stream Silt	---	.09	.90	17	24	150	<10	---	---	---	---	---	Drains area of reported prospect.
3486	Stream Sed	Stream Silt	---	.06	.13	17	22	105	<10	---	---	---	---	---	Drains head of Jackpot Bay.

$\frac{1}{1000}$  ounces per ton

--- no data

NAME (other names): Mineral occurrence      COMMODITIES: Copper

LOCATION:    Quadrangle: Seward D-5                      SW 1/4 Sec 27    T 5N    R 5E  
                    Meridian: Seward  
                    Geographic: Along north side of Falling Glacier in Kings Bay.  
                    Elevation: 660 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-92	NA	171	NA	NA	NA

HISTORY AND PRODUCTION:

An iron-stained sheared and fractured sandstone higher up on the ridge was sampled by Tysdal (141).

RESERVES: None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

An iron-stained finely laminated, siliceous mudstone, near the granite contact, is locally cut by quartz-feldspar veinlets. It contains trace chalcopyrite and approximately 2% pyrite, which occurs as fine disseminations and fracture fillings.

BUREAU WORK:

One random chip sample was collected from the mudstone and it contained 96 ppm copper (table A-75). This area has low mineral development potential due to low metal values.

REFERENCES:

141

TABLE A-75. - ANALYTICAL RESULTS - Mineral occurrence - Falling Glacier

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	U	Th	Sn	W	
5192	SL/SS/CG	Random Chip	---	<.03	0.3	96	38	225	105	---	<2	3	<20	<5	5	Iron-stained siliceous mudstone near granite contact contains quartz-feldspar veinlets and approximately 2% disseminated and fracture-filling pyrite with trace chalcopyrite.

--- no data



NAME (other names): Mineral occurrence      COMMODITIES: Cu

LOCATION:    Quadrangle: Seward B-5                      NE 1/4 Sec 35    T 5N    R 5E  
                 Meridian: Seward  
                 Geographic: Along a ledge above the north side of Falling  
   Glacier, Kings Bay.  
   Elevation: 2,200 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-93	NA	NA	NA	NA	NA

HISTORY AND PRODUCTION:

None.

RESERVES: None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

The area contains iron-stained granite, with localized bleached zones. Several shears up to 1/2-in.-wide, with 2% sulfides, locally cut the granite. Sulfides consist of pyrite, pyrrhotite, and arsenopyrite. Quartz veins a few inches wide also cut the granite.

BUREAU WORK:

Collected two random chip samples and they contained 77 ppm and 84 ppm copper (table A-76). This area has low mineral development potential due to low copper values.

REFERENCES:

TABLE A-76. - ANALYTICAL RESULTS - Mineral occurrence - Falling Glacier

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	U	Th	Sn	W	
5189	Fel Plut	Random Chip	---	<.03	0.3	77	20	55	440	---	<2	3	<20	<5	<5	Bleached granite that contains numerous shear planes and up to 2% sulfides. Sulfides include pyrite, pyrrhotite and arsenopyrite.
5191	Fel Plut	Random Chip	---	.03	.5	84	20	115	590	---	<2	3	<20	<5	<5	Bleached iron-stained granite that contains several shears.

--- no data

NAME (other names): Claim Dog I

COMMODITIES: Gold, Antimony

LOCATION: Quadrangle: Seward B-4

NE 1/4 Sec 1 T 4N R 6E

Meridian: Seward

Geographic: Head of Derickson Bay near Nellie Juan Glacier.

REFERENCE NUMBERS:

Map  
S-94

Kx  
NA

Tysdal  
NA

MAS  
NA

BLM  
AA33437

MS  
NA

HISTORY AND PRODUCTION:

Oct. 14, 1979 - Dog I claim staked by Scott E. Douglas.

Oct. 17, 1979 - Recorded at BLM.

RESERVES: None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

Granite with a few small localized iron-stained zones that appear to be caused by weathering of biotite.

BUREAU WORK:

Investigated both sides of the glacier but found no signs of mineralization or prospecting. Found one cairn, but it was not where the claim was described as being located.

REFERENCES:

147

NAME (other names): Unnamed prospect

COMMODITIES: Gold, Silver

LOCATION: Quadrangle: Seward B-4

NW 1/4 Sec 28 T 5N R 7E

Meridian: Seward

Geographic: Located in small cove at tidewater on the east side of Blue Fiord, 4.5 miles from its head.

REFERENCE NUMBERS:

Map  
S-95

Kx  
95-198

Tysdal  
173

MAS  
950128

BLM  
NA

MS  
NA

HISTORY & PRODUCTION:

1900 - Activity year (82).

1913 - Prospecting reported in the area but no active development (73, p. 237).

RESERVES: None exposed.

OPERATING DATA:

A northeast trending 15 ft adit containing a water-filled winze.

GEOLOGIC SETTING:

The adit follows a N20°E trending fault represented by a 5-in.-wide gouge zone. The hanging wall locally contains discontinuous 1/4-in.-wide barren quartz stringers. A 4-in.-wide vuggy quartz vein is exposed in the adit face and is terminated by the fault. It appears the winze was driven to cut the quartz veins and stringers below the adit level.

An average 1-ft-wide quartz vein is exposed 6 ft east of the adit entrance. It contains up to 1% arsenopyrite, pyrite, and pyrrhotite, along with shale partings. Quartz float was found locally along the shoreline to the east, but no source was located.

BUREAU WORK:

The adit was mapped and the mineralization sampled (fig. A-27 and table A-77). The low gold and silver values plus the small size of the quartz veins give the prospect a low mineral development potential.

REFERENCES:

73, 82, 141, 151

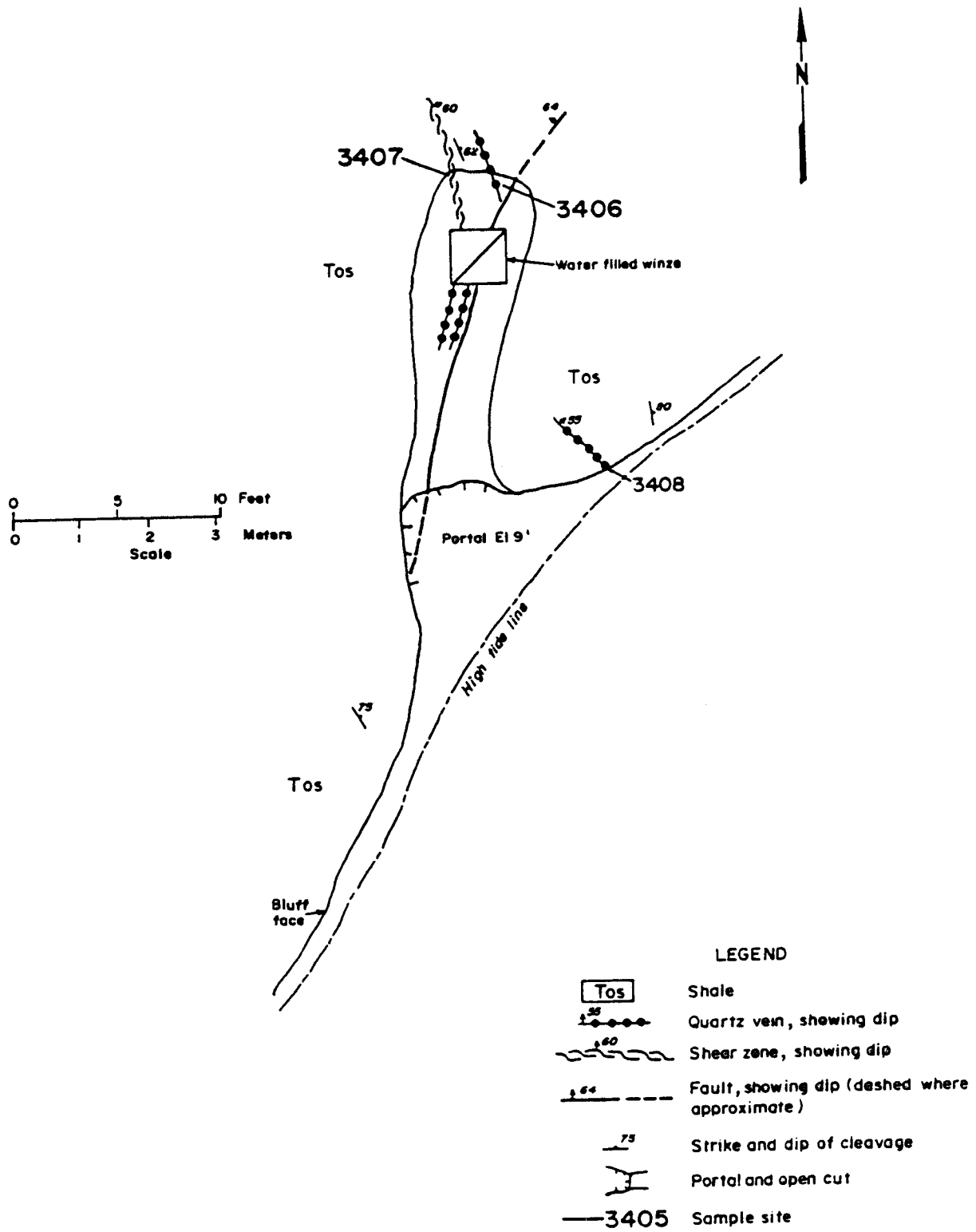


FIGURE A-27. - Unnamed prospect, Blue Fiord, sample locations.

TABLE A-77. - ANALYTICAL RESULTS - Unnamed prospect - Blue Fiord

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3406	Quartz	Chip	0.3	$\frac{1}{1000}$ <.005	<0.2	14	13	72	34	---	---	---	---	---	Vuggy quartz vein 4-in.-wide.
3407	SL/SS/CG	Chip	2.5	.03	1.7	27	25	93	26	---	---	---	---	---	Shale wallrock in adit.
3408	Quartz	Random Chip	1.0	<.005	<0.2	2	8	33	.21%	---	---	---	---	---	1-ft-wide quartz vein average 1% arsenopyrite.

 $\frac{1}{1000}$  ounces per ton

--- no data

NAME (other names): Unnamed prospect

COMMODITIES: Gold

LOCATION: Quadrangle: Seward C-4 After Tysdal (1978) SW1/4 Sec 23, T5N, R7E  
Meridian: Seward After Kardex (1982) NE1/4 Sec 14, T5N, R7E  
After USBM (1982) E1/2 Sec 14, T5N, R7E  
Geographic: McClure Bay, Port Nellie Juan.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-96	270	172	20950137	NA	NA

HISTORY & PRODUCTION:

1900 - Activity date.

1913 - Johnson (73, p. 237) reported that some prospecting was in progress in McClure Bay but no active development.

RESERVES: Unknown.

OPERATING DATA:

Depending on the reference used the location of this prospect varies considerably.

No indications of prospecting were found at any of the locations.

GEOLOGIC SETTING:

The country rock in the area consists of interbedded graywacke and shale which are locally iron-stained and contain vuggy quartz. Fracture surfaces contained 1 to 5% pyrite in the stained areas. Quartz veinlets averaged 1-in.-wide.

BUREAU WORK:

A ground and aerial search located no signs of prospecting. Vuggy quartz found in the area was sampled, but contained no significant metal values (table A-78).

REFERENCES:

73, 82, 141, 151

TABLE A-78. - ANALYTICAL RESULTS - Unnamed prospect - McClure Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3400	SL/SS/CG	Discon Chip	7.0	.03	1.0	26	21	68	12	---	---	---	---	---	Graywacke-shale with 1 to 5% pyrite and vuggy quartz veinlet.
3413	Stream Sed	Stream Silt	---	.08	<.03	19	26	87	<10	---	---	---	---	---	Collected from drainage near reported prospect.

--- no data



NAME (other names): Mineral occurrence      COMMODITIES: Gold, Silver, Arsenic

LOCATION:    Quadrangle:    Seward C-3                    NE 1/4 Sec 17 T 5N R 8E  
                 Meridian:    Seward  
                 Geographic:    At tidewater on the southwest side of Main Bay  
   0.6 miles east of its head.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-97	NA	NA	NA	NA	NA

HISTORY & PRODUCTION:

Unknown.

RESERVES:    A few tons exposed.

OPERATING DATA:

No indications of prospecting found.

GEOLOGIC SETTING:

A series of parallel quartz veins 3-in.- to 1.3-ft-thick occur within graywacke (?) wallrocks. The quartz contains rust-colored fractures and graywacke breccia fragments. A 2-in.-wide zone on the west margin of a 1.3-ft-wide quartz vein contains clots of massive arsenopyrite and trace pyrite. The sulfide zone continues for approximately 20 ft along strike and the entire quartz vein exposure was exposed intermittently for approximately 70 ft. Smaller amounts of arsenopyrite were also noted in some of the narrower quartz veins. No visible gold was noted in any of the quartz. Searches of the shoreline in both directions revealed no similar exposures.

BUREAU WORK:

The arsenopyrite-rich quartz was sampled (table A-79) and similar occurrences searched for. Low mineral development potential due to low gold and silver values.

REFERENCES:

TABLE A-79. - ANALYTICAL RESULTS - Mineral occurrence - Main Bay

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Ba	Ni	Cr	Sn	
5245	Quartz	Chip	0.9	.03	<0.1	18	5	9	31	3	<10	13	175	---	Barren quartz vein 0.5 to 2-ft-wide.
6414	Quartz	Random Chip	---	0.54	0.4	9	27	6	7.9%	56	<10	6	190	---	Quartz vein averaging 1 ft thick. Massive arsenopyrite clots.
6416	Quartz	Random Chip	---	.04	<0.1	25	9	11	170	5	59	9	220	---	3-in.-wide rusty- colored quartz vein.

--- no data

NAME (other names): Mineral occurrence      COMMODITIES: Tungsten

LOCATION:      Quadrangle: Seward C-3                      SE 1/4 Sec 15    T 7N    R 9E  
                 Meridian: Seward  
                 Geographic: Along shoreline at Billings Point, Perry  
   Island.  
   Elevation: 0 to 20 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-98	NA	NA	NA	NA	NA

HISTORY AND PRODUCTION:

None.

RESERVES: Unknown.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

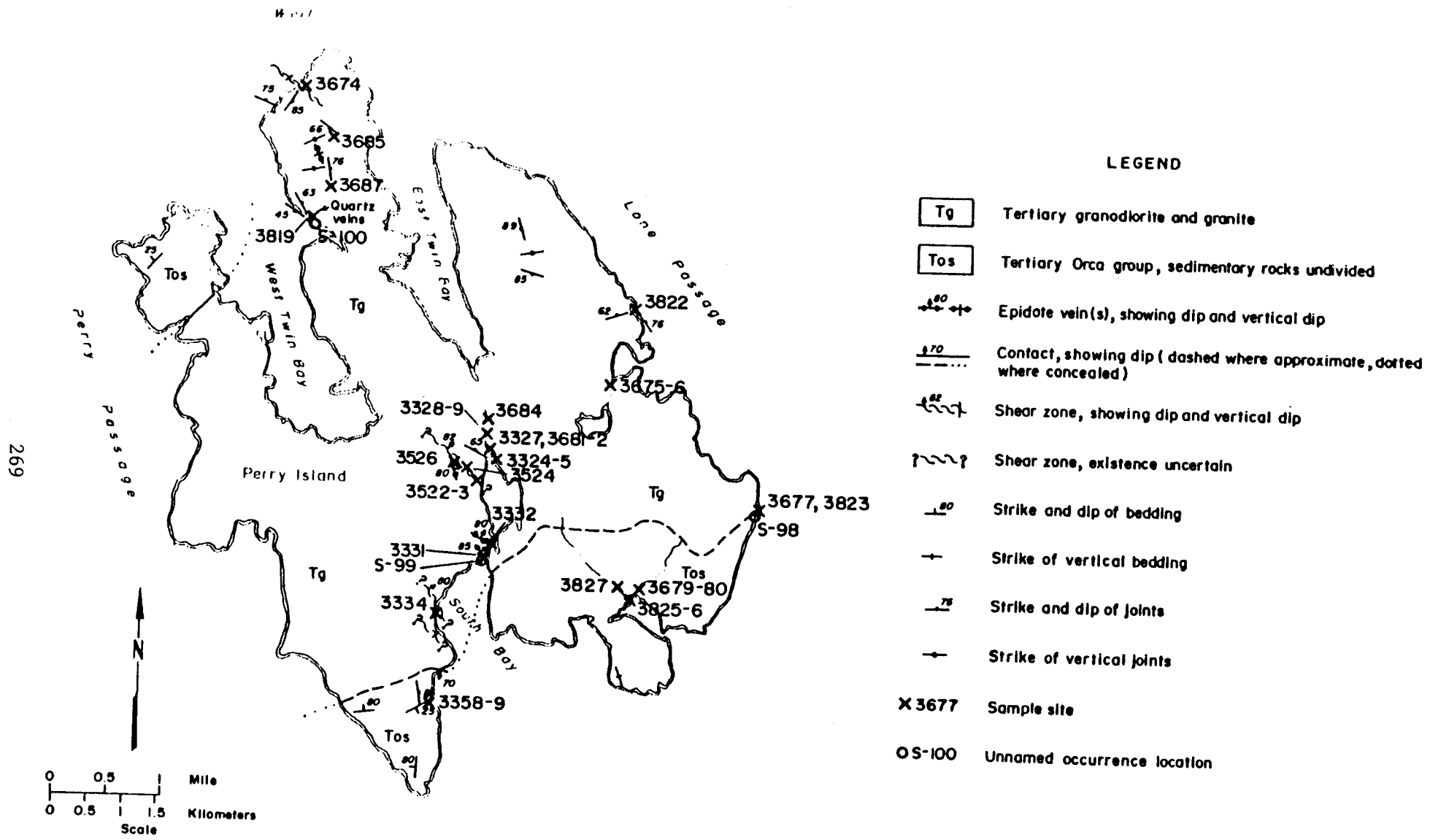
Several pegmatite and aplite dikes cut the silicified mudstone-chert. Minor iron-stains occur locally along with some epidote and a trace of fine grained pyrite.

BUREAU WORK:

Collected two samples from the contact zone (table A-80 and fig. A-28). One sample had 43 ppm tungsten and another sample had <5 ppm tungsten. Low mineral development potential due to low tungsten values.

REFERENCES:

None



Base adapted from U.S.G.S., Seward (C-3) 1:63,360 quadrangle

FIGURE A-28. - Perry Island, sample locations.

TABLE A-80.- ANALYTICAL RESULTS - Perry Island

Sample No.	Material Type	Sample Type	Width (feet)	Elements (ppm unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Sb	Sn	W	U	
3324	Stream Sed	Stream Sed	---	0.09	<0.03	3	16	205	<10	---	<2	---	<5	<5	<1	Stream sediment.
3225	Stream Sed	Stream Sed	---	.08	<.03	3	14	31	<10	---	<2	---	5	<5	<1	Stream sediment.
3327	Fel Plut	Grab	---	<.03	.2	7	17	47	<10	---	<2	---	<5	<5	7	Chloritic altered granite.
3328	Fel Plut	Grab	---	<.03	.2	7	18	51	<10	---	<2	---	<5	<5	1	Chloritic altered granite with up to 5% pyrite-pyrrhotite locally.
3331	Fel Plut	Grab	---	<.03	<.1	1	6	5	<10	---	<2	---	<5	<5	17	Granite with 1/8-in.-wide epidote veinlets.
3332	Fel Plut	Chip	2.5	.03	<.1	1	8	20	<10	---	<2	---	<5	<5	10	Granite with 3-in. wide epidote veinlets and trace of limonite.
3334	Fel Plut	Grab	---	.03	<.1	1	8	14	<10	---	<2	---	<5	<5	6	Iron-stained granite with 1% pyrite.
3358	Fel Plut	Random Chip	---	.06	<.1	1	8	14	<10	---	<2	---	<5	<5	2	10-ft-wide iron-stained shear zone in granite with trace of sulfides and epidote.

--- no data

TABLE A-80.- ANALYTICAL RESULTS - Perry Island

Sample No.	Material Type	Sample Type	Width (feet)	Elements (ppm unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Sb	Sn	W	U	
3359	Metased	Random Chip	---	<.03	3.3	23	15	51	<2	---	---	---	---	---	---	Across siltstone with 1% pyrite.
3522	Stream Sed	Stream Sed	---	.03	.03	7	20	74	<10	---	<2	---	<5	7	<1	Stream sediment.
3523	Fel Plut	Stream Sed	---	.07	.1	7	22	80	<10	---	<2	---	<5	<5	<1	Stream sediment.
3524	Fel Plut	Chip	5.0	<.03	<.1	3	18	17	<10	---	<2	---	<5	---	3	Iron-stained shear zone in granite.
3526	Fel Plut	Chip	5.0	<.03	.1	7	7	26	<10	---	<2	---	<5	<5	<1	Granite with 1% pyrite and epidote in fractures.
3674	Fel Plut	Chip	5.0	.06	.5	9	18	70	<10	---	<2	1	<5	<5	5	Iron-stained shear zone in granite.
3675	Stream Sed	Stream Sed	---	.10	1.0	7	14	42	<10	---	<2	2	<5	<5	6	Stream sediment
3676	Stream Sed	Stream Sed	---	IS	IS	19	12	44	IS	---	IS	3	18	<5	5	Stream sediment
3677	Fel Plut	Chip	2.0	.06	.3	15	11	25	<10	---	<2	3	<5	43	4	Chert zone at granite contact with trace of sulfides.

IS - Insufficient sample

--- no data

TABLE A-80.- ANALYTICAL RESULTS - Perry Island

Sample No.	Material Type	Sample Type	Width (feet)	Elements (ppm unless otherwise indicated)													Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Sb	Sn	W	U		
3679	Stream Sed	Stream Sed	---	.02	2.1	13	16	55	<10	---	<2	4	<5	<5	6	Stream sediment.	
3680	Stream Sed	Stream Sed	---	.04	.4	19	28	94	<10	---	---	<1	---	---	---	Stream sediment.	
3681	Fel Plut	Random Chip	---	<.03	.1	4	8	19	<10	---	<2	---	<5	<5	2	Aplite dike in granite.	
3682	Fel Plut	Chip	.2	<.03	.1	6	14	46	<10	---	<2	---	<5	<5	4	Gouge zone within granite.	
3684	Stream Sed	Stream Sed	---	<.03	<.1	21	19	170	14	---	<2	---	<5	<5	300	Stream sediment.	
3685	Fel Plut	Grab	---	<.03	<.1	4	14	42	<10	---	<2	---	6	<5	5	Chlorite altered granite.	
3687	Fel Plut	Grab	---	<.03	<.1	8	15	39	<10	---	<2	---	---	<5	<1	Granite.	
3819	Fel Plut Quartz	Random Chip	---	.06	.5	3	<1	7	<10	---	<2	3	<5	99	5	Quartz and aplite dikes within granite.	
3822	Fel Plut	Random Chip	---	.02	.4	27	21	28	<10	---	<2	3	<5	<5	5	Iron-stained fractured granite.	
3823	Metased	Random Chip	---	.08	.4	21	12	43	<10	---	<2	2	<5	<5	5	Iron-stained silicified mudstone with epidote veinlets.	
3825	Stream Sed	Stream Sed	---	.04	.9	7	47	33	<1	---	<2	<1	9	7	6	Stream sediment.	
3827	Metased	Random Chip	---	<.03	<.03	37	21	29	<10	---	<2	<1	<5	<5	---	Iron-stained mudstone with up to 1% pyrite.	

--- no data

NAME (other names): Unnamed prospect (?)      COMMODITIES: Uranium (?)

LOCATION:    Quadrangle: Seward C-3              NW 1/4 Sec 20    T 7N    R 9E  
                    Meridian: Seward  
                    Geographic: Near cabins in South Bay, Perry Island.  
                    Elevation: sea level.

REFERENCE NUMBERS:

$\frac{\text{Map}}{\text{S-99}}$	$\frac{\text{Kx}}{\text{NA}}$	$\frac{\text{Tysdal}}{\text{NA}}$	$\frac{\text{MAS}}{\text{NA}}$	$\frac{\text{BLM}}{\text{NA}}$	$\frac{\text{MS}}{\text{NA}}$
----------------------------------	-------------------------------	-----------------------------------	--------------------------------	--------------------------------	-------------------------------

HISTORY AND PRODUCTION:

None.

RESERVES: None.

OPERATING DATA:

One short adit (?) that averages 4-ft-wide and 8-ft-long.

GEOLOGIC SETTING:

Two 3-in.-wide branching epidote veinlets with silicified alteration borders up to 5-in.-wide cut the granite country rock. The veinlets trend N55°W and dip 80°N. Limonite pseudomorphs after pyrite (?) and numerous 0.1-in.-wide epidote veinlets are also present.

BUREAU WORK:

Collected two samples from the prospect (table A-80 and fig. A-28) (3331, 3332) which contained no significant metal values. A stream sediment sample (3684) collected in the area contained 300 ppm uranium but no source could be located. Low mineral development potential due to low metal values.

REFERENCES:

None



NAME (other names): Mineral occurrence      COMMODITIES: W

LOCATION:    Quadrangle: Seward C-3                      NE 1/4 Sec 1    T 7N R 8E  
                    Meridian: Seward  
                    Geographic: On shoreline along east side of West Twin Bay,  
                                    Perry Island.  
                                    Elevation: 5 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-100	NA	NA	NA	NA	NA

HISTORY AND PRODUCTION:

None.

RESERVES:    None.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

A 40-ft-wide zone containing stockwork aplite and quartz veins, up to 1-in.-wide, occurs in granite along the shoreline. Some of the veins have been brecciated and silicified back together. The zone trends N30°W and dips 63° to the northeast.

BUREAU WORK:

One sample was collected here (table A-80 and fig. A-28). It contained 99 ppm tungsten. Low mineral development potential.

REFERENCES:

None

NAME (other names): Mineral occurrence (Culross Island)      COMMODITIES: Copper, Uranium(?)

LOCATION:    Quadrangle: Seward C-3                      NW 1/4 Sec 32    T 7N    R 8E  
                    Meridian: Seward  
                    Geographic: Southeast side of Culross, 0.8 mile south of  
    Hidden Bay.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-101	NA	NA	NA	NA	NA

HISTORY AND PRODUCTION:

None known.

RESERVES: Unknown.

OPERATING DATA:

No signs of prospecting were found.

GEOLOGIC SETTING:

A 20 x 30-ft exposure of quartz diorite (?) is exposed between the low and high tide lines. It is surrounded by beach boulders but appears to be in place. It contains up to 10% combined pyrite and chalcopyrite in clots and disseminations up to 0.2 in. in diameter. Nearby several aplitic dikes occur which locally grade to pegmatite and contain finely disseminated garnets. They average 6-ft-wide and extend for 100 ft along strike. Both the diorite and aplite occur with granite approximately 500 ft north of the granite contact with sedimentary rocks.

BUREAU WORK:

A sample of the sulfide-bearing quartz diorite contained 0.13% copper. Total count scintillometer readings of 275 counts per second were obtained from the aplite dikes over a 10 count per second background. Chip samples contained a maximum of 9 ppm U<sub>3</sub>O<sub>8</sub> (table A-81). Low mineral development potential due to low copper and uranium values.

REFERENCES:

None

TABLE A-81. - ANALYTICAL RESULTS - Mineral occurrence - Culross Island

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	U308	Mo	Ni	Sb	Sn	W	
3355	Fel Plut	Random Chip	---	.06	0.5	4	2	78	12	9	<2	---	1	<5	16	Garnet-bearing aplite and pegmatite dikes.
3520	Fel Plut	Random Chip	---	.12	1.1	.13%	16	11	14	3	<2	---	3	<5	<5	Quartz diorite? 8% sulfides, pyrrhotite, pyrite, chalcopyrite.

--- no data

NAME (other names): Culross Mine

COMMODITIES: Gold, Silver

LOCATION: Quadrangle: Seward C-4

SW 1/4 Sec 35 T 8N R 7E

Meridian: Seward

Geographic: 1,500 ft SE of the head of Culross Bay, Culross Island

Elevation: 190 to 370 ft.

Claims: Bugaboo, Ricky Boy, Chelan, Helen, Dagny, Betty

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-102	95-206	169	950070	NA	NA

HISTORY & PRODUCTION: (148)

1907 - Discovery made.

1910 - Ground relocated as Bugaboo No.'s 1 & 2 claims (72, p. 235).

1914 - Operated by the Thomas Culross Mining Co.  
Shaft 28-ft-deep, 175 ft of drift and 140 ft of crosscut.  
Five tons of ore reportedly shipped (148).

1915 - Only assessment work done.

1916 - New shaft house built.

1917 - 10 ft lane mill and two gravity tables set up on property.  
Operated part of season (128, pp. 42-43).

1918 - Thomas Culross Mining Co. in bankruptcy.  
73 additional feet of drifting.

1919 - Owner: Culross Island Mining and Milling Co.  
60 ft of tunneling.

1921 - Development only. 240-ft of raising and a 5-ft drift.  
\$106,000 of ore blocked out (148).

1922 - 400-ft tunnel enlarged and face advanced 160 ft. Water powered  
650-ft<sup>3</sup>/sec air compressor installed. The mine was equipped with  
air drills and plans made for a new mill (134, p. 71).

1923 - Development only.

1924 - Only assessment work done.

1925 - Small shipment of gold ore made (99, pp. 10-11).

1934-1941 - Property leased and under rehabilitation. Small amount of work done.

1945-1982 - Claims lapsed and restaked several times by various parties. No major development done.

Production (after U.S. Bureau of Mines, 148)

<u>Year</u>	<u>Tons Ore</u>	<u>Gold (oz)</u>	<u>Silver (oz)</u>
1914	10	20	18
1917	2	1	1
1925	40	41	34
TOTALS	52	62	53

Average 1.2 oz gold/ton and 1.0 oz silver/ton.

Size of present stopes in the mine indicate that roughly 800 tons of rock may have been removed from them.

RESERVES: After Richelson (110, 1950)  
Indicated

<u>Tons</u>	<u>Gold (oz/ton)</u>	<u>Silver (oz/ton)</u>	<u>% Cu</u>	<u>% Pb</u>
75,000	1.5	1.5	1.0	1.0

In 1950 the ore was estimated to run \$35/ton.

After Bureau

1/  
Inferred

<u>Tons</u>	<u>Au (ppm)</u>	<u>Ag (ppm)</u>
9,800	5.5	3.4

1/  
34.28 ppm (parts per million) = 1 oz/ton

OPERATING DATA:

Underground development consists of an adit at the 190 ft level containing 185 ft of crosscut 480 ft of drift and several small stopes. A 180 ft raise extends from this level to the surface.

A series of small stopes have been driven above this level. To the south 110 ft, a second adit has been driven 50 ft but did not intersect the main shear zone.

At one time a mill building enclosing a 10 ft lane mill, two gravity tables, pelton wheel, and air compressor existed on the beach below the mine. A cable tramway connected it to the mine workings. The building has since collapsed and the gravity tables have been removed.

## GEOLOGIC SETTING:

The mine workings occur within Orca Group metavolcanics lying just east of a probable fault contact with Valdez Group mudstone and shale. Wallrocks consist of quartz-chlorite semischist or schist with occasional pillow outlines. The major mineralization occurs in quartz veins confined to a 4- to 8-ft-wide, near vertical, shear-fault zone trending N10 to 15°E and cutting the metavolcanics. This shear zone has been explored underground along strike for at least 410 ft and contains a 1- to 4-in.-wide gouge zone its entire length. Quartz-calcite stringers and veins varying from less than 1-in. to 3-ft-wide occur throughout the shear zone and locally make up to 20% of the total rock. The veins are very irregular, pinching and swelling in a boudin-like manner containing quartz rod and small fold structures roughly parallel to foliation. The vein composition varies from totally quartz to totally calcite, with iron staining and ribbon structure common underground. They contain an average of less than 1% pyrrhotite underground and occasionally gold. Selected pieces of dump material contain 1% galena, chalcopyrite, and trace visible gold. Johnson (72, p. 236) also reports arsenopyrite and sphalerite in the ore. Rough estimates of gold values indicate an average of 5.5 ppm and 3.4 ppm silver. Chip samples from quartz veins contain up to 22 ppm gold. The surface extension of this vein system can be traced for 40 ft north of a shaft at the 370-ft elevation which connects to the underground workings. Quartz float from several trenches in the area contained up to 5% galena, 1% chalcopyrite, and trace visible gold. A linear depression in which the quartz float occurs marks the surface expression of the shear zone.

## BUREAU WORK

The underground workings were mapped and sampled where possible as the tops of several stopes were not accessible (fig. A-29 and A-30 and table A-82).

Prospecting in the cirque area to the east of the Culross Mine revealed some quartz float containing 1% arsenopyrite, but no gold or silver. Several quartz veins occur in the area but were completely devoid of sulfides. A 10 x 15 ft exposure of shale cut by numerous quartz veinlets, contained trace copper and zinc but no precious metals (fig. A-30). Moderate mineral development potential for gold.

## REFERENCES:

17-18, 64, 72, 78, 80, 82, 99, 110, 112, 126-129, 134, 148, 151

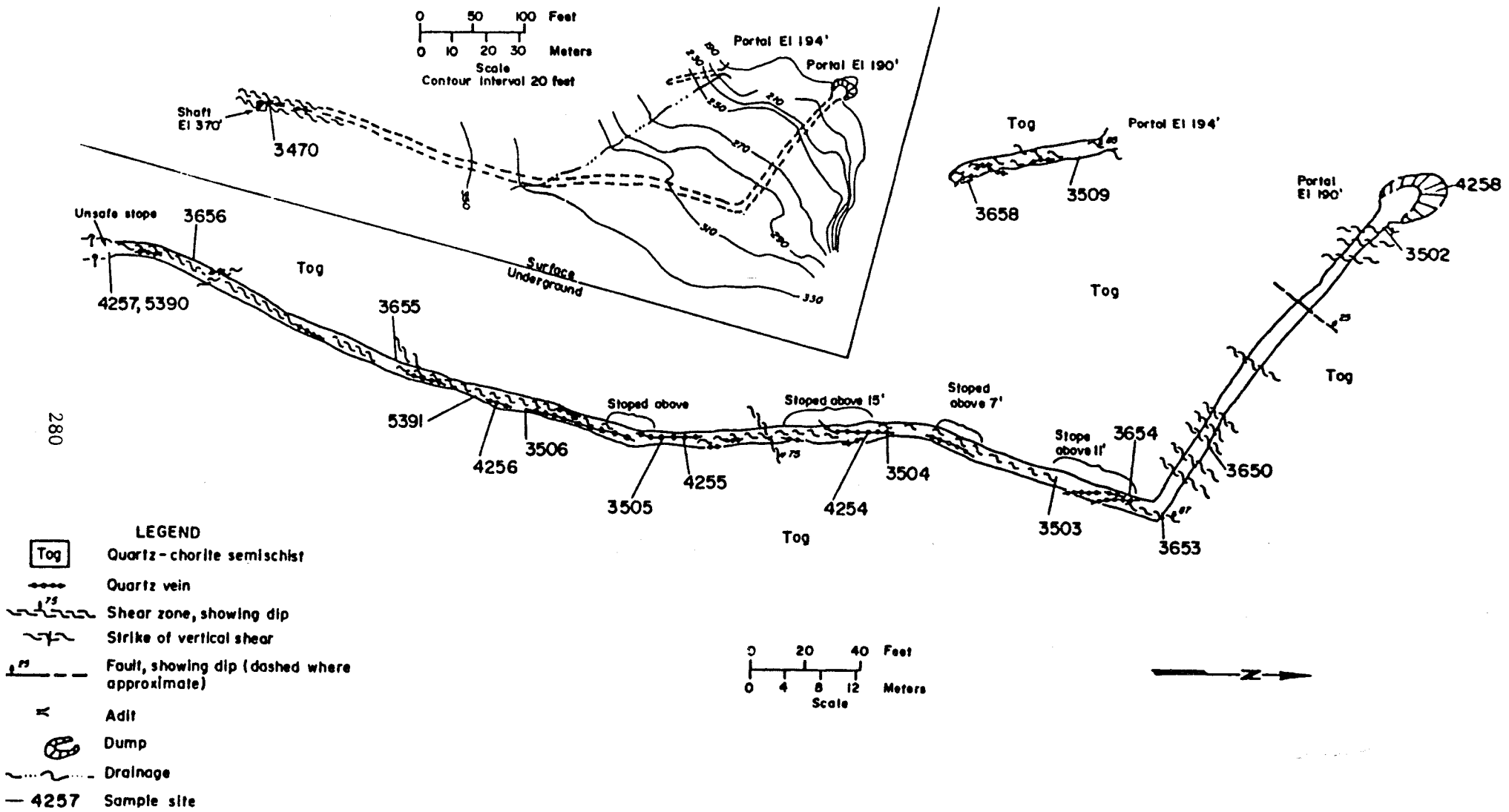


FIGURE A-29. - Culross Mine, sample locations.

TABLE A-82. - ANALYTICAL RESULTS - Culross Mine Area

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au 1/	Ag 1/	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3337	Quartz	Grab	---	<.005	<0.2	18	9	11	380	---	---	---	2	---	Quartz float, 1% arsenopyrite.
3339	SL/SS/CG	Random Chip	---	<.005	<0.2	65	23	75	39	---	---	---	6	---	Mudstone.
3340	SedRk/Q	Random Chip	---	<.005	<0.2	105	33	67	170	---	---	---	2	---	10 x 15 ft iron-stained shale. Quartz veinlets, up to 5% pyrite.
3342	Quartz	Cont Chip	4	<.005	<0.2	4	7	13	<10	---	---	---	4	---	Average 4 ft wide quartz vein exposed for 50 ft.
3344	Maf Volc	Random Chip	---	<.005	<0.2	57	14	26	<10	---	---	---	3	---	Greenstone.
3470	Quartz	Grab	---	0.16	<0.2	85	0.1%	15	0.1%	---	---	---	2	---	Vein quartz float in open cut.
3502	Maf Volc	Cont Chip	2	<.005	<0.2	62	36	46	790	46	---	82	6	---	Quartz-chlorite semi-schist.
3503	Maf Volc	Cont Chip	7	.026	<0.2	77	28	32	19	32	---	69	4	---	Shear zone, quartz stringers.
3504	Maf Volc	Cont Chip	1	.047	<0.2	6	14	14	21	<1	---	7	1	---	Greenstone semischist with quartz-chlorite veins.
3505	Quartz	Cont Chip	2	.052	<0.2	52	140	30	0.13%	38	---	90	2	---	Sheared greenstone with quartz calcite veins 1-in. to 1-ft-wide.

1/ ounces per ton

--- no data



TABLE A-82. - ANALYTICAL RESULTS - Culross Mine Area - Continued

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au 1/	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3506	Maf Volc	Cont Chip	2.5	.02	0.6	78	485	26	0.41%	---	---	---	3	---	Sheared greenstone with quartz calcite veins.
3509	Quartz	Cont Chip	1.5	.088	<0.2	800	.76%	.29%	88	---	---	---	7	---	4-ft-wide shear zone quartz-calcite veins.
3649	Str Sed	Grab	---	.06	0.4	30	31	69	18	---	---	---	<1	---	Stream silt below mine workings.
3650	Maf Volc	Random Chip	---	<.005	<0.2	78	13	13	<10	21	---	55	1	---	Cherty greenstone.
3653	Maf Volc	Cont Chip	5	<.005	<0.2	69	29	31	193	---	---	---	2	---	Shear zone with numerous quartz veinlets.
3654	Quartz	Random Chip	---	<.005	<0.2	11	20	11	129	---	---	---	<1	---	Quartz veins - <1-in. to 5-ft-wide.
3655	Maf Volc	Random Chip	---	<.005	<0.2	40	33	26	200	---	---	69	60	69	Sheared pillow basalt with calcite stringers.
3656	Quartz	Random Chip	1.5	.02	<0.2	66	42	10	440	---	---	---	---	<1	Calcite-quartz vein 1.5-ft-wide.
3658	Quartz	Chip	1.0	<.005	<.2	255	345	350	.11%	---	---	---	2.0	---	1-ft-wide quartz vein with minor sulfide and calcite.
3659	Quartz	Select Grab	---	trace	<0.2	45	29	20	104	---	---	---	---	1	Quartz float with dark gray bands.
3662	Maf Volc	Random Chip	---	<.005	<0.2	72	18	22	<1	20	---	31	1.0	---	Schistose greenstone with quartz stringers and lenses.

1/ ounces per ton

--- no data

TABLE A-82. - ANALYTICAL RESULTS - Culross Mine Area - Continued

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3663	Maf Volc	Random Chip	---	<.005	<0.2	105	18	16	22	10	---	19	<1.0	---	Sheared greenstone with quartz stringers & blebs
4254	Quartz	Grab	---	0.82	0.20	.58%	---	---	---	---	---	---	---	---	Quartz vein float on adit floor. Visible galena.
4255	Quartz	Select Grab	---	3.1	4.2	---	---	---	.33%	---	---	---	---	---	Quartz vein float on adit floor, contains pyrrhotite and malachite
4256	Quartz	Random Chip	---	13	7	---	---	---	.30%	---	---	---	---	---	Quartz with visible galena.
4257	Quartz	Random Chip	---	9.5	1.4	---	---	---	.36%	---	---	---	---	---	Quartz vein with sulfides.
4258	Maf Volc	Grab	---	12	11	.10%	.87%	.53%	---	---	---	---	---	10	Dump sample.
4263	Quartz	Select Grab	---	300	65	550	.36%	.70%	.15%	---	---	---	---	---	Crushed quartz remaining in mill.
5186	Quartz	Select Grab	---	30	10.1	480	685	270	.23%	---	---	---	---	---	Crushed quartz remaining in mill.
5390	Maf Volc	Grab	---	5.2	3.6	245	400	---	355	---	2	---	---	---	Fine debris in bottom of of stope.
5391	Quartz	Chip	0.5	22	11	495	.41%	---	.49%	---	---	---	---	9	Quartz vein.
5393	Maf Volc	Random Chip	---	.05	3	110	24	58	44	---	---	---	---	---	Greenstone, minor pyrrhotite.

--- no data

NAME (other names): John Sells Property      COMMODITIES: Gold  
                                     Claims: Culross Group 1-4  
     Culross 1-8  
     Reagan Group

LOCATION:    Quadrangle: Seward C-4              SE 1/4 Sec 34 T 8N R 7E  
                                     Meridian: Seward  
                                     Geographic: On west side of ridge 0.5 miles southwest of  
     the head of Culross bay, Culross Island.  
                                     Elevation: 580 to 720 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-103	95-204	170	940069	AA-014245	NA
	95-94				

HISTORY AND PRODUCTION:

Oct. 5, 1911 - Discovered and located by W. B. Harris (72, p. 236).  
 1911 - Recorded (82).  
 Jan. 1, 1913 - Relocated by John Sells (72, p. 236).  
 1913 - Reagan Group recorded (82).  
 Feb. 1916 - "A test shipment of gold-bearing quartz was made to Seattle from the Reagan Group" (78, pp. 187-188).  
 July 1937 - Relocated by Wm. B. Harris (112).  
 August 1938 - Optioned to D. J. McRae of Vancouver for \$10,000.  
 Oct. 1976 - Relocated by David W. Sims, Culross 1-8 (147).  
 Oct. 14, 1976 - Recorded by David W. Sims (147).  
 March 25, 1977 - F. S. Pettyjohn quit claim deed to James Gadmaus and Craig Cheledinas for Culross Mine (147).  
 1911-1937 - Activity years; - Claim Names - Culross Group 1-4, Sells Prospect.  
 1976, 1979-1981 - Owners - William Harris, Donald McRae, David W. Sims, James Gadmaus, Craig Cheledinas (82).

INFERRED RESERVES:    180 tons at 0.05 oz gold/ton.

OPERATING DATA:

A 100-ft-long adit, 15 ft open cut and several small pits were located (fig. A-31). An adit reported to be driven 32 ft along the footwall of the shear was not found (112).

#### GEOLOGIC SETTING:

Country rock consists of a northeast trending interbedded sequence of dark gray-black mudstone and shale/slate with a steeply west-dipping to vertical cleavage. Several shear zones occur in the area and these are generally parallel to cleavage.

Quartz veins are irregularly exposed for 270 ft along a N40°E strike and dip steeply to the west. Widths range from a few inches to 13.5 ft, averaging approximately 1 ft. Veins show signs of deformation and lie within a shear zone that is exposed for a 4 ft width in an open cut.

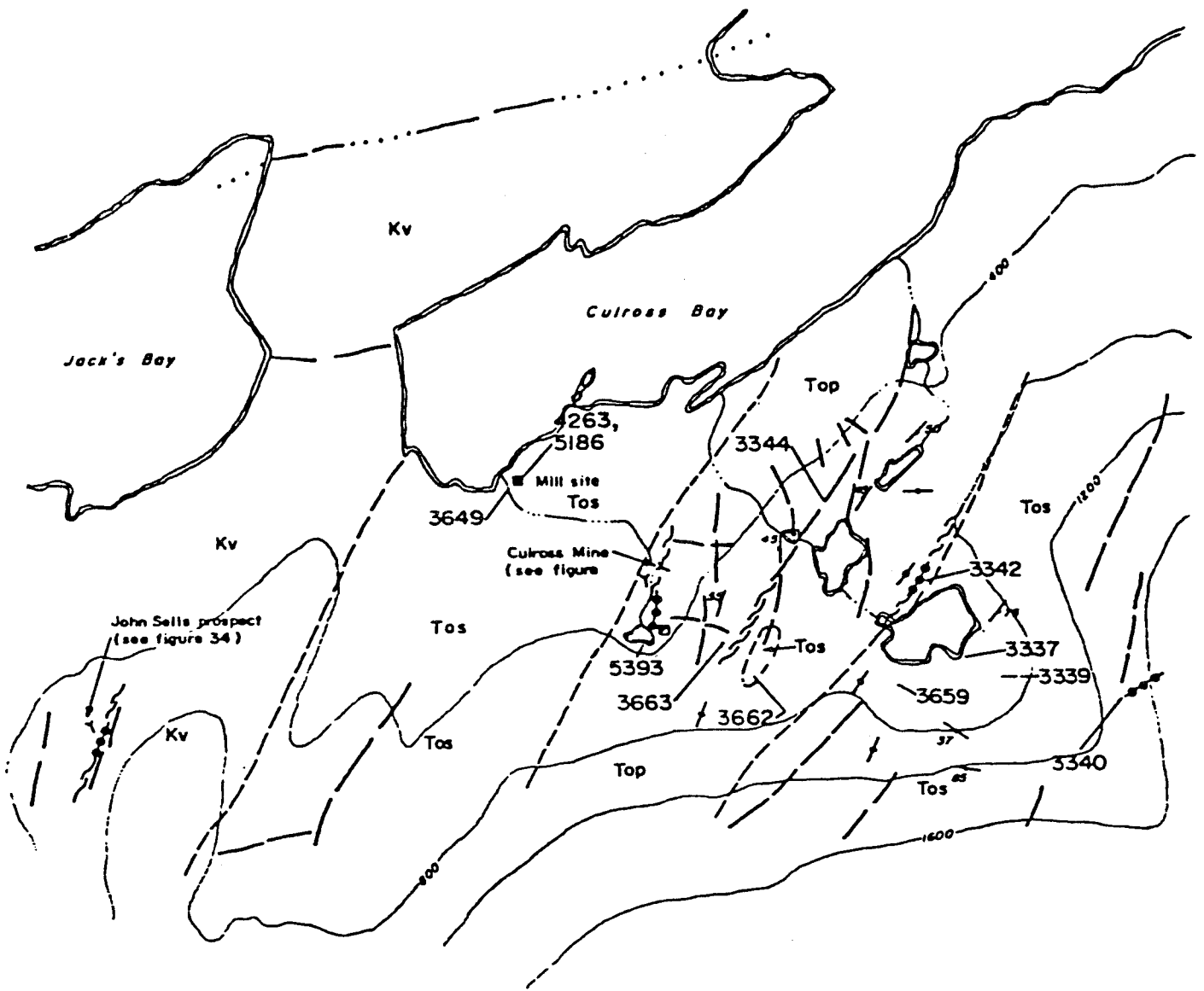
The quartz is white to light gray, limonite-stained, and contains dark gray-black inclusions, sooty vug fillings and narrow bands or ribbons of carbonaceous shale. This ribbon structure is cut by quartz stringers. Mineralization consists of up to 1% disseminated and stringer pyrite and a small amount of visible gold which was seen in float near the vein outcrops. The gold is associated with the ribbon quartz.

#### BUREAU WORK:

Surface and underground workings were mapped and samples collected (table A-83 and fig. A-30 and A-31). One sample across a 2.5-ft-wide quartz lens exposed for 10 ft contained .37 oz gold/ton. This prospect has moderate mineral development potential for gold.

#### REFERENCES:

72, 78, 82, 112, 141, 147, 151



LEGEND

- Tos Orca Group, shale and phyllite
- Top Greenstone with local pillow textures
- Kv Valdez Group, shale and mudstone
- ◆◆◆◆◆ Quartz vein
- Indefinite contact
- ~~~~~ Shear zone
- · · · · · Air photo lineament, dotted where concealed
- ↘<sub>73</sub> Strike and dip of foliation
- Strike of vertical foliation
- ↘<sub>85</sub> Strike and dip of joints
- Strike of vertical joints
- ↘ Strike of vertical pillow flow
- ~~~~~ Lake and stream drainage
- └ Adit
- Shaft
- 3662 Sample site

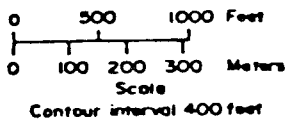


FIGURE A-30. - Culross Bay area, Culross Island, sample locations.

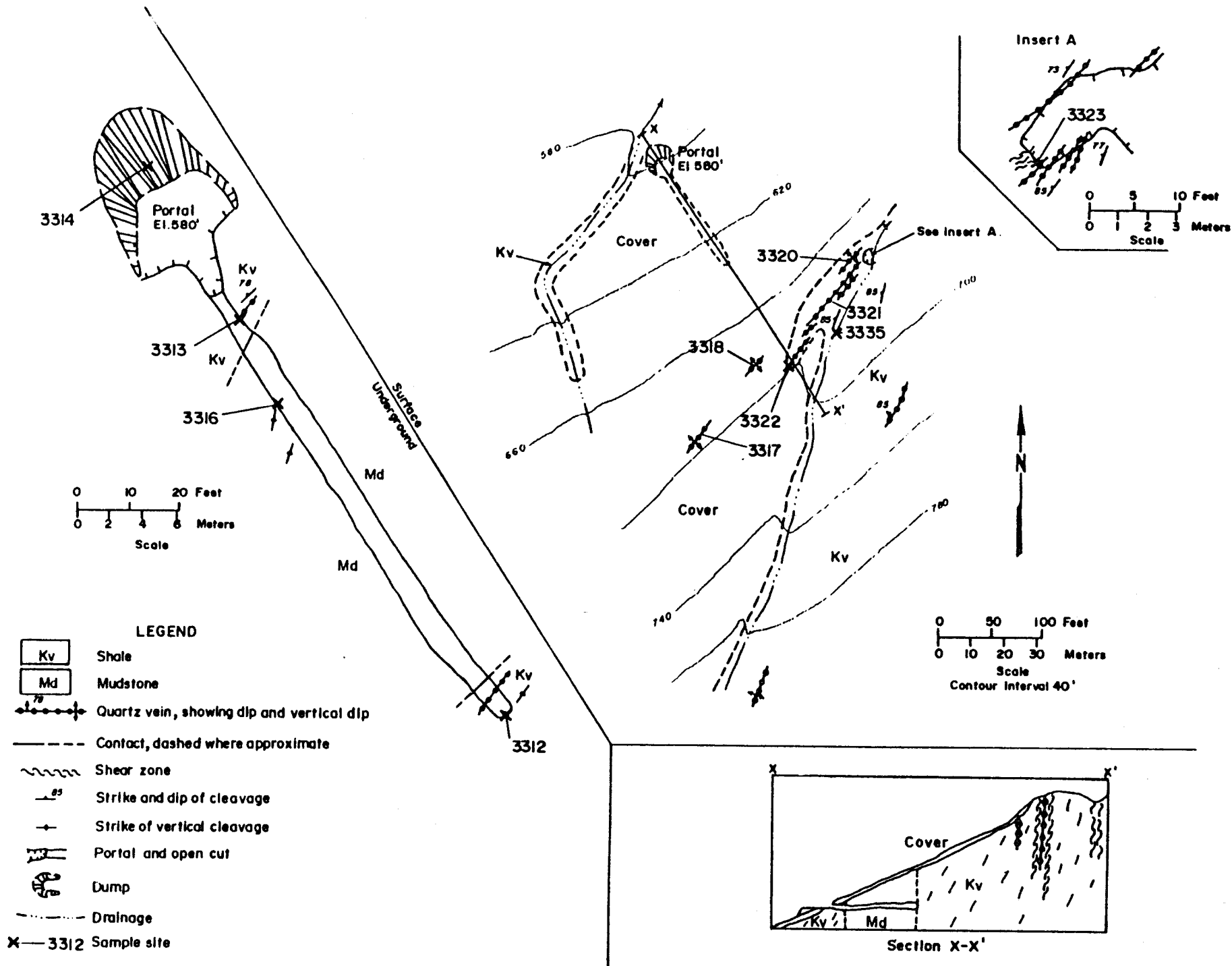


FIGURE A-31. - John Sells Prospect, sample locations.

TABLE A-83. - ANALYTICAL RESULTS - John Sells Property

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)											Descriptions
				Au 1/	Ag 1	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	
3312	SL/SS/CG	Chip	3.0	<.005	<.02	47	31	84	32	---	---	---	5	---	Across shale-slate at adit face.
3313	SedRx/Q	Chip	3.0	<.005	<.2	42	29	79	61	---	---	---	3	---	Across shale/slate with minor qtz vns. <1/2-in.-wide.
3314	SL/SS/CG	Grab	---	<.005	<.2	39	31	81	61	---	---	---	3	---	Dump sample.
3316	SL/SS/CG	Random Chip	---	<.005	<.2	27	29	76	34	---	---	---	2	---	Across two 3-in.-wide iron-stained zones with approx. 1% pyrite.
3317	Quartz	Random Chip	---	<.005	<.2	31	31	12	120	---	---	---	10	---	Across 6- to 12-in.-wide irregularly exposed quartz vein.
3318	Quartz	Chip	2.5	.374	<.2	3	4	18	10	---	---	---	2	---	Across 10-ft-long quartz lense.
3320	Quartz	Chip	9.0	.086	.07	6	10	11	400	---	---	---	1	---	Across quartz vein with dark bands.
3321	Quartz	Chip	13.5	<.005	<.2	5	8	44	34	---	---	---	1	---	Across quartz vein with some iron-stains.
3322	Quartz	Random Chip	---	<.005	<.2	3	7	14	15	---	---	---	2	---	Across quartz vein.
3323	Quartz	Chip	1.5	<.005	<.2	9	7	13	285	---	---	---	2	---	Across quartz vein with <1% shale fragments.
3335	SL/SS/CG	Chip	6.0	<.005	<.2	32	25	51	<10	---	---	---	4	---	Across shale-mudstone 30 ft east of quartz vein.

1/ ounces per ton

--- no data

NAME (other names): Mineral occurrence      COMMODITIES: Silver, Copper, Lead,  
Zinc, Gold, Arsenic

LOCATION:    Quadrangle: Seward C-4              NW 1/4 Sec 34 T 8N R 6E  
                Meridian: Seward  
                Geographic: Gully at southwest corner of Surprise Cove,  
                                Cochrane Bay.  
                Elevation: 0 to 2,000 ft.

REFERENCE NUMBERS:

<u>Map</u>	<u>Kx</u>	<u>Tysdal</u>	<u>MAS</u>	<u>BLM</u>	<u>MS</u>
S-104	NA	NA	NA	NA	NA

HISTORY AND PRODUCTION:    None.

RESERVES:    Unknown.

OPERATING DATA:

No signs of prospecting.

GEOLOGIC SETTING:

The country rock is a black-dark gray argillite with interbedded siltstone. Average strike and dip is  $N15^{\circ}E$  to  $75^{\circ}NW$ . Small quartz veins are scattered throughout the country rock along with a few felsic dikes.

Exposed for approximately 500 ft is an iron-stained silicified brecciated zone that strikes  $N32^{\circ}E$  and dips  $59^{\circ}$  northwest. It averages approximately 11-ft-wide with approximately 1% sulfides consisting of pyrite, arsenopyrite, and galena. Localized zones up to 3-ft-wide contain gouge and highly brecciated argillite. Localized quartz veins up to 1 1/2-in.-wide occur in the shear zone.

A second 3- to 8-ft-wide shear zone striking  $N50^{\circ}E$  and dipping 55 to  $65^{\circ}NW$  intersects the first at an elevation of approximately 900 ft and extends to the top of the divide. Several subparallel quartz and quartz calcite veins occur in and adjacent to the shear. The sheared metasediments and quartz veins collectively contain disseminated and podiform masses of pyrite, pyrrotite, chalcopyrite, sphalerite, and galena.

BUREAU WORK:

Several samples were collected and mapping was done in the area (table A-84 and fig. A-32). One 8-in. chip sample (5466), across a quartz vein, contained 130 ppm silver. A piece of float (7030), contained 140 ppm silver, 4.25% copper, 3.5% arsenic, and 0.3% zinc. This area has moderate mineral development potential.

REFERENCES:



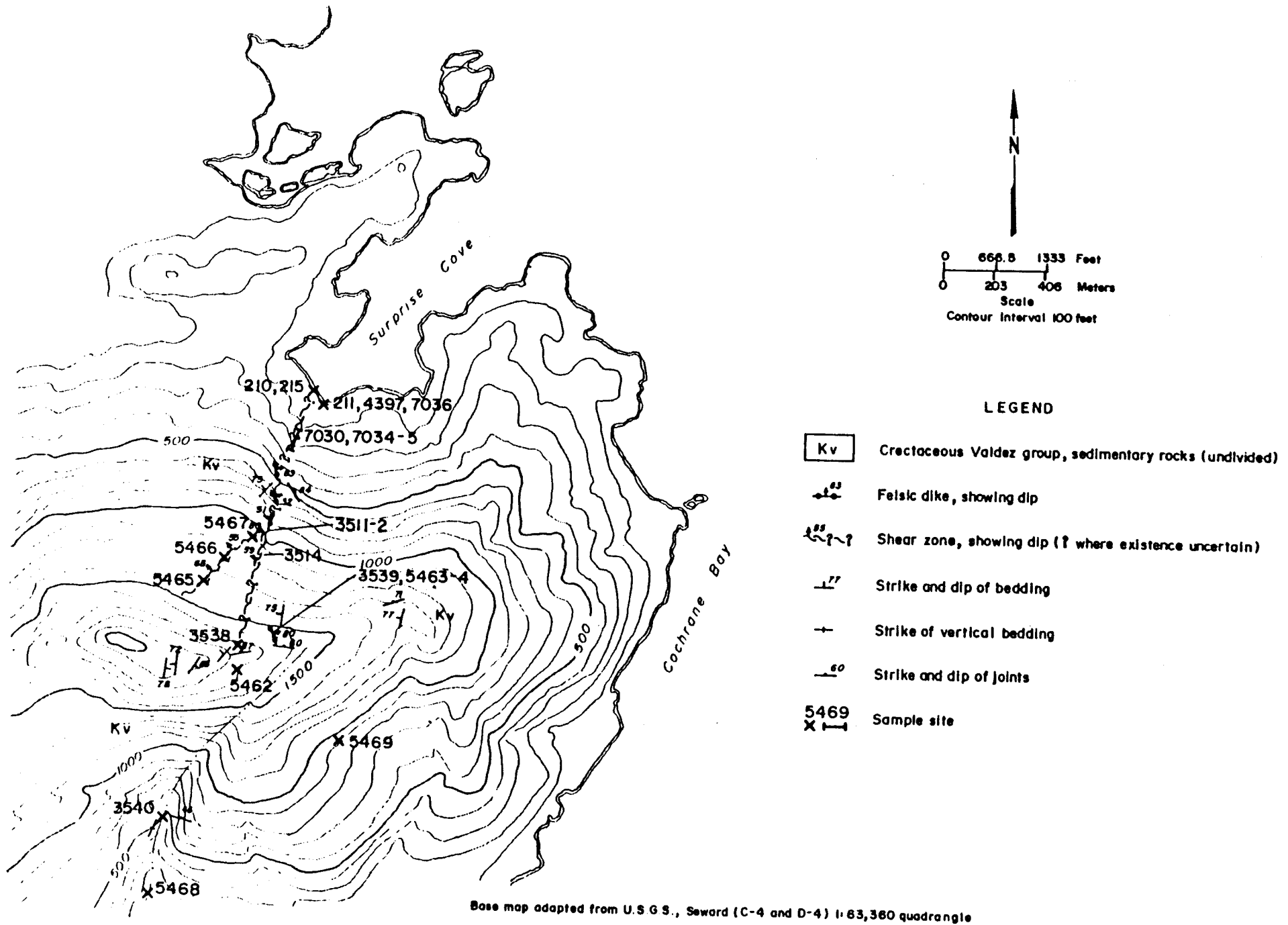


FIGURE A-32. - Surprise Cove area, sample locations.

TABLE A-84. - ANALYTICAL RESULTS - Mineral occurrence - Surprise Cove

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)													Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W		
210	SedRk/Q	Grab	---	<0.2	1	335	70	180	450	---	---	---	<1	---	---	Siltstone float with quartz veins and sulfides.	
211	Stream Sed	Stream	---	<0.4	<.2	295	30	95	1200	---	---	---	1	---	---	Stream sediment.	
215	SedRk/Q	Grab	---	<.02	9.6	950	1000	1250	---	---	---	---	---	---	---	Siltstone float with quartz veins and sulfides.	
3511	Quartz	Chip	.1	$\frac{1/}{<.005}$	<.2	12	120	120	12000	---	<2	---	55	---	---	Quartz veins with <1% sulfides.	
3512	SedRk/Q	Chip	5.0	$\frac{1/}{<.005}$	<.2	52	28	105	49	---	<2	---	3	---	---	Shear zone in argillite.	
3514	SedRk/Q	Chip	11	$\frac{1/}{<.005}$	<.2	49	54	30	1165	---	<2	---	5	---	---	Shear zone in argillite.	
3538	SL/SS/CG	Chip	5.0	.03	.3	35	23	81	1080	---	<2	---	---	---	---	Iron-stained argillite with <1% pyrite and quartz stringers.	
3539	Fel plut	Chip	3.0	<.03	.2	7	33	82	95	---	<2	---	---	---	---	Felsic dike with quartz vein and trace pyrite.	
3540	SL/SS/CG	Chip	3.5	.05	.2	38	30	102	2600	---	<2	---	---	---	---	Iron-stained argillite with <1% sulfide and quartz veinlets.	

$\frac{1/}{}$  ounces per ton

--- no data

TABLE A-84. - ANALYTICAL RESULTS - Mineral occurrence - Surprise Cove -- Continued

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
5462	Metased	Grab	---	<.03	2.1	78	80	95	200	---	---	---	---	---	---	Pyrite-bearing silicified meta-siltstone.
5463	Fel Plut	Grab	---	<.03	2.5	42	64	---	56	---	---	---	---	---	---	Felsic dike with pyrrhotite.
5464	Quartz	Grab	---	<.03	6.2	47	245	---	2000	---	---	---	---	---	---	Several thin quartz veins.
5465	Metased Quartz	Chip	2.5	<.03	2.6	41	48	---	500	---	---	---	---	---	---	Shear zone with pyrite, pyrrhotite and arsenopyrite.
5466	Quartz	Chip	8 in	.25	130	325	150	---	1400	---	---	---	---	<5	<5	Quartz vein with pyrrhotite and arsenopyrite.
5467	Quartz	Grab	---	---	---	---	---	---	---	---	---	---	---	---	---	Quartz vein with calcite.
5468	Alluvium	PanCon	2 pans	0.61	2.0	100	---	---	---	---	---	100	---	---	---	Pan concentrate.
5469	Fel Plut	Chip	4	<.03	3.0	68	26	---	1900	---	5	---	13	---	<5	Felsic dike with arsenopyrite.
7030	Metased	Grab	---	.24	140	42500	35	2950	35000	---	---	---	16	---	---	Argillite float.
7034	Fel Plut	Grab	---		<1	150	100	200	<500	---	---	---	<100	---	---	Diorite.
7035	Metased	Grab	---		<1	200	10	<200	<500	---	---	---	<100	---	---	Pyritiferous metasediments.

--- no data

TABLE A-84. - ANALYTICAL RESULTS - Mineral occurrence - Surprise Cove -- Continued

Sample	Material type	Sample type	Width (feet)	Elements ppm, (unless otherwise indicated)												Descriptions
				Au	Ag	Cu	Pb	Zn	As	Co	Mo	Ni	Sb	Sn	W	
7036	Alluvium	Stream Sed	---	<.2	.6	45	10	105	750	---	---	---	---	---	---	Stream sediment.

--- no data

APPENDIX B

NUMERICAL LISTING BY QUADRANGLE, OF MINES  
PROSPECTS, AND MINERAL OCCURRENCES

APPENDIX B. - Numerical Listing, by Quadrangle, of Mines, Prospects,  
and Mineral Occurrences 1/

Map No.	Name, Location	Commodities	Mineral Resource Potential
P-49 <u>2/</u>	Sheppard Claims - Goat Harbor	Placer gold	Low
BS-1 <u>3/</u>	Latouche Consolidated Copper Co. Prospect (Tibbits Prospect) Latouche Island	Copper, silver	Low
BS-2	Seattle Alaska Prospect - Latouche Island	Copper, gold, zinc	Moderate
BS-3	Unnamed occurrence - Latouche Island	Copper, silver, zinc	Moderate
BS-4	Alpha Claims - Latouche Island	Copper	Unevaluated
BS-5	Whale Claims - Latouche Island	Copper	Unevaluated
BS-6	Unnamed prospect -Elrington Island	Copper	Unevaluated
S-1	Keith Claims - Latouche Island	Copper, gold, zinc	Unevaluated
S-2	Reynolds-Alaska Prospect - Latouche Island	Copper	Unevaluated
S-3	Banta Shaft, Patented Claims: Duke, Iron Mtn. No. 6, and amended Iron Mtn. No.4 - Latouche Island	Copper, zinc, gold	Moderate
S-4	Duchess Claim (patented) - Latouche Island	Copper, zinc, gold silver, sulfur	Moderate
S-5	Tiger?, W & L? Claim - Latouche Island	Copper, gold	Low
S-6	Alameda Claims - Latouche Island	Copper, zinc	Unevaluated
S-7	Latouche Island Copper Mining Co. Prospect - Latouche Island	Copper	Unevaluated

See footnotes at end of appendix.

APPENDIX B. - Numerical Listing, by Quadrangle, of Mines, Prospects,  
and Mineral Occurrences 1/ -- Continued

Map No.	Name, Location	Commodities	Mineral Resource Potential
S-8	Unnamed occurrence - Latouche Island	Copper, zinc	Unevaluated
S-9	Latouche Island Copper Mining Co. Prospect (Alameda Claims)- Latouche Island	Copper, zinc	Unevaluated
S-10	Latouche Island Copper Mining Co. Prospect?(Alameda Claims?)	Copper, zinc	Low
S-11	Alameda Claims - Latouche Island	Copper, zinc	Unevaluated
S-12	Carlson Prospect (Latouche Island Copper Mining Co.) - Latouche Island	Copper, zinc	Low
S-13	Lin. Claims - Latouche Island	Copper	Unevaluated
S-14	Unnamed prospect- Latouche Island	Copper	Unevaluated
S-15	Bazard Tunnel, Claims: West Hillside Lode, Hillside Lode- Latouche Island	Copper	Unevaluated
S-16	Hillside Lode Claim - Latouche Island	Copper	Low
S-17	Beatson Mine, Patented Claims: Big Bonanza and Eagle - Latouche Island	Copper, zinc, gold silver	Moderate
S-18	Chenega Claim (patented claim)- Latouche Island	Copper	Moderate
S-19	Blackbird Mine (Girdwood, Barrack, Ladysmith) - Latouche Island	Copper, zinc, silver	Moderate
S-20	Unnamed occurrence - Elrington Island	Copper	Low
S-21	Lucky Girl Prospect (Murphy Prospect) - Elrington Island	Copper, asbestos	Unevaluated
S-22	Unnamed occurrence - Bainbridge Island	Copper, zinc	Low

See footnotes at end of appendix.

APPENDIX B. - Numerical Listing, by Quadrangle, of Mines, Prospects,  
and Mineral Occurrences 1/ -- Continued

Map No.	Name, Location	Commodities	Mineral Resource Potential
S-23	Hogg Bay Prospect - Bainbridge Island	Copper	Unevaluated
S-24	Shoo Fly Prospect - Bainbridge Island	Copper, gold, silver	Low
S-25	Unnamed prospect - Whale Bay	Gold	Moderate
S-26	Copper Queen Prospect, Helena Claim, Ground Hog Claim - Knight Island	Copper	Low
S-27	Hogan, Hemple, and Egan Prospect - Knight Island	Copper	Moderate
S-28	Wilcox Prospect, Claims: Hogan Bay - Knight Claims- Knight Island	Copper	Low
S-29	Unnamed prospect - Knight Island	Copper	Low
S-30	Minnie Prospect - Knight Island	Copper	Low
S-31	Unnamed occurrence - Knight Island	Copper	Low
S-32	Unnamed occurrence - Knight Island	Copper, zinc, chromium	Unevaluated
S-33	Home Camp Prospect (Charles Schultz Prospect?)- Knight Island	Copper	Moderate
S-34	Unnamed occurrence - Knight Island	Barium, copper, chromium	Unevaluated
S-35	Kilbourn Prospect - Knight Island	Copper	Low
S-36	H. J. Harvey Prospect - Knight Island	Nickel, copper	Moderate
S-37	Hendrix, Reavley, and McMasters Prospect - Knight Island	Copper	Unevaluated

See footnotes at end of appendix.



APPENDIX B. - Numerical Listing, by Quadrangle, of Mines, Prospects,  
and Mineral Occurrences 1/ -- Continued

Map No.	Name, Location	Commodities	Mineral Resource Potential
S-38	J. J. Bettles Prospect - Knight Island	Copper, zinc	Low
S-39	Sponberg, Sanberg, and Simpson Prospect - Knight Island	Copper	Unevaluated
S-40	Graham & Harrison Prospect - Knight Island	Copper, silver	Low
S-41	Unnamed occurrence - Knight Island	Copper, zinc	Low
S-42	Unnamed prospect - Knight Island	Copper	Unevaluated
S-43	Mallard Group Claims- Knight Island	Copper, gold	Low
S-44	Larsen Prospect - Knight Island	Copper	Unevaluated
S-45	Larsen, Erickson, and Allen Prospect - Knight Island	Copper, zinc	Unevaluated
S-46	Cathead Bay Claim - Knight Island	Copper, zinc	Low
S-47	Harry Moore Prospect - Knight Island	Copper	Low
S-48	Unnamed occurrence - Knight Island	Copper	Low
S-49	Hubbard and Elliot Prospect - Knight Island	Copper, nickel	Moderate
S-50	Copper Coin Group, (Russell Ball Copper Co. Prospect) - Knight Island	Copper, zinc	Moderate
S-51	Hemple Prospect - Knight Island	Copper	Low
S-52	Knight's Island Copper Mining Co. Prospect - Knight Island	Copper, nickel	Moderate

See footnotes at end of appendix.

APPENDIX B. - Numerical Listing, by Quadrangle, of Mines, Prospects,  
and Mineral Occurrences 1/ -- Continued

Map No.	Name, Location	Commodities	Mineral Resource Potential
S-53	Twentieth Century Knight Island Copper Co. Prospect- Knight Island	Copper, gold	Moderate
S-54	Alhambra, U & I, and Ura Claims - Knight Island	Copper	Low
S-55	Unnamed prospect - Knight Island	Copper	Low
S-56	Knight Island Alaska Copper Co. Prospect - Knight Island	Copper, silver, zinc	Low
S-57	Unnamed prospect - Knight Island	Copper	Low
S-58	Nellie Group Claims - Knight Island	Copper	Low
S-59	Jonsey Claims, Bald Eagle Claim - Knight Island	Copper	Moderate
S-60	Unnamed occurrence - Knight Island	Copper	Unevaluated
S-61	Knight Island Consolidated Copper Co. Prospect- Knight Island	Copper	Low
S-62	Monarch Prospect - Knight Island	Copper	Unevaluated
S-63	Unnamed occurrence - Knight Island	Copper	Unevaluated
S-64	Unnamed occurrence - Knight Island	Zinc, copper	Moderate
S-65	Pandora Prospect - Knight Island	Copper	Moderate
S-66	Marsha Bay Claims - Knight Island	Copper	Low

See footnotes at end of appendix.

APPENDIX B. - Numerical Listing, by Quadrangle, of Mines, Prospects,  
and Mineral Occurrences 1/ -- Continued

Map No.	Name, Location	Commodities	Mineral Resource Potential
S-67	Rua Cove Prospect - Knight Island	Copper, zinc, iron sulfur	Moderate
S-68	Unnamed occurrence - Knight Island	Copper	Low
S-69	H. A. Claims - Knight Island	Copper	Unevaluated
S-70	Unnamed occurrence - Knight Island	Copper	Low
S-71	Fergusson, Johnson and Harvey Prospect - Knight Island	Copper	Unevaluated
S-72	Kaczanowski and Wilson Prospect - Knight Island	Copper	Low
S-73	Unnamed prospect - Knight Island	Copper, zinc	Low
S-74	Wallace, McPherson and Valentine Prospect- Knight Island	Copper	Unevaluated
S-75	Unnamed prospect - Knight Island	Copper	Unevaluated
S-76	Crown Copper Co. Prospect - Knight Island	Copper, zinc	Unevaluated
S-77	Unnamed prospect - Knight Island	Copper	Unevaluated
S-78	Malack Prospect - Knight Island	Copper	Unevaluated
S-79	Boyle Prospect - Knight Island	Copper	Unevaluated
S-80	Big Passage Copper Mining Co. Prospect - Knight Island	Copper	Unevaluated
S-81	Knights Island Mining and Development Co. Prospect - Knight Island	Copper, zinc	Moderate
S-82	Von Gunther or (Malack?) Prospect - Knight Island	Copper	Low

See footnotes at end of appendix.

APPENDIX B. - Numerical Listing, by Quadrangle, of Mines, Prospects,  
and Mineral Occurrences 1/ -- Continued

Map No.	Name, Location	Commodities	Mineral Resource Potential
S-83	Singletary Prospect - Knight Island	Copper	Unevaluated
S-84	Disk Island Prospect - Disk Island	Copper	Low
S-85	Unnamed prospect - Eleanor Island	Zinc, copper	Low
S-86	Unnamed occurrence - Chenega Island	Gold	Low
S-87	Unnamed occurrence - Chenega Island	Chrome, nickel, manganese, iron	Low
S-88	Unnamed occurrence - Chenega Island	Iron, manganese, copper	Low
S-89	Unnamed occurrence - Chenega Island	Chrome, copper, nickel	Low
S-90	Unnamed occurrence - Chenega Island	Manganese	Moderate
S-91	Unnamed prospect - Jackpot Bay	Gold, silver, lead, zinc, copper	Unevaluated
S-92	Unnamed occurrence - Falling Glacier	Copper	Low
S-93	Unnamed occurrence - Falling Glacier	Copper	Low
S-94	Dog I Claim - Derickson Bay	Gold, antimony	Unevaluated
S-95	Blue Fiord Prospect - Port Nellie Juan	Silver, gold	Low
S-96	Unnamed prospect - McClure Bay	Gold	Unevaluated
S-97	Unnamed occurrence - Main Bay	Gold, silver, arsenic	Low
S-99	Unnamed prospect - Perry Island	Copper	Low

See footnotes at end of appendix.

APPENDIX B. - Numerical Listing, by Quadrangle, of Mines, Prospects,  
and Mineral Occurrences 1/

Map No.	Name, Location	Commodities	Mineral Resource Potential
S-100	Unnamed occurrence - Perry Is. Island	Tungsten	Low
S-101	Unnamed occurrence - Culross Is Island	Copper	Low
S-102	Culross Mine - Culross Island	Gold, silver	Moderate
S-103	John Sells Prospect - Culross Island	Gold	Moderate
S-104	Unnamed occurrence - Surprise Cove	Silver, copper, lead, zinc, gold, arsenic	Moderate

1/ Refer to Appendix for detailed descriptions

2/ P = placer

3/ Letter prefix indicates 1:250,000 quadrangle location