[ARIS11A] **ARIS Summary Report**

Regional Geologist, Vancouver | **Date Approved:** 1999.02.08 | **Off Confidential:** 1999.10.28

**ASSESSMENT REPORT: 25714** | **Mining Division(s):** Victoria

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Property Name:** | Copper Canyon | | | | | | | | |
| **Location:** | **NAD 27** | **Latitude:** | 48 52 10 | **Longitude:** | 123 48 15 | **UTM:** | 10 | 5413035 | 441026 |
| | **NAD 83** | **Latitude:** | 48 52 09 | **Longitude:** | 123 48 20 | **UTM:** | 10 | 5413225 | 440926 |
| | **NTS:** | 092B13W | | | | | | | |

**Camp:**

**Claim(s):** Copper Canyon

**Operator(s):** McNall, Michael
**Author(s):** Walton, Ron

**Report Year:** 1998

**No. of Pages:** 12 Pages

**Commodities Searched For:** Copper, Gold

**General Work Categories:** PROS

**Work Done:** Prospecting
PROS Prospecting (25.0 ha;)

**Keywords:** Sulphides

**Statement Nos.:** 3126584

**MINFILE Nos.:**

**Related Reports:**

BRITISH COLUMBIA

Ministry of Energy & Mines
Energy & Minerals Division
Geological Survey Branch

GOLD COMMISSIONER
RECEIVED and RECORDED
OCT 28 1998
M.R. #
VICTORIA, B.C.

MINERAL TITLES BRANCH
Rec'd.
OCT 30 1998
L.I.#
File
VANCOUVER, B.C.

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TITLE OF REPORT [type of survey(s)] Self Potentiometer Survey TOTAL COST $ 612.00

AUTHOR(S) Michael McNall SIGNATURE(S) Michael McNall

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S) YEAR OF WORK 1998.

STATEMENT OF WORK - CASH PAYMENT EVENT NUMBER(S)/DATE(S) 3 Oct 1998

PROPERTY NAME Copper Canyon, VICTORIA, Elmores Fraction.

CLAIM NAME(S) (on which work was done) Copper Canyon.

COMMODITIES SOUGHT Copper Gold

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN 260522, 260524, 260523

MINING DIVISION VICTORIA, NTS

LATITUDE 48° ° 52' ' 10 " LONGITUDE 123' ° 48 ' 15 " (at centre of work)

OWNER(S)

1) Michael McNALL. 2)

MAILING ADDRESS

979 Bray Ave.
Victoria, B.C. V9B 2S9.

OPERATOR(S) [who paid for the work]

1) Michael McNALL. 2)

MAILING ADDRESS

as above.

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Mineralization

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

25,714

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS

(OVER)

RON WALTON
PROSPECTING
VICTORIA BC.

81604

SOLD TO: MIKE McNALL
VICTORIA BC. LIC # 139591

SHIP TO: SAME

DATE: OCT 5/98

| QTY B/O | QTY ORDERED | DESCRIPTION | QTY SHIPPED | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|
| | | ESTABLISH GRID & SURVEY USING | | | |
| | | "SELF POTENTIAL METHOD." | | | |
| | | 2 MEN, 8 HRS LABOUR | | | 360 00 |
| | | TRUCK | | | 40 00 |
| | | FUEL | | | 22 00 |
| | | FOOD | | | 10 00 |
| | | USE OF S.P. EQUIPMENT | | | 180 00 |
| | | R. Walton THANK YOU | | | |
| | | TOTAL | | | $612 00 |

...PPED AS SOON AS AVAILABLE UNLESS ...E NOT BEEN BACK ORDERED. | DATE SHIPPED | B/O FROM | B/O TO

E. & O.E.

PAYLESS #25
380 Trans Can.
Duncan B.C.

STATION # 25
CUSTOMER RECEIPT
10/03/98 09:01:57
DISP. #14
41.580 LTR
UNL 30.529
FUEL SALE $22.00
CASH $22.00
VER # 1

FUEL SALE INCLUDES
$1.44 G.S.T.
Thank You
Please Come Again
Gst.#R138378419

## INTRODUCTION

Mr. Mike Mcnall of Victoria BC. contracted Ron Walton to conduct an S.P. survey on Mr. Mcnall's mining property west of Chemainus , Vancouver Is. , in October / 98 . The purpose was to determine where the sulphide body crosses the Copper Canyon claim .

## LOCATION , ACCESS , and GRID

The area of the work done is approximately 8 miles west of the island highway and adjacent to the Chemainus river . The area is protected by 6 claims held by Mr. Mcnall . The work was done on tenure # 260522 .

Approximately 600' north of the 8 mile sign on the copper canyon mainline is a bush road leading east into the property . A claim post is located near the entrance to the road ( information from owner ) . The road is overgrown but passable at this date to a point about 900' in to a clearing . A GPS reading was taken here to confirm location . An air photo map was also used to determine the property identifying landmarks . Air photo # 30BCC 93026#77 .

The #1 line was cut to determine where the sulphides crossed the claim . Readings were taken at pickets set 90' apart for 810' . When anomalous readings were found then a base line of 180 ' was cut a right angle to the north south # 1 line . Two parallel lines were then cut south of the baseline and pickets placed at 60' intervals to take four readings per line .

## INSTRUMENTATION

A self potentiometer survey was used . It involved the use of two ceramic , porous pots with a copper sulphate solution and copper probes . Once calibrated the negative pot remains at the base station with one man reading the meter set at millivolts . The lead pot or positive is placed well into the ' B ' horizon at the station along the line by the second man . The reading taken is the differential between the two .

## RESULTS

Anomaly A and B are probably related to the same occurence at depth . The small creek valley should be investigated as outcrop may be revealed and sampled .

Anomaly C will be difficult to determine as this area is covered in glacial terrain . The results will probably co-inside with the extension of the orebody from the " Victoria " claim to the east .

## CONCLUSIONS and RECOMMENDATIONS

The small creek that flows along the south boundary of the " Copper Canyon " should be prospected . Basic work such as panning and sampling outcrop can be productive . This is the area of interest .

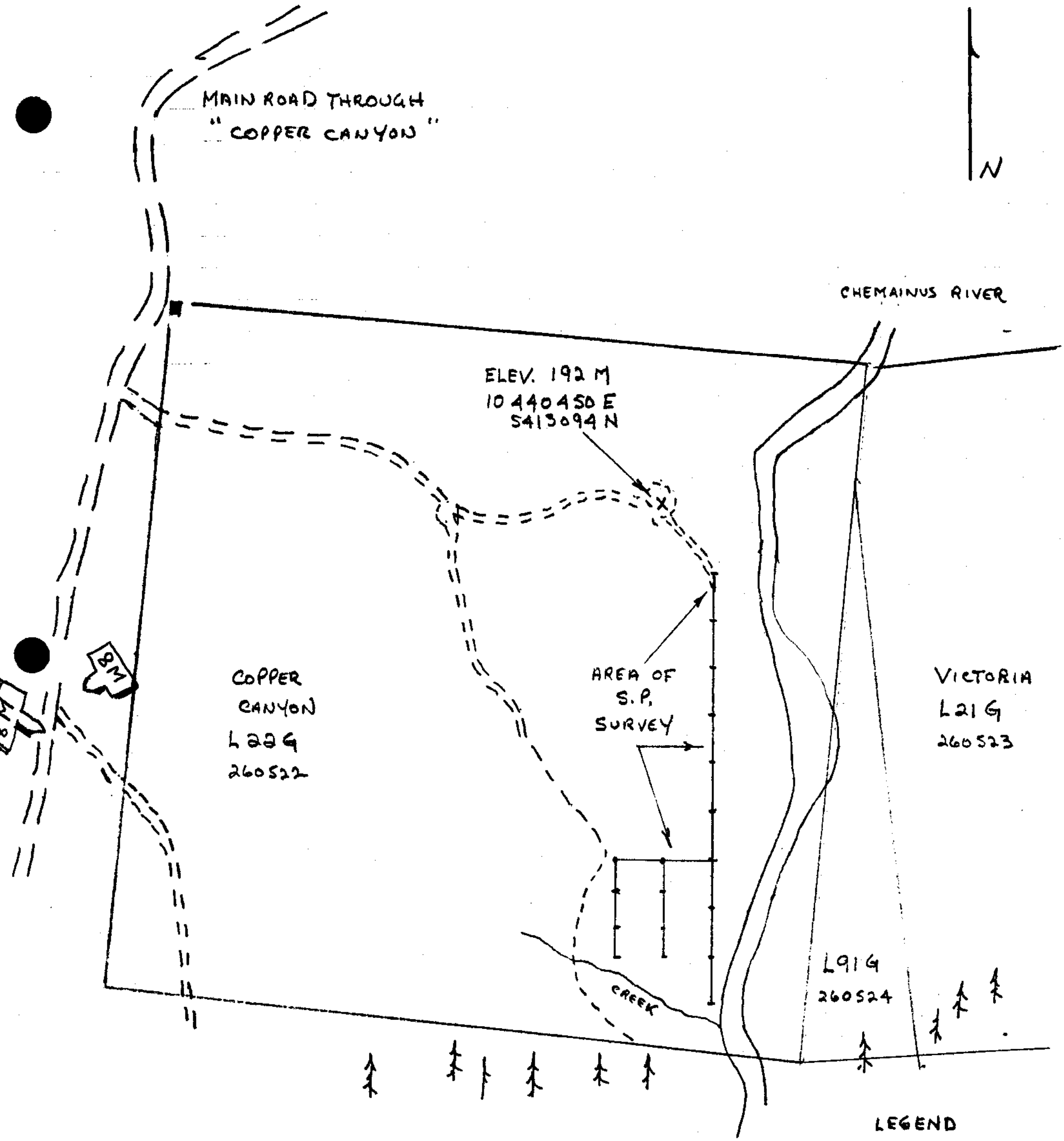
Another method to determine the potential of the creek area would be to bag a few samples of sediment for assay .

Since the economic interest on the property is the copper - gold mineralization and the ore body did travel over several claims then the possibility of strike continuation is good .

The owner does have the adjacent " Copper mint " claims which should be tested with a similar method to attempt to follow the sulphide body . Geological mapping and prospecting should be carried out. Any sulphide rich rock or quartz vein located should be sampled and assayed.

Submitted by Ron Walton

R. Walton




LEGEND

WATERWAY

CLAIM POST

BUSH ROAD

GPS READING USING "TRAILBLAZER" BY MAGELLAN

MAP BY RON WALTON

SCALE 60'

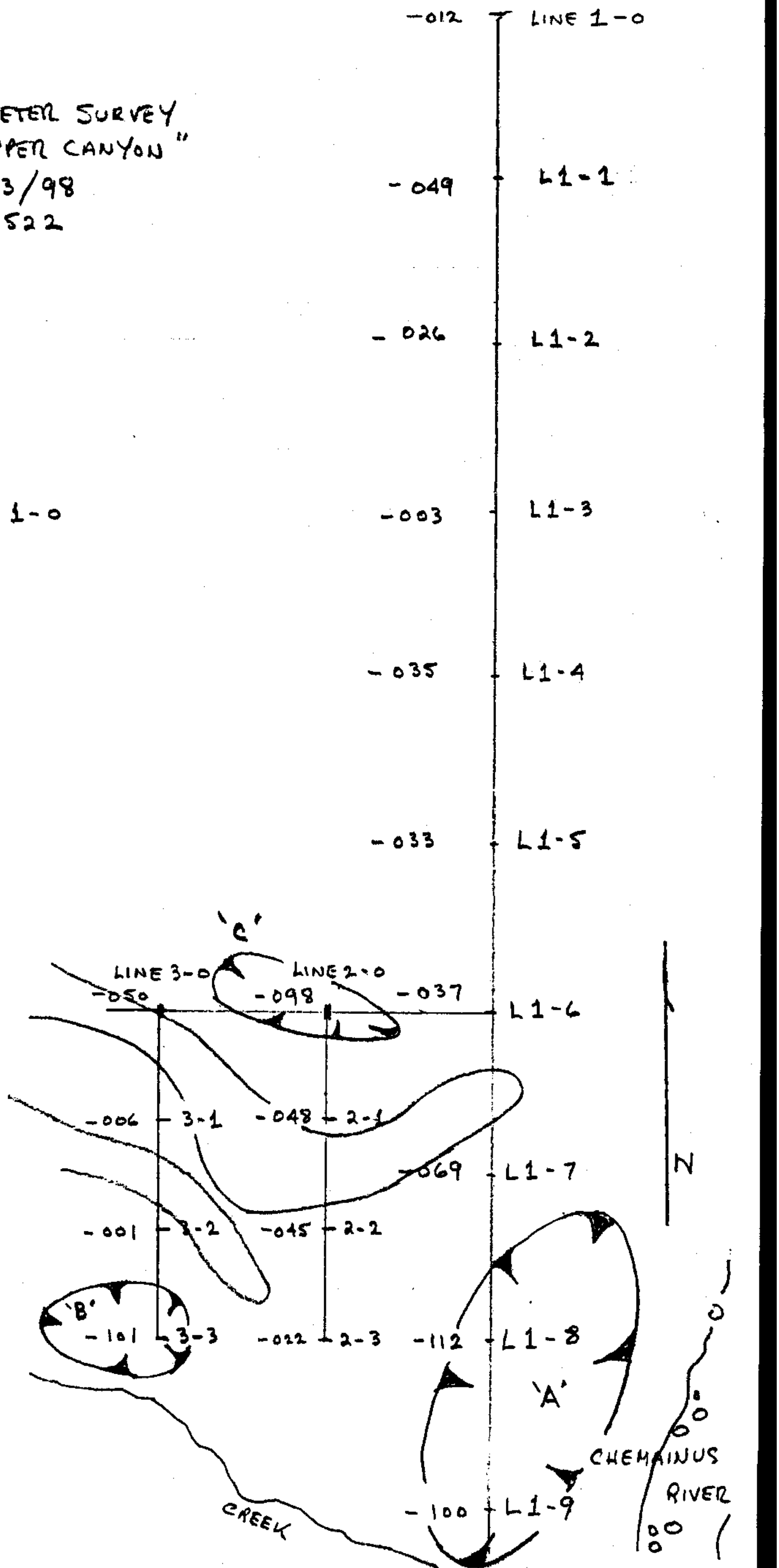
| COPPER CANYON CLAIM | |
|---|---|
| SELF POTENTIOMETER SURVEY | |
| DATE: OCT 3/98 | CLAIM MAP 92B/13W(?) |
| VICTORIA MINING DISTRICT | |

SELF POTENTIOMETER SURVEY
DONE ON "COPPER CANYON"
CLAIM, OCT 3/98
L22G #260522

READINGS TAKEN IN MILLIVOLTS

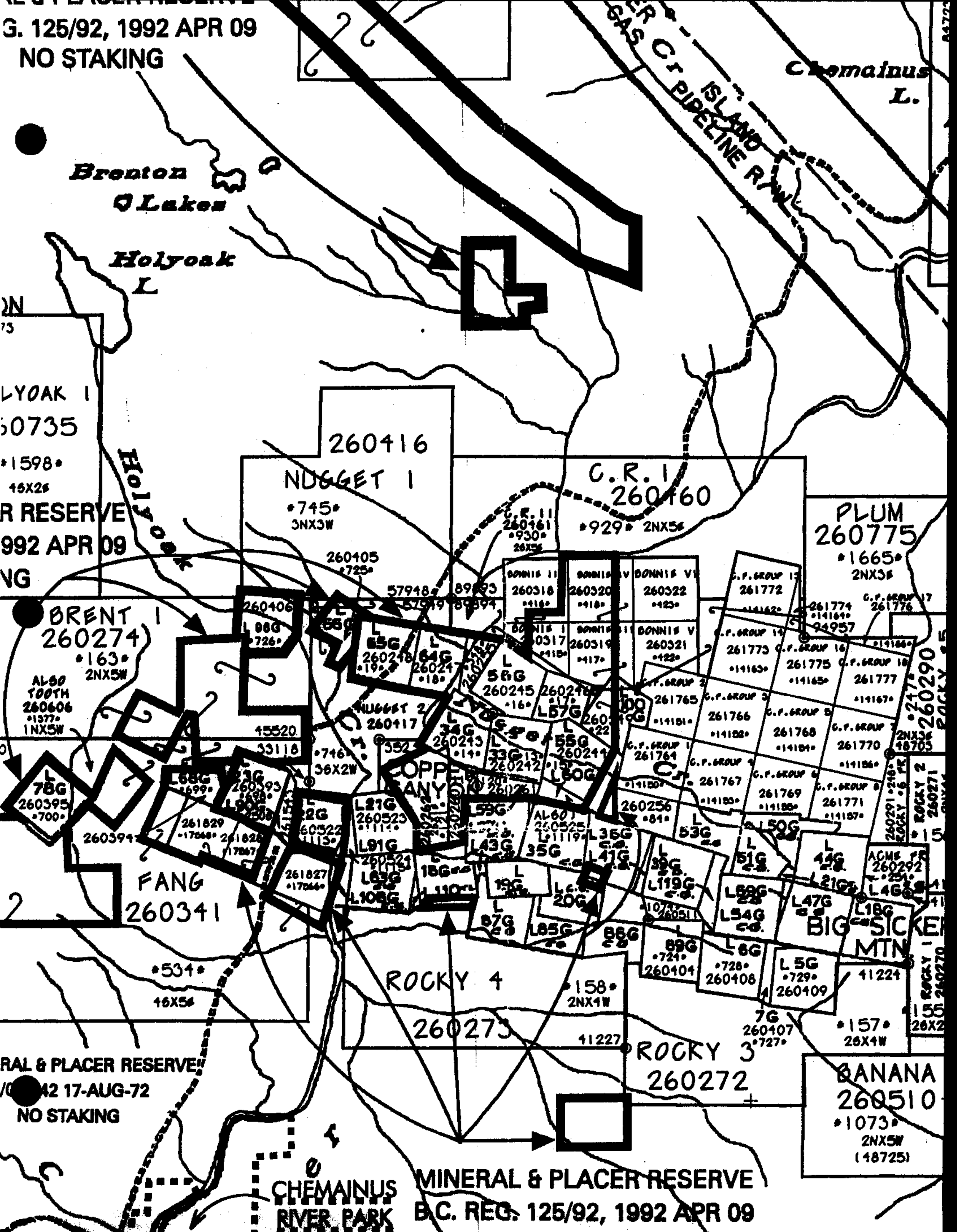
GPS READING TAKEN @ LINE 1-0
10 440450E
5413094N

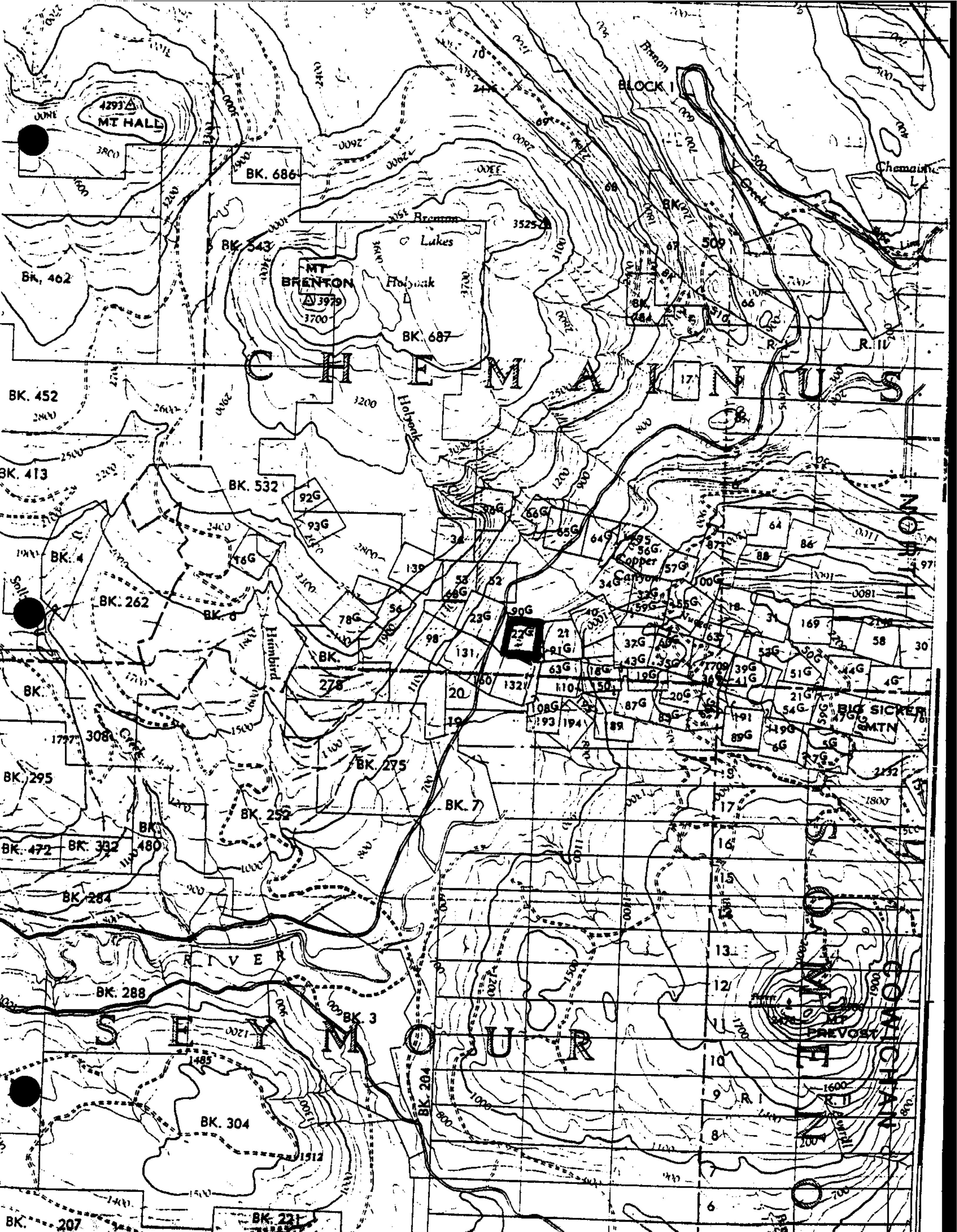
BY RON WALTON



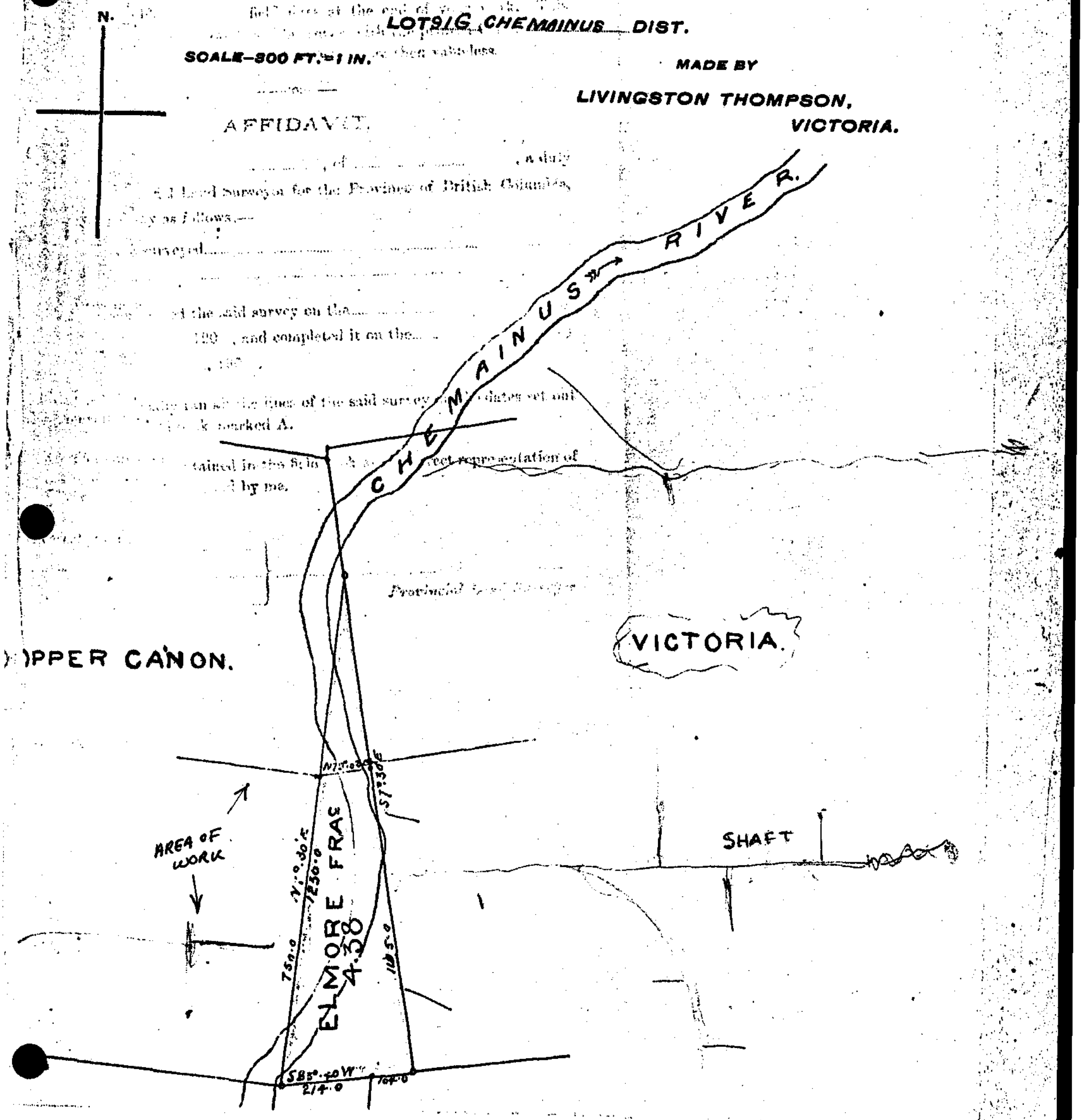

SCALE 20'

Chemainus
OYSTER LAND DISTRICT
CHEMAINUS LAND DISTRICT
SOMENOS LAND DISTRICT
Trans-Canada Highway
Bird Rock
Hospital Rock
Bare Point
Medical Centre
Tanks
Hospital Point
Chemainus Bay
Lumber Yard
Lumber Mill
Chemainus Lake
Waste
Askew Creek
Mill Creek
Fuller Lake
Motel
Arena
Escape Reef
Mainguy Island
Willy Island
Halalt Island Indian Reserve 1
Réserve indienne Halalt Island 1
SHOAL ISLANDS
Squaw-Hay-One Indian Reserve 11
Réserve indienne Squaw-Hay-One 11
Say-La-Quas Indian Reserve 10
Réserve indienne Say-La-Quas 10
Tsussie Indian Reserve 6
Réserve indienne Tsussie 6
Osborn Bay
Halalt Indian Reserve 2
Réserve indienne Halalt 2
Community Centre
CHEMAINUS RIVER
Whitehouse Creek
ISLAND
Copper Canyon
CANADIAN PACIFIC
NANAIMO
Westholme
Provincial Park
Filtration Plant
Pulp & Paper Mill
Chimney
Mobile Home Park
Crofton
Crofton Lake
Communication
Big Sicker Mountain
Little Sicker Mountain


G. 125/92, 1992 APR 09
NO STAKING
Chemainus L.
ISLAND GAS PIPELINE R/W
Brenton Lakes
Holyoak L
Holyoak
260416
NUGGET 1
•745•
3NX3W
C.R. 1
260460
•929• 2NX5E
PLUM
260775
•1665•
2NX3E
R RESERVE
992 APR 09
NG
BRENT 1
260274
•163•
2NX5W
ALSO TOOTH
260606
•1377•
1NX5W
260405
•725•
57948
260406
L 88G
•726•
65G
260246
64G
260247
58G
260245
NUGGET 2
260417
45520
33118
•746•
36X2W
78G
260395
•700•
260394
261829
261828
261827
FANG
260341
34G
260243
33G
260242
55G
260244
L60G
L21G
260523
L91G
L63G
L108G
18G
L59G
L43G
35G
L36G
L41G
20G
87G
L85G
86G
ROCKY 4
260273
•534•
46X5E
•158•
2NX4W
41227
ROCKY 3
260272
260256
53G
L50G
51G
44G
L21G
L4G
L1G
BIG SICKER MTN
L119G
L60G
L54G
L47G
89G
•724•
260404
8G
•728•
260408
L5G
•729•
260409
41224
7G
260407
•727•
•157•
2GX4W
BANANA
260510
•1073•
2NX5W
(48725)
261772
261774
261776
94957
261773
261775
261777
261765
261766
261768
261770
261764
261767
261769
261771
260317
260319
260321
260318
260320
260322
260290
ROCKY 2
260271
ACME FR
260292
48703
RAL & PLACER RESERVE
42 17-AUG-72
NO STAKING
CHEMAINUS RIVER PARK
MINERAL & PLACER RESERVE
B.C. REG. 125/92, 1992 APR 09


MT HALL
4293
BK. 686
BK. 543
BK. 462
MT BRENTON
3979
Brenton Lakes
Holyoak L
BK. 687
3525
BLOCK 1
Chemainus L
509
R. IV
CHEMAINUS
BK. 452
BK. 413
BK. 532
BK. 4
BK. 262
BK. 6
Humbird
BK. 278
Copper Canyon
BIG SICKER MTN
BK. 308
BK. 295
BK. 275
BK. 7
BK. 252
BK. 472
BK. 332
BK 480
BK. 284
RIVER
BK. 288
BK. 3
SEYMOUR
BK. 204
BK. 304
MT PREVOST
R. II
COWICHAN
BK. 221
BK. 207

# PLAN OF MINERAL CLAIM.



# THE SELF POTENTIAL METHOD

## INTRODUCTION

Like the magnetic method, the self-potential method is also a simple, easy and cheap geophysical tool to use in prospecting. If two metal stakes are driven into the ground about 200 feet apart and connected to the terminals of a sensitive voltmeter, an electric voltage will be found to exist between them. Such ground voltages normally range from a few millivolts to a few tens of millivolts. For comparison, a flashlight battery is 1.5 volts or 1500 millivolts. Especially important, it has been found that above some sulphide orebodies, notably those containing pyrite, chalcopyrite, pyrrhotite and also above graphite bodies, negative voltages as high as several hundred millivolts may be attained.

In the self-potential exploration method, the potential (or electric voltage) is measured over the area of interest, in the hope of finding strong negative anomalies in the range of hundreds of millivolts which may reflect sulphide mineralization.

## ORIGIN OF SELF POTENTIALS

There are two types of self-potentials observed in the ground:

1. Background potentials are positive and negative potentials ranging up to a few tens of millivolts. These potentials are thought to be caused by various electrochemical phenomena in the ground such as variations in the concentration of electrolytes from place to place.

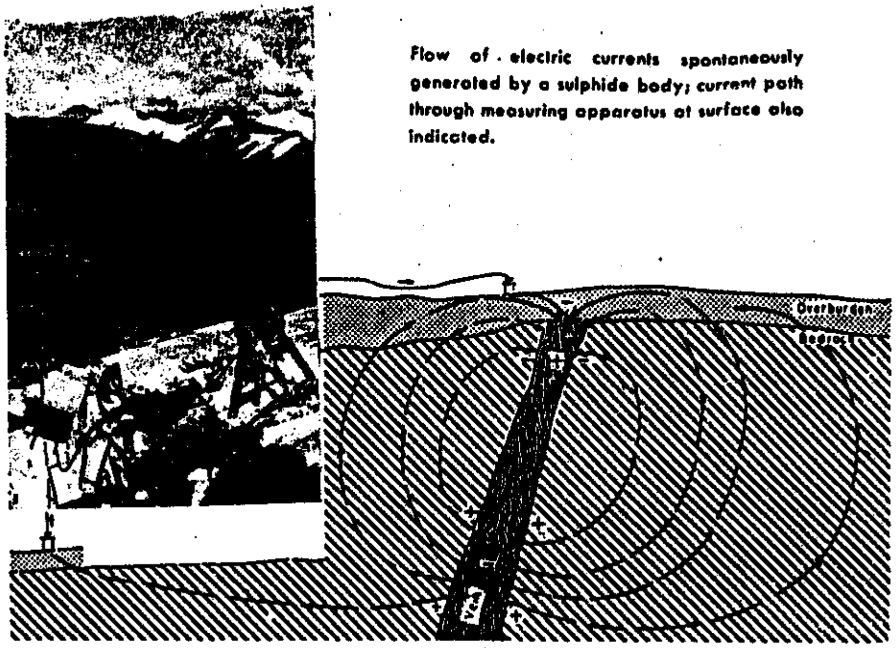
2. Mineralization potentials are strong negative potentials up to several hundred millivolts. The origin of these potentials is not clearly understook, but is thought to arise from the difference in the oxidation capacity of the waters near the upper and lower surface of an orebody. At the top and bottom of the orebody an exchange of ionic and electronic charges takes place, with the orebody serving to transport electrons from the lower surface to the upper surface until electrochemical equilibrium is reached.

The net result is that the upper surface of the orebody becomes negatively charged and the sulfide zone acts like a battery in the ground with the negative terminal at the upper end and the positive terminal at the lower end as shown in Figure 6, along with a sample SP profile across the top of the sulfide zone.

## EQUIPMENT

The basic apparatus required for SP measurements comprise a) electrodes, b)cable, and c) voltmeter.

a) electrodes - usually the electrodes consist of porous pots containing saturated copper sulphate solution. This is preferable over metal rods or stakes since the latter may polarize, this is, electrolytic action may set up a variable potential difference between the metal electrode and the ground and this, of course, does not reflect geology.



Flow of electric currents spontaneously generated by a sulphide body; current path through measuring apparatus at surface also indicated.

the earth's crust is presumed to be due, in part at least, to solar influences. When solar flares and sun spots produce particularly violent magnetic disturbances and auroral displays on earth, these telluric currents sometimes suffer such violent fluctuations as to preclude reliable observations with the spontaneous polarization technique. On the other hand, milder fluctuations in telluric currents have been employed as an exploration technique.

Primarily, however, exploration procedures based on the flow of natural currents, rely on the "self-potential" currents which arise spontaneously in certain mineral bodies, due to the polarization of these bodies. In other words, such mineral deposits are natural batteries, buried in the ground. In utilizing this phenomenon, the geophysicist is profiting from a natural field of force offered ready to his hand. He is spared the necessity of taking into the field apparatus, more or less cumbersome, to apply an artificially created field of force to the earth. On the other hand, he can neither vary the place of application nor the magnitude of the force, but must accept it as nature provides it.

The manner of origin of spontaneous polarization currents may not be fully understood, but enough is known to permit correcting some misconceptions and to give a general idea of the processes involved. The statement is often made that these currents arise from the oxidation of sulphide bodies. That this is partly erroneous is demonstrated by the fact that deposits of graphite, with very small amounts of sulphides, yield remarkably strong currents. Beds of anthracite, but not bituminous, coal also give moderately strong currents. Furthermore, currents noted in underground workings, far below the surface, have actually been found to arise from sulphides apexing well below those working levels.

For an electrical current to be generated in a manner similar to the process taking place in a galvanic cell, one or more metallic conductors of electricity must be in contact with one or more electrolytes (solutions of salts, acids or alkalies that are themselves electrically conductive). Most of the sulphides are metallic conductors of electricity, the general rule being that minerals possessing metallic lustre are metallic conductors of electricity, thus excluding sphalerite and cinnabar. An exception is stibnite, the antimony sulphide, a non-conductor in spite of its metallic lustre.

The oxides are mostly non-conductive, except for the manganese minerals pyrolusite and psilomelane. Graphite is a good metallic conductor, and anthracite coal owes its electrical activity to the sooty layers of conductive, graphitic material often interleaved with the bright, shiny, non-conductive portions. This sooty, graphitic material is absent from the lower orders of coal (and occasionally from some anthracites) which therefore yield no currents.

Metallic conductors, such as those just described, are bathed by various electrolytes in the rock forma-