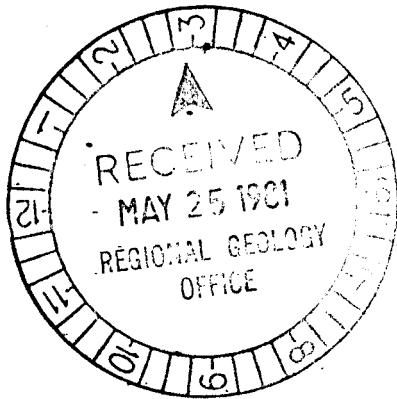


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IONA SILVER MINES LTD.

SUMMARY REPORT



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IONA SILVER MINES LTD.

SUMMARY REPORT

1. GENERAL

The Company is the holder of a 90 claim mineral property in the Upper Ketzá River Area, about 40 miles south of Ross River, Watson Lake Mining District, in the Yukon (Figure 1).

The property is accessible via a 23 mile truck road leaving the Campbell Highway in a southerly direction, about 200 miles north of Watson Lake. A 1,500 foot airstrip on the property allows for direct access by aircraft. Elevations on the property range from about 3,500 feet to about 6,000 feet, with good water and timber.

2. HISTORY

The first showings in the area were discovered in 1946 by prospectors working for Hudson Bay Mining and Smelting Company. In 1955, Conwest drove 3 short adit on the Key 3. A major program of exploration and development was carried out by Silver Key Mines and Stump Mines between 1965 and 1969.

Iona Silver Mines started to acquire the land in

the early 1970's.

During these years, work resulted in the building of a 25 mile all-weather truck road into the property and about 12 miles of access roads on the present property to the various showings. A total of about 3,000 feet of underground drifts, crosscuts and raises have been driven so far on the A-1, K-18-B, Lap 10 and Key 3 showings, mostly by the Stump Mines/Silver Key Mines Group, who also built the existing 1,500 foot airstrip.

Iona Silver Mines has erected a 16 man trailer-camp and a large machine shop and has assembled the necessary mining equipment for further development of the property.

3. GEOLOGY

The property is underlain by a sequence of slates, siltstones, quartzites and dolomites of Silurian-Devonian-Mississippian age. These formations are in general gently folded, and are overlain in parts of the property by older Cambro-Ordovician lustrous phyllites and associated greenstone sills, which have been thrust over the younger rocks, probably during the Jurassic, as a gently dipping sheet.

A small dioritic intrusive is present in the northeast part of the property and highly altered felsite dykes have been encountered in the underground workings of the

K-18-B deposit.

There are northwest striking faults, but as geological mapping progresses it appears that no major faults are present on the property.

Depth of overburden is variable. In most cases, it is highly clayey, and derived from underlying formations. Glacial overburden has only been positively identified west of the property in Upper Cache Creek (terminal moraines) and in Lower Ketz Valley where it enters the Pelly River Valley, as large valley moraines.

Solifluction is an important feature. As a result, on north slopes, the source of high-lead soil-anomalies may lie some distance upslope from the peak-values in the flowing overburden.

4. MINERALIZATION

There are a great number of mineral showings, areas of float and areas of high lead values in the soils on the property; the main showings and float areas are indicated on Figure 1.

Most of the known showings consist of siderite veins with varying amounts of galena, pyrite, silver-bearing tetrahedrite (freibergite), some quartz and minor occasional sphalerite. They are all striking close to north-south

and have steep dips (exceeding 60°) to the west or to the east.

Some appear to follow well marked faults; others follow inconspicuous shears. Widths may vary from a few inches to 20 feet (5 cm. to 6 meters).

Some veins are high in pyrite, some carry none. The galena and/or freibergite may be disseminated throughout the siderite gangue or the galena may form massive lenses or shoots up to several feet wide.

The silver content averages about one ounce of silver for every one ounce lead, but this ratio is at times as high as 10:1 or 20:1 where freibergite predominates over galena.

In one area of float, siderite and pyrite carry little galena, but conspicuous arsenopyrite and in this case, a significant amount of gold (Knoll).

Several of the vein-zones have been easily traced for from 200-400 feet (60-120 meters), but in the A-1 vein, the upper level has followed the vein for about 900 feet and the vein fault here is believed to be present for a length of at least 5,000 feet (1,500 meters).

In the K-18 area, a strong structure has been

followed by trenching, the mineralization consisting of veinlets and disseminations of high-silver galena across at least 8 feet for a known length of 600 feet, without any significant amounts of siderite or pyrite. Average grade is only of the order of 1-2% lead, but the presence of more significant shoots is suggested by a great number of massive high-silver galena below a covered portion of this structure, in blocks of float.

In the K-35 area, narrow massive pyrite bands up to 3 feet wide follow the bedding of black slates. Most of this material is barren, but some of it contains significant amounts of silver and lead. Total width of this zone is of the order of 30 feet (10 meters).

In the Key 3 area, high-grade siderite-pyrite-tetrahedrite lies along the contact of the same black slates and the overlying thin-bedded buff siltstones, and the latter contain narrow (1" to 2') lensy veins of silver-bearing galena.

Both these occurrences suggest that significant bedded deposits could be present in the upper portion of the Mississippian black slates below the thin-bedded buff siltstones.

This possibility is strongly supported by the geological framework in this area. Some 800 feet (250 meters) east of the K-3 occurrence, a large mass of black

welded tuffs has invaded the black slate basin and is intruded by the only intrusive on the property. These feldspar-quartz eye black tuffs are overlain locally by pyritic acid tuffs.

These geological conditions are particularly favourable for the formation of sheet-like bedded deposits of massive sulphides, and are quite unique in the general area.

The mineralized veins occur in all formations, including the Cambro-Ordovician, thrust in Jurassic (?) times over the younger formations, suggesting a Cretaceous age for at least some of the veins.

A few miles west of the property, on land controlled by Conwest Exploration Co., large pyrrhotite bodies with occasional significant gold values in arsenopyrite lie in Cambrian or Precambrian formations and appear to be bedding controlled.

In conjunction with other information on this district, it appears that throughout geological history, there may have been several pulses of mineralization, notably in the Cambrian, the Silurian, the Mississippian and the Cretaceous, on and around the present property of Iona Silver Mines Ltd..

5. SHOWINGS

A brief description of the principal showings is as follows; assay data are shown in the attached table.

(a) A-1

Longest and most continuous vein, discovered by soil-sampling in 1966 in a vein fault probably at least 5,000 feet long.

The mineralization consists mostly of near-massive galena from a few inches to a few feet wide with relatively little disseminated galena. Averages have been calculated by the previous operators without taking into account the heavy weight of the galena as compared to the wallrock.

Two raises driven up from the 100 foot level gave average grades immediately above the drift of respectively:

Raise 1: For 38': 17.7 oz/t Ag. and 14.4% Pb across 4'
Raise 2: For 67': 23.3 oz/t Ag. and 23.6% Pb across 5',
i.e. considerably better than on the level.

This is in line with the Iona Silver Mines experience in 1978, when a raise started off the K-18-B lower level found higrade in the drift and in the raise, in a location where the old drift assays showed mainly low grade results.

The A-1 vein is open at both ends and at depth

A strong lead soil anomaly on the surface suggest that the mineralization should extend at least another 1,600 feet (500 meters) to the north.

In future work, particular care should be exercised in sampling each face as drifting progresses, ~~as in part~~ drift sampling there may be a strong bias on the low side with a consequent underestimating of reserves.

The previous operators quoted in 1969 indicated reserves of 45,000 tons at 15 oz/t Ag. and about 15% Pb.

It is proposed to explore and develop the A-1 vein by extending the previously started 250 foot level crosscut, 150 feet below the 100 foot level.

(b) K-18-B

This zone was discovered accidentally in the lower part of a substantial lead soil anomaly known as the K-18 anomaly during the 1968 field-season. It was explored on two levels, the upper or 700 foot level, and the lower or 800 foot level. The former developed a length of 104 feet with 20.2 oz/t Ag. and 12.4% across 5.4 feet, and the latter a length of 82 feet of 14.4% oz/t Ag. across 4.8 feet; lead was mostly not assayed.

Iona Silver Mines Ltd. started a raise some 50 feet north of the 800 foot level 82 feet grade boundary. Upon replacing old timber in the drift a strong 2 foot wide vein averaging 42 oz/t Ag. and 23.5% Pb. was traced for 50 feet into the 82 foot long previous ore shoot. Adjacent lower grade could not be sampled due to poor ground. In conjunction with old sampling data, there now appears to be a length of about 160 feet of ore grade material on this level.

The raise averaged 18.8 oz/t Ag. and 12.5% Pb. across 9 feet for the 42 foot raise length sampled.

In addition, a 6 inch vein of pyrite-tetrahedrite ore assaying .14 oz/t Au., 20.86 oz/t Ag. and 1.48% Pb. was found about 8 feet into the hanging wall in a crosscut on the 800 level. Similar ore of 42.36 oz/t Ag. and 3.55% Pb. had previously been found on the old dump.

This proves conclusively that high silver - low lead pyrite ore is present at depth and is not confined to the near-surface weathered zone.

Highly altered felsite dykes with adjoining quartz veins have been located in the underground workings.

These may be related to the process of ore-deposition.

Indicated reserves were previously reported as 10,000 tons of about 17 oz/t Ag. and 12% Pb. Iona Silver Mines Ltd. estimates that this tonnage has increased by at least 50%.

The vein structure is open at depth; to the south there is a fault, but an old drill-hole has located a vein beyond it.

(c) K-18

In 1977, Iona Silver Mines trenched the upper edge of this large and strong high-lead soil anomaly. A 600 foot long zone with veinlets of high-silver galena was located, estimated to assay 1-2% lead across at least 8 feet. This structure is the source of massive galena blocks assaying 60-80% Pb. and up to 100 oz/t Ag., found down the hill.

Between the K-18 and the K-18-B, old trenching has uncovered considerable amounts of float and in 1978, Iona Silver Mines located a new vein zone, the K-18-C, in which mineralized lenses assayed 13.7 oz/t Ag., 13.24% Pb. and 1.58% Zn.

The area appears to be one of multiple veins

between K-18 and K-18-B, which converge to the south. The projected intersection lies below the over-thrusted Cambrian formations.

(d) F-2

Scattered galena mineralization occurs along a fault in quartzites. Silver-values are usually around 1 ounce for every 2% lead.

An old drift along a quartz-vein in the fault, located 0.63 oz/t Au. across 2.3 feet for a length of 30 feet.

1978 drilling of the Canyon vein intersected up to 20 feet of barren siderite-pyrite whereas on surface a 1.5 foot wide vein assayed 36.72 oz/t Ag. and 63.05% Pb.

(e) F-3

The 6 foot wide surface outcrop of high-grade ore was confirmed in 1977 by a shallow drill-hole averaging 32.75 oz/t Ag. and 31.62% Pb. across 6 feet. Further exploration of this vein will require additional shallow drilling.

(f) LAP-10

Old surface trenching and a drift in the

hanging wall of this vein-zone have all caved. The vein, traced for 400 feet on surface, is said to average 35 oz/t Ag. and 38% Pb. across 3.5 feet, and lies in the Mississippian buff siltstones a short distance above the black slates.

(g) KNOLL

Both massive galena and pyrite-siderite-arsenopyrite assaying 0.44 oz/t gold have been found in float.

The general area of Lap-10 and the Knoll is slated for intensive prospecting.

(h) BLAZED TREE

Located in steep, rocky and heavily vegetated terrain, this vein-zone can only be explored further by hand-trenching. It is at least 6 feet wide where exposed, with 2 inch - 2 feet wide massive galena and some sphalerite. Located in a sill or flow of Cambrian greenstone, it's vertical extent could be limited to the thickness of the flow. The known length is about 450 feet; a representative assay shows more zinc than in the other veins (see Table).

(i) DIP

This is an extensive area of siderite float with abundant disseminated galena and tetrahedrite found in the course of road construction. Soil sampling will be used to trace the up-hill limit of this area before trenching is undertaken.

(j) KEY 35

Pyrite-banded black slates carrying galena in places and massive pyrite-galena float suggest that a bedded lead-silver-pyrite deposit lies near the upper part of the Mississippian black slates in this area. Additional soil-sampling and geophysics are required before drilling can be planned on this steep heavily vegetated slope.

(k) KEY 3

Located at the base of a steep rocky slope, this showing has revealed high grade siderite-pyrite-tetrahedrite ore with assays exceeding in places 500 oz/t Ag. The main occurrence consisted of a lens of this material lying along the top of the Mississippian black slates, with narrow steep veins of galena in the overlying tuff siltstones.

Showing	Location	Width	Length	oz/ton Ag.	% Pb.	% Zn.	Sampled By:
A-1	Surface trenches	4'	810'	24.9	22.2		Archer Cathro, 1967
	100' Level	4'	556'	10.8	8.4		Archer Cathro, 1968
K-18-B	Surface, P	11'		(46.96	19.7	.08	Nevin & Assoc., 1977
	Q	6'	200'	(25.74	2.00	.10	Iona Silver, 1977
	R	1'		(23.26	11.86	.06	Iona Silver, 1977
	X Cut	11.5'		20.1	20.45		Nevin & Assoc., 1977
	Upper Level	5.4'	104'	20.2	12.4		Previous Operators, 1968
	Lower Level	4.8'	82'	14.4	?		Previous Operators, 1968
	Raise	9.0'	42'	18.8	12.5		Iona Silver, 1978
F-3	Surface	6'	100'+	43.68	32.5		Nevin & Assoc., 1977
	Drill Hole 77-3	6'		32.73	31.62	.35	Iona Silver, 1977
	Same, including marginal values in walls	29.8'		9.65	9.83		
Gem.	Narrow vein in quartzite + dissem. galena Combined	2"	?	110.76	80.5	.04	Iona Silver, 1977 Estimated, 1977 New Discovery
		+25'		2.0	2.5		
		+25'		3.6	3.6		
F-2	Canyon	18"	200'+	36.72	63.05	.01	Iona Silver, 1977
	Drill-hole 78-4 (New vein within overburden structure)	20' +30' wide			Barren pyrite- siderite only		
Key-35	Near outcrop float	Bedded pyrite Massive pyrite & galena		6.50	12.75	.18	Iona Silver, 1977
				44.0	65.5		Iona Silver, 1977
Lap 10	Surface Trench	3.5'	400'?	35.0	38.0	.07	Previous Operators, 1968
Dip	Float, blocks up to	2'	+200'	37.6	38.1	.15	P. H. Sevensma, 1975
Blazed Tree	Vein in place	2" - 2'	450'	42.6	44.8	3.36	P. H. Sevensma, 1977
Zinc	Float	?	300'?	2.58	.04	25.51	R. McIntyre, 1977
(noll	Float	?	300'	.26	.23	Au: .44	oz/t P. H. Sevensma, 1978

There is considerable faulting and local thrusting. Geological and topographical conditions render further exploration high-cost and impractical at this time and the same stratigraphic zone at the top of the black slates can be more easily explored in the Lap - 10, as well as in the K-35 area.

(l) F-4

A small highgrade showing has been reported by the previous operators, but could not yet be relocated by Iona Silver Mines.

(m) Zinc

An area of quite extensive float of sphalerite with silver values in a poorly accessible area of steep rocky slopes, slightly below the major Jurassic (?) flat thrust. May be bedding or thrust controlled. This is the only occurrence of significant zinc (25.5%) on the property. If the showing can be located in place, it may provide important clues on possible ore controls in the Mississippian formations.

(n) Gem

This is a 2" vein of massive galena (80.5% Pb., 110.8 oz/t Ag.) in quartzite with disseminated galena, which appears to be very limited in extent.

(o) Other Showings

A number of other small showings are known. Amongst these are quite extensive areas of disseminated galena in the Silurian quartzites, east of F-3 and east of the Gem. Large areas of pyritization (1-3%) also occur in these quartzites in this general area. The quartzites are massive, highly silicious and hard, as well as difficult to drill. If these areas are indicative of any economic potential, it could be related to the contact zone of the quartzites with the underlying black slates, along which contact there are also large lenses of fragmental silicious buff dolomite.

The excellent F-3 showing is the only one that justifies further work along this contact zone and that should determine the economic potential of this contact.

6. SOIL SAMPLING

In excess of 6,000 soil samples have been taken on the property since 1966, mostly as reconnaissance sampling. Many high lead soil anomalies have been found, with peaks between 1,000 and 10,000 p.p.m. of lead in the soil (equivalent to 0.1 to 1% lead). The majority of these have not yet been followed up in detail.

Ongoing prospecting and follow-up surveys are planned in some of the more promising areas, with continuing emphasis on the desire to locate mineable reserves at as high a rate as possible.

7. SUMMARY OF ECONOMIC GEOLOGY

Grade wise, the following potentially economic types of ore-grade material are important.

(a) Most Abundant

Generally averaging about 30 oz/t silver and 30% lead. Typical of A-1, K-18, Lap 10, Dip, Blazed Tree, F-3, and capable of providing mill-feed of about 15-20 oz/t silver and 15-20% lead with usually only very minor sphalerite. Abundant in K-18-B.

(b) Highest Grade

Siderite-pyrite-tetrahedrite low in lead with up to 15 or 30 oz/t silver for every 1% lead; this may be mixed with type a. Present in significant amounts in Key-3, moderately in K-18-B; minor amounts in A-1.

(c) Low-Silver, Galena, (Sometimes very coarse)

Appears to be discontinuous and scattered. Found mostly in the Silurian quartzites in F-2, Canyon and the quartzite walls of F-3. Probably unfavourable.

(d) Gold-Ore

One shoot in a quartz-vein in the F-2 adit. (0.63 oz/t gold).

Float, in siderite-pyrite-arsenopyrite in

the Knoll area (0.44 oz/t gold).

Occasionally in siderite-pyrite-tetrahedrite
(K-18-B, 800 level, 0.14 oz/t gold).

(e) Bedded Pyrite-Galena

Found in the Key 35 area, but only in float.
In place so far only bedded pyrite, in the upper
part of the Mississippian black slates. This
could prove the most important type of mineraliza-
tion on the property.

Stratigraphically, some formations now appear more favourable than others. From top to bottom, our present rating is as follows:

(a) Cambro-Ordovician

Greenstones and lustrous phyllites. Blazed tree, Knoll and Dip. Potential not known. Knoll and Dip appear very promising. Large and high lead soil anomalies occur in this terrain.

(b) Jurassic (?) Thrust

Could be an important ore-control. The zinc occurrence may be directly related to it.

(c) Mississippian Buff-Siltstones

Veins and veinlets in it appear to originate in the underlying black slates (Lap 10, Key 3, several minor occurrences).

(d) Mississippian Black Slates

- and associated black (feldspar) quartz eye tuffs. Classical environment favourable for the deposition of volcanogenic sulphide deposits. Bedded pyrite with associated galena (k-35) and siderite-pyrite-tetrahedrite lie along or near the top of these black slates.

(e) Stratigraphic Gap

Further mapping should pin-point this zone,

west and northwest of the airstrip.

(f) Devonian

Platey grey dolomites and fossiliferous black dolomites. Some scattered galena known above and west of the F-3 area. Of very little interest.

(g) Silurian Massive Grey Quartzites

Large areas with minor disseminated galena and/or pyrite are puzzling. Canyon drilling in 1978 and known surface exposures suggest the presence of only discontinuous and low-silver mineralization, except for the 2" Gem vein.

(h) Silicious Fragmental Buff Dolomite

Could be reefal remnants. Thickness from 0 to perhaps 100'. Significant lead-zinc mineralization along its base in the F-3 area.

(i) Silurian Black Slates

-with graptolite remnants in the F-3 area, where the showing lies over a local fold in the black slates adjacent to a local pinch-out of the dolomite, with quartzites directly on the black slates.

(j) Silurian Grey Slates

East of the F-3, a 1,500' long zone in black

slates is locally highly graphitic, as proved by 1978 drilling. An 18" wide zone carried three thin beds of silver-bearing galena and some barite (core-hole 78-5; 18" of 1.9 oz/t Ag., 3.1% Pb. and .61 BaSo₄) in grey slates about 100' below the 100' thick graphitic black slates. The grey slates are often limey and vary from laminated to thin and medium bedded (2"-8"), and may often be called sandy dolomites.

The A-1, K-18 and K-18-B and C lie in the grey slates, below a zone at least 65' thick of chloritoid-bearing slates which may locally constitute a major marker formation.

(k) Felsite Dykes

Highly altered felsite dykes exceeding at times five feet in width have been encountered underground in the K-18-B workings and in nearby drilling. They are nearly always accompanied by an equivalent width of white quartz with occasional specks of galena. The probability is high that these dykes are significant in the process of ore deposition.

8. SUMMARY AND RECOMMENDATIONS

The Iona Silver Mines Ketz River property covers the main silver-lead showings in this general area. Most occurrences are of the vein-type, but bedding controlled deposits are present in the upper portion of Mississippian black slates and may be related to (feldspar) quartz-eye black tuffs and a small intrusive lying within the black slates.

The A-1 and K-18-B veins have been partially developed and show excellent promise of being economic. They lie in the Silurian grey slates. Further underground development is recommended.

The general area of the Lap - 10 and Knoll, lying slightly above the Mississippian black slates near the edge of the Jurassic (?) thrust sheet of Cambrian formations, shows many areas of high lead in the soils overlying both these formations. It is the most attractive area for further surface exploration, initially to consist of prospecting and mapping.

The property has an outstanding potential for economic tonnages of lead-silver mineralization and further development of the A-1 and K-18-B is expected to develop the minimum tonnage of 100,000 tons of 15 oz/t of silver and

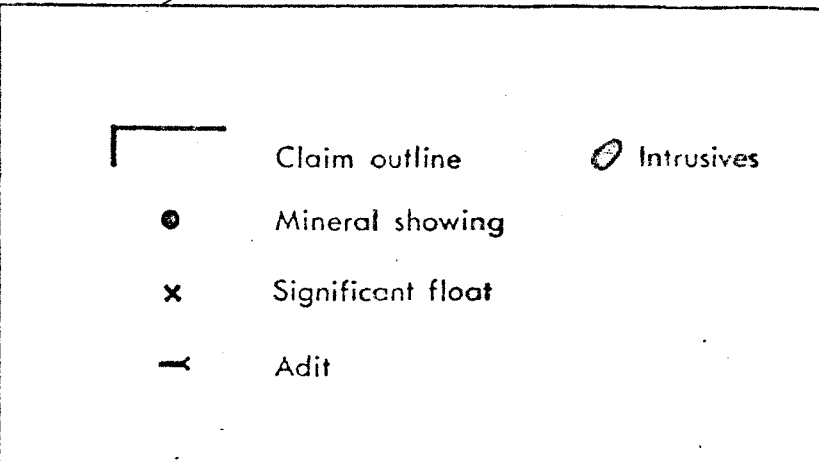
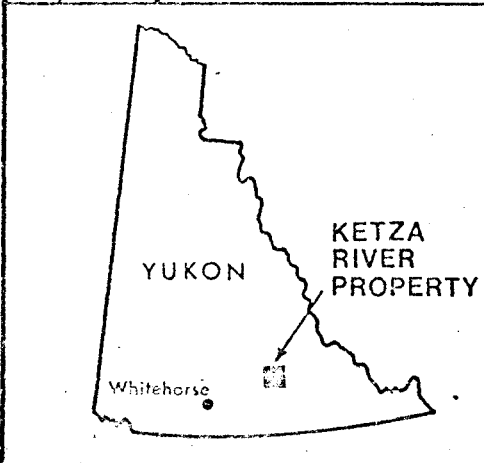
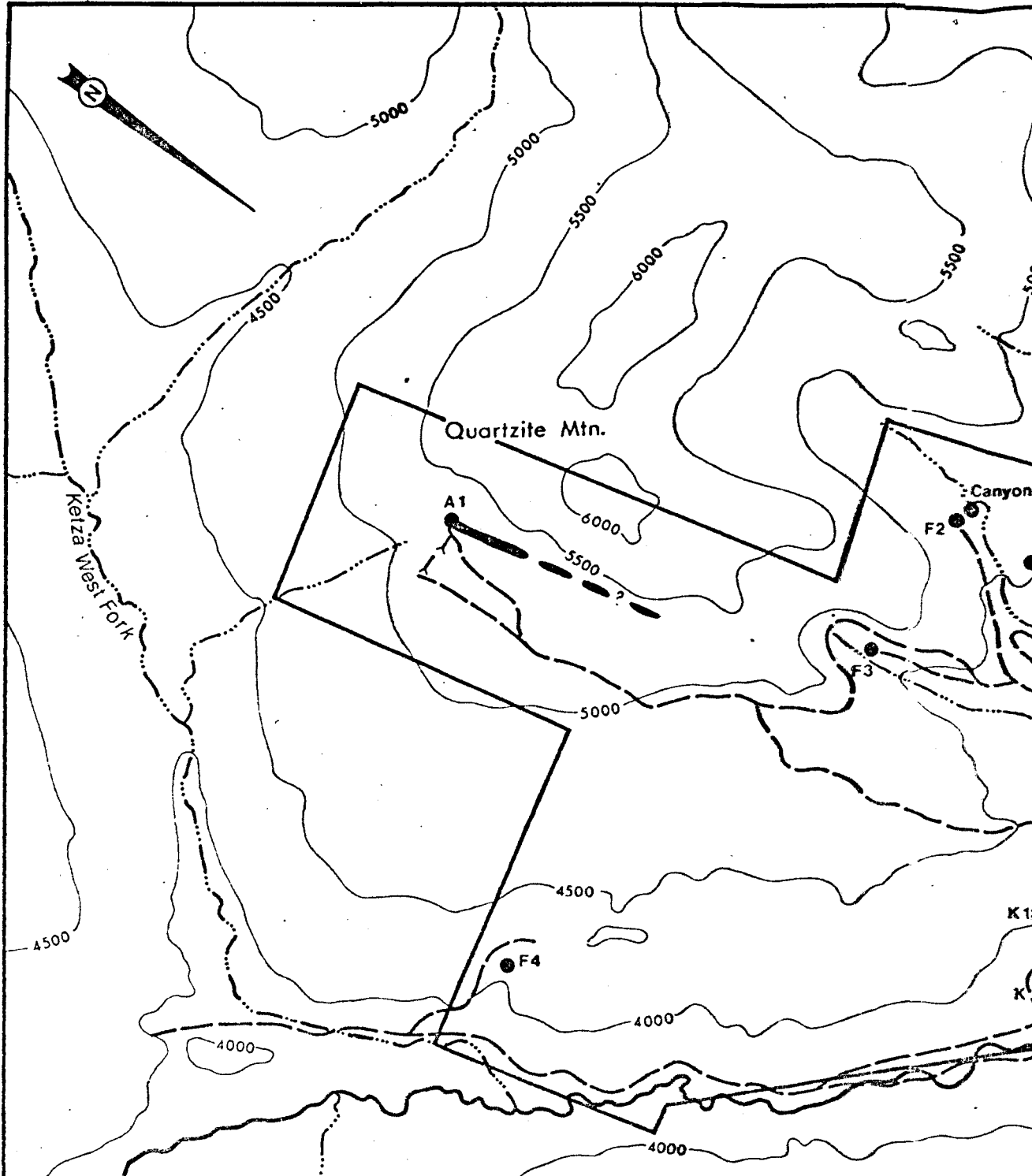
15% lead required for a production decision.

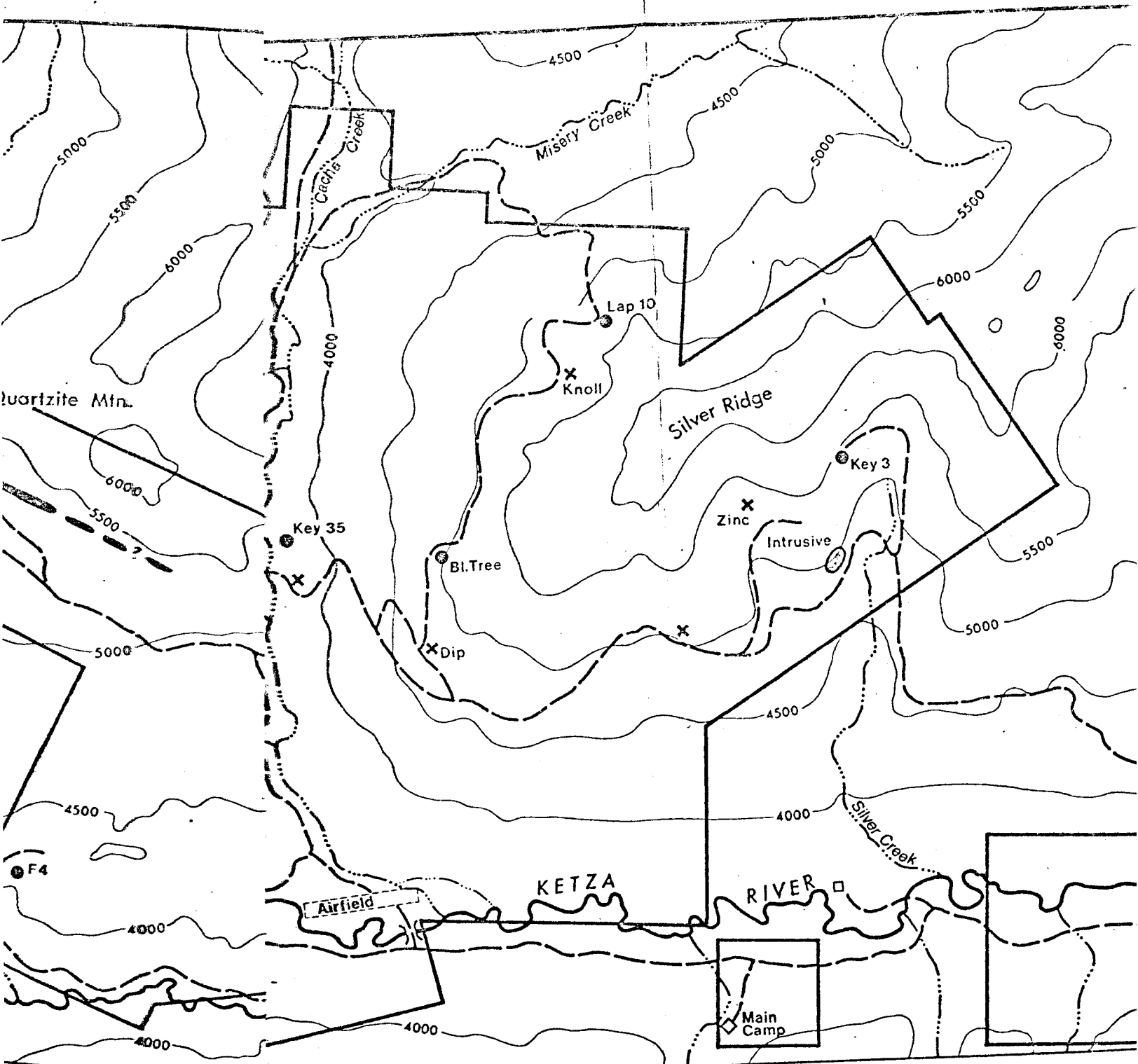
Estimated tonnage indicated so far is of the order of 55,000 - 60,000 tons of this grade.

A handwritten signature in cursive script, reading "P. H. Sevensma", written over a horizontal line.

P. H. Sevensma, Ph. D., P. Eng.

Director,
IONA SILVER MINES LTD.





- Claim outline
- Mineral showing
- x Significant float
- y Adit

IONA SILVER MINES LTD.

**CLAIMS AND SHOWINGS
KETZÁ RIVER AREA**

WATSON LAKE M.D., Y.T.

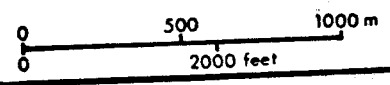
Part of NTS map 105

NVC ENGINEERING LTD.

VANCOUVER,

DATE: January, 1979

FIG.



A Report on the Ketz River Property

of

IONA SILVER MINES LTD.

Watson Lake Mining Division, Yukon

by

T.L. Sadlier-Brown and A.E. Nevin

March 14, 1978

CONSULTING GEOLOGISTS

MINERALS • AGGREGATES • GEOTHERMAL RESOURCES • ENVIRONMENT

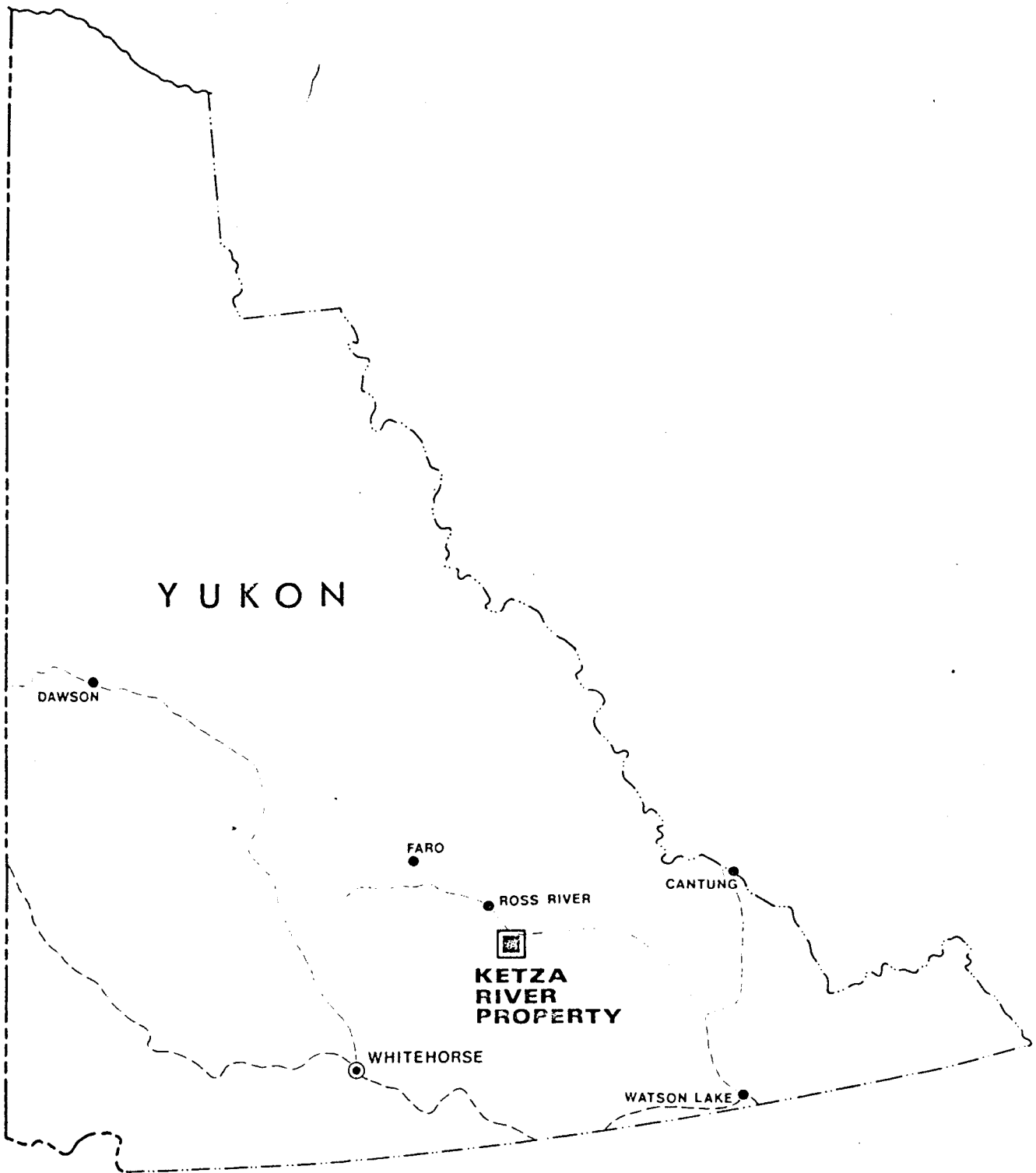
SUMMARY

With the addition of the 22 claims on the Camp, Dub, and Gem groups Iona Silver Mines Ltd. has increased the size of its holdings in the Ketz mountainous country some 30 miles south of the community of Ross River, Yukon and accessible by road from the Campbell Highway or by air to a gravel airstrip one mile from the campsite.

The claim area is underlain by a complex sequence of sedimentary and volcanic rocks ranging in age from Proterozoic to Mississippian. These have been modified by block and thrust faulting, folding, intrusive activity, and perhaps most significantly, hydrothermal vein emplacement.

Silver occurs with massive argentiferous galena and occasionally freibergite in siderite veins, with disseminated galena in altered mineralized wallrock, and locally with banded pyrite and galena in black shales. Twenty-five geochemical anomalies have been identified on the property and several of these have been shown to be related to sulphide mineralization. Of the many occurrences which have been discovered to date, fifteen are presently considered to be of economic interest. Among them are seven recognized veins including the K-18B and A-1 which together are estimated to contain a total of 55,000 tons of reserves grading 17 oz/ton Ag and 12% Pb. The list also includes four showings of which three are possible veins and one, the Key 35, a bedded sulphide deposit. Finally it includes four float areas the sources of which remain to be discovered.

For the 1978 field season work should be performed in three stages with priority recommended for exploration in four of the areas mentioned above. These are the K-18B, K-18, A-1 and the F-2 and Canyon. Second and third phases should include exploration on the Key 35 and F-3 showings and follow-up work in all areas of interest. An estimate of the cost of the recommended work for Phase 1 is \$65,000, for Phase 2 \$85,000, and for Phase 3 \$95,000 for a total of \$245,000.



IONA SILVER MINES LTD.

LOCATION MAP

KETZA RIVER PROPERTY

WATSON LAKE M.D., Y.T.

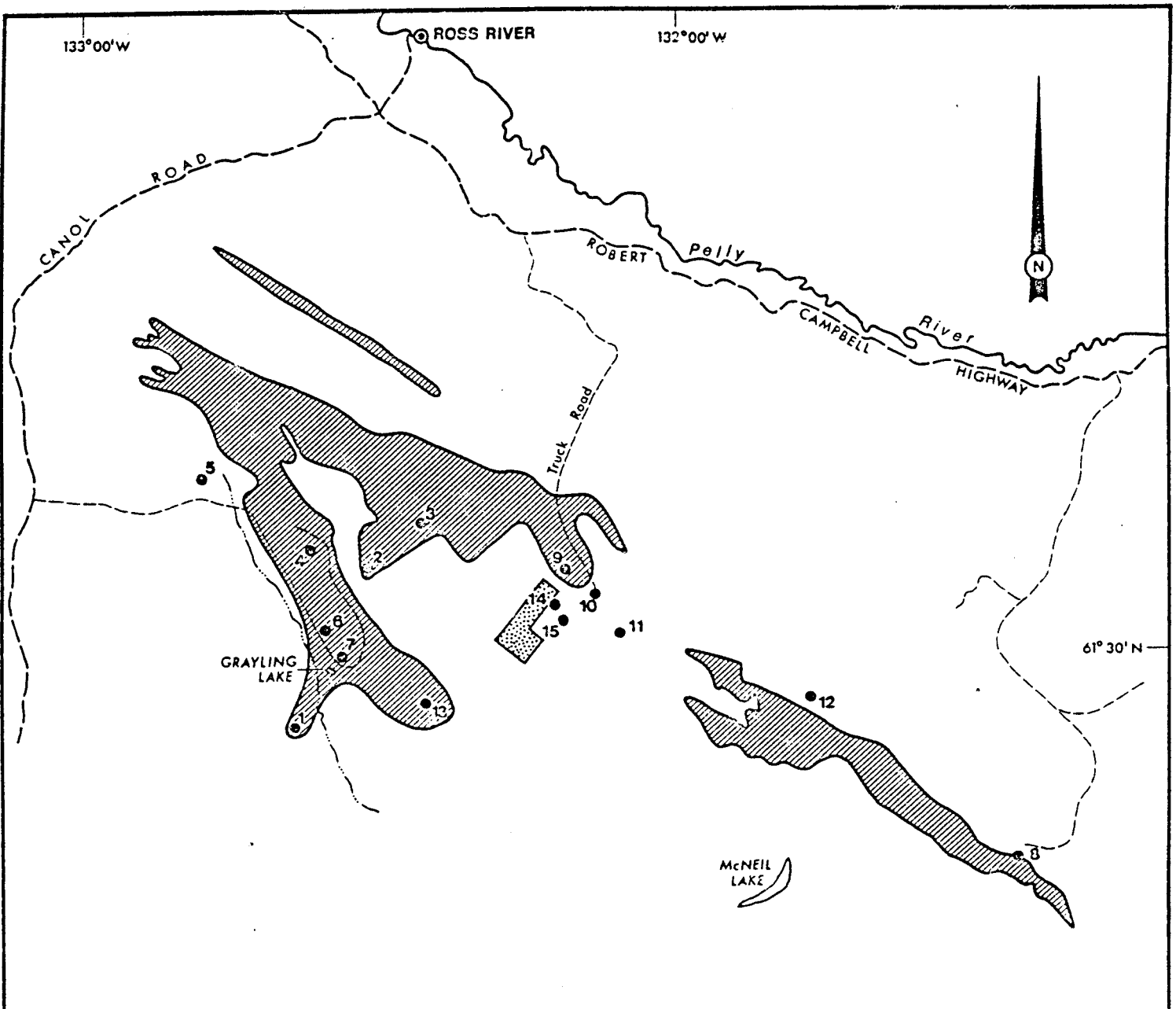
Part of N.T.S. map 105 F-9

NEVIN, SADLIER-BROWN, GOODBRAND, LTD., VANCOUVER B.C.

DATE **January 1978.**

SCALE 1:5,000,000 approx.

FIG. 1



- 1 - MM Ag, Pb, Zn
- 2 - BNOB Pb
- 3 - CHZERPNOUGH Pb
- 4 - COOT Ag, Pb, Zn
- 5 - Canol Mines Ltd.-Groundhog Creek Pb
- 6 - MAT Pb
- 7 - GULL Ag, Pb, Zn
- 8 - JOE (F.H.) Ag, Pb, Zn
- 9 - KEY Ag, Pb, Zn
- 10 - F-2, F-3 Ag, Pb
- 11 - A-1 Ag, Pb
- 12 - BELL Cu
- 13 - CPA
- 14 - Conwest Gold Au
- 15 - OXO Ag, Pb

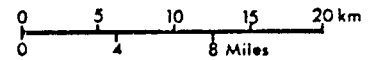
IONA SILVER MINES LTD.



Mississippian felsic volcanic rocks



Precambrian high.



IONA SILVER MINES LTD.	
REGIONAL GEOLOGICAL SETTING	
KETZA RIVER PROPERTY	
N.T.S. map 105 F,G	
NEVIN, SADLIER-BROWN, GOODBRAND, LTD., VANCOUVER, B.C.	
DATE January 1978	FIG. 2

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1.0 INTRODUCTION

1.1 Terms of Reference

The information contained in this report is based partly upon observations made by the writers during the course of two visits to the Iona Silver Mines Property in the Ketza River area but draws considerably on data provided by company officers. Of this material much is contained in reports prepared on behalf of previous owners of the showings and the remainder, which includes most of the geological mapping, is the product of field work carried out by Iona during the 1977 field season. In addition, all maps and diagrams included in this report were prepared from data supplied by company officers. This report then, is a compilation of earlier and current data and is intended to summarize progress on the property and to present a set of recommendations for continued development.

The writers' terms of reference are limited to the preparation of this report and do not extend into the management of the companies affairs or execution of any of the recommendations contained in this report.

1.2 Claims and Ownership

Iona Silver Mines Ltd. of 1015-837 W. Hastings St., Vancouver, B.C. holds, directly and under option, 86 mineral claims in the Ketza River Area, Watson Lake Mining District, Yukon. Claim distribution is shown in Figure 2 and particulars are given in the table below.

<u>Name of Claim</u>	<u>Record No.</u>	<u>Record Date</u>
Camp 2-8	Y94450-56	March 1, 1976
Dub 1-8	Y94457-64	March 1, 1976
Gem 1-6	Y94465-69	March 1, 1976
A 1-8	Y64464-71	May 31, 1972
B 1-8	Y64472-79	May 31, 1972
C 1-8	Y64480-87	May 31, 1972
D 1-4	Y64621-24	August 15, 1972
Camp 1	Y94026	November 2, 1975
Hope 1-6	YA11204-09	September 24, 1976
Pete 1-3	YA11256-58	September 27, 1976
B 9 fr & 10 fr	YA11259-60	September 27, 1976
Hope 7 fr & 8 fr	YA11261-62	September 27, 1976
Camp 9-16	YA11749-56	November 1, 1976
Wood 1 & 2	YA12875-76	May 6, 1977
Les 1 & 2	YA20228-29	June 23, 1977
OK 1-5	---	August 29, 1977
OK 6-11	---	September, 1977

1.3 Location and Access

The claims are located on the NTS map sheet 105-F-9 and centered at 132° 10' W longitude and 61° 32' N latitude in the area south of the junction of the Upper Ketzka River and Cache Creek. They are accessible from the community of Ross River, Yukon, 30 air miles to the north, via the Campbell Highway and a 40 km long truck road which follows the Ketzka River. The showings themselves may be reached via some 20 km of local access roads. A serviceable 500 m long gravel air strip was constructed several years ago in the Ketzka River valley and is located about 1.5 km from the Iona campsite and central with respect to the primary areas of interest.

1.4 Physiography and Topography

The claim group lies in mountainous country between about 1000 and 1700 metres above sea level. It is dissected by both the north-westerly flowing Ketzka River and its northeasterly flowing tributary, Cache Creek.

Outcrop is abundant on the ridges but bedrock is generally obscured by talus on the lower slopes. Valley bottoms tend to be alluvium filled although a number of drainages, including the two major ones, do cut through bedrock locally. The valleys are wooded, predominately with northern black spruce and lesser amounts of balsam in quantities sufficient to meet requirements for underground work. The Ketzka River and its tributaries should provide a reliable year round water supply for both industrial and domestic purposes.

1.5 Camp and Facilities

Early in the 1977 field season a new campsite was selected and cleared and a trailer camp with kitchen facilities and accommodation for a crew of about a dozen people was set up. The camp is supplied with electricity and running water and, with minor additions and modifications, should comfortably support a crew of about 15 men.

1.6 Previous Work

The first recorded history of silver-lead mineralization in the area was made in 1946 by prospectors working for the Hudson Bay Mining and Smelting Company. In 1955 a work program was carried out

by Conwest Explorations who drove three short drifts, totalling some 36 m on the Key 3 showing. Between 1965 and 1969 Silver Key Mines and Stump Mines carried out extensive geochemical surveys and about 900 m of underground development. This included work on the silver-lead veins presently being explored.

Regional and local geological mapping and investigations have been carried out by both the Geological Survey of Canada and the Department of Indian Affairs and Northern Development. The general geology of the prospect area is included in GSC Map 7-1960 (Quiet Lake; NTS 190-F) by Wheeler, Green, and Roddick and in a recent compilation (GSC O.F 486) by D.J. Templeman-Kluit.

Since 1972 Iona Silver Mines or its principals have acquired all of the known important silver-lead veins and other mineral occurrences in the area. During the summer of 1977 Iona initiated a program of exploration work which included bulldozer and hand trenching, geochemical sampling, geological mapping, and road and camp construction.

2.0 GEOCHEMISTRY

2.1 General Statement

Soil sampling in conjunction with geological mapping is presently considered the most effective exploration method for use on the claim group. The method is enhanced by the near absence of significant glacial overburden and was first employed in 1966 on a relatively gentle slope with light vegetation in what is now known as the A-1 area by previous operators. Some 800 samples were collected at one hundred foot intervals on grid lines 200 feet apart and tested for lead. Two areas of high values running between 800 and 1500 ppm lead were defined and, in 1967, one of these was drilled resulting in the discovery of the A-1 vein. With a surface exposure 810' long averaging 24.9 oz/ton silver and 22.2% lead across 4 feet this vein was considered a significant find and, as a result of its discovery an extensive program of soil sampling for lead was planned and carried out by Archer, Cathro and Associates in July and August 1968.

During the course of the survey 5178 samples were taken from seven different grids. A total of 25 anomalies were outlined, of which 15 are equal or larger in size and intensity to the 1966 A-1 anomaly. Their locations are plotted on Map 5 of this report. Follow-up work on one of these led to the discovery of the K-18B vein in September 1968, but none of the other areas were investigated at the time. The operators subsequently ceased work on the property owing to a drop in the price of silver and consequent financing difficulties.

Investigations based on the earlier work were started by Iona Silver Mines during the 1977 field season. Some 200 soil samples were taken and analyzed for lead, copper, and silver. Background Pb values were found to be to the order of 25 ppm and, in general, only anomalous areas substantially over 400 ppm Pb were considered for follow-up. This work, however, has resulted in the discovery of one new anomalous area and one new showing, the Gem. It has also more accurately defined a third anomaly which was previously only indicated.

2.2 Anomalous Areas

In the K-18 area two anomalies known since 1969 were opened up with bulldozer trenches. One restricted lead high was found to correspond with the trace of an old gravel stream channel containing boulders of massive galena. The channel is buried beneath about 5 m of clay which has apparently moved by solifluction and the source of the galena remains to be found up hill. The second anomaly corresponds with a major low-grade mineralized structure which has been traced for about 230 m and is open on both ends.

Another of the old anomalies has now been shown to be related to the Blazed Tree Vein. This structure carries widths up to about 0.6 m of massive argentiferous galena over a strike length of 150 m in terrain not readily accessible to a bulldozer. Further work is planned in this area.

Many of the major anomalous areas remain to be investigated. It is anticipated, however, that additional near-surface vein exposures will be discovered, as there are a number of anomalies with values ranging from 2,000 to 15,370 ppm (0.2 to > 1.5%) lead. There are also several small intense anomalous areas as well as some weaker large

ones which appear to coincide with the covered contact at the base of the volcanic unit on the lower south face of Silver Ridge.

The black Silurian slates have also been found to have a higher than normal lead content and are known to be carriers of base-metal deposits much further to the east, in the Selwyn Basin (see regional geological section). The F-3 vein, lies near the contact between such a black slate unit and overlying quartzite.

3.0 GEOLOGY

3.1 General Statement

The claims lie within an area of deformed sedimentary and volcanic rocks varying in age from Proterozoic to Mississippian. The oldest strata in the general area are the slates, shales, and quartzites which represent the late Precambrian "Grit Unit" in the area. These are unconformably overlain by lower Cambrian limestones, dolomites, siltstones, and argillites and together lie immediately west of the main mineralized area. Here they comprise a local geological "high" which forms the core of an anticlinorial structure modified by block faulting and shown outlined in Fig. 2. To the northeast the lower Cambrian is unconformably overlain by upper Cambrian to Ordovician phyllites, slates, limestones, and greenstones. These are important as the host rocks for several vein type silver-lead occurrences in the Ketzia area.

In the southern part of the area of interest the Cambro-Ordovician rocks are in conformable contact with the overlying Ordovician and Silurian clastic sediments and the Siluro-Devonian dolomites, and dolomitic clastics. Further north in the central part of the mineralized area they are overlain, perhaps disconformably, by grey to buff orthoquartzite of Silurian age. A number of showings have been discovered in Cambro-Ordovician rocks at the base of this unit possibly indicating that it may have had localizing influence on mineral deposition.

The northern part of the Iona property is underlain by upper Devonian and Mississippian slates, cherts, and greywackes and by the youngest layered rocks in the area, the Mississippian felsic volcanics which are reported to host bedded sulphide deposits elsewhere in the region. They protrude from beneath the Silver Ridge thrust, a southerly dipping fault which has displaced an allochthonous block of the Cambro Ordovician rocks northward.

The important metals known in the district are silver, and lead. Zinc is significant elsewhere in the felsic volcanic rocks but, except in one instance, is generally scarce in the area of interest. Minor copper and gold also occur but are presently thought to be of limited economic importance.

The most abundant ore mineral is argentiferous galena. It forms massive veins or coarse disseminations within carbonate veins. Other sulphides are tetrahedrite (or freibergite), pyrite, and pyrrhotite. They may occur as minor constituents within the massive galena or disseminated in gangue which is comprised mainly of siderite but with minor quartz. Pyrite and galena are also present in bands and disseminations in black graphitic shale or slate in the central part of the property.

At least three distinct types of sulphide occurrences are present on the Iona property. The best known are the veins of massive galena which cut virtually all of the rock types. They tend to strike northerly and vary in width from a few cm to 5 m or more. They characteristically consist of a zone of massive argentiferous galena flanked by siderite gangue material. Galena and minor sulphide minerals including pyrite may occur both disseminated in the gangue or as minor stringer veins within the gangue and adjacent country rock.

Galena is present as coarse disseminations in carbonate units at several localities on the property particularly near or at geological contacts.

Massive pyrite and disseminated galena occur in black graphitic shales and slates associated with chert, greywacke, and chert pebble conglomerate. Bedding of the pyrite is distinct suggesting a syngenetic or possibly diagenetic origin for the sulphides.

3.2 Detailed Property Geology

Knowledge of the geology of the property is based on extensive reconnaissance of the claim area and on initial detailed mapping on a scale of 1 inch to 400 feet of the portion of the claim group lying north of Cache Creek. The Cache Creek valley itself may represent the surface trace of a high angle fault, down-dropped to the north to the order of 100 to 300 m. The fault is an important geological boundary and this, along with the difference in the degree of information from either side makes it convenient to treat the north and south blocks separately.

South Block or Quartzite Mountain Block

In the south area, the oldest exposed rocks comprise a series of folded phyllites of different hues of grey, containing lensy beds of dolomites up to about 3 m thick and a heavy platey chloritoid slate up to perhaps 10 m thick, which may prove most useful as a marker bed. Their age is considered to be Cambrian. These beds are affected by isoclinal folding; axial planes strike about N25° W with steep dips of the order of 65°-70° to the east; the fold axis exhibit in general shallow plunges mostly about 10°-20° north-northwest.

The Cambrian phyllites are overlain by Silurian black slates. No exposures of the contact have been found but a strong unconformity is suspected as the black slates appear to be much less intensely folded than the phyllites. Some remnants of graptolites were found in one location (near the F-3 vein). Overlying the slate unit is a massive brownish-grey weathering silty dolomite, the total thickness of which is unknown although it is apparently locally in excess of 30 m.

The dolomite is generally succeeded by a near-massive coarse orthoquartzite with some angular disconformity. In at least one location (F-3 Vein) the dolomite is absent and for an interval of about 10 m the quartzite lies directly on black slate.

The quartzite is over 150 m thick and is in turn overlain by a platey limestone, the upper part of which contains Stringocephalus fossils and is therefore of probable Mid-Devonian age. These are the youngest rocks so far identified south of Cache Creek.

The presence of one other formation has also been recognized in the South block; the Cambrian-Ordovician allochthon, an older rock unit carried by a flat thrust over younger rocks and distributed over an extensive area in this part of the Yukon. This gives rise to rather complex structures as the thrust planes themselves have, in some areas, been folded extensively.

In and near the claim area, the allochthonous unit comprises a greenish agglomerate of volcanic origin with grey and black schist fragments which may range from 1.5 mm to 30cm in diameter. It is interbedded with lustrous or "silvery" phyllite and overlain by fine-grained basaltic to andesitic to dioritic extrusives.

A remnant of this thrust plate, consisting mostly of the green agglomerate, extends for over a mile from south of the K-18 area to the F-4 area, overlying both the Cambrian phyllites and Silurian Orthoquartzites.

North Block or Silver Ridge Block

North of Cache Creek an extensive thrust-plate comprised of the assemblage of agglomerates, phyllites, and andesites of Cambro-Ordovician age, overrides the youngest unit so far identified in the area: the Mississippian felsic volcanic and volcanogenic sedimentary assemblage. This plate strikes about N 75° E and dips on the average about 20° S, with gentle undulations between 0° and 40°.

At Silver Creek pass, near the north end of Silver Ridge the underlying Mississippian rocks consist of grey and black cherty siltstones striking north-south with a 30° dip east. The dip flattens to about 15° further north, and the unit continues at least 6 km along strike in that direction.

Between Silver Creek Pass and the Key 3 showing, the unit shows a rapid lateral change from a single sequence of interfingering lenses and bands of dark chert and cherty siltstones in the north-west into two lithologically distinct members further to the southeast; a thick black slate overlain by thin bedded light-buff siltstones and silty argillites. Immediately southeast of the Key 3 showing, finely bedded green and grey tuffs appear in the upper member and within 150 m the black slate formation grades into a black crystal tuff, locally highly schistose and with abundant elongated feldspar augen and small quartz eyes. Further south along the east face of Silver Ridge, the black crystal tuff carries only sparse quartz-eyes and is occasionally associated with minor black slate.

Some 450 m northeast of the Key 3 showing, a propylitized syentic intrusive cuts the feldspar-quartz-eye tuff and is exposed for a length of some 200 m. The overlying beds have been pyritized and a strong brown-yellow-cream gossan has been developed over a vertical distance of 100 m to the same elevation where the Key 3 showing lies on strike some 250 m to the west. The company reports that, near the intrusive contact, a limited area of anomalous radiation has been observed. Levels are about four times background and are tentatively attributed to radon gas.

On the southwest face of Silver Ridge, in the area of the Lap 10 vein, the Mississippian rocks consist of the upper member, the light-buff thin-bedded siltstones and volcanogenic sediments which overly the black slates.

The contact between the lower slate and the upper silt member has been traced as far as the south face of Silver Ridge where the slate apparently disappears under the Silver Ridge thrust, to re-emerge near the Lap-10 area. The mineralized black slates in the Key 35 area are evidently part of this unit as well. The heavily altered rocks just below the thrust, overlying the black slates here still show on their bedding planes the mudcrack-like features characteristic of the buff silt unit which overlies the slate elsewhere.

The contact between the two important members of the Mississippian, the thin-bedded buff siltstones and the underlying black-slates or black tuffs, may have economic significance as both bedding-controlled pyrite and argentiferous galena in the Key 3 and Key 35 areas are associated with it. At the Key 35 showing a 12 m thick section of black slate near the contact is banded with pyrite and locally galena. Bands are generally from 1 to 2 cm wide but in places exceed 0.6m. Another feature of possible economic importance is the zone of mineralized tuff overlying the syenite intrusive near the Key 3. Conditions here are consistent with those envisioned for the development of bedded massive sulphide deposits.

Structure

The Ketzka area is essentially a complex depositional basin which has been severely modified by tectonic processes which occurred both during and subsequent to sedimentation. These processes include intrusive and volcanic activity, folding, faulting, and hydrothermal activity. Dominant structural features, however, are four main faults which shape the area geologically. Two northwest trending high angle normal faults down-dropped to the northeast are thought to occupy the valleys of the Ketzka River and Misery Creek. A third northeast trending high angle fault is believed to follow the valley of Cache Creek dividing the Silver Ridge rocks from those to the south on the Quartzite Mountain block. It is apparently down-dropped to the northwest. The fourth fault is a reverse fault with a gentle southerly dip. It has thrust Cambro-Ordovician volcanic rocks over the Mississippian felsic volcanic rocks exposed on Silver Ridge, largely obscuring them and is referred to here as the Silver Ridge thrust.

Faulting and fracturing, but on a local scale combined with hydrothermal activity, produce the most important structures in the area, the sulphide bearing veins. These tend to strike within a

few degrees of north-south and vary in width from a few centimetres to several metres. Their genesis and relationship to the major faults has yet to be established. Some, however, such as the A-1 vein, are persistent features and may represent splays or tears attributable to movement on the Ketzka River or Misery Creek faults.

Another poorly understood feature is the rapid change in the attitude of the Mississippian felsic volcanic-siltstone unit between Silver Ridge Pass and the Key 3 area. The axis of this folding coincides roughly with the facies change from slates to tuffs and lies near the syenitic intrusion in the Key 3 area.

Surficial Geology

Surficial deposits in the claim area fall into three main groups; colluvial, glacial, and alluvial. Colluvial material composed in part by eluvial soils and partly by angular fragments has been subjected to solifluction and probably comprises the greater part of the overburden on the lower slopes. It mantles much of the potentially mineralized terrane but fortunately responds well to geochemical sampling. Glacial overburden appears to be minimal on the claims. Features are restricted to a few moraines in the upper Cache Creek valley and scattered boulders. Silt and clay deposits on the lower slopes may be eluvial or may in part be the result of a fluvioglacial period. All major valleys are filled to considerable depth with alluvial material, for the most part, obscuring all outcrop on the valley floors.

3.3 Economic Geology

The veins in the area cut virtually all rock types and are essentially composed of siderite occasionally accompanied by quartz and calcite. They are characterized by shoots of massive to near-massive galena associated with freibergite and minor amounts of pyrite. The quartz appears to be restricted to areas of late movements on the mineralized fissures, either near fault zones or at the termination of ore-shoots. In some cases, massive galena forms veins in the wallrock without siderite gangue; in other cases disseminated galena and freibergite occur within the siderite gangue. Significant widths to the order of 6 - 10 m of disseminated galena have also been found in quartzite wallrock.

In general, the total area of economic mineralization within the plane of a vein may not represent more than 10 to 20% of the total area of the plane of the vein; thus, the through-going long vein structures have the best tonnage potential and showings within large structures are the most important exploration targets.

Calculation of silver and lead grades from assay results has, to date, been done under the inaccurate assumption that sulphide and gangue or wallrock densities are about the same. While not unreasonable in the case of large disseminated ore bodies where the host must be removed, it can be a misleading premise where high-grade veins are the source of the ore. As the galena, in this instance, is very dense compared to the surrounding rock there is a tendency to underestimate reserve and mining grades. For instance, a vein of massive galena may assay 86% lead across .30 m in a mining face of 1.50 m. It may then be assumed that the average grade across the 1.50 m is one-fifth of 86% lead, or 17.2% lead. However, taking the difference in density into account, it will be found that the true grade across this distance is 28.6% lead if the barren rock is siderite, and 35.5% lead if the barren rock is a phyllite or a quartzite. If for every 1% lead there is 1 ounce of silver, the first calculation produces a gross metal value across this face, (at 36 cents per pound of lead and \$5.00 per ounce of silver) of about \$211 per ton, whereas the actual value in a quartzite wallrock would be about \$433 per ton and in siderite about \$349 per ton. This is a somewhat extreme example but it illustrates clearly that a 15 cm continuous vein of massive galena with a 1:1 silver:lead ratio is not as insignificant a showing as it may appear at first glance. Examination of the records pertaining to virtually all previous work on the Iona Silver Mines Ltd. properties shows that many of the veins consist of a high proportion of material assaying 40 - 80% lead associated with much lower grade material and that in a number of cases actual grades are significantly higher than previously calculated grades.

Certain siderite-silver vein deposits in other silver districts are known to occur associated with bedded sulphides. This appears to be the case in the Ketzka River area where Mississippian slates, black shales, and siltstones at the Key 35 showing are strongly mineralized with pyrite and galena carrying silver and minor gold. The greater part of the work done to date in the district has been directed towards the vein type deposits, but the bedded sulphides remain an untested and potentially important resource.

4.0 DESCRIPTION OF MINERAL OCCURRENCES

A total of 15 significant mineral occurrences at various stages of development are known on the property. They are listed below under three categories; veins, showings, and float areas.

Veins:

- ✓1. K-18B
- ✓2. A-1 Vein
- ✓3. Lap 10
- ✓4. Key 3
- ✓5. F-3
- ✓6. Blazed Tree
- ✓7. Gem

Showings:

- ✓8. F-2
- ✓9. Canyon
- 10. F-4
- ✓11. Key 35

Float Areas:

- ✓12. K-18
- ✓13. Dip
- ✓14. Zinc
- ✓15. Knoll

4.1 Veins

The K-18B Vein

The K-18B vein system outcrops on the lower slopes of Quartzite Mountain and is encountered underground in two levels. Development includes surface trenching and drifting from two crosscutting adits but only the surface exposure and the section in the upper workings are accessible, the lower portal being caved.

Two accessible locations were examined and sampled in August 1977 with the following results.

<u>Sample No.</u>	<u>Width</u>	<u>Description</u>	<u>Ag</u> (oz/ton)	<u>Pb</u> (%)	<u>Au</u> (oz/ton)	<u>Cu</u> (%)
(309)	3.4 m (11')	Surface exposure of K-18 vein 21 m (70') above upper portal. Trench P.	46.96	19.7	0.054	1.26
(310)	1.5 m (5')	Vein exposed in north wall of upper crosscut 21 m (70') west of portal. Sample is from 0 to 1.5 m (5') E.	9.30	11.3	0.018	0.16
(311)	2.0 m (6.5')	As above from 1.5 m (5') E. to 3.5 m (11.5')	29.04	26.04	0.032	0.67
(312)	1.0 m (3.5')	Massive sulphide zone from central part of K-18 vein north wall, upper crosscut.	36.12	37.5	0.020	---
---	3.5 m (11.5')	Average value across vein in upper crosscut (north wall).	20.45	20.1	---	---

These figures agree essentially with the results of earlier independent sampling by Paul V. Brash (Unpublished Report on the Key Property: Stump Mines Ltd., June 13/73) who reported an average grade across 11 foot (3.35 m) on the north wall of the upper crosscut as follows: Ag 31.52 oz/ton, Pb 20.7%, Zn .12%. An average across a 24 foot (7.3 m) surface sample ran Ag 48.44 oz/ton, Pb 26.65%. Information provided by company officials indicates that this vein was followed in the upper workings for a strike length of 104 feet (31.7 m) and averaged 20.2 oz/ton Ag and 12.4% Pb over a width of 5.4 feet (1.6 m). In the lower workings Ag grade over a strike length of 82 feet (25 m) and a width of 4.8 feet (1.46 m) was 14.4 oz/ton. The total strike length explored is about 150 feet (46 m).

The vein system is located in the Ketz River valley, near water and timber, and with good road access. The grades and dimensions referred to above suggest that this material could, under circumstances consistent with the scope and objectives of the project, make ore. Thus K-18B and adjacent area is presently considered an important target for immediate exploration and development.

The A-1 Vein

The A-1 vein consists of a galena-siderite vein structure which is located above tree line on the east facing slope near the southern limit of the property on the Camp claims. The vein strikes at 350°, dips westerly into the mountain at 50° to 60°, and has been traced on the surface over a strike length in excess of 280 m. Soil geochemical data illustrated in Fig. 6 indicates that the structure may persist for over 730 m along strike.

During the late 1960's underground development was initiated and a crosscutting adit at a bearing of 302° was driven. It intersects the vein about 110 m (360 feet) from the portal. About 240 m (790 feet) of drifting was then carried out mostly in a northerly direction. Work was subsequently started on an adit at a lower level but suspended before the vein structure was reached.

The underground workings are presently inaccessible so sampling is restricted to the surface showings. Earlier samples taken underground, however, are reported by company officers to grade 15.3 oz/ton silver and 19.3% lead across 1.2 m (4 feet) over a strike length of 58 m (190 feet). An additional 140 m (450 feet) of lower grade material is also reported. Four samples taken from surface trenches are summarized below:

<u>No.</u>	<u>Description</u>	<u>Width</u>	<u>Ag</u> (oz/ton)	<u>Pb</u> (%)	<u>Au</u> (oz/ton)	<u>Cu</u> (%)	<u>Zn</u> (%)
(308)	Galena Carbonate vein material east of Portal	1.66 ft.(0.5 m)	50.94	46.6	.02	.24	.01
(307)	Galena Carbonate 102 m north of #308	2.0 ft.(0.6 m)	25.26	22.5	.026	.20	.01
(305)	Massive fine grained banded galena	grab from dump	42.8	42.8	.016	.18	.01
(306)	Galena siderite vein material	grab from dump	22.76	25.76	.038	.23	.01

Samples 307 and 308 calculated for a 4 foot (1.2 m) width give 12.63 ounces of silver, 11.3% lead and 21.1 ounces of silver and 19.3% lead respectively. These values average to 15.3 oz Ag and 16.9% Pb and roughly bracket the figures quoted from the earlier underground sampling.

Work performed to date has delineated a strong zone of potentially commercial grade material over a mineable width in the A-1 workings and trenches. Although it would be premature to describe this material as "proven reserves" a comparatively moderate amount of additional work could place it in that category. This would initially involve re-entering the workings, which are presently not accessible; establishing underground drill sites and diamond drilling to test for downward continuity of grades; and thorough resampling and evaluation of results.

Lap 10

The Lap 10 vein has been traced in trenches for a length of 120 m (400 feet). It cuts the lower part of a buff siltstone unit just above an underlying black slate, a geological environment which appears to be conducive to lead silver vein emplacement in this area. An adit driven from a portal just south of the southernmost exposure followed the hanging wall of a fault zone and did not intersect vein material underground.

The vein strikes north 30° east and dips northwest at 35°. Sampling by Prof. T. Patching and Mr. M.G.C. McCartney on behalf of the previous owners gave a grade of 38% lead and 35 ounces per ton Silver across 3.5 feet (1.07 m). Two check samples taken by Iona Silver Mines personnel from partly sloughed trenches ran 77.18% lead and 73.76 ounces per ton silver over 15 cm (6 in.) and 61.8% lead and 46.11 ounces of silver across 30 cm (1 foot).

Another occurrence of similar material is reported to occur in a gossan some 150 m east of the Lap 10 portal. Both veins are now partly covered and require extensive cleaning out before additional work can be contemplated.

Key 3

Recent extensive trenching indicates that high grade mineralization occurs in several sulphide lenses up to 6 m long and 1 m thick along the black slate-buff siltstone contact. This material assays from 100 to 500 oz/ton silver and is generally low in galena (5-10% lead) and high in siderite and freibergite. Narrow irregular

steeply dipping veins occur over a length of some 200 feet in the overlying buff siltstones. Vein width is generally to the order of 5 to 15 cm but occasionally as much as 60 cm. Silver content is about 1 to 30 ounces for every 1% lead and assays have varied from 157.2 oz/ton and 5.3% lead across 60 cm down to about 10 oz/ton silver and 9% lead across a similar width.

The area is structurally complex. Interfingering beds in a zone of transition from buff siltstones into dark cherts, dark slates and finely bedded green tuffs are cut by small faults and warped into broad folds. Pyrite gossans containing up to 1000 ppm lead occur on the ridge about 250 m to the east and on strike with the showing. Detailed investigation of this area should be included with any further exploration of the Key 3 itself.

F-3

The F-3 vein is composed of siderite and galena with minor quartz and rusty oxides. It cuts a thin bed of massive dolomite at and near its contact with an underlying unit of black slate. It strikes about north-south and was sampled across two adjoining widths of 1.8 m on a bearing of 050°. Values from northwest to southeast were 32.5% lead, 43.68 ounces per ton silver and 6.58% lead, 4.8 ounces of silver. In the fall of 1977 the company reported on a drill hole which intersected the vein beneath the showing. DH 77-3 intersected 6 feet of sulphides grading 31.62% lead and 32.73 ounces per silver. Samples of the black slate which lies below the dolomite taken by the writers, were also assayed and, although no sulphides were visible they ran 0.40% lead, 0.72 ounces per ton silver. Mineralization in both the dolomite and the black slate is widespread. Provision for detailed mapping and physical work including additional drilling should be made.

Blazed Tree

This recently discovered vein occurs on a steep slope with scattered bluffs of andesitic flow rocks. Bulldozer trenching near the road to the Lap 10 has revealed a massive fine grained galena vein and some siderite, but the full vein width has so far proved impossible to expose because of continuous sloughing. Two other exposures of the vein have been found, one corresponding to an old float occurrence formerly known as the 11A and one new exposure to the north which consists of 1.8 m of siderite with galena veins up to 20 cm wide.

The massive to near massive galena gave assays of from 22.5 oz/ton silver and 40.4% lead to 78 oz/ton silver and 81.2% lead over widths up to 60 cm. The vein strikes about N 15° E and dips west at 70°. Total known length is about 150 m.

Gem

Discovered in 1977 as a result of a geochemical follow-up this is a 2 to 10 cm wide massive galena vein assaying 110.8 oz/ton silver and 80.5% lead. It strikes north-south and dips 62° W. It cuts quartzite in a cliff face and is exposed vertically over about 3 m. The quartzites, lying about flat, carry disseminated galena for a distance of some 3-5 m into both walls.

A better grade pocket of this material measuring about 15 x 30 cm assayed 19.1 oz/ton silver and 25.4% lead. Overall average of the quartzite, however, may be to the order of 2% lead. Including the narrow vein, there may be a total width of around 8 m averaging 3.5 oz/ton silver and 3.5% lead. Further evaluation of this sizable but low-grade showing should follow a study of the new Canyon showing and the F-2 area in general. The Gem showing appears related to the F-2 and Canyon structures described below.

4.2 Showings

F-2 and Canyon

The F-2 showing is reported to be a zone 4.6 m wide and 300 m long. Massive argentiferous galena is reported to occur in sloughed trenches on a steep quartzite slope. An assay of this material ran 16.9 ounces per ton silver and 29.14% lead across 8.5 feet (2.6 m) over a length of 30 m.

Some underground work was initiated after a drill hole reportedly intersected 11 feet (3.35 m) of 0.63 ounce per ton gold in quartz vein. The vein was drifted on for about 50 m and assayed .63 oz/ton gold across 2.3 feet (0.7 m) for a length of 10 m.

The Canyon showing was discovered in 1977 in a 10 m wide Canyon near the F-2 zone. Galena has been found in places intermittently over a length of 60 m in various parts of the Canyon but nowhere has the full width been exposed. A typical assay of vein material across 0.5 m exposed along the hanging wall is 36.7 oz/ton silver and 63% lead.

F-4

Small pods of high grade argentiferous galena occur here in a zone of complex faulting and folding. Trenches put in by the previous owners of the property failed to expose anything of interest and the area presently has a low priority for possible further work.

Air photograph interpretation suggests that a NW trending cross-fault extends from about 275 m south of the F-2 showing to the F-4 area.

Key 35

Intensely deformed black shale and slate strongly mineralized with bands of pyrite and patches of galena is exposed in a bulldozer trench at the north base of Silver Ridge. Overlying altered sedimentary rocks exhibit mudcrack-like bedding plane features resembling those characteristic of the Mississippian siltstone unit elsewhere on the property and suggesting that the shale-slate below may represent the basal Mississippian referred to earlier (particularly in the Key 3 area some 2300 m to the north).

Several samples of galena bearing material from the trench have been assayed. Iona Silver mines reports two samples which ran 6.82% lead, 2.84 ounces per ton silver and 12.75% lead, 6.5 ounces per ton silver. A sparsley mineralized sample taken by the writers ran 0.40% lead, 0.70 ounces per ton silver, and 0.084 ounces per ton gold.

Within the general area underlain by the shale-slate unit several head-sized blocks of massive galena-pyrite float have been turned up. Average grades of this material are 65% lead and 44 ounces per ton silver. The blocks appear to originate from a high-grade zone of mineralized shale in the vicinity of its contact with the overlying siltstone unit.

Additional physical and geophysical work appear warranted here as the area could host either vein type argentiferous galena deposits or possibly large bedded sulphide type deposits of lead, silver, and gold.

4.3 Float Areas

K-18

The K-18 area lies just south of the K-18B workings and is defined by an elongate zone of high grade galena float which follows the contour of the hillside for at least 70 m. Boulders vary from about pebble size to in excess of 200 kg and assays of this material are reported to give about 70 to 85% lead and 80 to 110 ounces per ton silver.

A 240 m long trench dug in 1977 uncovered a 230 m long structure open on both ends and forming the hanging wall of a galena-bearing body or vein system of as yet unknown width. Veinlets, disseminations, and occasional patches of galena occur in a zone at least 2.5 m wide, and this well defined hanging wall strikes from N 10° W to N 30° W, and dips westerly at 55-60°. The coarse massive galena float apparently originates along the unexposed footwall of this structure.

The galena-bearing gravel channel mentioned in paragraph 2.2 lies about 150 m north of the northern end of the trench and may be related to the structure exposed in it.

More trenching will be required to define this persistent feature which lies about on strike with and at the same attitude as the A-1 zone some 1800 m to the south.

Dip

Large blocks of siderite-galena float up to 0.6 m in diameter lie scattered in a zone roughly 50 m long defined by a strong lead soil geochemical anomaly in excess of 500 m long. Assays of float material ran 38% lead and 37.6 ounces per ton silver. Additional geochemical sampling would be required to define the upslope edge of this zone.

Zinc

Dense sphalerite float boulders have been found on a steep north facing slope on Silver Ridge. They comprise the only significant occurrence of zinc known on the Iona property. Assays of chips from some of these boulders ran 2.6 ounces per ton silver, .04% lead, and 25.5% zinc.

Knoll

Siderite and galena occur in float found in the "Knoll" area. The boulders occur within a strong soil lead geochemical high and were discovered late in the 1977 field season. No further information or assays are presently available.

4.4 Reserves

The previous operators quote probable reserves estimated at 55,000 tons of 17 oz/ton silver and 12% lead from two veins, the K-18B and the A-1. An additional 9000 tons is reported to occur in the dumps at these sites but grades and percent recoverable are not known.

A preliminary analysis of the old data indicated that the ore occurs in shoots within the veins and that the grades are dependent essentially upon the width of the shoots of galena, or of high-galena material. They are usually accompanied by low grade material on each wall so that the shape of individual ore-shoots depends mainly upon the width of the central high-galena band. This may vary from a few centimetres to over 2 metres. The factors controlling the attitude of these shoots can only be surmised but may include changes in dip and/or strike of the vein, competency of the wallrock, intersecting joint or minor fault patterns, or plunge of axial folds in the wallrock, to list a few.

As grade averages have been calculated by volumetric methods not taking into account the differences in density, the available reserve figures are conservative and therefore acceptable at this stage.

On the A-1 vein, extensions where reserves may be built up look especially promising towards the north, as only about 360 m of vein has been opened on surface. A potential length of about 850 m is indicated by soil sampling (see Fig. 6).

The K-18B vein is cut by a fault to the south, but a probable offset may have been intersected by an old underground drill-hole. Several other mineralized structures have been located by surface-trenching nearby.

In addition to the A-1 and K-18B, several other veins and showings hold immediate promise for development of potentially economic reserves. These are the F-2 and Canyon, the F-3, the K-35, and the Lap 10 and Knoll.

5.0 DISCUSSION AND CONCLUSIONS

The Iona Property is distinguished by an inordinate number of galena veins, showings, and float areas containing promising values of silver. Work is in progress in several of these areas and planning is underway to expand the program as weather conditions permit.

Chief targets are the K-18B and A-1 veins where geophysical work, geological mapping and surveying, and diamond drilling are considered priorities. Underground development on both veins is contemplated and, in the case of the K-18B, should begin as soon as adequate survey controls have been established.

The limited amount of work done to date on the F-2 and Canyon showings has been encouraging and a follow-up program, which could include mapping, survey work, and diamond drilling, is warranted here.

The F-3 showing is still in an early stage of development with geological controls incompletely understood. Grades however are good and the geological setting could be consistent with the presence of bedded sulphide deposits.

The Key 35 showing is located in the Cache Creek valley and is readily accessible by road from the camp almost year round. Values are in lead, silver, and gold which occur with galena and pyrite in black shale. Although grades are lower than in the vein type deposits the bedded sulphide mode of occurrence holds considerable promise for a large tonnage deposit. The showing, however, has hardly been tested and provision would have to be made for a major project before any firm conclusion could be reached.

In addition to the above, several other showings are felt to be of economic interest but budgetary and time considerations make it impractical or unrealistic to include work on them among the priorities for 1978. It is not our intent to downgrade their importance, but only to reduce the chance of compromising the success of the present work by disseminating the effort to widely. Among these showings are the Lap 10 and Knoll, which should be treated together, and the Dip, Zinc, Blazed Tree, and Gem.

6.0 RECOMMENDATIONS AND COST ESTIMATES

Allowance should be made for work to be carried out in three phases with priority for first phase work on the K-18B, K-18, A-1, and the F-2 and Canyon. Later phases should include work on the Key 35 and possibly the F-3 showings. Primary objectives of this work are as follows:

- 1) to develop reserves and carry out metallurgical tests in the K-18B area;
- 2) to delineate the mineralization discovered during 1977 in the K-18 area;
- 3) to test the indicated northern continuity of the A-1 vein;
- 4) surface sampling and evaluation of the F-2 and Canyon vein system.

Important secondary objectives should be:

- 1) detailed evaluation of the Key 35 showing; possibly including drilling;
- 2) re-entry of the A-1 workings; drilling either from surface or underground to test A/ downdip continuity and B/ the nature of the north extension;
- 3) further evaluation of the K-18B area by drilling;
- 4) further evaluation of the F 2 and Canyon by drilling.

An outline of the recommendations is as follows:

Phase 1:

K-18B

- Drive raise in vein material from the 800 level of the workings to the 700 level or beyond. Precise location to be selected by engineer on site.
- Line cutting to be followed by detailed surface survey.
- Electromagnetic (shootback CEM or JEM) survey over selected parts of grid.
- Underground mapping and sampling. Metallurgical testing of selected samples of vein material.

K-18

-Surface mapping and electromagnetic survey of showing area.

A-1

-Establish survey grid and carry out electromagnetic survey of known and indicated extension of A-1 zone.

F-2 and Canyon

-Surface survey followed by electromagnetic survey of vein area and possible extensions. Sampling and detailed mapping of showings.

Phase 2

Key 35

-Geological mapping, electromagnetic survey work, and geochemical sampling.

A-1

-Re-entry and sampling of old workings. Design drilling program both surface and underground.

K-18B

-Design and initiate surface and underground drilling program.

F-2 and Canyon

-Surface drilling from sites selected on the basis of Phase 1 work.

K-18

-Follow-up trenching. Evaluate Phase 1 work. Design drill program if warranted.

Phase 3

Priorities for Phase 3 cannot yet be established but allowances should be made for the following:

- Continued drilling on K-18B;
- Preliminary drill program on A-1 and Key 35;
- Additional drilling on F-2 and Canyon as warranted.

The program outlined above will be carried out in conjunction with limited camp expansion and continuing road construction and maintenance. An estimate of the cost of the program envisioned for the 1978 field season is as follows:

Phase 1 (Duration approx. 40 days)

Camp expansion and upgrading	\$ 6,000
Road construction and maintenance	7,000
Camp operating costs, meals, support staff	8,500
Geology, Engineering and Supervision (includes survey work, sampling, report and map preparation)	10,500
Geophysical surveys	4,000
Development work (includes re-opening of 800 level portal, timbering, misc. machinery purchases and rentals, explosives, raise driving)	21,000
Corporate purposes	5,000
Contingency	3,000
TOTAL	<u>\$65,000</u>

Phase 2 (Duration 60 days)

Camp costs	\$15,000
Engineering and supervision	14,000
Trenching	5,000
Drilling	27,000
Development work	11,000
Contingency	5,000
Corporate purposes	8,000
TOTAL	<u>\$85,000</u>


Phase 3 (Duration uncertain)

Camp costs	\$12,000
Diamond drilling	43,000
Engineering & supervision	15,000
Road maintenance and construction	3,000
Trenching	4,000
Contingency	8,000
Corporate purposes	10,000
TOTAL(allow)	<u>\$95,000</u>

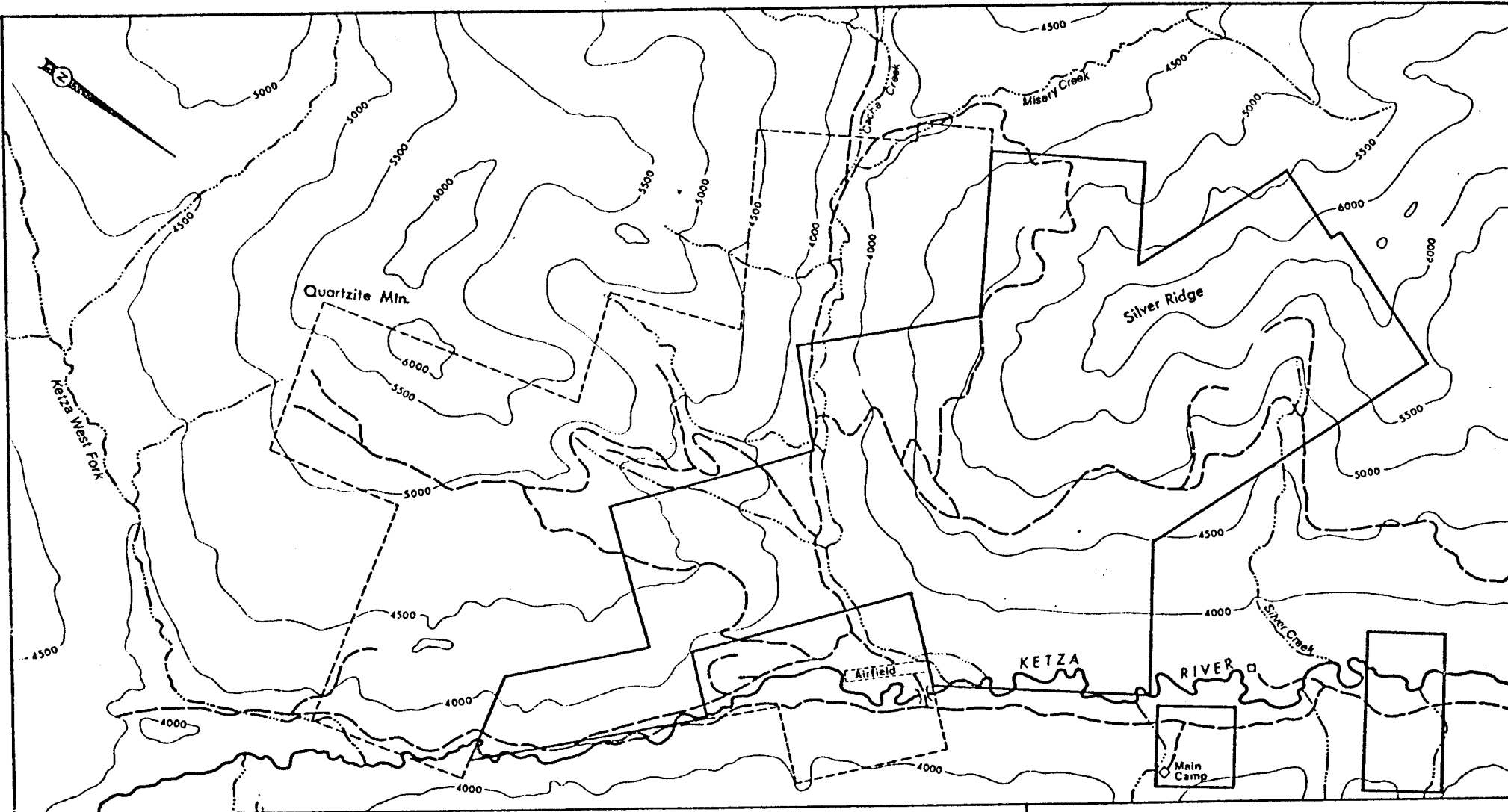
GRAND TOTAL \$245,000

Respectfully submitted,



NEVIN SADLIER-BROWN GOODBRAND LTD.


T.L. Sadlier-Brown

Andrew E. Nevin, P.Eng.



LEGEND

-  Iona Silver Mines Ltd. previous claims
-  New claims acquired 1977

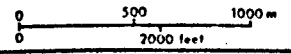
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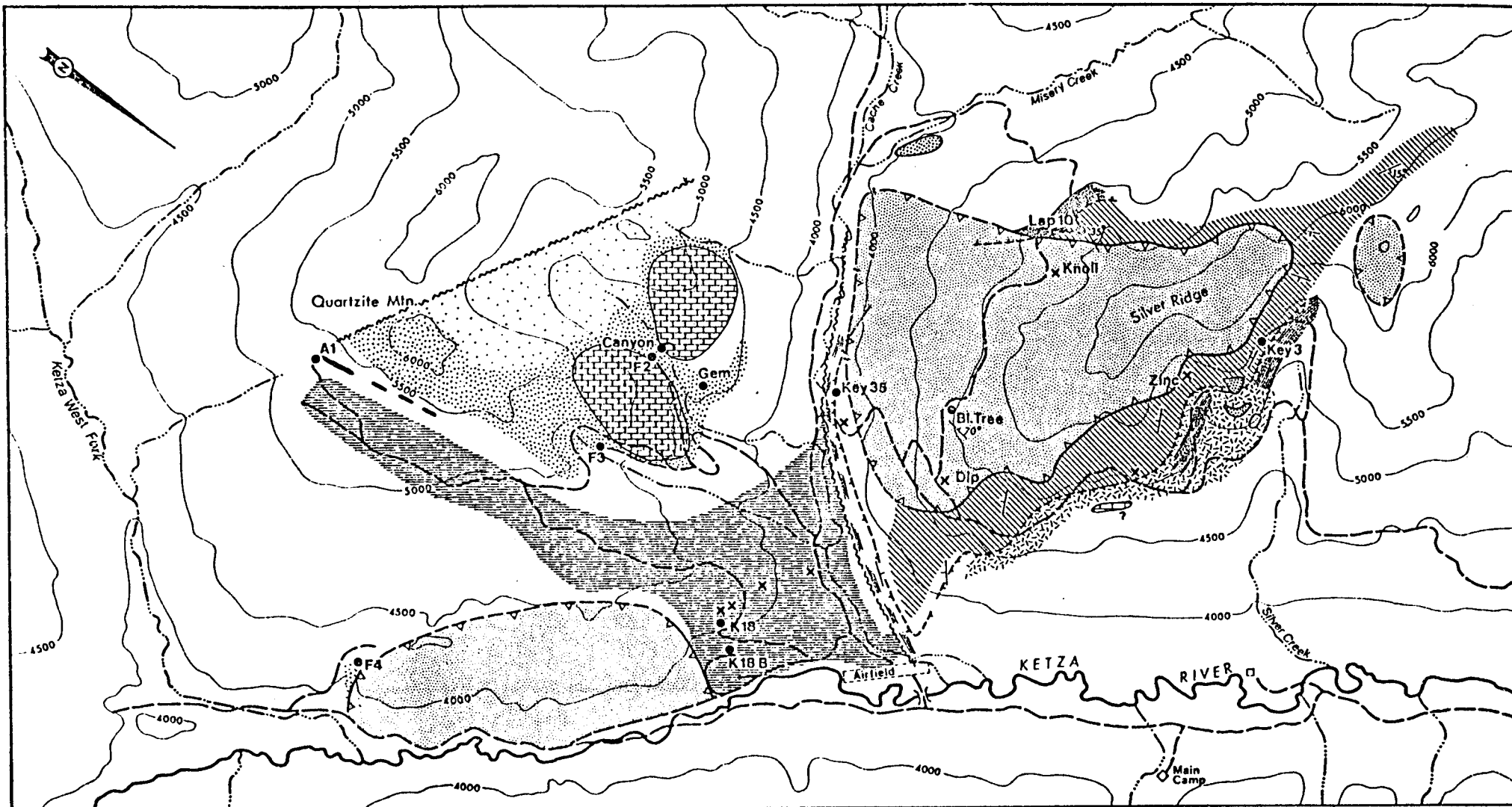
**CLAIM LOCATION MAP
KETZÁ RIVER PROPERTY**

WATSON LAKE M.D., Y.T. Part of NTS map 105 F-9





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








DATE: January, 1978 FIG. 3










LEGEND

-  **ALLOCHTON, ORDOVICIAN**
Green agglomerate, lustrous phyllite, andesitic flow rocks
-  **Thrust - POST TRIASSIC ?**
-  **Buff tuffaceous thin bedded siltstones**
-  **Top of black member, bedded pyrite (galena) in places**

-  **a - Black crystal tuffs**
-  **b - Black slates**
-  **No contact observed**
-  **DEVONIAN**
Platy limestone, *Stringocephalus*
-  **SILURIAN**
Orthoquartzites overlain by some dolomite
-  **Minor unconformity**
-  **SILURIAN** Brown weathering massive siliceous dolomite, black slates, minor *graptolites*
-  **Major unconformity**
-  **CAMBRIAN** Grey phyllites, minor dolomite, platy chloritoid formation

-  **Fault**
-  **Mineral showing**
-  **Significant float**
-  **Gossan**
-  **Intrusive**

IONA SILVER MINES LTD.

GEOLOGICAL MAP
KETZA RIVER PROPERTY

WATSON LAKE M.D. Y.T.

Part of NTS map 105 F-9

NEVIN, SADLIER-BROWN, GOODBRAND, LTD., VANCOUVER, B.C.

DATE: January, 1978

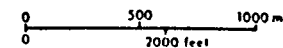
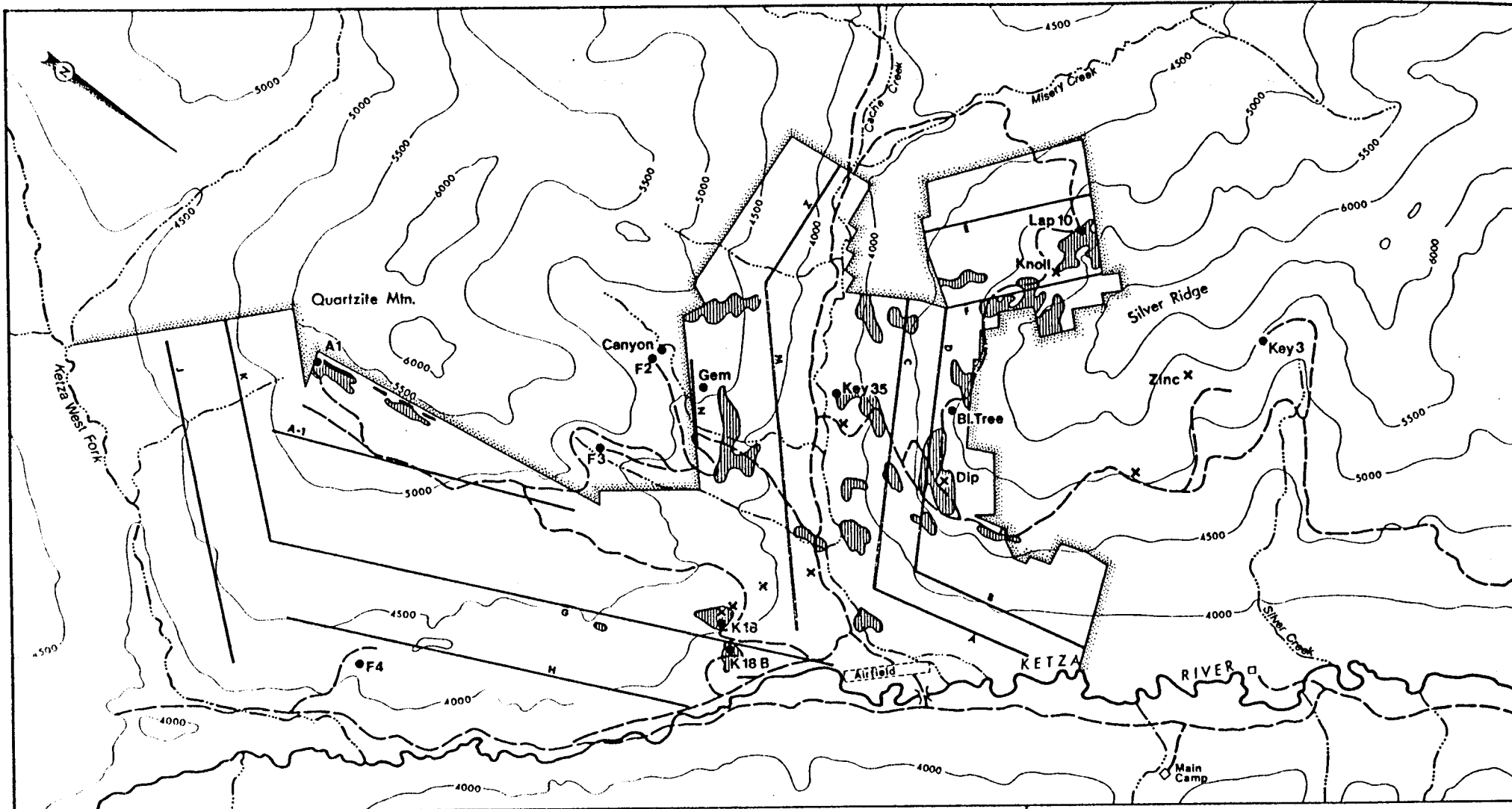


FIG. 4



LEGEND

 Outline of 400 ppm Pb

● Mineral showing

H Baseline

x Significant float

 Boundary of surveys

IONA SILVER MINES LTD.

GEOCHEMICAL MAP
KETZÁ RIVER PROPERTY

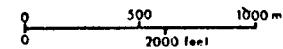
WATSON LAKE M.D., Y.T.

Part of NTS map 105 F-9

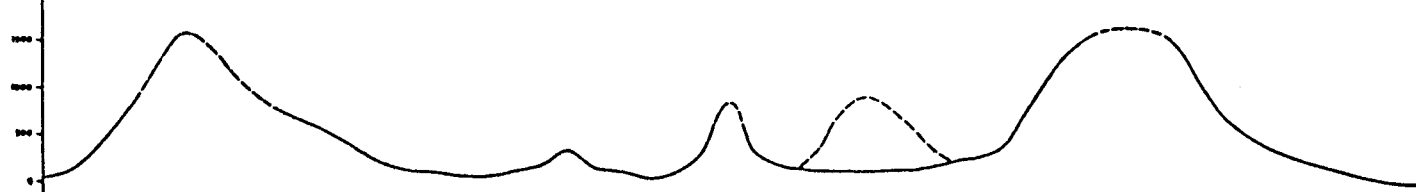
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DATE: January, 1978

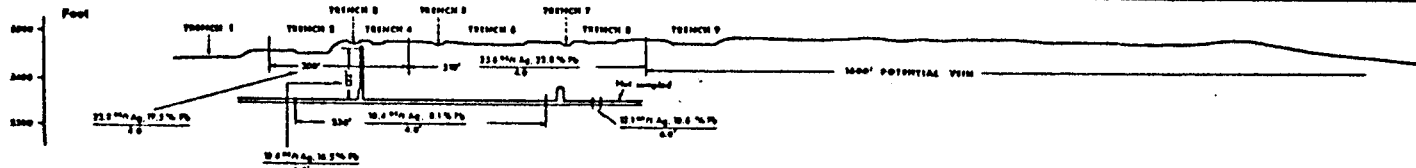
FIG. 5



ppm Pb

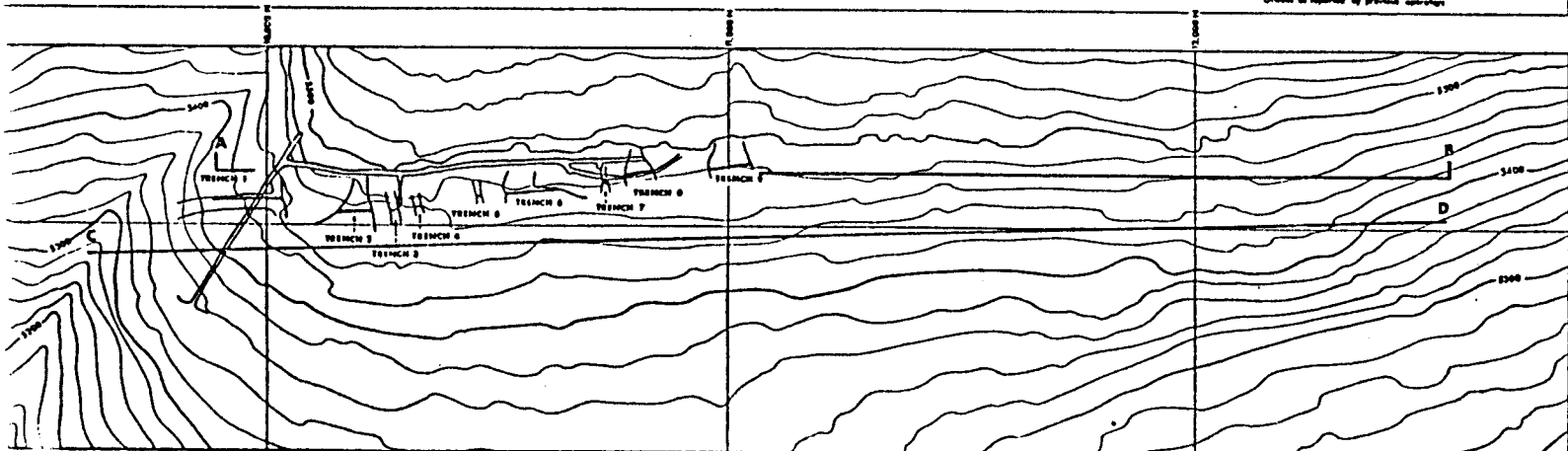


Geochemical Lead Profile
C - D



Vertical Longitudinal Section
A - B

Grades as reported by previous operators



Surface Plan and
Underground Working



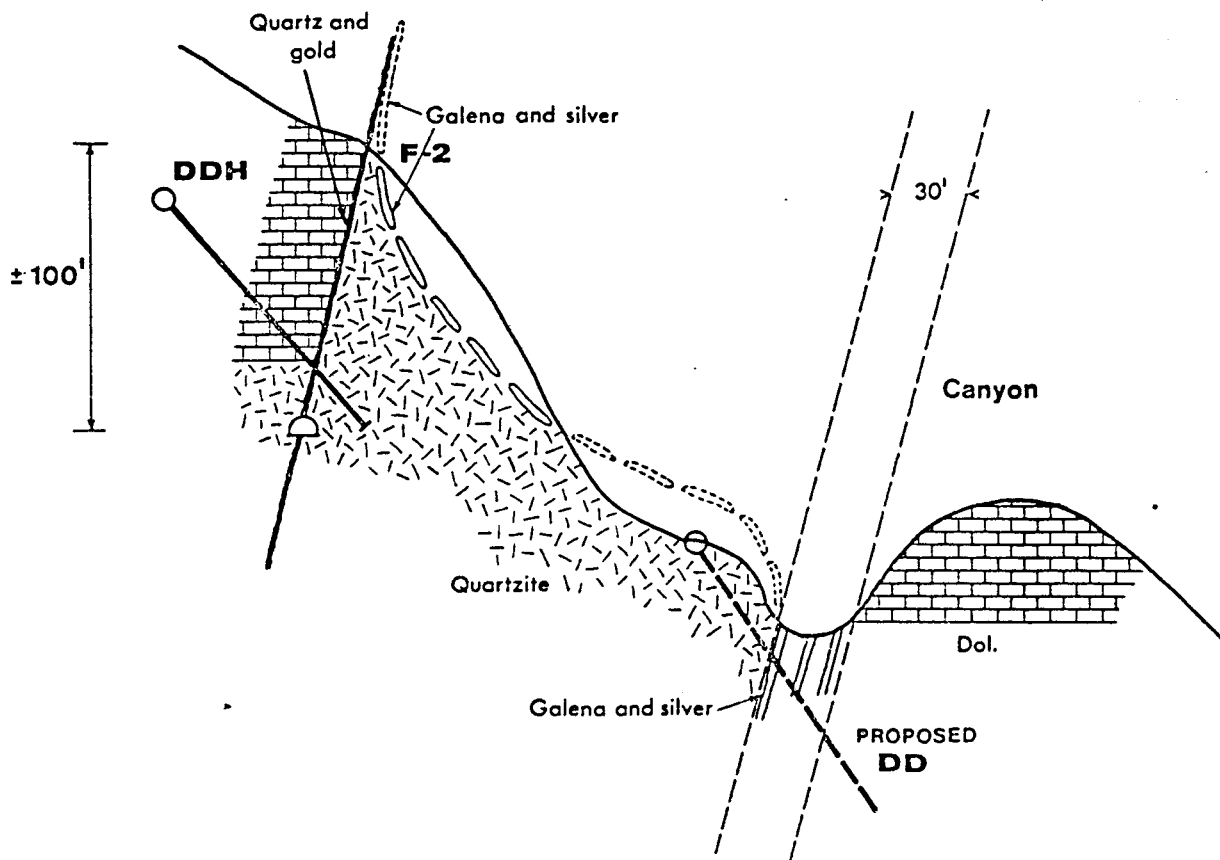
IONA SILVER MINES LTD.

A-1 VEIN
KETZA RIVER PROPERTY

WATSON LAKE N.B.V.C. Part of N.T.S. map 106 P-6
 HEVIN, BADLIER - BROWN, GOODBRAND, LTD., VANCOUVER, B.C.
 DATE: January 1978. FIG. 8

E

W



DDH: 11' of .32 oz/t Au
Drift: 2.3' of .63 oz/t Au length 30'

Locking south

Surface F-2

980' long, up to 15' wide massive
galena lenses up to 10' thick

IONA SILVER MINES LTD.

**SCHEMATIC VERTICAL SECTION
THROUGH F-2 and CANYON**

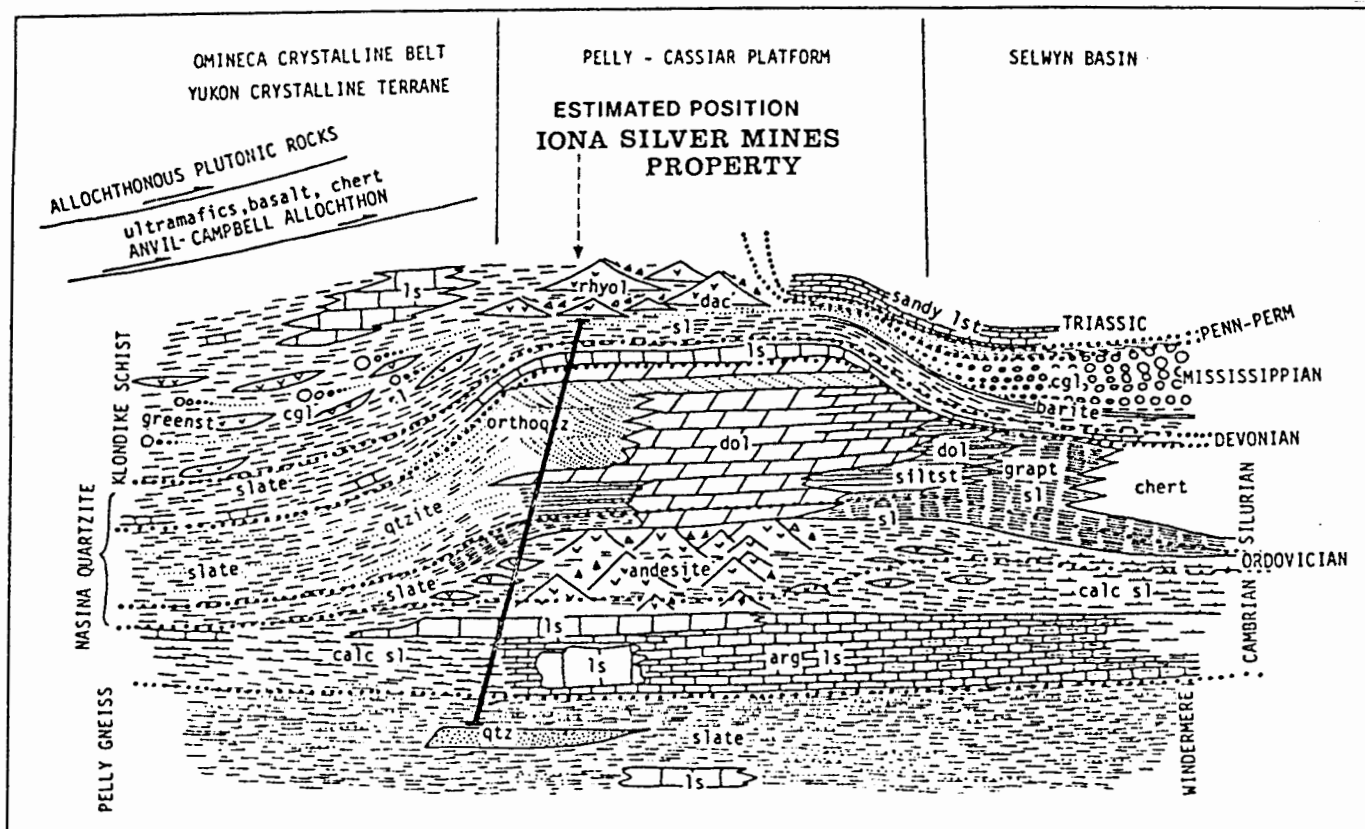
KETZA RIVER PROPERTY

N.T.S. map 105 F,G

NEVIN, SADLER-BROWN, GOODBRAND, LTD., VANCOUVER, B.C.

DATE January 1978

FIG. 7




Restored section across the Pelly-Cassiar Platform through Quiet Lake map-area to illustrate the facies relations of the main stratigraphic units with those found in the flanking tectonic elements, Selwyn Basin and the Omineca Crystalline Belt-Yukon Crystalline Terrane. Time lines shown by heavy dots across the diagram are only approximately located in the Omineca Crystalline Belt part of the diagram because no diagnostic fossils have been found there. (After D.J. Templeman-Kluit; Geol. Survey Canada, P. 77-1A, pp. 223-227.)

Fig. 9

STATEMENT OF QUALIFICATIONS AND CERTIFICATE

I, Timothy L. Sadlier-Brown hereby state that

1. I reside in the City of Vancouver, B.C., at 1307 Harwood Street.
2. I am a consulting geologist and partner in the firm of Nevin Sadlier-Brown Goodbrand Ltd. with offices at 503-134 Abbott Street, Vancouver, B.C. V6B 2K4
3. I was educated in geology at Carleton University in Ottawa, Ontario.
4. I have been actively engaged in geological field work for 17 years as a technical officer with the Geological Survey of Canada and as an exploration geologist with both mining corporations and consulting firms.
5. Since 1965 I have acted in the field of exploration geology in positions of responsibility and have been a principal in the firm of Nevin Sadlier-Brown Goodbrand Ltd. since 1972
6. I examined the prospects described in this report during the course of a visit to the property of Iona Silver Mines Ltd. in August 1977.
7. I have no interest direct or indirect in the properties or securities of Iona Silver Mines Ltd. nor do I expect to receive such interest.



T.L. Sadlier-Brown

March 14, 1978

APPENDIX 'A' - CERTIFICATE

I, Andrew E. Nevin, hereby certify that:

1. My residence address is 926 Montroyal Blvd., North Vancouver, B.C., my office address is 5th floor - 134 Abbott Street, Vancouver, B.C. V6B 2K4; and that I am a Geologist by occupation.
2. I hold a B.Sc. in Geophysics from St. Lawrence University, an M.A. in Geology from University of California, Berkeley, and a Ph.D in Geology from University of Idaho. I have been practicing my profession since 1961, and I am a member of the Association of Professional Engineers (Geological) of the Province of British Columbia, and a Registered Professional Geologist in the State of Idaho.
3. I examined the prospects during the course of a visit to the area on July 25, 1974 and reviewed work performed to March, 1978.
4. I hold no direct or indirect beneficial interest in the above property nor in the securities of Iona Silver Mines Ltd. (NPL), nor do I expect to receive such interest.

Andrew E. Nevin, Ph.D, P.Eng.

March 14, 1978

061651

BRODIE HICKS ENGINEERING LTD.
SUITE 103
1199 WEST PENDER STREET
VANCOUVER, B.C., CANADA V6E 2R1
TELEPHONE 688-4725

REPORT

ON

PROPERTIES OF

IONA SILVER MINES LTD.

KETZA RIVER AREA

YUKON TERRITORY

BY

H. BRODIE HICKS, P. ENG., M. ENG.

VANCOUVER, B.C.
JANUARY 3, 1979

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SUMMARY AND RECOMMENDATIONS

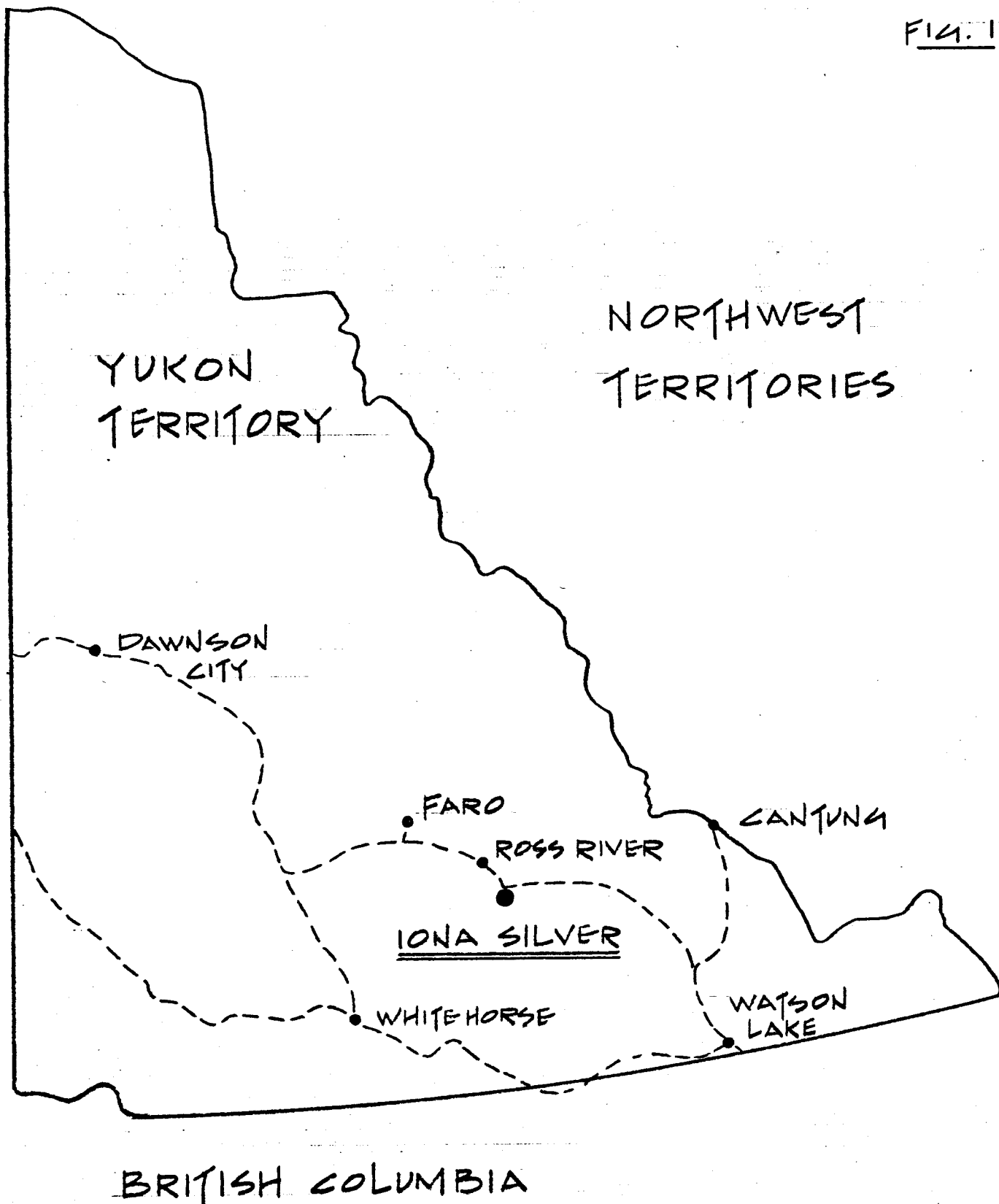
1. Iona Silver Mines Ltd. is the holder of a 90-claim property in the Watson Lake Mining District of the Yukon Territory on which past work has indicated the existence of numerous silver-lead occurrences of possible economic importance.
2. The property, while situated in a remote area, is readily accessible by road from the community of Ross River, a distance of about 40 miles, and there should be no unusual problems involved in developing a production operation.
3. Elevations range from 3,000 to 5,500 feet above sea level. Outcrop is abundant on the ridges but the lower slopes are covered in overburden supporting a good growth of timber. An ample water supply exists in local streams.
4. A modern 12-man camp has been erected as well as all necessary shops and housing for equipment. The Company owns all equipment necessary for carrying out work on two underground exploration projects with, in addition, a substantial inventory of operating supplies.
5. Intermittent work programmes have been carried out on the property since 1955 by Iona Silver Mines as well as by former owners. Work has included geological mapping, geophysical and geochemical surveys, trenching, diamond drilling, and underground development on two showings.
6. Geologically, the area forms part of a large depositional basin, including sedimentary and volcanic facies ranging in age from Proterozoic to Mississippian, which have been subjected to tectonic processes including major faulting.
7. Most of the showings presently known consist of veins of hydrothermal origin following subsidiary faults. They appear to cut all rock types. The gangue is siderite with some quartz and calcite. The veins contain shoots of massive to near-massive galena associated with freibergite and minor pyrite, occasionally disseminated into the wallrock. Veins widths vary from a few inches up to 15 feet or more, while the galena shoots are normally narrower but may, on occasion, reach the same maximum dimensions.
8. Significant metal content consists of silver and lead. There is almost no zinc present and only very occasional gold. Silver grade varies widely from a few ounces to several hundred ounces per ton and lead from a few percent up to 75%. The ratio of silver to lead, although varying to a considerable degree is, on average, about one ounce of silver to one percent lead.

Cont'd/

SUMMARY AND RECOMMENDATIONS (Cont'd)

9. The determination of an economic ore grade is dependent on a number of factors, in particular the scale of operation, which cannot be determined at this time. Past work, however, suggests that it may be possible to develop a significant tonnage of material with a recoverable grade of 15 ounces silver per ton and 15% lead. Based on assumptions detailed herein, it is estimated that such material might have a net smelter return value of \$172.40 per ton, of which \$80.00 would represent operating profit. Assuming a capital cost of \$4,000,000 for placing the property into production at a rate of 100 tons per day, it would require 50,000 tons of this material to write off the investment.
10. It is recommended that the immediate objective be to place in sight, as developed reserves, double this minimum amount or, in summary, 100,000 tons grading, recoverable, 15 ounces silver and 15% lead. There are reasonable ground for believing this to be possible.
11. Of the 15 presently identified mineral occurrences, two, the A-1 and the K-18B, are already partially developed by underground openings and thus afford the most readily available targets for additional exploration. Unconfirmed reports by previous operators quoted probable reserves in these two mines as 55,000 tons grading 17 ounces per ton silver and 12% lead. The programme suggested herein is designed to confirm and expand these reserves, to, if possible, the 100,000 tons necessary to permit consideration of production.
12. It is therefore recommended that, for the present, exploration be concentrated on the A-1 and K-18B mines, and to consist of underground development including crosscutting, drifting, raising and diamond drilling. A detailed programme is suggested.
13. The programme is divided into stages with, to some extent, subsequent stages to be dependent on the degree of success achieved. Cost and timing are estimated as follows:

<u>Stage</u>	<u>Cost</u>	<u>Time Required</u>
1	\$136,000	3 months
2	\$192,000	4 months
3	\$100,000	2 months
Contingency Allowance	\$ 65,600	
	<u>\$493,600</u>	
or, say,	<u>\$500,000</u>	<u>9 months</u>



BRODIE HICKS ENGINEERING LTD.
LOCATION MAP
IONA SILVER MINES LTD.
SCALE 1:5,000,000
DEC. 1978

INTRODUCTION

The following report has been prepared at the request of Iona Silver Mines Ltd., (The Company), in support of a proposed financing agreement.

The writer visited the Ketz River properties of the Company on September 27 and 28, 1978, and has subsequently participated in the management of operations, including a term as a Director of the Company, a position he has relinquished upon his appointment as Consulting Engineer.

In addition to personal observations, extensive use has been made herein of reports and other data in the files of the Company, more particularly a number of documents prepared by Archer, Cathro & Associates Ltd., and a March, 1978 report, hereinafter referred to as the Nevin Report, by Nevin, Sadlier-Brown, Goodbrand Ltd., the use of which is gratefully acknowledged. He has also had the benefit of personal communications from Mr. P. Sevensma, P. Eng., who has directed much of the exploration work on the claims.

CLAIMS AND OWNERSHIP

The Company holds directly or under option 90 claims in the Ketz River Area, Watson Lake Mining District, Yukon Territory. A block diagram of the holdings is shown in Figure 2 and a list is recorded in Appendix A. The writer has not personally checked these holdings nor the nature of the Company's title.

LOCATION AND ACCESS

The claims are located on the NTS map sheet 105-F-9 and centered at 132° 10' W longitude and 61° 32' N latitude in the area south of the junction of the Upper Ketzka River and Cache Creek (see Figure 1). They are accessible from the community of Ross River, Yukon, 30 air miles to the north, via the Campbell Highway and a 40 km long truck road which follows the Ketzka River. This road, while adequate for present exploration purposes will require major improvement in the event of a production facility being established. A network of gravel roads connects the various showings within the property. A 1,600 foot gravel air-strip is located in the Ketzka River valley about one mile from the main camp.

PHYSIOGRAPHY AND TOPOGRAPHY

The property lies in mountainous country with elevations ranging from 3,000 feet to 5,500 feet above sea level. It is dissected by the northwesterly flowing Ketzka River and its northeasterly flowing tributary, Cache Creek.

Outcrop is abundant on the ridges but bedrock is generally obscured by talus on the lower slopes. Valley bottoms tend to be alluvium filled although a number of drainages, including the two major ones, do cut through bedrock locally. The valleys are wooded, predominantly with northern black spruce and lesser amounts of balsam in quantities sufficient to meet requirements for underground work. The Ketzka River and its tributaries should provide a reliable year round water supply for both industrial and domestic purposes.

FACILITIES AND EQUIPMENT

A trailer camp, in good condition, with facilities for 12 men has been set up. This will be adequate for the presently proposed programme. There is, in addition, a good garage-repair shop at the main camp, while at both the A-1 and K-18B portals housing has been provided for compressors, generators, and other necessary purposes.

Virtually all of the major items of equipment necessary for carrying out underground programmes at both of the recommended sites are on hand, as well as a substantial inventory of consumable supplies, including mine timber.

FACILITIES AND EQUIPMENT (Cont'd)

Electricity is supplied by portable diesel generators. The area is remote from any source of public power and in the event of production, local generating capacity would be necessary. While this would normally be produced by diesel generators, there is a potential hydro-electric site which should be investigated at an early date.

HISTORY

Previous Work

The first recorded history of silver-lead mineralization in the area was made in 1946 by prospectors working for the Hudson Bay Mining and Smelting Company. In 1955 a work program was carried out by Conwest Exploration Ltd. who drove three short drifts, totalling some 115 ft. on the Key 3 showing. Between 1965 and 1969 Silver Key Mines and Stump Mines carried out extensive geochemical surveys and about 2,900 ft. of underground development. This included work on the silver-lead veins presently being explored.

Regional and local geological mapping and investigations have been carried out by both the Geological Survey of Canada and the Department of Indian Affairs and Northern Development. The general geology of the prospect area is included in GSC Map 7-1960 (Quiet Lake; NTS 190-F) by Wheeler, Green, and Roddick and in a recent compilation (GSC O.F 486) by D.J. Templeman-Kluit.

Since 1972 Iona Silver Mines or its principals have acquired all of the known important silver-lead veins and other mineral occurrences in the area. During the summer of 1977 Iona initiated a program of exploration work which included bulldozer and hand trenching, geochemical sampling, geological mapping and road and camp constructions. This was supplemented in 1978, by a programme of approximately 2,000 feet of diamond drilling.

GEOLOGY

The regional and property geology have been described in a number of reports. For the most part, the following summary has been derived from the March 1978 Nevin report, supplemented by personal observation and oral communications from P. Sevensma, P. Eng., who has directed much of the work.

The property lies within an area of deformed sedimentary and volcanic rocks ranging in age from Proterozoic to Mississippian and comprising essentially a complex depositional basin which has been severely modified by tectonic processes including intrusion, volcanism, faulting, folding, and hydrothermal activity. Dominant structural features are four major faults which shape the area geologically. Three of these are high-angle normal faults, represented on surface by water courses, while the fourth is a reverse fault of gentle dip.

Probably subsidiary to these main faults are faulting and fracturing on a local scale which, combined with hydrothermal activity, have produced sulphide-bearing veins of economic interest. The veins normally strike approximately north-south, have westerly dips, and vary in width from a few inches up to 15 feet or more. They appear to cut virtually all rock types although, by analogy with similar deposits elsewhere, it may be anticipated that certain host rocks will be more favourable than others. The gangue is essentially siderite, accompanied by quartz and calcite.

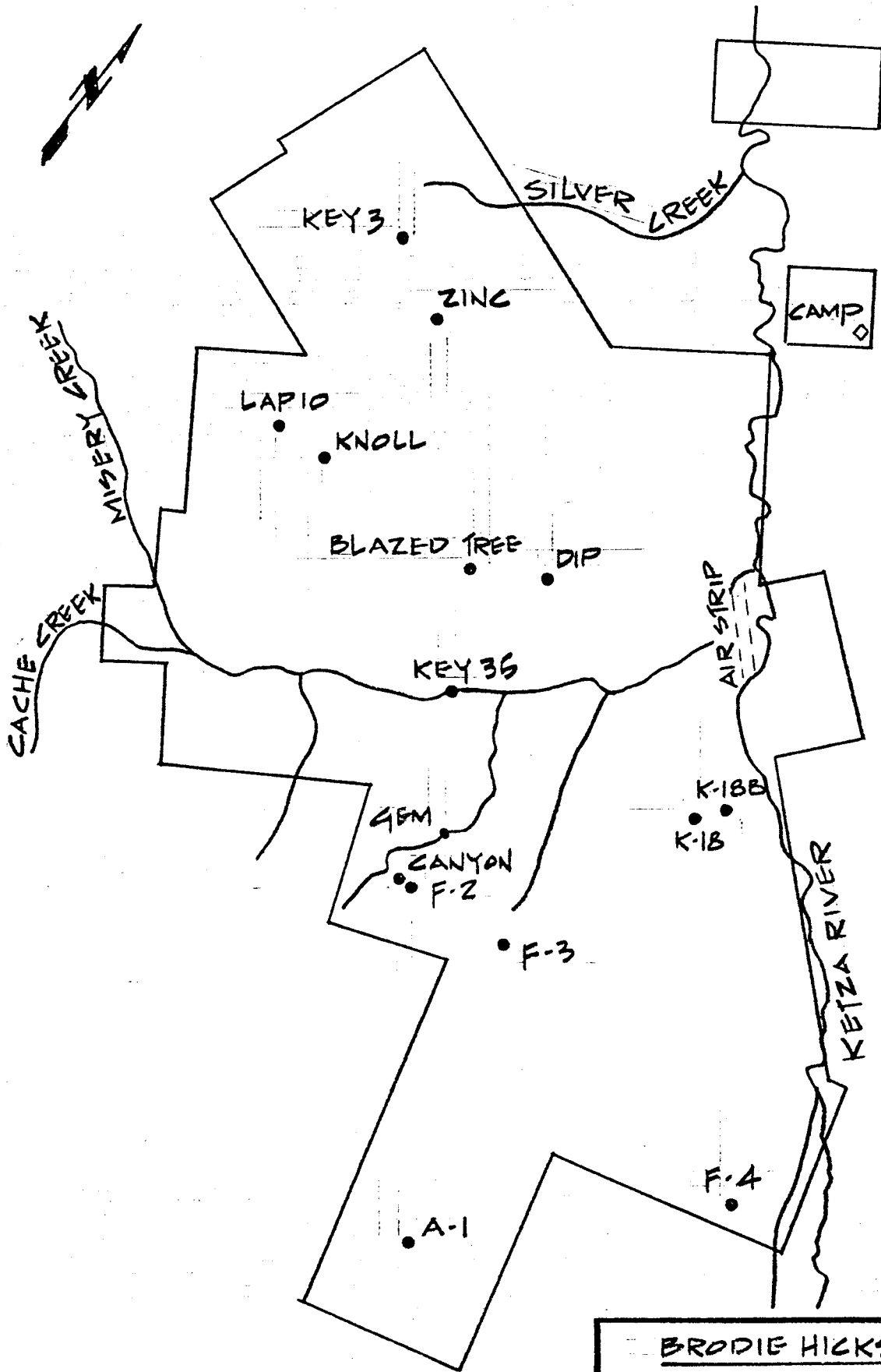
The veins contain shoots of massive to near-massive argentiferous galena, associated with freibergite and minor pyrite. Except in one location, sphalerite is absent. Occasional good gold values have been returned but the average tenor is low. In addition to the normal mode of occurrence, massive galena may form veins in the wallrock without siderite gangue and in other cases disseminated galena and freibergite occur within siderite. Significant widths, of the order of 15 to 30 feet of disseminated galena have also been found in quartzite wallrock.

In addition to the veins there is evidence of at least one occurrence which may represent a bedded sulphide deposit carrying significant silver and lead.

MINERALIZED SHOWINGS

Exploration by Iona Silver Mines and its predecessors has resulted in the discovery of some 15 separate and wide-spread showings carrying sufficiently good values to warrant additional work. The approximate locations are shown on the claim map, fig. 2. Much of the property, particularly at lower elevations, is covered by overburden and it is probable that other showings exist. For the

FIG. 2



BRODIE HICKS ENGINEERING LTD.

PLAN OF
IONA SILVER MINES LTD
SHOWING

CLAIM HOLDINGS AND
PRINCIPAL SHOWINGS

2000'

DEC 1978

MINERALIZED SHOWINGS (Cont'd)

most part, the occurrences have been explored to a limited extent only by methods including geological mapping, geophysical and geochemical surveying, trenching, diamond drilling, and underground development.

The existence of this comparatively large number of potential deposits has had, to some extent, a negative side-effect in that exploration work has tended to be scattered among too many projects with no definitive programme completed on any one. It is proposed herein that, for the time being, work should be concentrated exclusively on the two most advanced sites with the objective of blocking out reserves.

In view of this recommendation, no detailed description of the other showings is considered necessary at this time. Based on classification in the Nevin report, seven are categorized as "veins" on which sufficient work has been done to establish their nature; four are "showings" where the structure is still uncertain; four are "float areas" carrying large blocks of mineralized material but with the source still to be located.

In respect to the "veins" the following brief notes are of interest:

The A-1 and K-18B, on which further work is recommended herein, are discussed below.

The Lap 10 has been traced in trenches for 400 feet, with an indicated grade of 35 ounces per ton silver and 38% lead across a width of 3.5 feet.

The Key 3, as developed by trenching, is structurally complex with a number of short, narrow, high-grade lenses. The silver to lead ratio is higher than elsewhere on the property. The lenses are up to 20 feet in length with vein widths up to as much as two feet. Samples across approximately two feet have ranged from 10 ounces silver per ton and 9% lead, to as high as 157 ounces silver per ton and 5% lead.

The F-3 has been explored by trenching and one drill hole over a length of about 100 feet. Average width is six feet and grade is of the order of 24 ounces silver per ton and 20% lead.

The Blazed Tree has been only partially explored by trenching over a length of 500 feet. The full width has not been revealed. Samples across two feet have returned silver values ranging from 22 to 78 ounces per ton and lead values from 40% to 80%.

MINERALIZED SHOWINGS (Cont'd)

The Gem is a narrow but high grade galena vein in quartzite, with disseminated mineralization in the wallrock. The overall average grade may be of the order of 3.5 ounces silver per ton and 3.5% lead over a width of 25 feet.

MINERAL GRADE

From the above notes it will be apparent that a rather wide range of metal values is found on the various showings. A decision on the grade necessary to constitute ore is dependent on a number of circumstances, in particular the ultimate scale of an operation, and cannot be made at this time. However, as will be developed below, a recovered grade of 15 ounces per ton silver and 15% lead should constitute ore at a mining rate of 100 tons per day and, for present purposes, this may be adopted as a "cut-off". From the vein descriptions above and those of the A-1 and K-18B to follow, it is apparent that a reasonable potential exists for the development of material of this tenor.

NET SMELTER RETURN ESTIMATE

At the present stage of development, it is not possible to calculate potential net smelter return with any exactitude as none of the basic parameters are sufficiently well established. It is necessary, however, to arrive at some "order-of-magnitude" figure in order to determine whether additional development is justified.

As suggested above, a recovered grade of 15 ounces silver per ton and 15% lead may be adopted. The observed nature of the mineralization suggests that it will be possible to produce a good grade of concentrate. Assuming a ratio of concentration of 5:1, concentrate grade would be 75 ounces silver per ton and 75% lead.

Transportation and smelting costs may be estimated at \$100 per ton and the smelter may pay for 95% of the contained metal. Using prices of \$6.50 per ounce of silver and \$0.35 per pound of lead, we have:

NET SMELTER RETURN ESTIMATE (Cont'd)

Silver Payment : 75 oz. @ 95% x \$6.50	-	\$463.00
Lead Payment : 1,500 lb. @ 95% x \$0.35	-	499.00
		<u>\$962.00</u>
Less, freight and smelting	-	100.00
Net Smelter Return per ton of Concentrate	-	<u>\$862.00</u>
Net Smelter Return per ton of Ore	-	<u>\$172.40</u>

OPERATING AND CAPITAL COST ESTIMATE

The remote location and the apparently somewhat difficult rock conditions in the mines suggest that operating costs may be higher than under more favourable circumstances. This may be partially offset by the probable ease and simplicity of concentration. At this time, it may be assumed that, of the \$172.40 estimated net smelter return, \$92.40 may be absorbed in costs, leaving an operating profit of \$80.00 per ton.

The capital cost of a mining and concentrating complex for the treatment of 100 tons of ore per day is estimated at \$4,000,000.

PROGRAMME OBJECTIVE

On the basis of the above figures which, it must be remembered are at this time quite tentative, it would require 50,000 tons of ore to pay back the capital cost of equipping the mine for production.

If it were possible to double this figure and to place in sight 100,000 tons of proven reserves, there would be justification for proceeding with a full-scale feasibility report, with a probability that a recommendation to proceed to production would be made and that sufficient profitability would be indicated to attract senior financing.

The present objective, therefore, is the blocking out of 100,000 tons of material with a recoverable grade of 15 ounces silver per ton and 15% lead.

RESERVES

There are, at present, no proven reserves.

Previous operators have quoted probable reserves, in the A-1 and K-18B mines, of 55,000 tons grading 17 ounces per ton silver and 12% lead. The proposed programme will be directed toward confirming and if possible extending these estimates.

METALLURGY

No metallurgical testing has been carried out and this will be necessary at some future date. In the meantime, the nature of the mineralization is such that no difficulties should be anticipated.

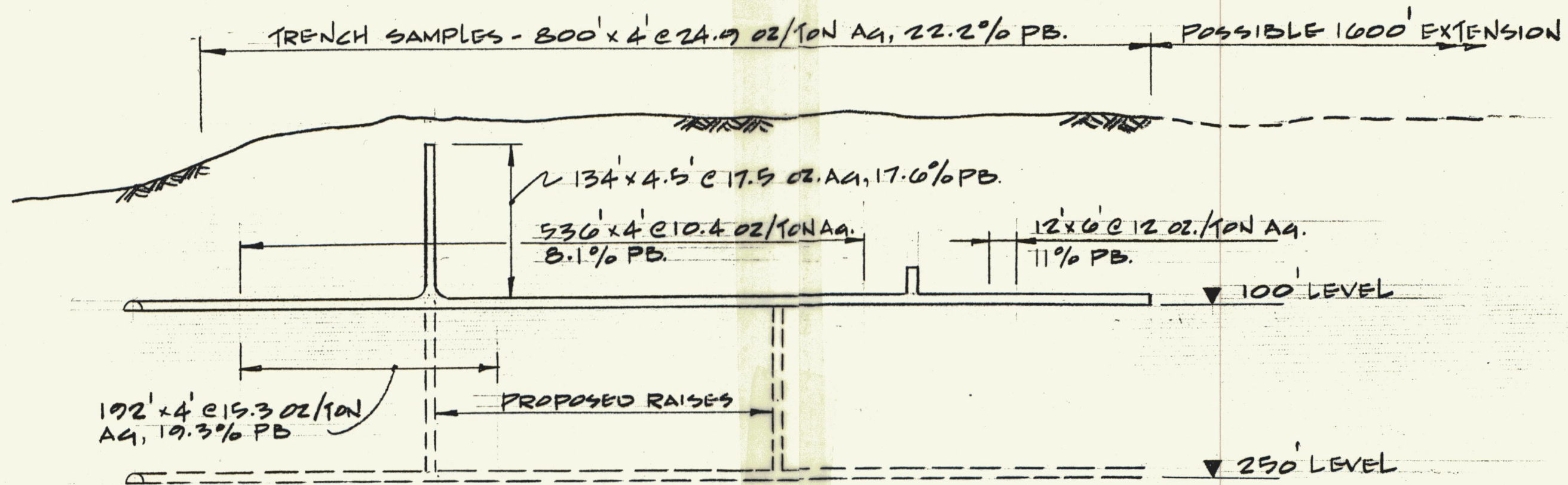
PROGRAMME

Of the various showings, two, the A-1 and K-18B, are the most advanced in underground development. Both have responded well and have demonstrated potential for the outlining of ore reserves. Because of simplicity of structure it appears that the A-1 may be expected to yield results more quickly. The proposed programme is directed to the further development of these two zones with a higher priority accorded to the A-1.

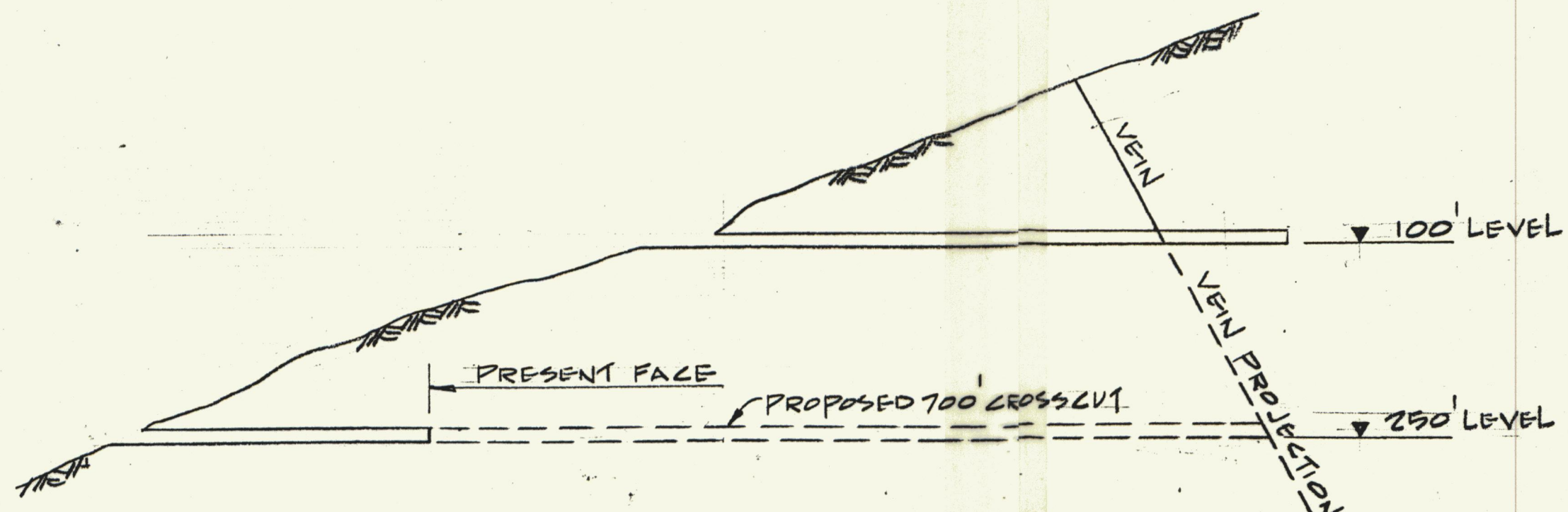
A-1 ZONE

This zone, as described in earlier reports, consists of a typical siderite vein, with values predominantly confined to a central core of massive galena which varies in width from a few inches up to three feet. It has been opened up by surface trenches and an underground level. A longitudinal section is shown in fig. 3.

Cont'd/



LONGITUDINAL SECTION



CROSS SECTION

BRODIE HICKS ENGINEERING LTD.

A-1 VEIN

IONA SILVER MINES LTD.

SHOWING PROPOSED DEVELOPMENT

SCALE 1"=10' DEC. 1978

A-1 ZONE (Cont'd)

This is the most fully developed of any of the known zones. Its demonstrated length, potential additional length, freedom from major faulting, and average grade, suggest good possibilities for the blocking out of reserves. For these reasons it is recommended that it be constituted as the primary target for the immediate future.

The vein outcrops at an elevation of about 5,000 feet at the southern end of the property, striking at 350° and with a westerly dip of about 55° . It has been traced on surface by trenching over a length of 800 feet. The trenches are now sloughed-in but galena mineralization can still be found. Sampling of the trenches by previous operators returned an average of 24.9 ounces per ton silver and 22.2% lead across an average width of 4.0 feet. A possible longitudinal extension of the vein for 1,600 feet has been indicated by geochemical surveying.

In the late 1960's, a 360-foot crosscut was driven to intersect the vein at a vertical depth of 125 feet below the outcrop. Drifting was carried out over a length of 790 feet and a raise driven to within a few feet of surface. The crosscut portal is caved and the writer has been unable to examine these workings.

Sampling results, reported by Archer-Cathro, include a drift length of 192 feet averaging 15.3 ounces silver and 19.3% lead across 4.0 feet within a longer zone of 536 feet averaging 10.4 ounces silver and 8.1% lead across 4.0 feet. The lower 67 feet of the raise assayed 23.3 ounces silver and 23.6% lead across 5.0 feet and the upper 67 feet 10.2 ounces silver and 9.6% lead across 4.0 feet.

In general, the galena core is less than 4.0 feet in width and the results quoted above were arrived at by averaging-in sufficient adjacent wall rock to reach a minimum four-foot mining width. The Nevin report points out that, in this process, the substantially higher specific gravity of the galena was not taken into account and hence true values may be expected to be higher than those quoted. The averages, in other words, are conservative.

The drift is reported to have been stopped in material grading 10.6 ounces silver and 12.1% lead across 6.0 feet. While the overall average of the grades in these workings is below the arbitrary standard selected above, it is apparent that a substantial portion of the vein may be expected to reach these standards and thus the A-1 constitutes a worthwhile exploration target.

Cont'd/

A-1 ZONE (Cont'd)

Contemporary with the work described above, a second adit was started, 150 feet below the first, and advanced a reported 175 feet. It will require approximately a further 700 feet to reach the downward extension of the vein. The programme recommended is to resume driving of this crosscut adit, to drift out the vein on the level and to drive one or more raises between the levels with the objective of blocking out reserves. The programme is divided into stages with each being dependent on the degree of success achieved in the preceding stage.

The portal of the lower adit, which was caved, has now been rehabilitated, necessary buildings have been erected, and all equipment is on hand for resumption of advance.

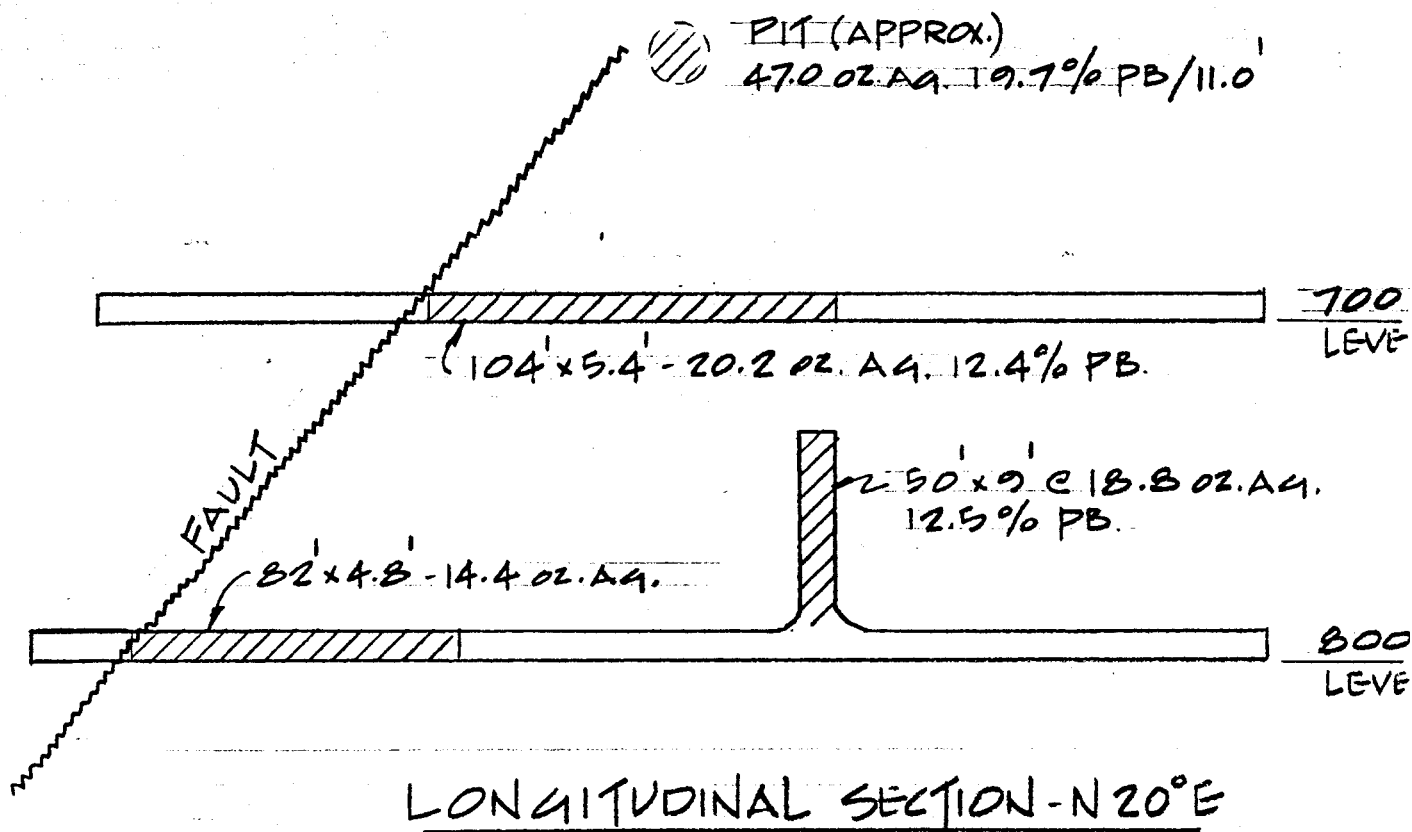
K-18B ZONE

This zone has been developed by surface trenching and by two underground levels as shown in fig. 4. While grades and widths are, perhaps, better on the average than in the A-1 zone, the structure is considerably more complex, being broken by faulting and the presence of subsidiary and branching veins, so that development will be less straight-forward. For this reason it has been accorded secondary priority in the present programme. It is more readily accessible than the A-1 and, during early stages, will serve as a reserve working place if weather or road conditions at the A-1 are unfavourable. At later stages it will be a major development target. All necessary buildings and equipment are in place and, in fact, active underground work was in progress late in 1978.

On the basis of reports by previous operators, the upper, or 700 foot level, developed a length of 104 feet averaging 20.2 ounces of silver and 12.4% lead across a width of 5.4 feet, while the lower, or 800 foot level, developed a length of 82 feet averaged 14.4 ounces of silver across a width of 4.8 feet. Lead grade was not quoted.

Late in 1978 a raise was collared on the 800 foot level, outside of the zone indicated by the assays quoted above. It immediately broke into ore and has now advanced 50 feet vertically, averaging 18.8 ounces silver and 12.5% lead over a width of 9.0 feet. The present face is in similar material.

The recommended programme here is, first, the completion of this raise, and then drifting, crosscutting and drilling in order to resolve the somewhat complex structure indicated both in the underground workings and in surface trenching.



BRODIE HICKS ENGINEERING LTD.
K-18B ZONE
IONA SILVER MINES LTD.
1:50'
DEC. 1978

OTHER WORK REQUIREMENTS

Under terms of the property purchase, there is an annual work requirement on an area outside of that containing the A-1 and K-18B veins. It is recommended that, in order to satisfy this requirement in 1979, a programme of surface exploration be carried out on the Lap 10 vein area.

PROGRAMME DETAILS AND COSTSStage 1

A-1 Crosscut, 700' @ \$100/ft.	-	\$70,000	
A-1 Drift, 200' @ \$105/ft.	-	21,000	
Roads, Camps, etc.	-	10,000	
Engineering and Supervision	-	5,000	
General Corporate Purposes	-	<u>30,000</u>	\$136,000

Stage 2

A-1 Drift, 300' @ \$105/ft.	-	\$31,500	
A-1 Raises, 280' @ \$100/ft.	-	28,000	
K-18B Raise, 50' @ \$150/ft.	-	7,500	
K-18B Lateral Work, 500' @ \$105/ft.	-	52,500	
K-18B Drilling, 1000' @ \$20/ft.	-	20,000	
Surface Work, Lap 10	-	25,000	
Roads, Camps, etc.	-	20,000	
Engineering and Supervision	-	<u>7,500</u>	\$192,000
			<u>\$328,000</u>
Contingencies, 20%			65,600
			<u>\$393,600</u>
	or, say,		<u>\$400,000</u>

The details of this programme should not be regarded as rigidly fixed so long as the general objectives are followed. As results are obtained, it may be desirable to shift emphasis from one facet to another. Again, if cost estimates prove too high or too low, some additional work may be possible or, alternatively, some curtailment may be necessary. Major changes should, in general, be subject to the approval of the Company's consulting engineers.

PROGRAMME DETAILS AND COSTS (Cont'd)

If the objectives of the programme have been successfully attained, there should be , at the conclusion of these two stages, ample evidence on which to reach a decision on proceeding to production. If favourable, however, some additional work will still be required, including, probably, some further underground development and a programme of metallurgical testing. Such additional work cannot be detailed at this time but an allowance of a further \$100,000 for its completion would not be unreasonable. Thus, total financing of the order of \$500,000 should be envisaged.

TIMING

In a remote location, under severe winter conditions, exact timing cannot be estimated with accuracy. In general, a timetable should be:

Stage 1	- 3 months
Stage 2	- 4 months
Additional Stages, if required	- 2 months

Respectfully submitted,

BRODIE HICKS ENGINEERING LTD.

H. Brodie Hicks, P. Eng., M. Eng.

Vancouver, B.C.
January 3, 1979

HBH/sg

encls.

CERTIFICATE

I, H. Brodie Hicks, P. Eng., residing at Suite 903 - 5455 Balsam Street, Vancouver, B.C., V6M 4B3, do certify as follows:

1. That I am a graduate of McGill University, Montreal, with the degrees of B. Eng., (1934), and M. Eng. (1935), in Mining Engineering.
2. That I am a member of the Associations of Professional Engineers of the Provinces of British Columbia and Ontario.
3. That I have practiced my profession since 1935.
4. That this report is based on a personal examination of the subject property in September 1978, reference to reports and maps in the files of the Company, and personal communications.
5. That I have no interest in the properties or in the securities of the Company, nor do I expect to obtain any such interest.
6. That this report, or a condensation thereof, approved by myself, may be used in connection with an underwriting designed to raise funds for carrying out of the work programme recommended therein.

H. Brodie Hicks, P. Eng., M. Eng.

Vancouver, B.C.
January 3, 1979

HBH/sg

APPENDIX ACLAIM HOLDINGS AT DECEMBER 28, 1978

<u>Name</u>	<u>Record Number</u>	<u>Expiry Date</u>
A1 & 2	Y64464 & 5	August 15, 1980
A3	Y64466	August 15, 1981
A4	Y64467	August 15, 1983
A5	Y64468	August 15, 1980
A6	Y64469	August 15, 1981
B1 - 8 inc.	Y64472 - 79 inc.	August 15, 1980
B9 Fr.	YA11259	November 1, 1979
B10 Fr.	YA11260	November 1, 1981
C1 - 8 inc.	Y64480 - 87 inc.	August 15, 1980
D1 - 4 inc.	Y64621 - 24 inc.	November 1, 1979
Camp 2	YA94450	November 1, 1979
Camp 3 & 4	YA94451 & 2	November 1, 1980
Camp 5 - 8 inc.	YA94453 - 6 inc.	November 1, 1979
Camp 9 - 15 inc.	YA11749 - 55 inc.	November 1, 1979
Camp 16	YA11756	November 1, 1982
Hope 1 - 6 inc.	YA11204 - 9 inc.	November 1, 1979
Hope 7 & 8 Fr.	YA11261 & 2	November 1, 1979

Cont'd/

APPENDIX A (Cont'd)

<u>Name</u>	<u>Record Number</u>	<u>Expiry Date</u>
Pete 1 - 3 inc.	YA11256 - 8 inc.	November 1, 1979
Dub 1 - 8 inc.	Y94457 - 64 inc.	November 1, 1979
Gem 1 & 2	Y94465 & 6	November 1, 1979
Gem 3	Y94467	November 1, 1980
Gem 4 - 6 inc.	Y94468 - 70 inc.	November 1, 1979
OK 1 - 5 inc.	YA25460 - 4 inc.	November 1, 1979
OK 6 - 11 inc.	YA26125 - 30 inc.	November 1, 1979
OK 12	YA33222	November 1, 1979
Les 1 & 2	YA20228 & 9	June 23, 1979

RECENT LOCATIONS

<u>Name</u>	<u>Record Number</u>	<u>Record Date</u>
Bud 1 - 4 inc.	YA35521 - 4 inc.	September 18, 1978
Camp 17 & 18	YA35525 & 6	September 18, 1978

PROGRAMME DETAILS AND COSTS (Cont'd)

If the objectives of the programme have been successfully attained, there should be, at the conclusion of these two stages, ample evidence on which to reach a decision on proceeding to production. If favourable, however, some additional work will still be required, including, probably, some further underground development and a programme of metallurgical testing. Such additional work cannot be detailed at this time but an allowance of a further \$100,000 for its completion would not be unreasonable. Thus, total financing of the order of \$500,000 should be envisaged.

TIMING

In a remote location, under severe winter conditions, exact timing cannot be estimated with accuracy. In general, a timetable should be:

Stage 1	- 3 months
Stage 2	- 4 months
Additional Stages, if required	- 2 months

Respectfully submitted,

BRODIE HICKS ENGINEERING LTD.

H. Brodie Hicks, P. Eng., M. Eng.

Vancouver, B.C.
January 3, 1979

HBH/sg

encls.