

REPORT ON DONNA MINES LTD. N.P.L.

BURNT BASIN PROPERTY

GREENWOOD MINING DIVISION
NEAR PAULSON, BRITISH COLUMBIA

49° 10' 30", 118° 09 W

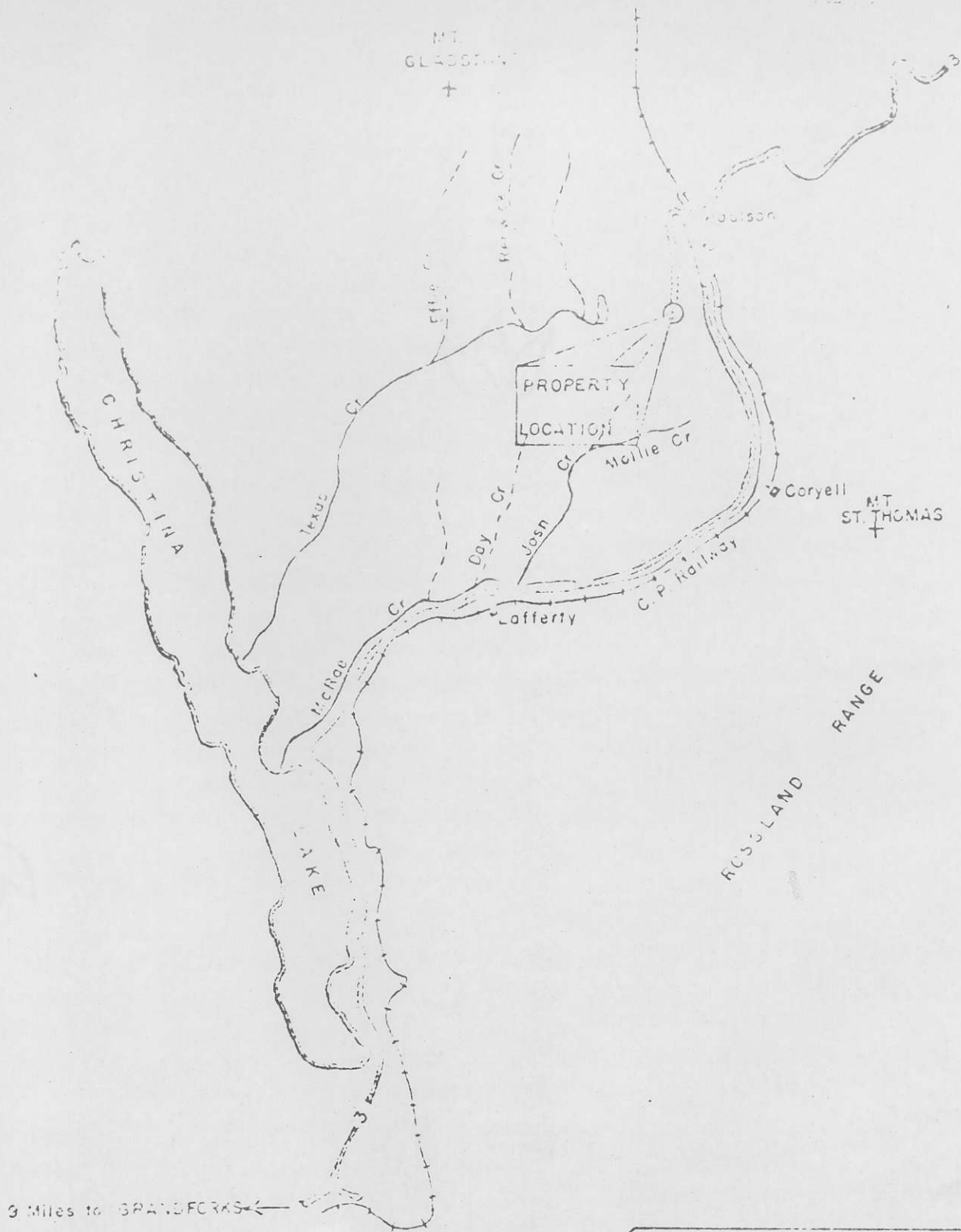
SUMMARY

A significant silver bearing base metal and copper zone some 1,000 feet long has been indicated in recent surface trenching on the Burnt Basin property of Donna Mines Ltd. Indications are that sufficient direct shipping ore may be put in sight to warrant production at an early date.

A first stage program of rock trenching and bulk sampling followed by further exploration estimated at \$35,000 is recommended.

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9 Miles to GRANDFORKS ←

BRITISH COLUMBIA
U.S.A.
15'

LOCATION MAP

BURNT BASIN PROPERTY

GREENWOOD MINING DIVISION, B.C.

Scale: 1 inch = 2 miles

4800
11600

INTRODUCTION

This report was written at the request of Ivan Todd, President of Donna Mines Ltd. (N.P.L.).

The purpose of the report is to review and summarize the extensive amount of detailed exploration carried out on the property in the past with special emphasis on the results of recent work carried out during the past two months, to evaluate the potential of the property and recommend a preliminary exploration programme.

The results data herein is taken from reports and maps on file with the company and Burnt Basin Mines Ltd. the owners and from an examination made of the property in July and August 20, 1972. A list of references is provided in Appendix 1.

OWNERSHIP AND LEGAL ASPECTS

Donna Mines of 642 Clark Drive, Vancouver, B. C., furnished the writer with the attached claim map and list of claims and represent the claims listed below are owned by:

BURNT BASIN MINES LTD. (N.P.L.)
P.O. BOX 1496
GRAND FORKS, B. C.

Donna Mines Ltd. also informed the writer the listed claims have been taken under option by them. The property is comprised of **36** contiguous claims and fractures approximating 700 acres.

Evaluation of the legal aspects of the claims is beyond the scope of this report. Several claim posts on the property were inspected and found to be staked according to the British Columbia Mining Act.

82E/1E(M)

6

5

Renninger Cr.

MT
GLADSTONE

Hooper Cr.

DONNA MINES BURNT BASIN PROPERTY CLAIMS MAP

Linberg Cr.

Cr.

Effie

Creek

Renwick Cr.

Phylson

Walker

Orian

L1781

L2874
L2873

L1136

L205

3239

V. Mallie

Corvell



SCHEDULE "A" OF AGREEMENT OF SALE

DONNA MINES LTD. AND BURNT BASIN MINES LTD.

1.	HAVANA FRACTION		Record Number 18902
2.	GALENA FRACTION		Record Number 19964
3.	SHIRLEY 1-8 inclusive		Record Number 19966-73
4.	CHRISTINA No. 1		Record Number 21139
5.	CHRISTINA FRACTION 1-3 inclusive		Record Number 21140-42
6.	CHRISTINA FRACTION 4-6 inclusive		Record Number 21148-50
7.	B.P. FRACTION 1-3 inclusive		Record Number 26063-65
8.	JENNY LIND FRACTION	Lot 3043	Lease Number M-365
9.	HALIFAX	Lot 3042	Lease Number M-119
10.	GOLDEN AGE FRACTION	Lot 3044	Lease Number M-119
11.	ARLINGTON	Lot 2596	Lease Number M-118
12.	EVA BELL	Lot 2031	Lease Number M-131
13.	ENNISMORE	Lot 2595	Lease Number M-52
14.	AJAX	Lot 1509	Lease Number M-183
15.	BURNT BASIN	Lot 1136	Lease Number M-196
16.	MOTHERLODE	Lot 1508	Lease Number M-197
17.	MOTHERLODE FRACTION	Lot 1511	Lease Number M-197
18.	DALY	Lot 1510	Lease Number M-197
19.	AJAX FRACTION	Lot 1512	Lease Number M-197
20.	ALDEEN	Lot 1749	Lease Number M-205
21.	TUNNEL	Lot 1750	Lease Number M-205
22.	KITTIE	Lot 1748	Lease Number M-205
23.	B.P. No. 4 FRACTION		Record Number 35788

LOCATION AND ACCESS

The Burnt Basin claims are located approximately 26 miles northeast of Grand Forks, British Columbia, in the Greenwood Mining Division. Coordinates are $49^{\circ} 10' 30''$ north, $118^{\circ} 09'$ west. Map Sheet 82E/SE. The claims are reached via Highway No. 3 from Grand Forks to Paulson Bridge at Coryell and then by a good truck road recently improved from the bridge up the east side of Mount Gladstone to Mollie Creek. The trip from Grand Forks takes approximately 1 hour. The property is 30 miles west of Trail, B. C.

TOPOGRAPHY, TIMBER, POWER, ETC.

The claims are located in a valley plateau, the average elevation being 4,500 feet. McRae Creek has cut a deep east west valley through the locality. The general area is known as the Burnt Basin at the headwaters of Josh Creek. Ample water is available for all mining milling and exploration from the creeks.

Pine and fir stands cover part of the property.

No electric power is available at present on the property. The closest source is at Christina Lake, 5 miles distant.

A single core shack and office is available for exploration crews at the property. The proximity to Christina Lake obviates the need of a bunkhouse or cookery. The CNR rail line lies 5 miles distant at Coryell.

HISTORY

A concise history of the property is provided by Dr. V. Dolmage as follows:

"Burnt Basin is an old camp discovered before the beginning of the century when the neighbouring camps, Rossland, Phoenix and Greenwood were flourishing. Prospectors were numerous and pursued their occupation with energy and skill. It would appear that by the beginning of the century they had discovered all the surface showings in the Burnt Basin area, and there are a great many, but in spite of many courageous attempts no deposits were found which under the existing circumstances seemed to warrant large scale development.

The lack of success and the inability to interest any of the large aggressive mining companies of the day was due mainly to the high zinc content of the ores. At that time zinc was regarded as an impurity and instead of paying for it the smelting companies penalized the shipper according to the amount of zinc in the ore. Since then conditions in this regard have changed completely and zinc is now a valuable constituent in any lead or copper ore. Another reason for the failure to develop a mine was the desertion of the camp by most of the prospectors to join in the gold rush to the Yukon in 1898 and succeeding years.

Since those early years many changes have occurred to make this an unusually favorable prospecting area. Transportation and accessibility have been improved by the completion of a first class highway leading from close to Burnt Basin to the Trail Smelter. This road is now being shortened from about 45 to 30 miles. A branch of the Canadian Pacific Railway passes close to the area and runs to Trail. The Trail Smelter has become one of the largest smelting and refining complexes in the world and is particularly well equipped to treat zinc ores such as those in Burnt Basin.

Burnt Basin has more mineral showing per unit of area than most parts of British Columbia. Since these showings were discovered the adjoining camps, Phoenix and Deadwood have produced 22 million tons of profitable ore and Phoenix is at present enjoying a second period of profitable production. The surrounding region has been topographically and geologically mapped by Dr. H. W. Little of the Geological Survey whose map was published in 1957.

All the above facts point to this being an unusually favorable area in which to engage in mine development. Christina Lake Mines Ltd. were well advised in selecting this region and pursued their search in a logical and efficient manner. First they acquired a large block of mineralized area including the great majority of the early discoveries. They they proceeded to explore the area by the most approved and modern methods including detailed geological mapping and geochemical and magnetic surveys. The latter was particularly appropriate since many of the ores are decidedly magnetic. These methods were then followed by diamond drilling and trenching with the use of a bulldozer. By all the laws of chance this work should have turned up a commercial deposit of lead-zinc-silver ore but unfortunately failed to do so.

On the completion of this program the writers were requested to examine the properties, the drill cores, the general results of the investigation and to evaluate the potentialities of the property, and advise the directors how next to proceed. To this end the showing and drill core were examined in the field, the map and geophysical results studied and the old reports on the early discoveries reviewed. We found that the exploration had been well planned and effectively carried out. The only phase of the

investigation which was not done as thoroughly as might be desired was that of cleaning out, mapping and testing the old workings. In many instances the only information which could be gained from our examination of these was from the material found on the dumps. No attempt appears to have been made to determine the limits of the individual showings by exploration, sampling and drilling. However this is slow, laborous and expensive work and it is often difficult to know where to begin and to stop such work, moreover this kind of drilling can be done effectively only by probing one hole at a time and under the constant and close supervision of a geologist."

GEOLOGY

The geology is described by Dolmage as follows:

"The region including Burnt Basin is underlain mainly by limestones which have been compressed into tight folds striking generally northwest. For the most part the limestones have been crystallized and where they are siliceous in composition they have been altered to skarn. Everywhere the limestones are well bedded and the attitudes of the various strata are generally horizontal but the folds however are overturned and it is not always possible to distinguish the tops from the bottoms of the limestone beds. Fossils have been found in the limestones which determine their age to be Pennsylvanian and/or Permian.

The limestones are intruded by many dykes, sills and larger masses of a variety of intrusive rocks. Northwest of the basin are large masses of light pink granitic rocks which have displaced much of and in some areas completely replaced the limestone. In the eastern and southern parts of the basin the

limestones are cut by numerous dykes and sills. Many of these are amygdaloidal and spotted with small phenocrysts of biotite. Some of these contain minute amounts of copper usually confined to a narrow zone near their upper contacts. They frequently cut out the ore but are not believed to have been the source of the metals found in the ores. These are more likely derivatives of the much larger intrusives of the Nelson batholith which occupies large areas in and around the basin.

The large number of dykes, sills and other small intrusions is well illustrated on the geological map recently prepared by John Buckholz. They may account for the large number and small size of the mineral deposits in this basin.

The principal structural features of the region are the great shear zones which occupy the main north-south valleys such as that of the Grande River, Christina Lake and Sander Creek and McKee Creek. Burnt Basin occupies the high plateau between the Christina Lake and the McKee Creek Valleys. Theoretically these great shear zones should be the loci of largest mineral deposits of the region but as yet none have been found. This may be due to the valley floors being deeply buried under overburden. This not only conceals mineral showings but also discourages any attempt at prospecting particularly by the old pick and shovel methods.

MINERAL DEPOSITS

The mineral deposits examined are mainly lead-zinc type, carry values in silver, and are comprised of a dense assemblage of massive to disseminated galena, zinc blends; and magnetite in a banded argillaceous limestone host rock. "

A second type of occurrence opened by bulldozer stripping in 1968 on the Eva Bell claim is described by S. A. Mauritzen as follows:

Eva Bell

"An extensive pyrrhotite zone near the adit of the Eva Bell tunnel was chip sampled over a width of 22 feet. The assay results were 0.01 oz. gold, 1.20 oz. silver, trace of copper, 2.14% lead, 2.40% zinc. The galena vein at the tunnel opening was not assayed. "

MINERALIZED SHOWINGS

Some 20 mineralized showings of various sizes are reported on the property. Since time did not permit a comprehensive examination of these and since previous efforts had failed to find a deposit of economic size, my examination was confined to recent work carried out by bulldozer and rock trenching on the Eva-Bell claim northern showings and the Halifax showings to a lesser extent. Overlying survey work comprised of a magnetometer, induced polarization, geological and geochemical surveys, were reviewed and the results compiled and correlated with mineral showings. In addition the rock trenching in the vicinity of the copper-zinc showing was sampled. (See attached sampling sketch.)

A significant correlation was apparent between mineralized zones and magnetic anomalies and to a lesser extent induced polarization anomalies and geochemical anomalies. A 1,000 foot long zone varying from 10 to 60 feet in width carrying ore grade copper-zinc, lead and silver values has been uncovered in recent trenches at widely spaced intervals over a vertical extent of at least 100 feet. The zone is believed to be continuous but additional bulldozer and rock trenching is necessary to determine its true length, width and grade.

EVA-BELL CLAIM

A. Southeast Showing - Location 11 + 00 N - 2250 E Magnetometer Grid

An open cut 10' wide and 30' long x 8' high was opened up last winter on a massive sphalerite-galena replacement vein in argillaceous limestone. Forty-seven tons were rough sorted and shipped to Cominco, Trail.

The shipment assayed as follows:

<u>Gold</u>	<u>Silver</u>	<u>Lead</u>	<u>Zinc</u>	<u>Copper</u>	<u>Bismuth</u>
0.017oz/T	6.50oz./T	7.8%	16.5%	0.01%	0.01%
<u>Antimony</u>	<u>Cadmium</u>	<u>Silica</u>	<u>Arsenic</u>	<u>Iron</u>	<u>Sulphur</u>
0.10%	Nil%	18.2%	0.10%	23.9%	11.2%
<u>Lime</u>	<u>Alumina</u>	(See attached smelter return Appendix 2)			
3.5%	1.8%				

After total treatment charges, smelter penalties of \$25.19 per ton and 1.00 per ton freight charges, a net smelter return of 22.00 per ton was realized. Major penalties were for iron at \$14.28/ton. The high grade nature of the occurrence is well illustrated. The vein has clean cut walls, strikes N 40° W and dips 72° with the argillite bedding.

To the northwest of the pit the zone widens out to 100' showing narrow bands of massive lead-zinc mineralization.

B. Intermediate showing No. 1 (300' Northwest of A)

A shallow bulldozer stripping exposes veins of massive sphalerite-galena. Insufficient work was done to estimate width of individual veins.

C. Intermediate showing No. 2 (500 ft. Northwest of A)

Similar to B above.

D. Northwest showing (location 20 + 00, 1900 E - Magnetometer Grid - 1000 ft. Northwest of A)

Considerable bulldozer stripping and rock trenching over an area 100 feet in diameter has exposed significant widths of copper-lead and zinc mineralization concordant out with a similar band of northwest striking argillaceous limestone.

Considerable rock rubble from the stripping obscures relationship and makes systematic sampling impossible at this stage.

Chip samples were taken where possible and assayed as follows:

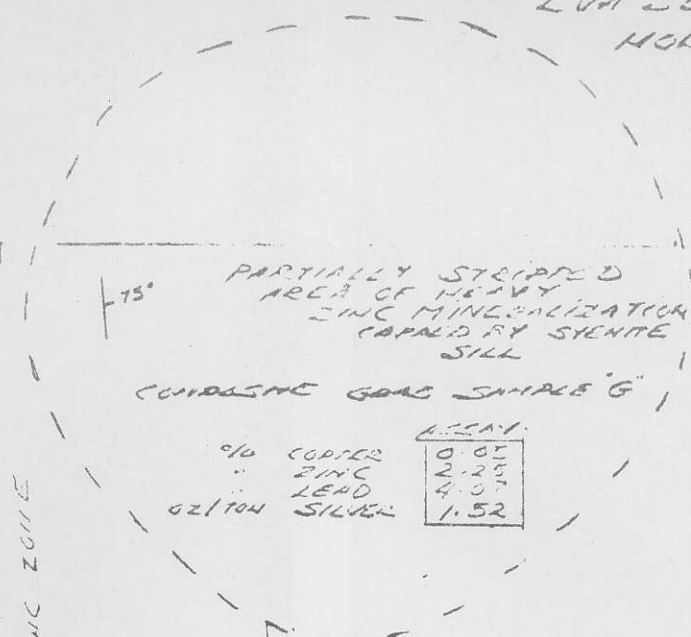
(Sampling sketch attached.)

SAMPLES TAKEN FROM
 EVA SILL (PARTIAL)
 NORTHWEST ZONE
 (FIG 1)

CRIP ASSAYS

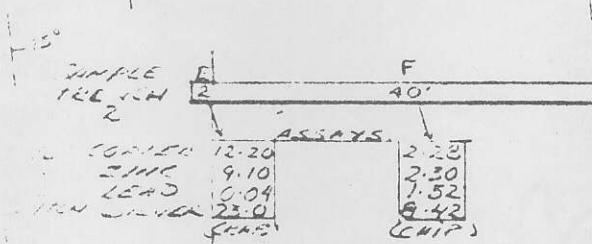
90	COPPER	1.75	2.89	0.50	1.91
..	ZINC	3.50	6.22	14.73	12.40
..	LEAD	1.54	0.15	1.62	0.91
02/104	SILVER	6.70	6.19	4.16	8.05

D	C	B	A
5'	5'	5'	10'



ASSAYS

90	COPPER	0.65
..	ZINC	2.25
..	LEAD	4.07
02/104	SILVER	1.52



(800 FEET TO SOUTH SHIPPING PIT)

STENITE LENS → ARGILLITE LENS/GNE

CULLERDEN



BURHT BASIN MINES LTD.
 PAULSON B.C.
 (SCALE 1 IN = 20 FT)
 E.O. CHISHOLM, AUG 20 1911

11206

Sample Trench 1 across 23 ft. from West to East

<u>Sample</u>	<u>From</u>	<u>To</u>	<u>Width</u> <u>Feet</u>	<u>Copper</u> <u>%</u>	<u>Zinc</u> <u>%</u>	<u>Lead</u> <u>%</u>	<u>Silver</u> <u>Oz/Ton</u>	<u>Remarks</u>
"D"	0'	3'	3.0	1.9	13.5	1.54	6.90	Chip Sample
"C"	3'	8'	5.0	2.84	6.20	0.15	6.14	Chip "
"B"	8'	13'	5.0	0.50	14.70	1.82	4.16	Chip "
"A"	13'	23'	10.0	1.91	12.10	0.91	8.08	Chip "
Average ABCD over 23.0 ft.				1.9%	12.0%	1.0%	6.7oz/T	Chip "

Sample Trench 2 (60 ft. south of 1) across 42 ft. from west to east)

"E"	0'	2'	2.0'	12.20	9.10	0.04	23.0	Grab Sample
"F"	2'	42'	40.0'	2.28	2.30	1.52	8.42	Chip "
Average over 40 ft.				2.28	2.30	1.52	8.42	Chip "

Sample of partially stripped area of heavy sphalerite mineralization under flat lying stentite sill representing an area approximately 60 feet in diameter adjoining sample Tr #1 above to the east

60 ft. diameter.	<u>Copper</u>	<u>Zinc</u>	<u>Lead</u>	<u>Silver</u>	<u>Remarks</u>
	0.05	2.25	4.07	1.32	Composite Grab Sample

The copper rich zone lies to the west of the zinc rich zone and parallels a steeply dipping northwest striking syerite dike that has a width of approximately 20 feet.

The northwest showing appears to be the continuation of the zones to the southeast. Additional stripping and rock trenching is necessary to remove the overlying syerite sill that covers the area to a depth of 4 feet before the potential of the showing can be estimated. The zinc and copper mineralization appear to have the same dip and strike as the host argillite and could have important tonnage potential. Drill hole No. 9 in the earlier work is reported to have cut the copper - zinc zone at a depth of 130 feet vertically below the showing. The width here is reported to be 3 - 4 feet and may indicate its termination to the northwest. Cores of this drilling were not available for examination.

HALIFAX SHOWINGS Location 1600 ft. SW of NW showing D above)

Mauritzen describes the Halifax showings as follows:

These veins, in shear zones along andesite dykes, were cut by the Halifax trench. Sample assay No. 15135C - 1C was a six foot chip sample. Assay result: 3.2 oz. silver, 0.20% copper, 7.50% lead and 12.70% zinc. The ore is galena and sphalerite. Sample assay No. 15136C - 2C was an 8 foot chip sample separated from 1C sample by a 4 foot wide andesite dyke. Assay result: 0.10 oz. silver, 2.45% zinc. This vein contains a blue form of sphalerite. Sample assay no. 15137C - 3C is a 5 foot chip sample assayed only for copper and silver. The sample contains good lead and zinc values. Assay results: 2.40 oz. silver, 0.07% copper. The minerals are galena and sphalerite.

MAGNETOMETER SURVEY

A magnetometer survey was made over an area 4,000 ft. x 8,000 feet in a northwesterly direction encompassing the Eva-Bell, Galena, Halifax, Arlington, Ennismore, Ajax and part of the Shirley claims. Several anomalies were obtained which warrant further investigation.

Currently a northwesterly striking anomaly on the northern sector of the Eva-Bell claim is being investigated by bulldozer stripping and trenching. It is apparent that the anomaly coincides with the mineralized base metal zone described above. The lead-zinc mineralization has considerable associated magnetite and can be attracted by a magnet.

The anomaly over the zone strikes northwesterly between the southeast zone and the northwest zone a distance of 1,000 feet as outlined by the 2,000 gamma contour line. Background readings are in the order of 1500 gammas and a peak of 6000 gammas was obtained. A Sharpe MF1 fluxgate magnetometer was used on a grid with lines spaced at 400 foot intervals and 50 foot stations. The apparent width of the anomaly averages around 100 feet. Overburden is shallow in the order of 4 to 6 feet. Four trenches along its strike expose more or less massive sphalerite and galena mineralization in widths varying from 8 to 50 feet. Due to the magnetite content (up to 10%) of the sphalerite it is considered a definitive exploration method and all similar anomalies shown on the survey should be investigated by stripping and trenching with a bulldozer.

A similar anomaly was obtained over the Halifax showing and recent stripping in this area has revealed additional lead-zinc mineralization near the Halifax addit zone. Eight smaller but distinct northwesterly trending anomalies on the Eva-Bell - Halifax claims remain to be investigated.

A series of northerly trending anomalies up to 3000 feet in length were obtained on the northwest corner of the survey on the Shirley claims group. Argillites are reported in this sector also and the anomalies should be investigated for underlying lead-zinc mineralization.

INDUCED POLARIZATION SURVEY

An induced polarization survey was carried out by Dalex Mines in 1968 under the supervision of S. A. Mauritzen, P. Eng., Geofax Surveys Ltd. of Calgary. Anomalies B and C on the Eva-Bell claim correlate with the magnetic anomaly and lead-zinc zone described above. A trench at 2200 E on line 14H within this zone exposed 22 feet of massive lead-zinc silver mineralization. This appears to be intermediate showing No. 2 described above.

It is significant that the mineralization occurs beneath a "weak low" between two highs. The anomaly in the section is approximately 1500 feet in length and 600 feet wide. Background was around 11 milliseconds and anomalous readings up to 40 milliseconds. In the opinion of the writer the presence of graphite layers in the sediments could limit the usefulness of the IP survey but any coincidental IP and magnetic anomalies warrant careful investigation for underlying lead-zinc mineralization. A Hunttec pulse type system capable of delivering 2500 watts to the ground was used on lines at 100 feet spacing and stations from 25 to 50 feet apart.

DIAMOND DRILLING

The location of several diamond drill holes in the vicinity of the Eva-Bell and Halifax showings are shown on the geological survey maps of the area. The results of this work though important to the correlation of the mineralization was not available to the writer. The cores of many holes are reported to be misplaced or lost. An attempt should be made to obtain the data and correlate it with the mineralization.

It appears from the records that much of the drilling was of a haphazard nature and was not effectively spotted with regard to the major mineralized zones. Future work of this nature should be supervised by a competent geologist and used to obtain depth information of the zones. Surface information can be more effectively obtained by bulldozer stripping and trenching.

GEOCHEMICAL SURVEY

A geochemical soil survey was carried out over the Eva-Bell and Halifax claims by Christina Lake Mines Ltd. in July 1965. A highly anomalous lead zone extends from the northwest showing on the Eva-Bell claims to the Halifax showings and beyond. The 80 parts per million contour against a background of 10 parts per million extends in a westerly direction from the northwest showing on the Eva-Bell to the Halifax showing a distance of some 2500 feet. The anomaly is up to 300 feet wide and contains peaks up to 500 parts per million in lead. Copper anomalies up to 40 parts per million against a background of 10 to 20 parts per million are contained within the lead anomaly. The link between the

Eva-Bell showings and Halifax showings displayed by this survey may be more apparent than real as the Halifax showing is down slope somewhat from the Eva-Bell. The ground between the northwest showing and the southeast showing on the Eva-Bell was not surveyed.

The survey was carried out at 50 foot stations on lines 200 feet apart.

The survey successfully outlined underlying zones of lead-zinc copper mineralization but was not done in sufficient detail to pinpoint target areas. The overburden is shallow and mainly residual soil providing good conditions for effective geochemical work.

The method should be used over magnetic anomalies to indicate the presence of lead-zinc and copper ions associated with magnetite bearing sulphides. If samples are taken over 25 foot intervals on lines 100 feet apart over magnetic anomalies prior to trenching it is believed base metal targets could be pinpointed.

CONCLUSIONS AND RECOMMENDATIONS

A considerable amount of detailed exploration has been carried out over the Burnt Basin property in the past without delineating an economic deposit. Much of this earlier work was of a haphazard nature and was done without the benefit of later geophysical and geochemical survey.

Recent bulldozer stripping and trenching on magnetometer anomalies has revealed ore grade lead-zinc-copper and silver associated with a 1000 feet long magnetic anomaly over mineable widths.

Systematic bulk sampling done at regular intervals is required to determine its economic potential. Rock trenches 4' x 4' should be blasted across the northwest zone by percussion holes and all cuttings collected and sampled in addition to bulk samples. Unexplored magnetic anomalies should be investigated by additional closely spaced geochemical survey prior to trenching.

If results of the geochemical survey indicate base metal ions are present in the soil over the magnetic anomalies a program of bulldozer trenching and stripping should be undertaken to expose the zone to bedrock. Following this rock trenching should be done for bulk sampling. If base metal values of significance are encountered a drilling programme should be undertaken to determine depth of mineralization.

All work should be carried out from stage to stage in sequence by an experienced geologist resident on the claims group and a plane table survey made of the results of all surface work.

The objective of the programme should be to put in sight on the Eva-Bell zone sufficient direct shipping open cut ore to warrant production at an early date.

