ASSESSMENT REPORTS

019905

MAP No. 105-M-13, 14 / 106-D-3 TYPE OF WORK: Geological

REPORT FILED UNDER	Silver Spring Mines Ltd.
DATE PERFORMED	DATE FILED: April 4, 1968
LOCATION - LAT.	63° 51'-64° 02'N Mayo Area, Yukon
LONG.	135° 07'- 135° 50'W
CLAIM Nos.	NORTH and STAR Mount Haldane Area LAPSED.
	SILVER and STAR Hanson Lake Area LAPSED.
	LADIE and JEAN LAPSED Monument and Beauvette Hills
LAPSED →	Y6627
WORK DONE BY	P.H. Sevensma
WORK DONE FOR	Silver Spring ML
REMARKS	The regional geolog' and individual geology of the claim
	groups especially assays of veins on surface and in adit
	The use of G.S.C. geochemistry to highlight anomalous
	areas such as these claim groups.

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PCB / DEC /79
5 APRIL 79
84-03-31

SILVER SPRING MINES LTD.

Mayo Area Properties

North & Star	105 M-13
Silver & Spring	106 D-3
Jean & Ladie	105 M-14

REPORT

by

P. H. Sevenson, Ph.D., P. Eng.

April 4, 1968

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ILLUSTRATIONS

SILVER SPRING MINES LTD.
Mayo Area Properties

1. INTRODUCTION

Silver Spring Mines Ltd. have recently acquired 39 claims in four separate groups in the Mayo Silver belt. (Fig.1)

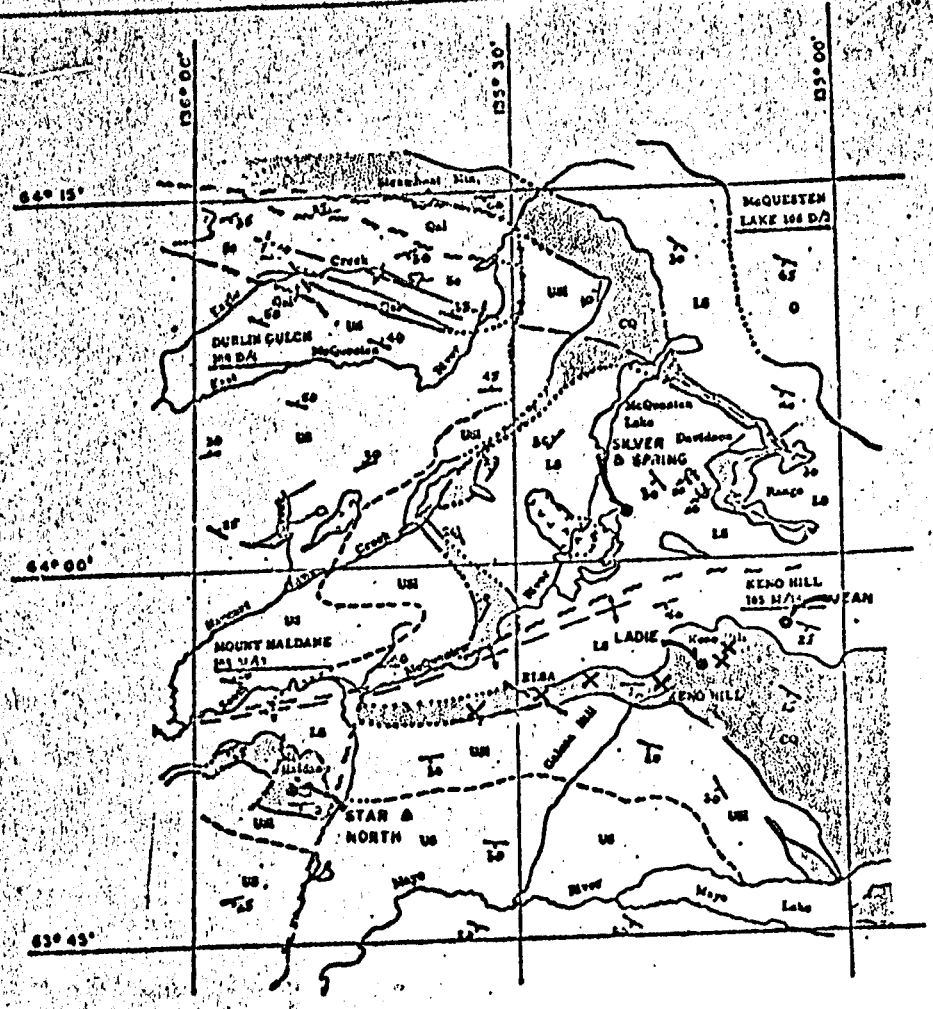
The writer has been requested to make a preliminary assessment of these holdings.

In the course of the last nine years, the writer has examined several times the existing mining operations in the Mayo area, as well as a number of old and recent showings and exploration projects in this area.

The writer has also made detailed studies of technical data on existing producers and of many of the reports published by the Geological Survey of Canada on this area.

A major geochemical study of heavy metal in the district, covering about 1900 square miles and based on 5,700 samples of stream sediments, was released by the Geological Survey of Canada on March 31, 1965.

The data from this survey, combined with the existing geological maps and with the structural data derived from the known occurrences, form the best basis for the appraisal of most of the exploration targets in this silver district.



SCALE – (Miles)

0 5 10

LEGEND

Sc	Slate, chert; quartzite, limestone
Osl	Quartzite, slate, limestone
US	Upper Schist: schist, quartzite, grit: USl, lower part includes limestone
CQ	Central Quartzite: thick – bedded quartzite.
LS	Lower Schist: schist, phyllite
G	Grit unit: quartzite, slate, grit, limestone
	Granodiorite
	Dominant foliation
×	Operating mines of United Keno Hill Mines Ltd

G.S.C. Paper 65-1

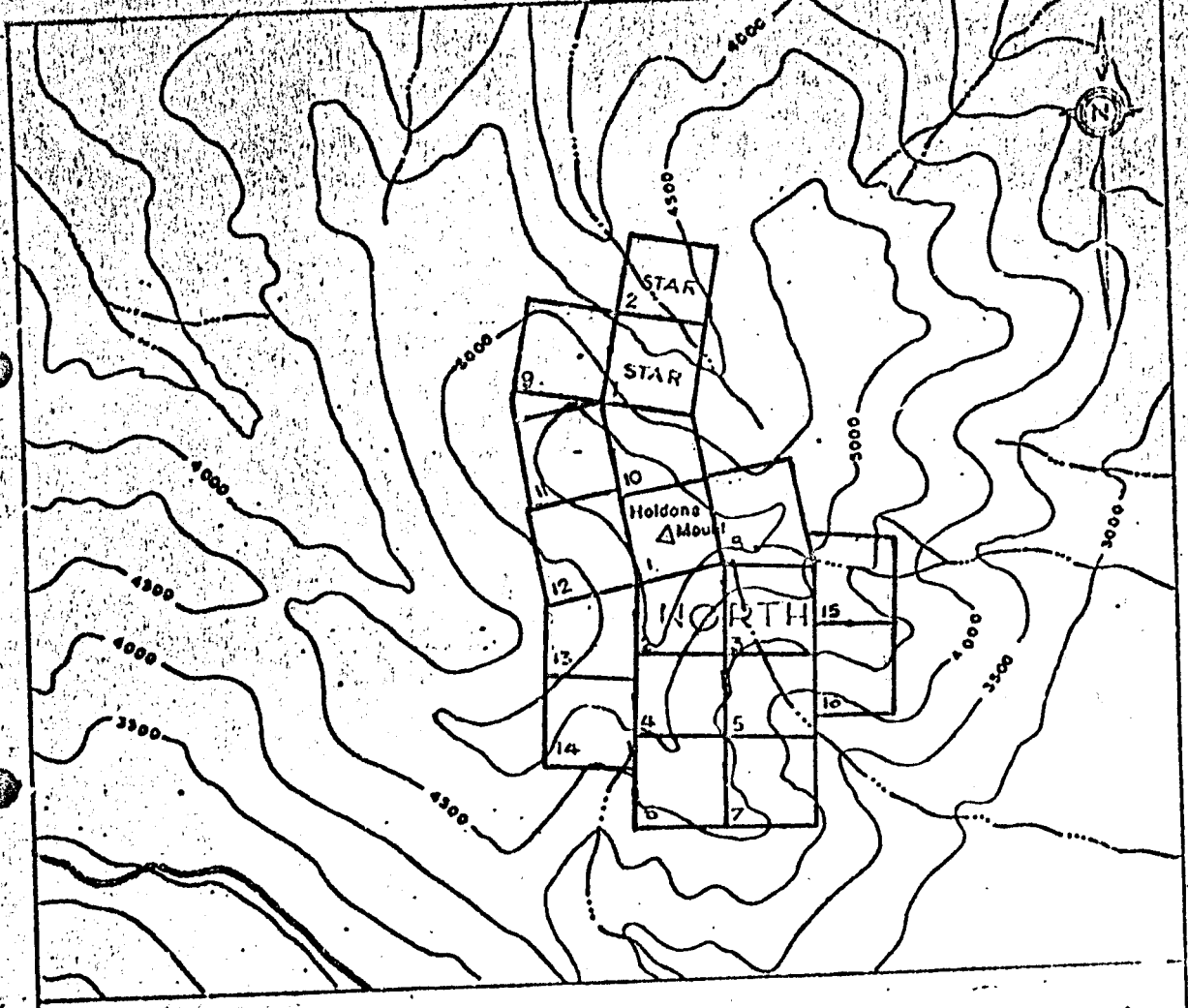
FIG. 1

SILVER SPRING MINES LTD.

LOCATION MAP

Mayo M.D. – Y.T.

P.H Sevenstone Consultants Ltd. March 1965

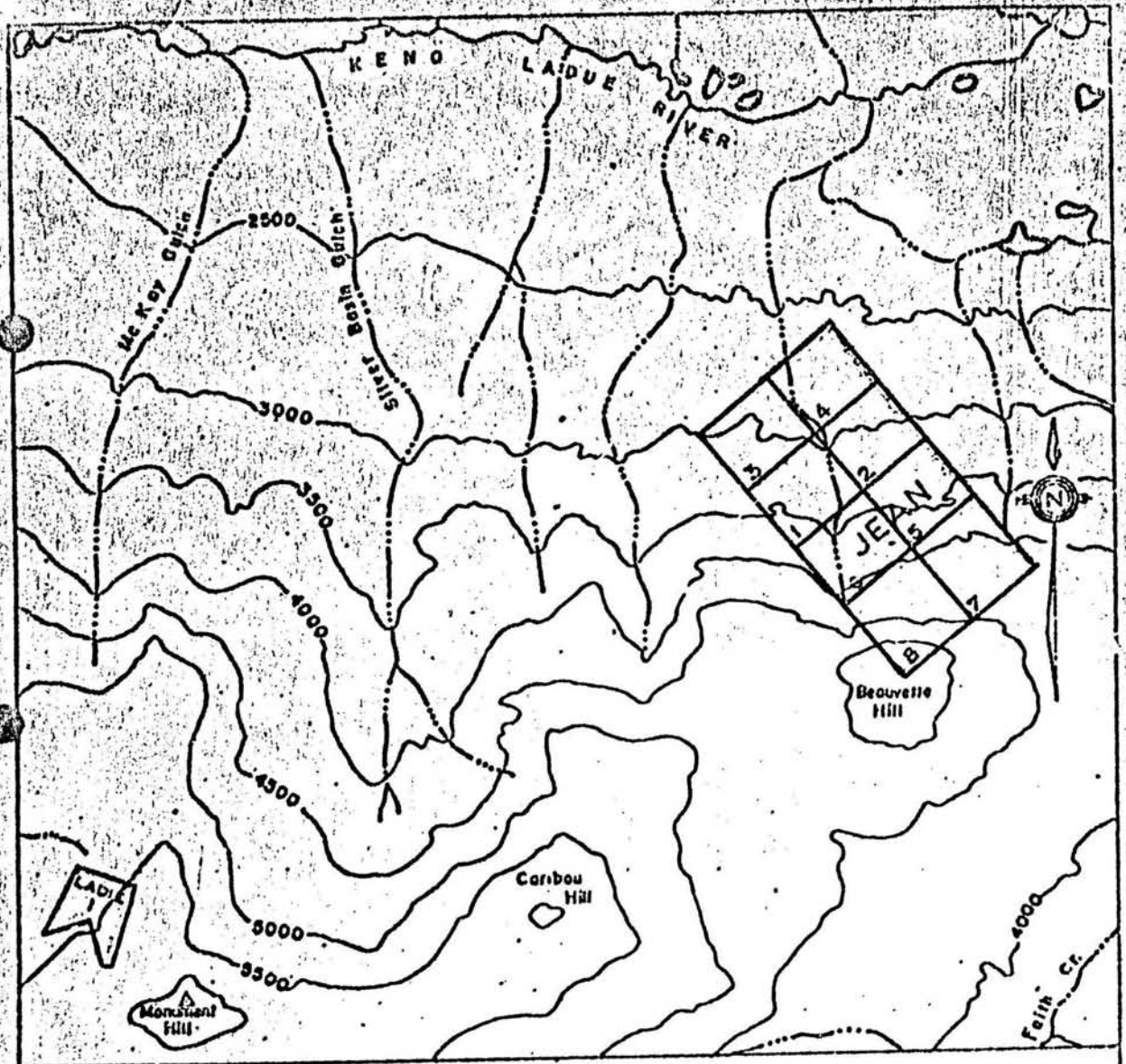


Scale – (Miles)

0 1/2

FIG 2

SILVER SPRING MINES LTD.	
CLAIM MAP — NORTH & STAR	
Mayo M.D.	105-M-13
P.H. Seversmic Consultants Ltd.	March 1983



Scale — (Miles)
0 1/2 1

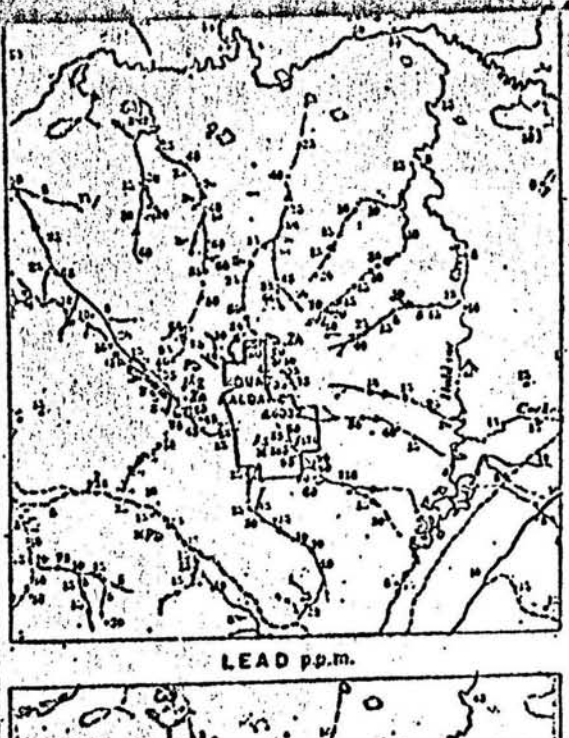
FIG. 4

SILVER SPRING MINES LTD.

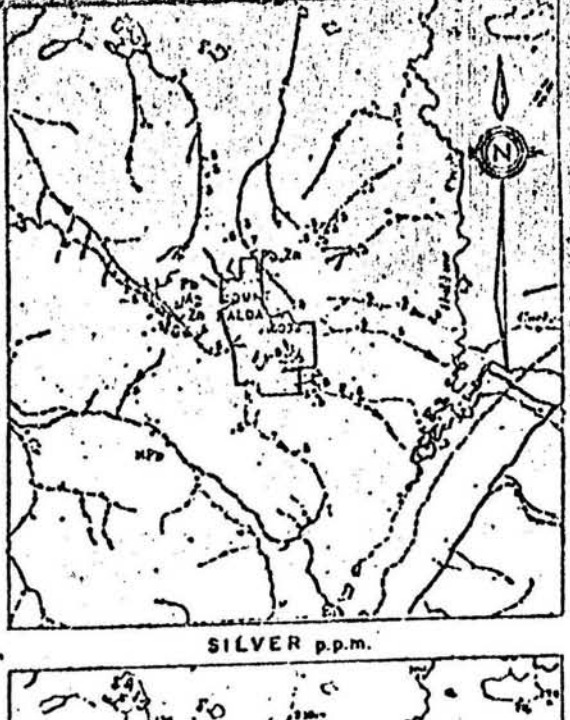
CLAIM MAP — JEAN & LADIE

Mayo M.D. Y.T. 105 — N — 16

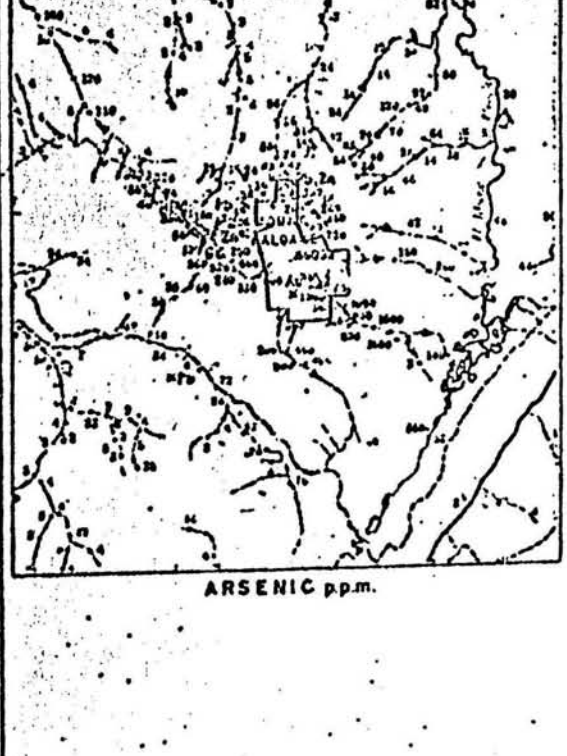
P. H. Sevensma Consultants Ltd. March 1980



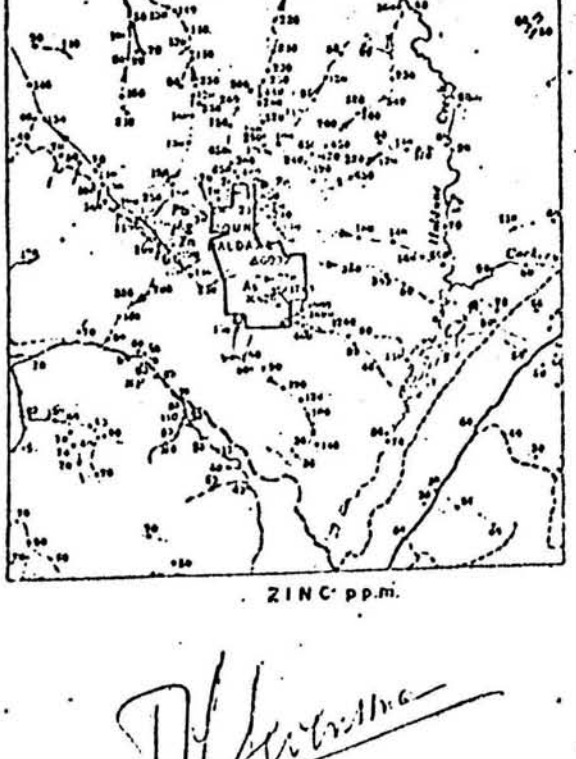
LEAD p.p.m.



SILVER p.p.m.



ARSENIC p.p.m.



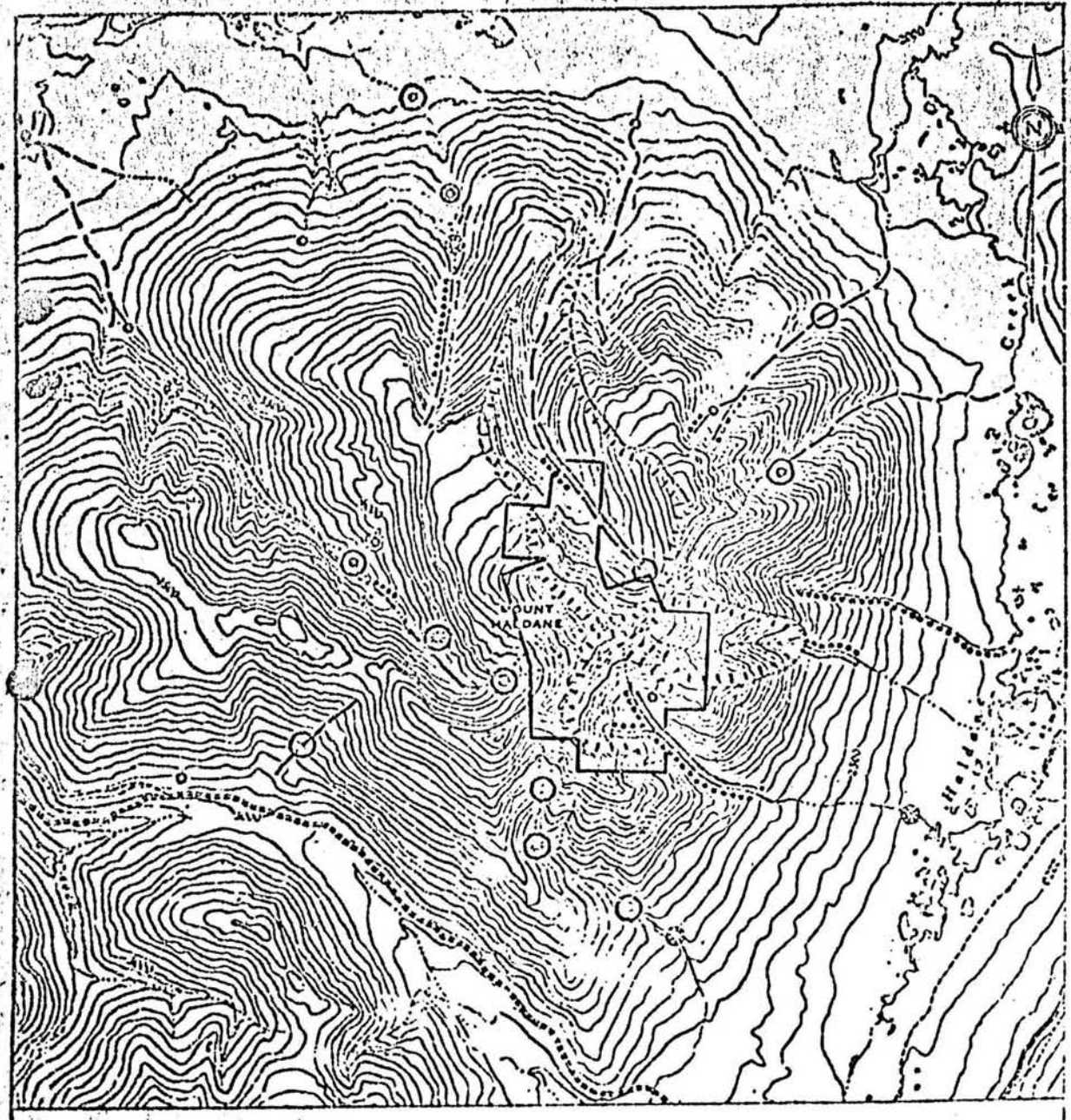
ZINC p.p.m.

SCALE — (Miles)

0 2 4

FIG. 5

SILVER SPRING MINES LTD.	
Mount Haldane STREAM SEDIMENT ANALYSES	
Mayo MD., Y.T.	
P. H. Sevensma Consultants Ltd.	March 1980



LEGEND

- Lead
- Silver
- Total Heavy Metal

Areas of interest: Drainage catchment relating to coincident silver–lead anomalies.

Scale – (Miles)
1/2 0
1:50,000

FIG. 6

SILVER SPRING MINES LTD.

MOUNT HALDANE — DRAINAGE

Mayo M.D.–Y.T. 105–M–13

P. H. Sevensma Consultants Ltd. March 1963

3. ECONOMIC GEOLOGY OF THE MAYO AREA

The producing mines in the Mayo area occur in a succession of schists and quartzites intruded by sill-like gabbro bodies and by later granodiorites and granitic bodies.

These rocks, previously considered to belong to the Yukon Group of Precambrian age, have recently been shown to be of Triassic-Jurassic age by L. H. Green and J. A. Roddick, (Paper 62-7, 1962)

They form part of a belt nearly 200 miles long extending from North of Dawson City to well East of Keno City, about along 64° latitude North.

In the Mayo area, these rocks form a faulted dome-like structure, sometimes called the McQuesten anticline (Fig.1).

More detailed mapping on a scale of 1" = 1 mile is however required to ascertain true correlations and to arrive at a better understanding of what may control the presence of the ore-bearing area.

In many cases, contacts between formations of different ages are masked by overburden and it is still a matter of speculation whether these depressed areas reflect faults, thrusts or unconformable contacts.

Suspected major faults occur in both a nearly E-W direction and along N-S striking lineaments.

Economic Geology Cont'd

The gabbroic sills and masses present in the Jurassic-Triassic formations are comparable to similar rocks in formations mapped as Precambrian further to the West, but whether these represent one or several ages of gabbroic intrusions is uncertain. There is no apparent direct relationship between these rocks and the mineralization.

The Cretaceous grandiorites, which occur in more or less a swarm of small intrusives between Hanson Lake and Haggart Creek, and in a major 10 mile long "batholith" at the East end of Gustavus Range, do not appear to have any direct relationship to the known mines in the Keno Hill area; in the Dublin Gulch area off Haggart Creek, however, gold, wolframite and arseno-pyrite originate within the intruded area.

In the Keno Hill area, the sequence of formations is as follows:

Top: Upper Schists (or Sourdough Hill formation)

Centre: Central Quartzites

Base: Lower Schists, with gabbroic greenstone and minor quartzite

The producing veins develop ore mainly in the Central Quartzites and occasionally in other competent quartzite or greenstone beds.

The ore-shoots occur in near-parallel vein-faults, especially near vein junctions. The following average structural relations prevail:

	Strike	Dip
Bedding	N 80° E	+ 25° South
Vein-faults	± N 30° - 65°E	55°-80° SE
Post-ore faults	± N 45° W	40°-50° SW

Structurally and lithologically, exploration in the district should be concentrated in the Central Quartzites which is the favourable host rock for bodies of significant size.

Since the early sixties, geochemical techniques have come to the fore. The 1965 G.S.C. study is the most universal guide available in this area. After careful study of the heavy metal distribution in the 1,900 square miles covered by this survey, the writer can state that the best target areas are those where heavy metal anomalies overlie, or originate in the belt of Central Quartzites.

A third favourable factor is the presence of mineralized shears, especially those carrying siderite.

Proximity to gabbro or granitic rocks is a generally favourable factor only, with possible local significance for some showings. The gabbro may act as a competent member in the same manner as quartzite; intrusion of granite or granodiorite could have reconcentrated pre-existing sulphide deposits near the intrusive.

Besides the freibergite occurrences with high silver-lead ratios in shears, silver-galena occurrences with ratios of 1 to 3 as well as gold occurrences are of interest. Tin, tungsten and gold are normally associated with the granitic rocks, as in Dublin Gulch.

4. SILVER SPRING MINES LTD. PROPERTIES

A. Properties

The holdings of Silver Spring Mines Ltd. total 39 claims located in four separate areas, as follows:

Area	Claims	Grant No.'s	Due Date
Mount Haldane	North 1-7	Y 6359 - Y 6365	July 26, 1968
105 M-13	North 8-16	Y 6539 - Y 6547	Sept.20, 1968
	Star 1-2	83556 - 83557	Aug. 1, 1968
18 claims			
Hanson Lake	Silver 1-8	83758 - 83765	Nov.10, 1968
106 D-3	Spring 1-4	Y6575 - Y6578	Nov.23, 1968
12 claims			
Beauvette Hill	Jean 1-8	Y 14029 - Y14036	Not available
105 M-14			
8 claims			
Monument Hill	Ladie	Y6627	Not available
105 M-14			
1 claim			
39 claims Total			

B. Location and Access

The properties of Silver Spring Mines Ltd. are situated in the Keno Hill district, about 225 airmiles or 260 road miles North of Whitehorse, Yukon Territory.

The North and Star claims on Mount Haldane lie near the Mayo-Elsa road, eighteen miles north of the community of Mayo. The claims are between elevations 4000 and 6000 feet at Latitude 63° 51' North and Longitude 135° 50' West on claim sheet 105 M-13 (Fig. 2).

The Silver and Spring claims at Hanson Lake are located nine miles north of the community of Keno Hill. The claims are between elevations 2500 and 3500 feet at Latitude 64° 02' North and Longitude 135° 20' West on claim sheet 106 D-3 (Fig.3).

The Ladie claim on Monument Hill and the Jean claims on Beauvette Hill are respectively four and seven miles northeast of the community of Keno Hill on claim sheet 105 M-14. The Ladie claim is at elevation 5500 feet at Latitude 63° 57' North and Longitude 135° 12' West. The Jean claims are between elevations 2500 and 5000 feet at Latitude 63° 58' and Longitude 135° 07' (Fig.4).

Access is relatively easy, with roads and tote-roads and trails nearby. Water is no problem and timber is available in the general area. The Hanson Lake property lies alongside the road.

5. LOCAL GEOLOGY

A. Mount Haldane Area - North & Star Claims

The North & Star claim group on Mount Haldane is underlain by thick bedded quartzite of the Central Quartzite Formation, the important host to silver-lead deposits in the Keno Hill district.

A small tabular body of acidic intrusive lies near the South boundary of the claim area.

Major North-striking faults cut across the sediments on the east and west sides of the claim group.

The property adjoins the former Lookout Mine which was explored prior to the main discovery of Keno Hill. By 1919 there were 930 feet of underground development on four levels in the Lookout. There has been little work since. Re-sampling of the lower levels by Silver Titan Mines Ltd. in 1964 indicated two small shoots averaging 27.4 oz/t Ag, 2.0% Pb, and 0.7% Zn across 2 feet in one instance, and 22.6 oz/t Ag, 18.0% Pb, and 1.2% Zn across 3.2 feet in the other. Stripping by Silver Titan 2500 feet north of the workings exposed a 50 foot length of oxidized vein material which averaged 4.4 oz/t Ag, 0.6% Pb, and 1.6% Zn across 25 feet. A 900 foot adit driven by Mount Haldane Mines Ltd. to investigate this zone in 1966 encountered only sparse mineralization.

The 1965 G.S.C. geochemical survey shows that the showings on the West slope of Haldane Mountain lie in an area of low to medium geochemical activity, whereas the Creeks draining to the North, East and South are highly anomalous.

The North & Star Group contains 5 northeast striking vein faults as observed by the owners. The largest has a surface length of 3,000 feet with widths to 50 feet. A 10 foot adit on one of the smaller vein faults on the Star claims exposes a one-foot vein with values reported to range from 30 oz. to 200 oz. silver per ton.

Analyses of stream sediments by the G.S.C. in the Mount Haldane area show it to be notably anomalous in Total Heavy Metal, silver, lead, zinc and arsenic content. The arsenic content is especially anomalous. The anomalous trains brought out in the Mount Haldane area by and large culminate in the North & Star claims (Fig.5).

Results of the G.S.C. studies show that coincident silver and lead stream sediment anomalies especially warrant further investigation, for example the coincident anomalous trains found on the two creeks draining the north and south sectors of the property respectively. The anomalous train in the south sector is a particularly strong feature showing also markedly anomalous values in arsenic. The arsenic may be indicative of gold and silver bearing veins or may reflect the presence of arsenopyrite associated with acidic dykes or contact metamorphic deposits.

As shown by the survey, lead is an excellent indicator element because of its low chemical dispersion and subsequent accumulation in soils in the vicinity of vein faults and lodes.

Detailed soil sampling on the property to locate lodes would appear practical. Some sectors may require deep sampling near bedrocks to prove effective.

In other districts, arsenic is an important indicator of sulphides, gold or silver, and in this particular environment of Central Quartzites, a high arsenic-zinc-lead-silver anomaly is an excellent exploration target.

B. Hanson Lake Area - Silver & Star Claims

The Silver & Star group of claims cover a potential gold and silver prospect in the Davidson Range. Silver-lead mineral occurrences are present in the nearby Rambler, Forbes, and Stand-to Hills.

Silver Spring Mines Ltd. report that their claims cover a zone of limonitic material with dimensions some 200 feet by 1500 feet by 1' to 2' in depth and returning values of up to one-half ounce/ton gold and one-half ounce/ton silver in random samples.

Results of stream sediment sampling by the G.S.C. in the claim area were not diagnostic. Of the few samples taken the sediments were low to moderately anomalous in zinc and arsenic, and negligible in response to silver, lead, antimony, and molybdenum.

In view of reported gold values and its location in an area of known silver-lead occurrences, the prospect warrants a preliminary field investigation to establish the nature of the limonitic zone and to determine the possible presence of favourable structures or of geochemically anomalous soils.

The location at the East end of the Hanson Lake granitic intrusive lends additional interest to the target area, which lies along an existing road.

C. Monument & Beauvette Hill Areas - Ladie & Jean Claims

The Ladie and Jean claim areas lie within the established silver camp of Kono Hill on the extension of the productive vein system.

Results of the stream silt survey by the G.S.C. were inconclusive with respect to the Ladie claim. Anomalous silver values were obtained in the Jean claim area which may be of significance.

The Ladie lies within the Central Quartzites, and the Jean Group in the Lower Schists, where ore shoots tend to develop only near competent rocks, like local quartzite lenses or gabbroic greenstone "sheets" or "sills".

The Jean claims lie in an extensive belt of Lower schists with a relatively high metal content, which is ascribed to base metal associated with the graphitic schists within this belt. This property has therefore a relatively low probability for finding ore.

The Ladie claim, lying on or near the Lakeview vein-fault, and in favorable ground, warrants a detailed examination and until then, its potential cannot be accurately determined.

6. SUMMARY OF GEOCHEMICAL DATA

The G. S. C. data on stream sediments, as pertaining to the Silver Spring Mines properties, are summarized in the table below; symbols used are as follows:

BG = background
A = anomalous
W = weakly
M = moderately
S = strongly
THM = total heavy metal

Figures indicate times background

	Ag	Pb	Zn	As	Sb	Mo	THM
North & Star	A	MA,4	SA,20	SA,100	BG	WA,2	A
Silver & Spring	BG	BG	MA,10	WA,2	BG	BG	A
Ladie	A	MA,4	BG	WA,2	BG	WA,2	A
Jean	A	BG	WA,2	WA,2	BG	WA,3	A

According to R. W. Boyle (G.S.C. Bulletin 111, p.174) the average grade of the main elements in the sulphide ore of the major Hector-Calumet Mine, at a depth of about 200', within the deeper part of the zone of oxidation, is approximately as follows.

SiO_2 - 10% ; Fe_2O_3 - 15% ; CO_2 - 5%

S - 10% ; As - 0.2%; Sb - 0.5%

Zn - 6% ; Pb - 45%; Ag - 200 oz/t.

The importance and universality of both arsenic (As) and antimony (Sb) are proven and these elements are therefore expected to be valuable indicators.

Summary - Geochemical Data Cont'd

High arsenic and only background antimony may be indicative of quartz-arsenopyrite - (gold) veins.

Exploration of the properties under consideration should therefore use geochemical methods adjusted to terrain conditions.

This work should be carried out within the framework of geological mapping and supplemented by geophysical measurements where required.

References for further study are as follows:

G. S. C. Bulletin no.'s 32, 36, 39, 58, and 111.

G. S. C. Map no.'s 20 to 23-1964, 28 to 29-1964, 45 to 49-1965, & 51--1965.

G. S. C. Map no.'s 890A (Mayo) and 1105A (Keno Hill)

G. S. C. Papers 62-7, 64-36 p.16, 65-1 p.33, 65-19 p.16, 67-40 p.23.

Claim Sheet No.'s 105 M-13, 105 M-14, and 106 D-3.

7. SUMMARY AND RECOMMENDATIONS

At this stage, the four properties owned by Silver Spring Mines Ltd. may be rated as to their relative merits as follows:

Mount Haldane: Strong geochemical anomalies in the favorable Central Quartzites, siderite bearing shears and known silver-lead showings. Rating: 12

Ladie: Less than one claim, on known vein structure in the favorable quartzite with potential for high grade shoots of unknown size. Rating: 5

Hanson Lake: Abundant gossan and unverified reports of significant gold and silver in the gossan. Easily accessible. Rating: 6

Jean: Along strike of known vein structures but in unfavorable Lower Schists. Abundant greenstones in this area constitute a relatively favorable factor. Rating: 3

Compared to general exploration targets, the Mount Haldane target rates high.

The following initial program is recommended.

Mount Haldane - Provide access by cutting a tote-trail using, at least in part, the road to the Mount Haldane Mines holdings. Use the bulldozer to advantage on the property where possible. Geological mapping on a topography map of 1" = 1000', blown up to 1"=400', covering an area 2 x 2 miles, is recommended. Some reconnaissance sampling should be carried out while the bulldozer is available.

Recommendations Cont'd

Hanson Lake - A detailed examination with soil sampling along flagged lines is recommend d, including some reconnaissance mapping. Confirmation of previous sampling is essential.

Monument & Beauvette Hills - A detailed examination, but less extensive than on the Hanson Lake property, is recommended.

Estimated Costs Cont'd

A program of this type is intended to lead to specific recommendations on each group of claims.

In view of the shortness of the season, it is desirable that an allocation be made at this time for continuing work on the most favorable target, or targets.

It is very likely that the Mount Haldane prospect will prove of sufficient interest to warrant a much more extensive program.

Confirmation of the reported gold values on the Hanson Lake claims would also lead to intensive exploration.

The Ladie claim may warrant a program of geochemical sampling with a dry drill of the Atlas Copco type.

Extent of work on the Jean claims depends on the presence of a satisfactory mineral showing.

Although no specific program can be prepared until the initial field assessment has been completed, it is recommended that provision be made to have a minimum of $50,000 available on short notice for a continuation of the program, for a total of $80,000.

Respectfully submitted,

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

PHS/cm

April 4, 1938
Vancouver, B.C.

PAGE 19 OMITTED