BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
MINISTRY OF ENERGY AND MINES
GEOLOGICAL SURVEY BRANCH

PROGRAM YEAR:	1994/95
REPORT #:	PAP 94-61
NAME:	LEONARD BOURGH

RECEIVED
P 28
JAN 31 1995
PROSPECTORS PROGRAM
MEMPR

BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

* One technical report to be completed for each project area
* Refer to Program Requirements/Regulations, section 15, 16 and 17
* If work was performed on claims a copy of the applicable assessment report may be submitted in lieu of the supporting data (see section 16) required with this TECHNICAL REPORT

Name Leonard Bourgh Reference Number 94-95-P28

LOCATION/COMMODITIES

Project Area (as listed in Part A.) Fulton Lake project Minfile No. if applicable

Location of Project Area NTS 92L/16W Lat Long

Description of Location and Access Aprox 5 Miles west of The Town of Grand Isle Logging Roads Branch out on The North and South of Grand Isle

Main Commodities Searched For Lead and Zinc

Known Mineral Occurrences in Project Area Broughton Creek (Copper)

WORK PERFORMED

1. Conventional Prospecting (area) Prospecting Traverses
2. Geological Mapping (hectares/scale)
3. Geochemical (type and no. of samples)
4. Geophysical (type and line km)
5. Physical Work (type and amount)
6. Drilling (no. holes, size, depth in m, total m)
7. Other (specify)

SIGNIFICANT RESULTS (if any) (Float)

Commodities Lead Zinc Galena Claim Name open ground

Location (show on map) Lat Long Elevation

Best assay/sample type

Description of mineralization, host rocks, anomalies

Lime Stone out crops on Some Areas I located some Float as described above but I do not beleive in Assaying Float. The rock and Mineral must be in place

Supporting data must be submitted with this TECHNICAL REPORT.

BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

* One technical report to be completed for each project area
* Refer to Program Requirements/Regulations, section 15, 16 and 17
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Name Leonard Boorgh Reference Number 94-95-P28

LOCATION/COMMODITIES

Hanson Project

Project Area (as listed in Part A.) C Minfile No. if applicable

Location of Project Area NTS 93K/03E Lat Long

Description of Location and Access North of The Town of Endako Logging Roads Branch out For access To Area C

Main Commodities Searched For Lead and Zinc

Known Mineral Occurrences in Project Area ?

WORK PERFORMED

1. Conventional Prospecting (area) Prospecting Traverses
2. Geological Mapping (hectares/scale)
3. Geochemical (type and no. of samples)
4. Geophysical (type and line km)
5. Physical Work (type and amount)
6. Drilling (no. holes, size, depth in m, total m)
7. Other (specify)

SIGNIFICANT RESULTS (if any)

Commodities Nil Claim Name

Location (show on map) Lat Long Elevation

Best assay/sample type

Description of mineralization, host rocks, anomalies

Edako Granites and Volcanics

Supporting data must be submitted with this TECHNICAL REPORT.

BRITISH COLUMBIA
PROSPECTORS ASSISTANCE PROGRAM
PROSPECTING REPORT FORM (continued)

B. TECHNICAL REPORT

* One technical report to be completed for each project area
* Refer to Program Requirements/Regulations, section 15, 16 and 17
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Name Leonard Bourgh Reference Number 94-95-P28

Newcombe Lake project.

LOCATION/COMMODITIES

Project Area (as listed in Part A.) B Minfile No. if applicable ______

Location of Project Area NTS 93E/14W Lat ______ Long ______

Description of Location and Access Location To Area B is by Numerous Logging Road west of Houston BC

Main Commodities Searched For Lead and Zinc

Known Mineral Occurrences in Project Area Lead Zinc Galena New comb Lake and Dual Lakes

WORK PERFORMED

1. Conventional Prospecting (area) Prospecting Traverses
2. Geological Mapping (hectares/scale) ______
3. Geochemical (type and no. of samples) ______
4. Geophysical (type and line km) ______
5. Physical Work (type and amount) ______
6. Drilling (no. holes, size, depth in m, total m) ______
7. Other (specify) ______

SIGNIFICANT RESULTS (if any) Nil

Commodities ______ Claim Name ______

Location (show on map) Lat ______ Long ______ Elevation ______

Best assay/sample type ______

Description of mineralization, host rocks, anomalies

Telkwa Intrusives area und[er]lain by over burden and large Swamps

Supporting data must be submitted with this TECHNICAL REPORT.

New Combe
Lake
Area

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P 28
MAR 27 1995
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MEMPR

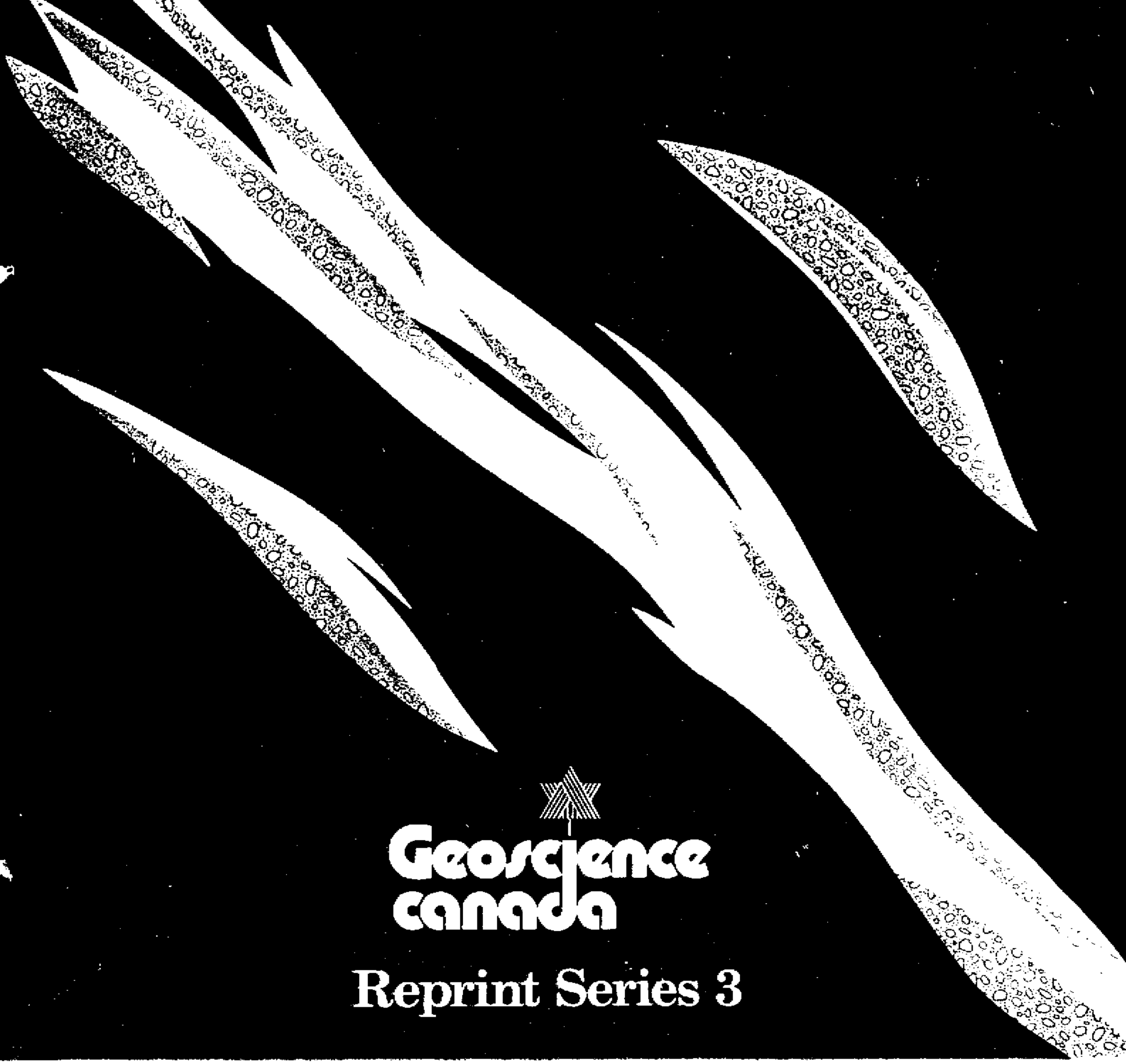
NEW COMBE LAKE AREA

The New Combe Lake Area can be reached by taking the Morris River access road at Houston and travelling approximately 70 kilometers west. The dominent rocks in the area are Hazelton Volcanics. The type of deposit I looked for was epithermal. The area is well staked and only swamps and difficult ground was left open. I saw an interesting showing on the dual M.C. Cominco had done an I.P. survey on the ground. The showing was galena in a fairly tight calcite view which disapeared into the overburden. I did not see much mineralization in the search of my designated area. I have picked two samples which were of interest and located on my sample map. I don't think the area I looked at should have any more time spent on it at the present time, but you must check everything in this type of area. As new logging roads show up, new rocks show up every year. I did not come up with anything close to a British Columbia epittermal model or showing described by Andreys panteleyeu. Part of his report enclosed in the report.

Respect Full
Submitted

Ore Deposit Models

Edited by RG Roberts
and PA Sheahan



Geoscience
canada

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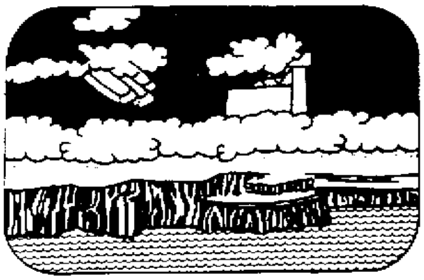


A Canadian Cordilleran Model for Epithermal Gold-Silver Deposits

Andrejs Panteleyev
Senior Project Geologist
Geological Branch
Mineral Resources Division
British Columbia Ministry of Energy, Mines and Petroleum Resources
Victoria, British Columbia V8V 1X4

Introduction

Discovery of lode gold in 1851 and placer gold in 1857 initiated the first large-scale economic activity in British Columbia and led to a major influx of miners during the gold rushes of the mid- and late 1800s. This explosion of non-native population necessitated colonial expansion, the creation of new settlements, developments of infrastructure, and provided the economic base for the fledgling colony.

Total gold production to date from the Canadian Cordillera (British Columbia and Yukon) is close to 1,182 tonnes (38 million ounces), approximately one-third of the amount produced by Ontario. About 60% of Cordilleran gold comes from lode deposits; the remainder has been won from placer workings. Placer gold production peaked in 1900; lode gold production peaked in 1939 when 18.3 tonnes of gold were produced in British Columbia. Thereafter, output declined steadily until the early 1970s when by-product gold, mainly from porphyry copper mines as well as massive sulphide and skarn deposits, became the dominant source. These accounted for up to 80% of the annual 3-4 tonnes of gold production.

Gold was liberated in international markets in 1968 from the fixed price of $35US per ounce set in 1934. The resulting price increases, culminating in spectacular price peaks in late 1979, renewed interest in known deposits and enlivened the quest for new supplies of both gold and silver. The search for gold has been the main focus during the 1980s of the mining exploration community, a $100 million annual enterprise in the Canadian Cordillera. One of the primary targets has been gold-silver deposits of the "epithermal type", also known variously as "bonanza ores", "Tertiary type", "precious metal deposits of volcanic association" or "fossil hot spring type" (Figure 1 and Table 1).

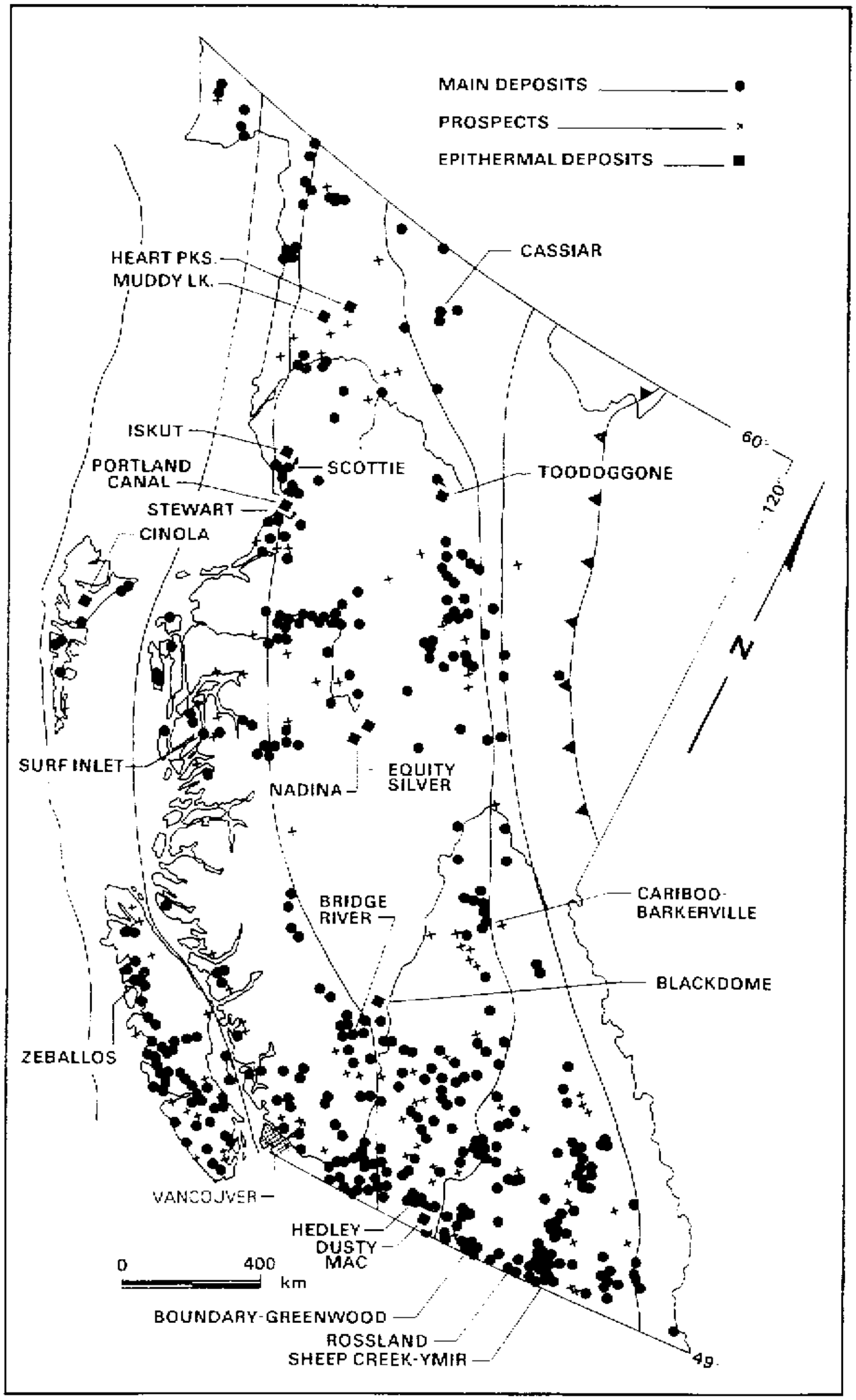


Figure 1 *Distribution of gold deposits in British Columbia showing major camps, individual deposits and areas of recent exploration activity. Lines indicate major tectono-physiographic boundaries. Crystalline-metamorphic terranes of the Coast Plutonic Belt in the west and Omineca Belt in the east are shown by the hachured pattern.*

hedrite-tennantite, silver sulphosalts and minor amounts of base metal sulphides are the main ore minerals; tellurides occur in some deposits.

The deposits originated from hot fluids emplaced at depths ranging from slight to far below any hot spring discharge sites. The near-surface deposits are, therefore "telescoped", as defined by Spurr (1923, p. 292-308) in his book *The Ore Magmas*. The definition implies that deposition took place at unusually high temperatures for such a shallow setting, and also that thermal gradients were very steep near the surface. Preliminary isotopic studies indicate a magmatic source for sulphur, but the other fluid components are meteoric in origin (Ashley, 1982). Alunite and native sulphur are dominantly hypogene in these deposits. Supergene alunite that forms in some acid-sulphate alteration zones and leached cappings can be distinguished by stable isotope analysis and radiometric dating.

A Canadian Cordilleran Epithermal Model

A General Model. The western part of the Canadian Cordillera is a dominantly eugeoclinal region. Allochthonous volcanic terranes, flanking sedimentary basins, and their metamorphosed and intruded equivalents were accreted during Mesozoic time against the ancestral continental margin of North America (Monger *et al.*, 1982). Most of the accreted terranes are only locally metamorphosed and large regions are only moderately deformed with little disruption of stratigraphic continuity. Within these terranes are numerous areas of subaerial rocks with related or younger, structurally controlled, high-level plutons. These provide geological settings suitable for formation of epithermal deposits. The oldest known favourable host rocks are subaerial andesitic rocks that were deposited near the end of Early Jurassic island arc volcanism. Extensive Cretaceous and Tertiary to Recent continental volcanic rocks were deposited following Jurassic to Cretaceous accretion and consolidation of the Cordillera in a predominantly extensional tectonic regime with much major strike-slip faulting. Epithermal deposits in these rocks bear remarkable similarity to many Tertiary epithermal deposits in the southwestern United States.

Much of the Cordillera was extensively glaciated and is deeply dissected and eroded. Nevertheless, some sites of high-level hydrothermal activity and fossil hot spring deposits have survived. In the Toodoggone area, in northern British Coumbia, for example, the recognition of 190 Ma alunite replacement deposits (Schroeter, 1982) and related epithermal deposits in rocks of Early Jurassic age (204-183 Ma) demonstrates the presence of pre-Tertiary epithermal deposits in the Canadian Cordillera. Recognition of paleotopographic surfaces by means of attendant preserved hot spring deposits has important implications for exploration using depth-zoning models.

In a model developed from British Columbia deposits (Figure 5), there are three main hydrodynamic components that represent hydrothermal flow regimes in epithermal systems as illustrated by Berger and Eimon (1982).

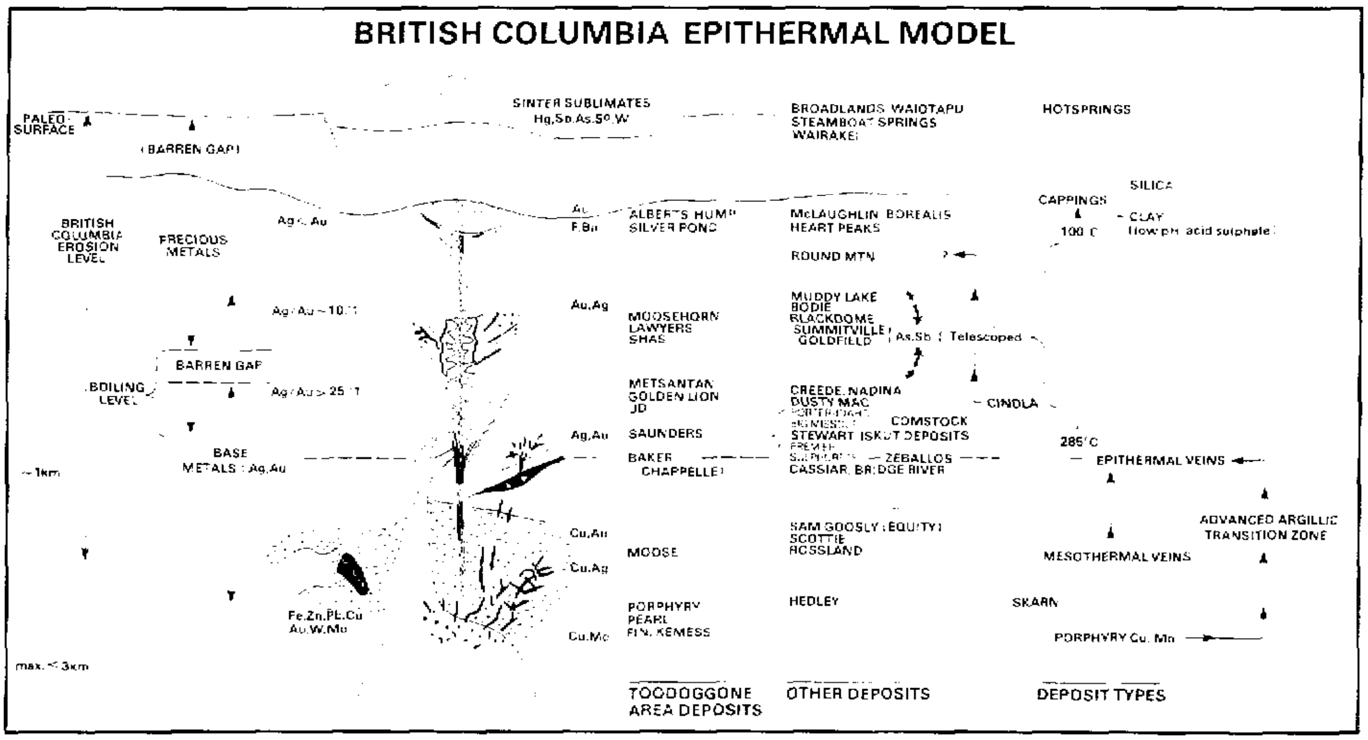
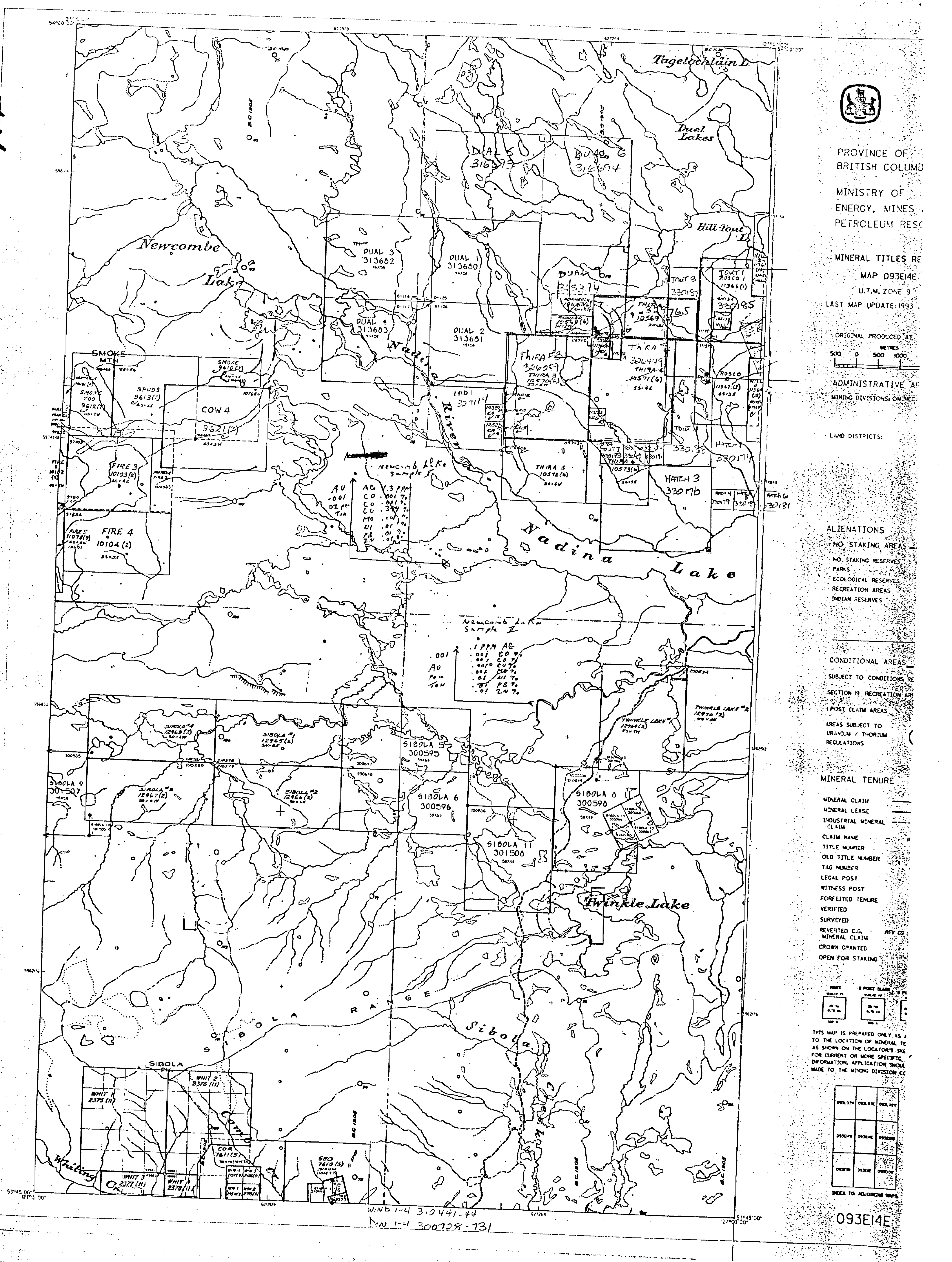


Figure 5 *British Columbia epithermal model. The model is based on studies of epithermal deposits in the Toodoggone area by T.G. Schroeter and A. Panteleyev, and comparisons with deposits elsewhere. The model infers a continuum from porphyry copper and skarn through transitional deposits, to epithermal veins, and hot spring discharge deposits*

M 93E/14E


PROVINCE OF
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ENERGY, MINES
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ECOLOGICAL RESERVES
RECREATION AREAS
INDIAN RESERVES
CONDITIONAL AREAS
SUBJECT TO CONDITIONS RE
SECTION 19 RECREATION AR
1 POST CLAIM AREAS
AREAS SUBJECT TO URANIUM / THORIUM REGULATIONS
MINERAL TENURE
MINERAL CLAIM
MINERAL LEASE
INDUSTRIAL MINERAL CLAIM
CLAIM NAME
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OLD TITLE NUMBER
TAG NUMBER
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TO THE LOCATION OF MINERAL TE
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MADE TO THE MINING DIVISION CO
INDEX TO ADJOINING MAPS
093E14E
Tagetochlain L.
Duel Lakes
Hill-Tout L.
Newcombe Lake
Nadina River
Nadina Lake
Twinkle Lake
SIBOLA RANGE
Sibola
SIBOLA PK.
SMOKE MTN
Whiting
DUAL 5 316695
DUAL 6 316694
DUAL 3 313682
DUAL 1 313680
DUAL 4 313683
DUAL 2 313681
DUAL 315374
TOUT 3 330187
TOUT 1
ROSCO 1 11366(1)
THIRA 3 10570(6)
THIRA 326449
THIRA 4 10571(6)
THIRA 5 10572(6)
THIRA 6 10573(6)
TOUT 330186
HATCH 1 330174
HATCH 3 330176
HATCH 6 330181
LADI 327114
SMOKE TOO 9612(1)
SPUDS 9613(7)
COW 4 9621(7)
FIRE 3 10103(2)
FIRE 4 10104(2)
Newcomb Lake Sample I
AU .001 oz per Ton
AG 1.3 PPM
Newcomb Lake Sample II
.001 AU per Ton
.1 PPM AG
SIBOLA #4 12968(2)
SIBOLA #1 12965(2)
SIBOLA 5 300595
SIBOLA 9 301597
SIBOLA #3 12967(2)
SIBOLA #2 12966(2)
SIBOLA 6 300596
SIBOLA 8 300598
SIBOLA 11 301508
TWINKLE LAKE #1 12969(2)
TWINKLE LAKE #2 12970(2)
WHIT 1 2375(11)
WHIT 2 2376(11)
WHIT 3 2377(11)
WHIT 4 2378(11)
COR 7611(5)
GEO 7610(5)
W.N.D 1-4 310441-44
D.N 1-4 300728-731
53°45'00"
127°45'00"
127°30'00"
54°00'00"

COMP: LEONARD BOURGH
PROJ:
ATTN:

MIN-EN LABS — ICP REPORT

8282 SHERBROOKE ST., VANCOUVER, B.C. V5X 4E8
TEL:(604)327-3436 FAX:(604)327-3423

FILE NO: 5V-0060-RJ1
DATE: 95/03/21
* * (ACT:F31)

SAMPLE NUMBER	AG PPM	CD %	CO %	CU %	MO %	NI %	PB %	ZN %
HANSON LAKE 1	40.4	.001	.001	>1.000	.001	.01	.01	.01
HANSON LAKE 2	.1	.001	.001	.002	.001	.01	.01	.01
FULTON LAKE 1	>200.0	.037	.001	.228	.002	.01	>1.00	>1.00
FULTON LAKE 2	114.1	.018	.001	.111	.001	.01	.41	>1.00
NEWCOMB LAKE 1	1.3	.001	.001	.344	.001	.01	.01	.01
NEWCOMB LAKE 2	.1	.001	.001	.001	.001	.01	.01	.01

MINERAL • ENVIRONMENTS LABORATORIES
(DIVISION OF ASSAYERS CORP.)

SPECIALISTS IN MINERAL ENVIRONMENTS
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Geochemical Analysis Certificate

5V-0060-RG1

Company: **LEONARD BOURGH**
Project:
Attn:

Date: MAR-21-95

We hereby certify the following Geochemical Analysis of 6 ROCK samples submitted MAR-20-95 by LEONARD BOURGH.

Sample Number	Au PPB	Au g/tonne	Au oz/ton
HANSON LAKE 1	35	.04	<.001
HANSON LAKE 2	2	<.01	<.001
FULTON LAKE 1	92	.09	.003
FULTON LAKE 2	46	.05	.002
NEWCOMB LAKE 1	35	.04	<.001
NEWCOMB LAKE 2	1	<.01	<.001

Certified by ____________________

MIN-EN LABORATORIES

Hanson Lake
Area

HANSON LAKE AREA

The Hanson Lake Area can be reached by taking a forest access road north from the little town of Endako. The type of deposit I searched for was an Endako type of ore body. The rocks I saw were much different from the ones around the Endako Mine. The country has received extensive exploration at the time Endako was being brought into production. Numerous grid works and trenches were noted. There are numerous logging roads old and new in the area. Mineralization was sparce with mostly rusty zones and pyrite. If there was any alteration some isolated copper was seen but nothing of any size. In summing up the area I would say it has been fairly well looked at and can not come up with a reason to go back at this time. The Geology reported by Kimura and Sysouth was not noted by myself as part of the enclosed report.

RespecT Fully
Submitted

[signature]

Endako

E. T. Kimura and **G. D. Bysouth,**
Canex Placer Limited,
Endako Mines Division,
Endako, B.C., and
A. D. Drummond,
Canex Placer Limited,
Vancouver, B.C.

Abstract

The Endako molybdenum deposit is 160 km west of Prince George, B.C., in the composite Jurassic Topley Intrusions. It occurs in older Endako Quartz Monzonite, which is bounded on the south by Francois Granite and on the north by Casey Alaskite and Glenannan Granite. In the vicinity of the orebody, Endako Quartz Monzonite is intruded by pre-mineral aplite, andesite, porphyritic granite and quartz-feldspar porphyry, and post-mineral basalt dykes.

The orebody in plan is an irregularly elongated body that strikes N 60° W, dips 40 to 60 degrees S, and measures 3,360 m long by 370 m wide. A major crosscutting fault offsets the orebody in a northerly direction and also forms a divisional boundary between the broader westerly plunging east half of the orebody and the shallower lenticulated west half.

Mineralogy is simple and consists of quartz, molybdenite, pyrite, magnetite, calcite and rarely chalcopyrite occurring as veins and fracture fillings. Hydrothermal alteration has locally produced K-feldspar and quartz-sericite-pyrite envelopes, and has pervasively kaolinized the host rock.

The Endako orebody is visualized as a restricted stockwork that was formed on an elongated easterly trending dome by uplift, intrusion and shearing, and localized at or near the intersection of regional northwesterly and easterly structures.

Introduction

THE ENDAKO molybdenum deposit is about 160 km west of Prince George in central British Columbia (Lat. 54°02′; Long. 125°07′; NTS 93K/3E). The mine property is 10 km southwest of Endako village, which is on Highway 16 and the B.C. North Division of the Canadian National Railway.

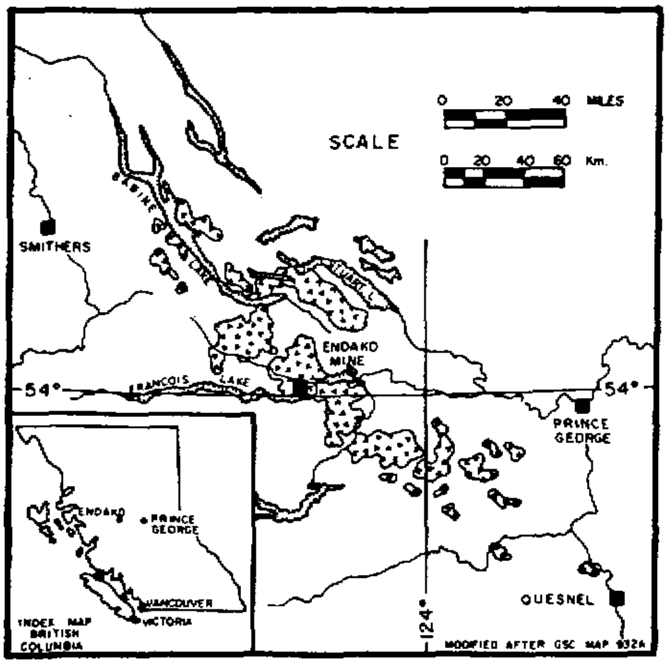


FIGURE 1 — Regional setting of the Topley Intrusions, showing the northwesterly trend of the batholith.

The Endako area is within the Interior System of the Canadian Cordillera and, more specifically, within the physiographic subdivision referred to as the Nechako Plateau. Local terrain is gently rolling, with flat-topped hills and broad valleys. Pleistocene glaciers moved eastward across the area, and have imprinted and accentuated easterly trending lineaments. Topographic relief ranges from an elevation of 670 m at Endako village to 1,070 m on the crest of the Endako open pit.

History

The molybdenite deposit was discovered in 1927 by two local men who staked four mineral claims to cover an area of mineralized float. They subsequently uncovered a 0.5-m-wide quartz-molybdenite vein. Exploratory work on the property was very limited until 1962, when a diamond drill program was initiated by R and P Metals Corporation Ltd. Personnel from Canadian Exploration Limited, a wholly owned subsidiary of Placer Development Limited, examined the property in October 1962. Following the completion and evaluation of extensive diamond drill and underground bulk sampling programs, the decision to develop the property for production was announced in March 1964.

Production is currently being maintained at 24,000 tonnes per day at an average ore grade of 0.15 per cent molybdenite. Two products, molybdenum sulphide and molybdenum oxide, are produced. Open-pit mining is operated at a mining rate of 54,400 tonnes per day with a 1.2:1 strip ratio; optimum open pits are designed with 10-m-high benches and a 45-degree wall slope. Ore reserves as of January 1, 1975, within an ultimate pit design, are calculated at a cutoff grade of 0.08 per cent molybdenite and are estimated at 194,000,000 tonnes with an average grade of 0.14 per cent molybdenite.

Regional Geology

The Endako molybdenite orebody occurs in the Topley Intrusions, which are considered to be of late Jurassic age. They are intruded into late Paleozoic and early Mesozoic sedimentary and volcanic rocks. The Topley Intrusions extend from the center of Babine Lake to Quesnel, a distance of about 290 km along a regional northwesterly trend (Fig. 1).

The emplacement of the Topley Intrusions was probably influenced by and related to regional tectonic events which occurred during Jurassic time in the central Intermontane Tectonic Belt of the Cordillera of British Columbia. It is presumed that emergent and uplifted areas, with associated northwest fault control and granitic intrusions, prevailed for this period. The continuation of regional stress conditions after intrusion is evidenced by the structural trends that surround and crosscut Topley rocks. The predominant lineation trends are northwesterly, easterly

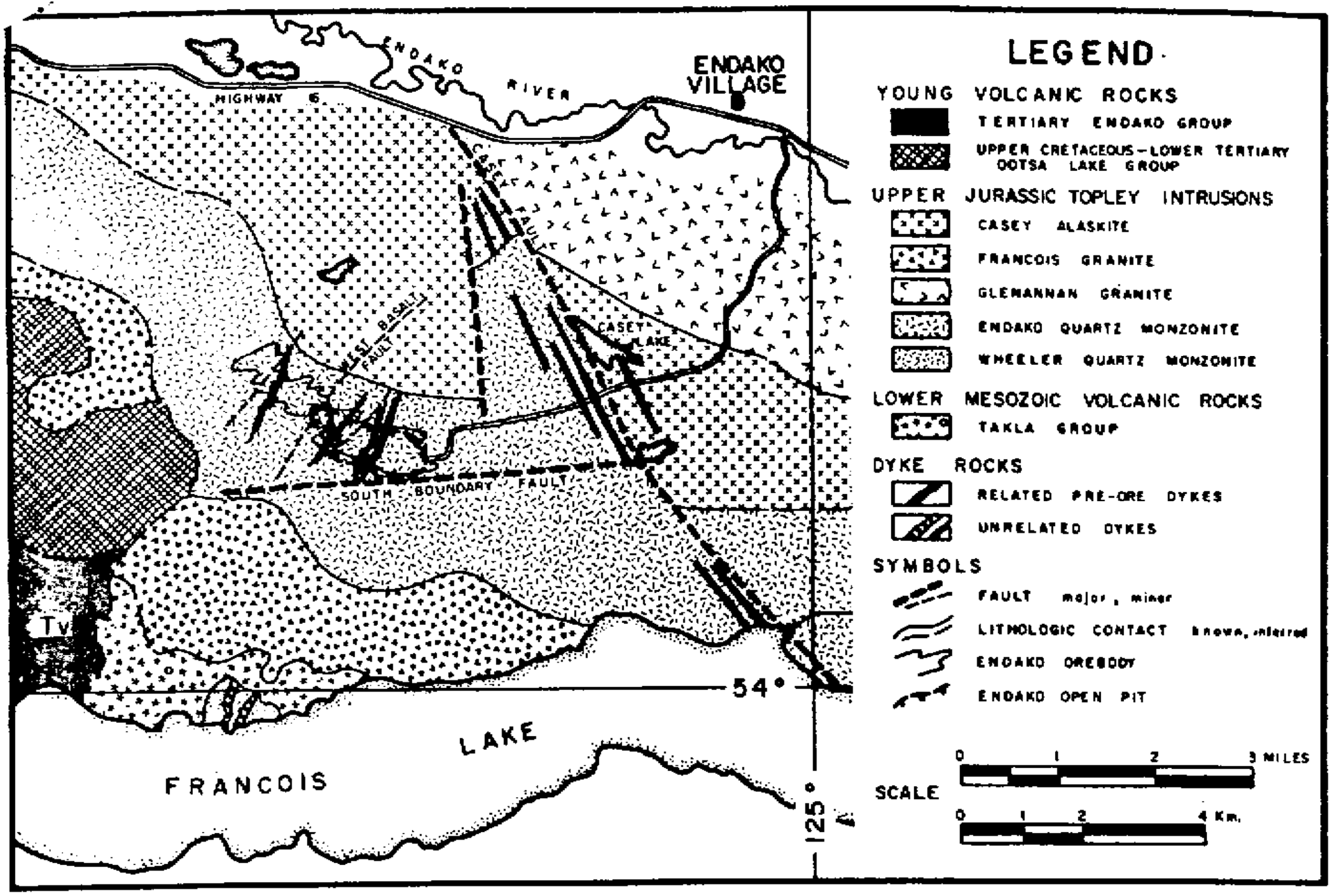


FIGURE 2 — Geology of the Endako area. The Endako ore deposit is in the Endako Quartz Monzonite rock unit.

and, to a lesser degree, to the northeast and east-northeast. These may have been developed as part of the compressional components which formed the Skeena Arch during the Upper Jurassic and Lower Cretaceous. The axis of this regional east-northeast-trending structural uplift existed across the north tip of Babine Lake (Souther and Armstrong, 1966).

Topley Intrusions comprise a composite batholith consisting of granite, quartz monzonite, granodiorite, quartz diorite, diorite and gabbro. The Endako deposit is centrally situated within the batholith.

Local Geology

The distribution of rock types, major structures and location of the ore deposit are shown on Figure 2.

ROCK TYPES

The majority of rock type names follow the formal nomenclature of Carr (1966).

Takla Group volcanic rocks of Early Mesozoic age are the oldest rocks in the vicinity of Endako Mine and outcrop along Francois Lake. The group consists here of a sequence of dark green to purple lavas, tuffs and flow rocks which locally contain small white quartz, feldspar and biotite phenocrysts in a hard aphanitic matrix.

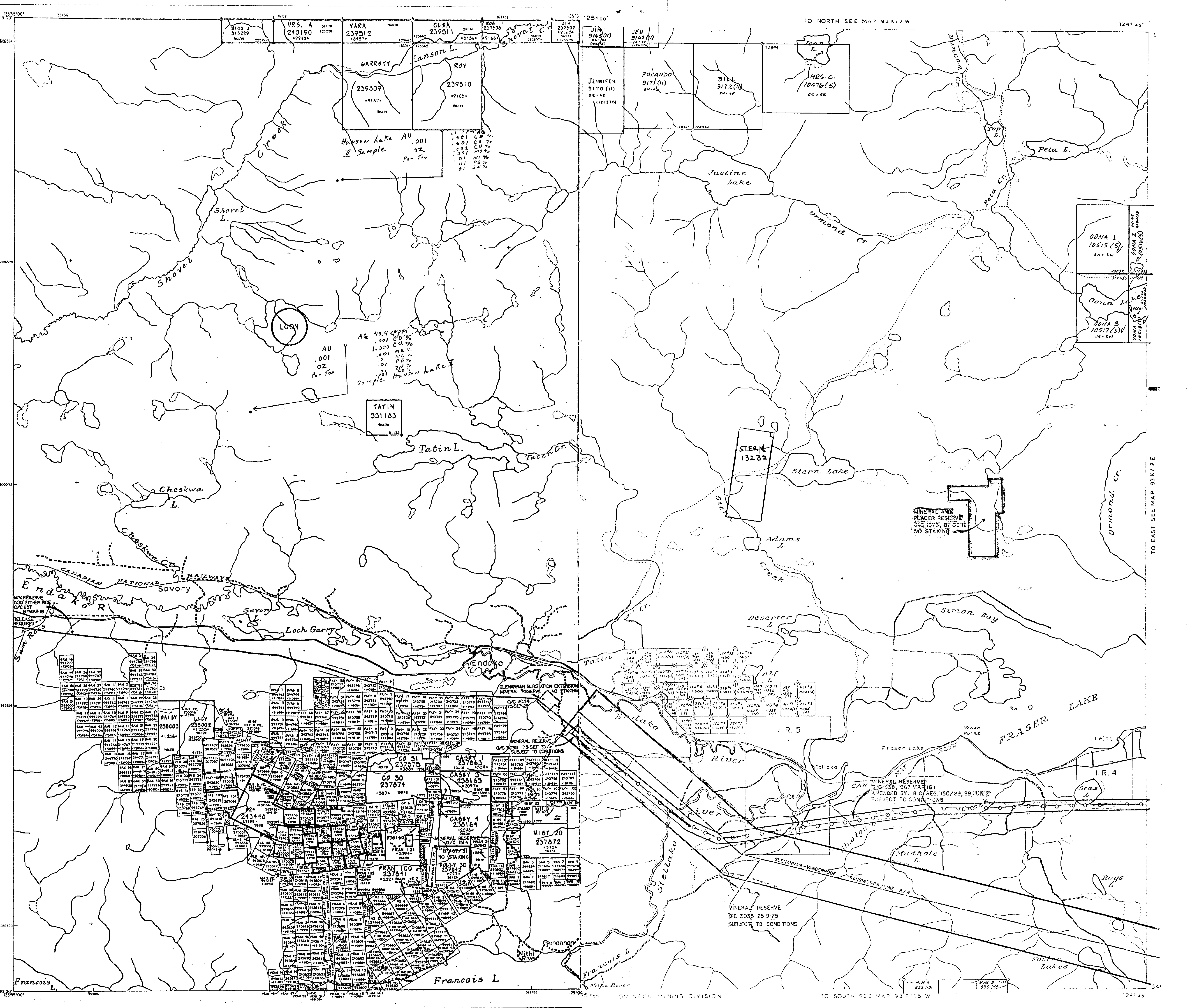
The Topley Intrusions, which intrude the Takla Group, consist of five distinct rock types in the mine area.

(a) **Endako Quartz Monzonite**, the ore host, is generally equigranular (3-4 mm), with some K-feldspar crystals in places as large as 7 mm. This size difference imparts a suggestion of a porphyritic texture, but is not sufficiently distinct to warrant the term "porphyritic". The rock consists of quartz (30%), pale pink to orange-tinged K-feldspar (perthitic orthoclase) (35%), white to green-tinged plagioclase (An_{30}) (30%) and partially chloritized black biotite (5-10%), with accessory magnetite, pyrite, apatite and sphene. Scattered dark rounded biotite-rich inclusions, 2 to 10 cm across, are common. The rock is readily recognized by its characteristic pink to bright orange-pink K-feldspar. In and around the ore deposit, quartz monzonite is kaolinized in varying degrees. The colour of altered rock varies initially from pale greenish grey to dark green or bleached creamy white for highly altered varieties.

(b) **Casey Alaskite** is normally a fine- to medium-grained (1-3 mm), sugary textured, leucocratic rock. Its modal composition is quartz (40%), pale pink K-feldspar (45%), white plagioclase (5-10%), partially chloritized biotite (2-5%), and accessory pyrite and hematite (1%). The subrounded sugary quartz has a characteristic greasy grey appearance. The rock can vary texturally from typical sugary texture to coarse equigranular; occasionally, porphyritic varieties have been recognized.

(c) **François Granite** is a distinctive red equigranular (3-4 mm) rock composed of quartz (35%), perthitic K-feldspar (45%), white plagioclase with greenish cores (15%), chloritized biotite (3-5%), and accessory amounts of magnetite, pyrite and sphene (1%). Some feldspar grains exhibit a rare rapakivi textural feature in which K-feldspar grains are mantled by white plagioclase. This texture appears to be

M93K 3E



TO NORTH SEE MAP 93K/7W
TO EAST SEE MAP 93K/2E
TO SOUTH SEE MAP 93F/15W
OMINECA MINING DIVISION
125°00'
124°45'
54°15'00"
54°00'00"
MISS J 318229
MRS. A 240190
YARA 239512
CLEA 239511
JIM
JED
JENNIFER 9170 (11)
ROLANDO 9171 (11)
BILL 9172 (11)
MRS. C. 10476 (5)
Jean L.
GARRETT
ROY
239809
239810
Hanson L.
Shovel Cr.
Creek
Duncan Cr.
Top L.
Peta L.
Peta Cr.
Justine Lake
Ormond Cr.
OONA 1 10515 (5)
OONA 3 10517 (5)
Oona Lake
Hanson Lake AU
II Sample
.001 oz. Pe-Ton
Shovel L.
Shovel
LOON
AU .001 oz Pe-Ton
AG 40.4 PPM
Sample Hanson Lake I
TATIN 331183
Tatin L.
Tatin Cr.
STERN 13232
Stern Lake
Cheskwa L.
Cheskwa Cr.
CANADIAN NATIONAL RAILWAYS
Savory
Endako R.
MIN. RESERVE 500' EITHER SIDE O/C 837 57-MAR-16
RELEASE REQUIRED
Savory L.
Loch Garry
Sam Ross
Adams L.
Creek
MINERAL AND PLACER RESERVE O/C 1370, 87 OCT 11 NO STAKING
Ormond Cr.
Deserter L.
Simon Bay
Endako
GLENANNAN SUBSTATION EXTENSION MINERAL RESERVE NO STAKING
O/C 3034 75 SEP 25
MINERAL RESERVE O/C 3035 75-SEP-25 SUBJECT TO CONDITIONS
DAISY 238003
LILY 238002
CASEY 1 237063
GO 31 237675
GO 30 237674
CASEY 3 238163
CASEY 4 238164
MIST 20 237672
MINERAL RESERVE O/C 1514
NO STAKING
FRAN 101
FRAN 100 237641
DOLLY 30
243440
Tatin
Alf
I.R. 5
Endako River
Stellako
FRASER LAKE
House Point
Fraser Lake
Lejac
I.R. 4
Seas L.
MINERAL RESERVE O/C 538, 1967 MAR 16 AMENDED BY: B.C. REG. 150/89, 89 JUN 2 SUBJECT TO CONDITIONS
GLENANNAN—VANDERHOOF TRANSMISSION LINE R/W
Mudhole L.
Roys L.
Stellako River
MINERAL RESERVE O/C 3035 25-9-75 SUBJECT TO CONDITIONS
Foster Lakes
Francois L.
Nithi River
Glenannan
Francois L.

COMP: LEONARD BOURGH
PROJ:
ATTN:

MIN-EN LABS — ICP REPORT

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FILE NO: 5V-0060-RJ1
DATE: 95/03/21
* * (ACT:F31)

SAMPLE NUMBER	AG PPM	CD %	CO %	CU %	MO %	NI %	PB %	ZN %
HANSON LAKE 1	40.4	.001	.001	>1.000	.001	.01	.01	.01
HANSON LAKE 2	.1	.001	.001	.002	.001	.01	.01	.01
FULTON LAKE 1	>200.0	.037	.001	.228	.002	.01	>1.00	>1.00
FULTON LAKE 2	114.1	.018	.001	.111	.001	.01	.41	>1.00
NEWCOMB LAKE 1	1.3	.001	.001	.344	.001	.01	.01	.01
NEWCOMB LAKE 2	.1	.001	.001	.001	.001	.01	.01	.01

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Geochemical Analysis Certificate

5V-0060-RG1

Company: **LEONARD BOURGH**
Project:
Attn:

Date: MAR-21-95

We hereby certify the following Geochemical Analysis of 6 ROCK samples submitted MAR-20-95 by LEONARD BOURGH.

Sample Number	Au PPB	Au g/tonne	Au oz/ton
HANSON LAKE 1	35	.04	<.001
HANSON LAKE 2	2	<.01	<.001
FULTON LAKE 1	92	.09	.003
FULTON LAKE 2	46	.05	.002
NEWCOMB LAKE 1	35	.04	<.001
NEWCOMB LAKE 2	1	<.01	<.001

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Fulton Lake
Area

FULTON LAKE AREA

The type of deposit I expect to find in this area would be stratiform or sedimentary associated with limestone. There is a large block of limestone in the area covering a large area. The most interesting alteration accompanied by pyrite occurs where the overburden and swamp lands meet on the western side of the limestone block. The samples I found were float, but with limestone and were quite angular. I will be putting my whole season this year into the Fulton Lake area and will be putting in a rudimentary grid and soil sampling in the general area where I found the samples. This will be followed by trenching, some work has to be done on the access road. To reach the area you take an old logging road approximately 4 miles south of the town of Granisle. I feel the area has a good potential of finding a head line or body of commercial site.

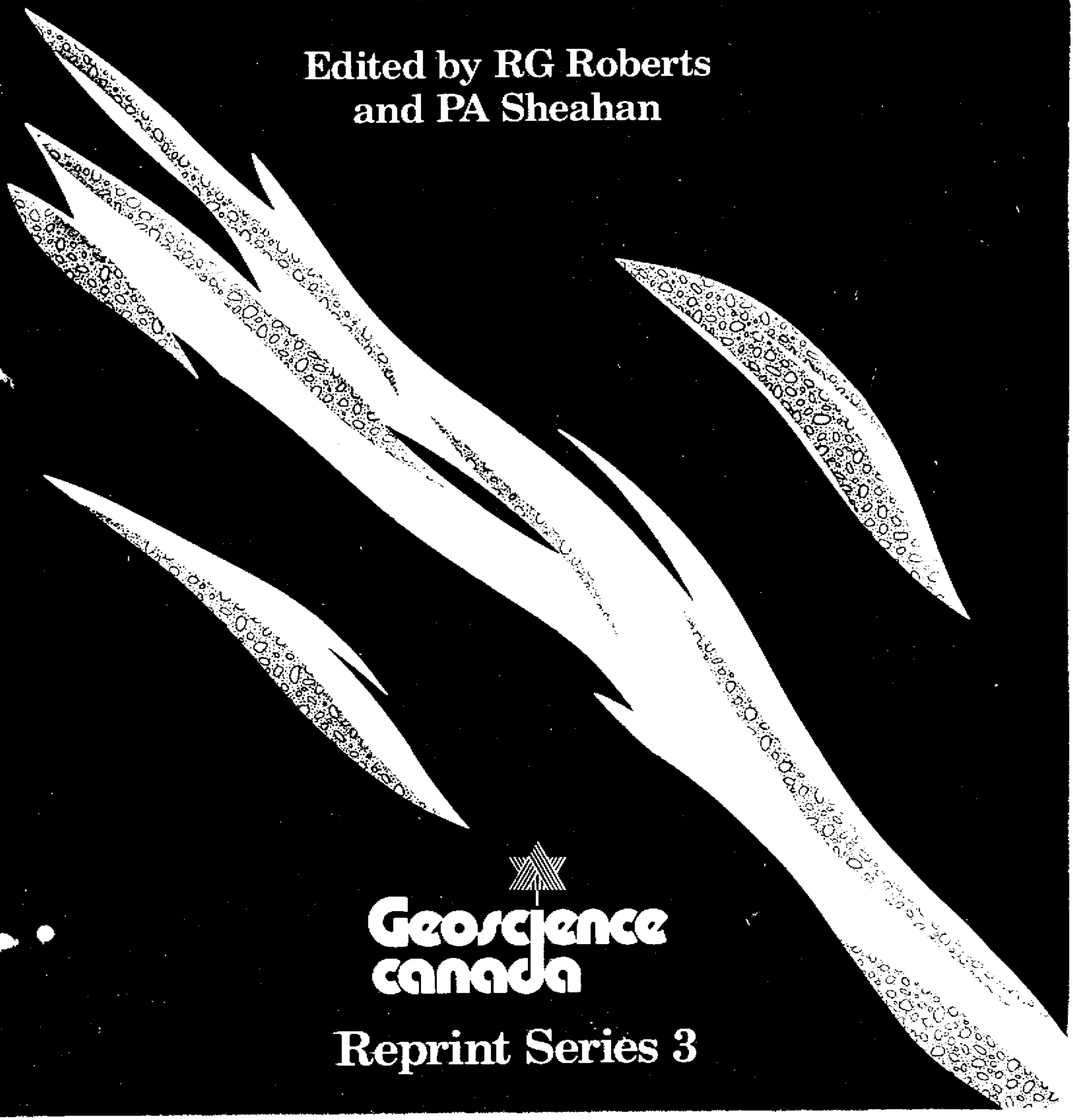
Enclosed part of J. M. Morganti report, I will start staking M.C. in the next few days as I have a little money at this time to get started.

Respectfully Submitted

[signature]

Ore Deposit Models

Edited by RG Roberts
and PA Sheahan



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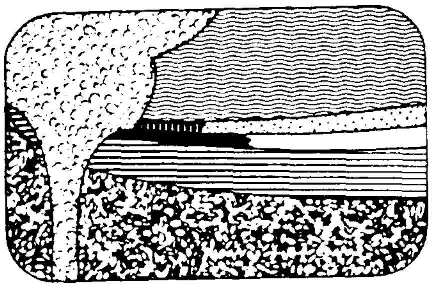


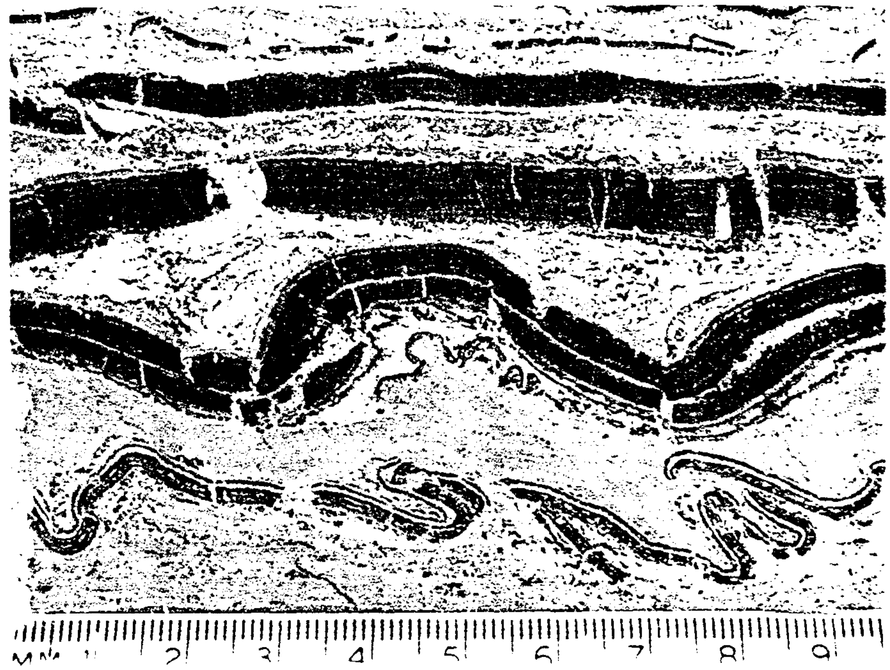
Sedimentary-Type Stratiform Ore Deposits: Some Models and A New Classification

J.M. Morganti
Placer Dome Inc.
Box 350, Suite 3500, IBM Tower
Toronto Dominion Centre
Toronto, Ontario M5K 1N3

Introduction

Many mineral deposits containing zinc, lead, copper, barium and/or precious metals are stratiform in that their general morphology is similar to sedimentary strata (Stanton, 1972, p. 498-503). Some of these deposits occur in predominantly clastic sedimentary sequences where volcanic rocks are not demonstrably related to ore formation. These are herein referred to as sedimentary-type stratiform deposits (Figure 1). Major examples are McArthur River, Sullivan, Meggen, Mufulira and XY. Typically, these deposits consist of stratiform sulphide bodies that internally contain at least some bedded sulphides suggesting that deposition of the sulphides occurred before lithification. Furthermore, many deposits, when specifically grouped, occur in one major sedimentary basin, although individual deposits may occur within separate, second-order or sub-basins. Examples of major basins or first-order basins are found in the Zambian Copperbelt where Mufulira, Muliashi and Chambishi sub-basins represent remaining roots of a very extensive basin in which Katanga sediments were deposited (Fleischer *et al.*, 1976). The Kupferschiefer deposits of central Europe are contained within the Permian Zechstein Basin, and all the Howards Pass deposits occur within the Selwyn Basin of the Northern Cordillera.

As a group, the deposits are loosely associated with carbonaceous sedimentary rocks, but individually, some occur within specific associated lithologies. The stratiform nature of the deposits and their clastic sedimentary rock association help separate these deposits from the strata-bound Mississippi Valley type deposits (Anderson, 1978) which are generally associated



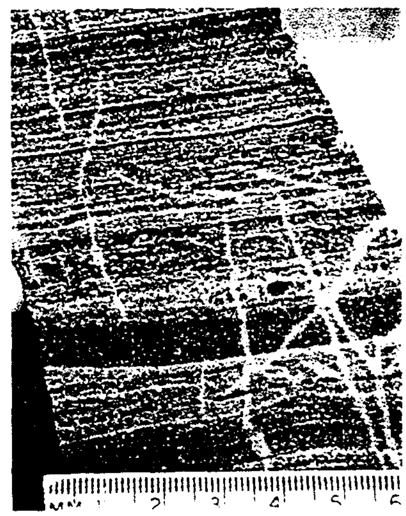


Figure 1 *Specimens of laminated ore from sedimentary-type stratiform ore deposits:*
(a) *laminated sulphide and chert, from Mt. Isa, Australia;*
(b) *laminated argillite with sulphides, from the Sullivan deposit, Canada;*
(c) *laminated sulphide and darker chert, from the Howards Pass deposits, Canada.*

(5) The deposits are associated with anomalously thick sedimentary sequences (*i.e.*, sub-basins, Figure 11), but lack evidence for rapidly formed graben structures similar to the flysch deposits.

With the Selwyn Basin, platform-marginal deposits occur in graptolitic carbonaceous mudrocks, cherts and limestone of the Howards Pass Formation (Morganti, 1977). This unit contains slope, base of slope and basin floor facies which developed west of the MacKenzie Platform (Figure 12). Within the base of slope (rise?) facies, sub-basins occur as sea-floor depressions (Figure 13) in which cherts, mudrocks, limestones and sulphides were deposited. The laminated, sulphide-rich beds occur in a rhythmic sequence limited to these sub-basins within the active member of the Howards Pass Formation. A general trend up-section of limestone-mudrock-chert (Figure 14) also occurs as individual cycles within the major cycle. A sequence such as this could be the result of the increasing isolation of a sub-basin, accompanied by formation of limestone as a by-product of sulphate to sulphide reduction. A decrease in pH and resultant change in the stability of carbonate relative to amorphous silica could have been brought about by the influx of low pH, metalliferous brine into the high pH, reducing sub-basins. The lack of associated feeder zones underlying the deposits of this sub-class, their low copper and silver contents, and the large lateral dimensions of the deposits all suggest that the source of the brine was not nearby, such as is evident in flysch deposits. In the case of the eastern Selwyn Basin, tuffs associated with basin-platform transition suggest that anomalous heat flow and possible brine exhalation may have occurred and provided a brine which subsequently migrated down-slope.

Ore-Forming Fluids for Sedimentary-Type Stratiform Deposits

The fluids which transport the metals to their site of deposition constitute the second parameter to be considered here. These brines deposited their metals within the lithifying sediment or at the sediment-water interface.

Within the sediment, migration of ore-forming brine may be somewhat analogous to oil migration. Thus, primary

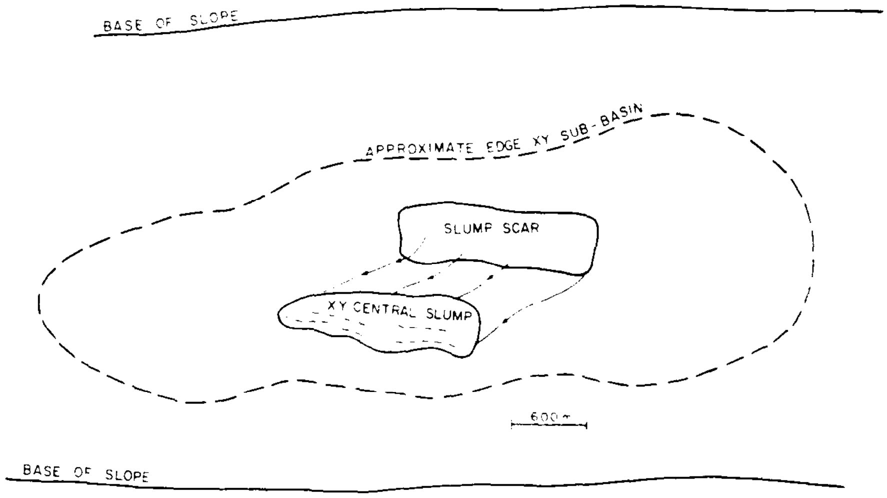


Figure 13 *Generalized plan view of reconstructed XY sub-basin, Howards Pass. The sub-basin axis of elongation parallels that of the base of slope. Slumping has produced a high-grade "plumb" within the larger XY deposit. (Arrows indicate direction of movement of slumped sediment.)*

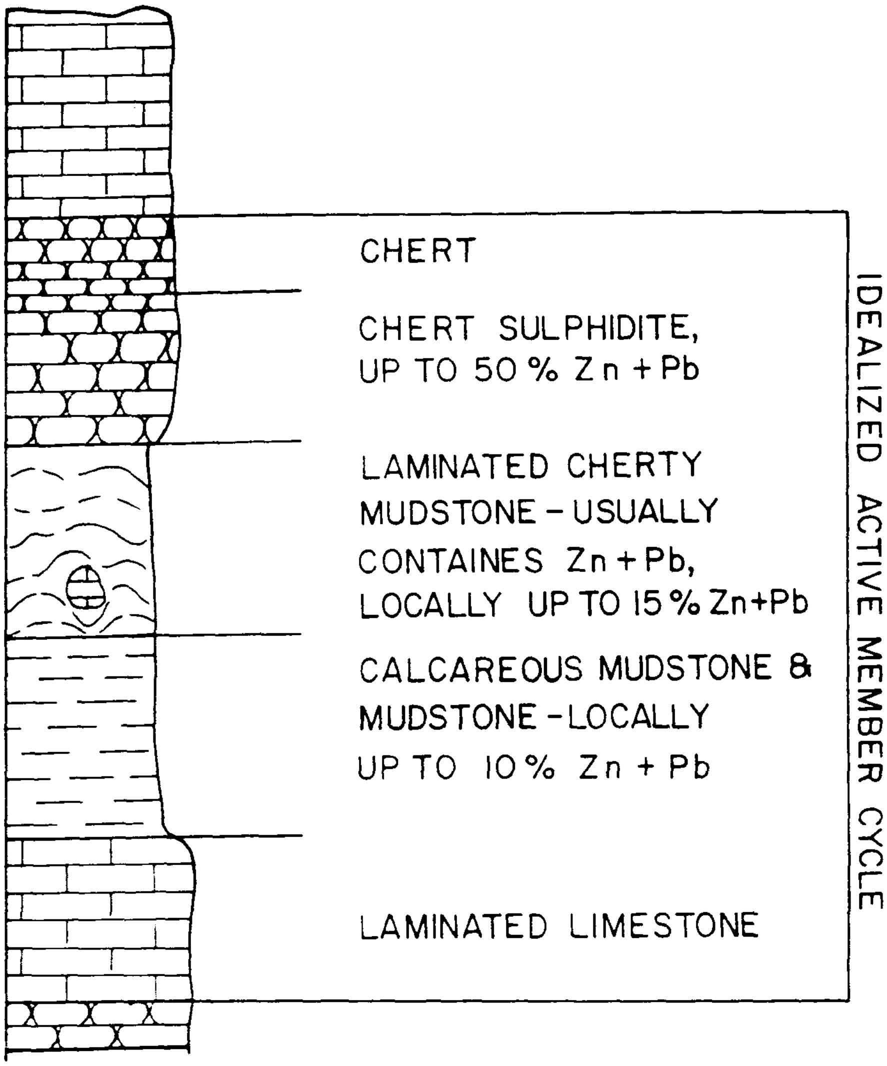


Figure 14 *Generalized stratigraphic section of an idealized active member showing a typical sequence of facies. Note that there is a decrease in carbonate and an increase in chert upward.*

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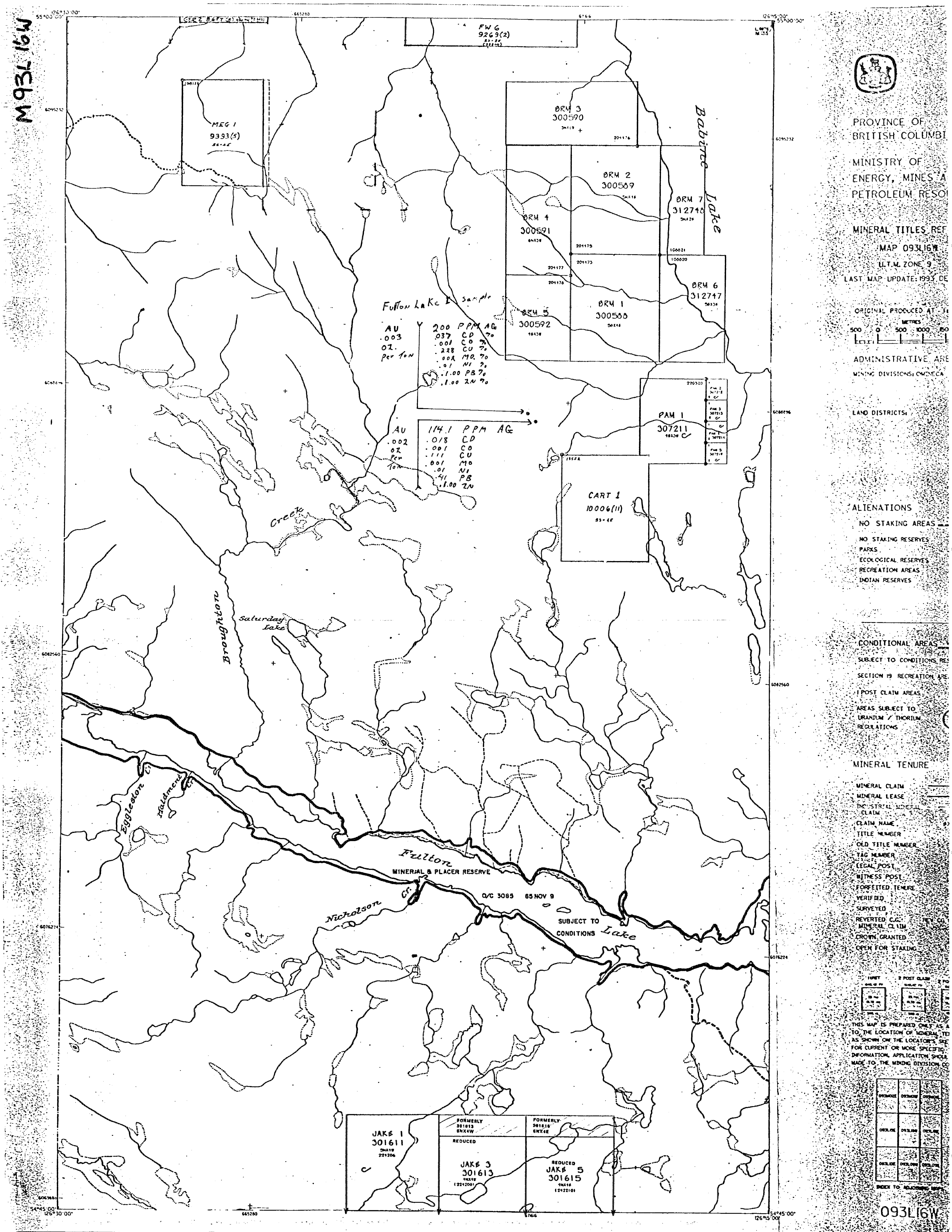

M93L 16W
FW 6
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MEG 1
9393(5)
BRM 3
300590
BRM 2
300589
BRM 7
312748
BRM 4
300591
BRM 6
312747
BRM 1
300588
BRM 5
300592
Babine Lake
Fulton Lake 1 sample
AU .003 OZ. Per ton
200 PPM AG
.037 CD %
.001 CO %
.228 CU %
.002 MO %
.01 NI %
1.00 PB %
1.00 ZN %
AU .002 OZ Per Ton
114.1 PPM AG
.018 CD
.001 CO
.111 CU
.001 MO
.01 NI
.41 PB
1.00 ZN
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307211
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Creek
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Saturday Lake
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Haldimand
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JAKE 3
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JAKE 5
301615
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SECTION 19 RECREATION ARE
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MINERAL CLAIM
MINERAL LEASE
INDUSTRIAL MINERAL CLAIM
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