

86-570-14985
MINISTRY OF ENERGY, MINES
AND PETROLEUM RESOURCES
Rec'd JUL 7 1986
SUBJECT _____
FILE _____
VANCOUVER, B.C.

REPORT ON RESISTIVITY AND SELF-POTENTIAL SURVEYS

EDITH 100 CLAIM, KAMLOOPS MINING DIVISION

Lat. 50° 34.9' Long. 120° 22.6'

N.T.S. 92I/9W

Owner: Afton Operating Corporation

Operator: Teck Corporation

FILMED

GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,985

W. R. Bergey

May, 1986
GOVERNMENT
AGENT

JUL 10 1986

KAMLOOPS

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INTRODUCTION

Intermittent exploration work has been carried out since the early 1940's in the area east of Goose Lake, within the Edith 100 Claim as presently designated. Physical work has included 3 shallow inclined shafts, a considerable amount of trenching and 1 diamond drill hole. In addition, magnetometer, VLF, geochemical and geological surveys have been carried out by several operators. The most recent report, by L. Sookochoff (5) for Argenta Resources Ltd., suggests that gold potential exists within volcanic rocks of the Nicola group in the northeast part of the Edith 100 Claim.

The earlier geochemical surveys did not show any significant enrichment in any of the elements tested. However, none of these elements (Cu, Mo, Ni, Co, Pb, Zn, Ag, Fe, Mn) is particularly useful as a pathfinder element for Au. The Sookochoff report (5) indicated that some of the known mineralization occurred as sulphide-rich black argillite. This suggested to us that a combination of self-potential and resistivity surveys might help to outline deposits of this type since black argillites frequently contain conductive organic matter (also giving rise to self-potentials) and the self-potential method is responsive to relatively weak sulphide mineralization. The combined survey was carried out along 9 survey lines, each 300 metres in length, for a total of 2.7 kilometres of detailed surveying.

Geological mapping was carried out within the survey area following completion of the geophysical work. The mapping was felt to be essential to the interpretation of the resistivity survey, particularly in the location of the outcrop areas, and it is included as an adjunct to the present report. A more detailed discussion will be the subject of a subsequent report.

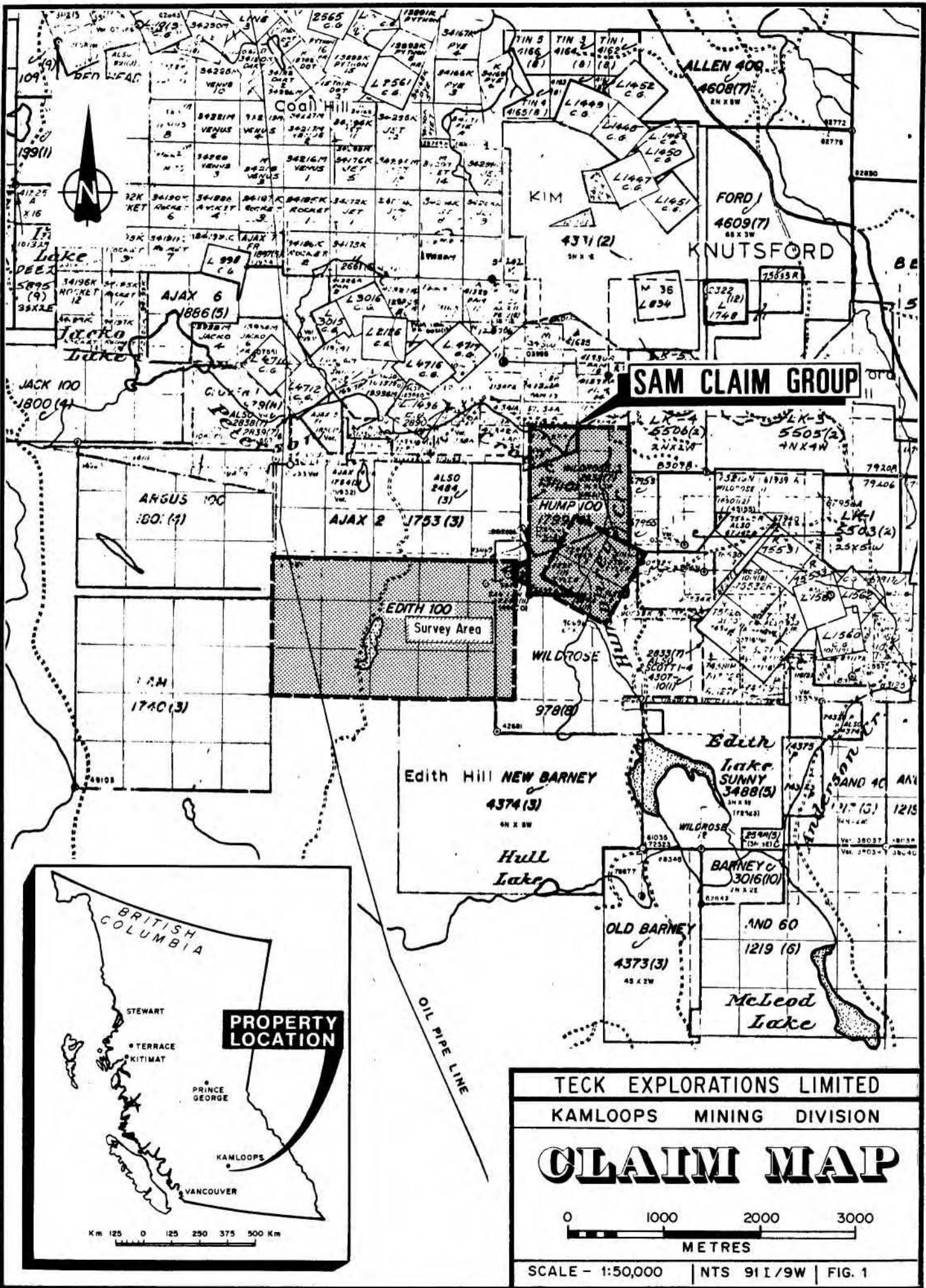
Geochemical samples were taken in conjunction with the geophysical surveying. These have been stored for possible analysis for Au and other elements in the future.

PROPERTY

The property consists of the following:

<u>Claim Name</u>	<u>Record No.</u>	<u>Expiry Date</u>
Tyler 1 to 4	2297-2300	Nov. 29, 1986
Edith 100 (15 units)	1802	April 9, 1987 *
Hump 100 (8 units)	1799	April 9, 1987 *
Sam 1 Fr.		Nov. 29, 1986

- * Upon approval of assessment work described in this report and covered in a Statement of Exploration and Development dated April 9, 1986.



SAM CLAIM GROUP

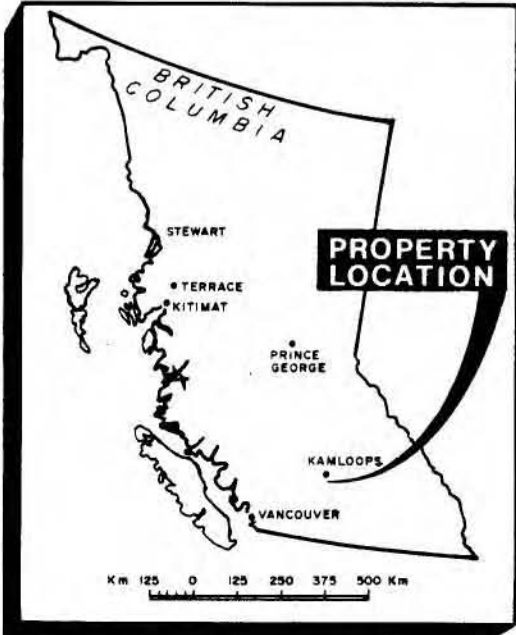
Edith Hill NEW BARNEY
4374(3)
4N X SW

SUNNY
3488(5)
17N X E

BARNEY C
3016(10)
2N X E

OLD BARNEY
4373(3)
4S X SW

AND 60
1219(6)



TECK EXPLORATIONS LIMITED
KAMLOOPS MINING DIVISION

CLAIM MAP

0 1000 2000 3000
METRES

SCALE - 1:50,000 | NTS 91I/9W | FIG. 1

LOCATION, ACCESS, PHYSIOGRAPHY

The Edith claim straddles the Goose Lake road at Goose Lake, approximately 10 kilometres south of Kamloops. It may be reached via the Goose Lake road which branches from Highway No. 5 at Knutsford.

The survey area itself is accessible by ranch road through land belonging to Morrison Ranches. This area lies along the northeast flank of the low ridge which forms the northern extension of Edith Hill. Overburden generally is thin and rock exposures are abundant along the ridge. However, several small drumlins were noted and a flat moraine of considerable thickness occurs in the northeastern portion of the area. The ridge is mainly tree covered.

PREVIOUS WORK

Three shallow inclined shafts, one to a depth of 180 feet, apparently were sunk by H. R. Graham during the 1940's (See Chance Group, Cockfield (1), p.66). Extensive trenching was carried out during this period and later, but is not well documented.

Lori Exploration Ltd. carried out magnetometer and Cu geochemical surveys in 1972. Trenching, and possibly percussion drilling, may have been done at about the same time.

Argenta Resources acquired the Edith 100 claim in 1979. Since that time they have carried out a VLF-EM survey, multi-element geochemical surveys, a few induced polarization traverses, a so-called "geological survey", and a one-hole diamond drilling program.

GEOPHYSICAL SURVEY

Detailed survey lines were laid out in two areas to cover most of the known showings on the Edith 100 claim. The survey conforms to the grid used in early work described by Sookochoff (5). Stations were located at intervals of 12.5 metres along lines 60 metres apart and 300 metres in length. In the eastern or "Shaft" area 5 lines were surveyed. The western or "Trench" area was covered with 4 lines.

The geophysical survey employed the familiar "Wenner array" electrode configuration to measure the resistivity and the self potentials along the traverse lines. In this array electrodes are spaced at equal intervals along the traverse line, with current electrodes at the ends and potential electrodes in the centre. In this survey the electrode spacing was 12.5 metres in all cases. Power was provided by a 45-volt D.C. power pack. Porous pots between potential electrodes were used as potential electrodes and 2-inch augers formed the current electrodes.

At each station the voltage was measured both with current on and current off. The current was measured during the "on" cycle.

The instrument used in the survey was the Fluke 77 Multimeter. This instrument is capable of measuring D.C. voltage to 0.1 millivolts and D.C. current to .01 milliamps. This sensitivity was approximately an order of magnitude greater than required for the purposes of the survey.

As the survey proceeded the potential electrodes were "leapfrogged", i.e., the rear pot was moved ahead 25 metres while the front pot remained in place. This obviated the necessity for a "pot correction". The D.C. voltage with current off was recorded as self potential and the algebraic sum of the readings gave the self potential values at the succeeding stations relative to an arbitrary base value of zero, which was taken as the highest positive reading in the survey area. This gave all negative values; for ease in plotting, the negative signs were removed.

The resistivity at each station was calculated according to the formula, $\text{Resistivity} = V/I \times 2\pi a$, where "a" is the electrode spacing of 12.5 metres. Since the survey utilized direct current, it was necessary to subtract the self potential (current off) from the voltage measured with the current on. We insured that the latter was much greater than the former at every station. For "V" in millivolts, "I" in milliamps and "a" in metres the resistivity is given in ohm-metres. For ease in presentation the values are shown on the accompanying map (Figure 1) as $100 \times \log_{10}$ ohm - metres.

The geophysical survey was carried out by G. Lovang and his assistant. The survey lines were laid out to follow the lines used in previous work. Some discrepancies were noted; however the present survey is internally consistent.

GEOLOGY

The Edith 100 claim is underlain mainly by volcanic rocks of the Triassic Nicola group. It lies approximately 1.5 kilometres west of the margin of the Iron Mask batholith; small dioritic stocks and dikes commonly intrude the volcanic rocks in this area.

The dominant volcanic lithology within the survey areas is crystal-lithic tuff. Fragments commonly are in the size range of medium-to-coarse grained sandstone but finer and coarser varieties occur. In the vicinity of the main shaft the rock is breccia composed of fragments of a distinctive pale-grey crystal tuff. The so-called black "argillite" in the "Trench" area is a fine-grained, dark-grey tuff containing small light-coloured clasts and several percent of sulphides. This rock locally is thinly interbedded with pale-gray volcanic sandstone.

A diorite stock occurs northwest of the main shaft and occupies most of the central and western part of this survey area. The stock has a width of about 100 metres and is elongated north-northwest for at least 400 metres.

The volcanic rocks are predominantly massive and only a few bedding attitudes were noted, all in the western area. Except for distortion in the thin-bedded tuff, the dips are steep to the northeast.

The main shaft was sunk on a conformable 0.5 metre quartz vein striking 102° and dipping 55° south. Alteration extends for about one metre into the footwall; the hanging wall is not well exposed. Shearing and alteration extend into the diorite to the west. The No. 2 shaft apparently explored a vein trending at 20° which is approximately normal to the local bedding in the tuffs. The No. 3 shaft was put down in veined and altered diorite. It is reported that erratic Au values occurred in the veins and shears, generally with Cu (Sookochoff, Cockfield).

The dark-grey tuff in the "Trench" area contains several percent of finely disseminated pyrite, pyrrhotite and chalcopyrite. Trenches in the area evidently were put down to test zones of strong limonitic staining. No assays are available.

DISCUSSION OF THE GEOPHYSICAL RESULTS

Variations in the self potential values are extremely small. There are no local changes which are not well within normal variations due to soil type and moisture. For example, changes of up to at least -30 millivolts can occur between a pot imbedded in wet ground and one on dry sand or outcrop. Evidently, the disseminated sulphides in the dark-grey tuff are not sufficiently abundant or interconnected to give rise to a detectable self-potential anomaly.

The resistivity survey, as expected, was dominated by variations in the thickness of the till. The selection of a very short electrode separation was made in order to provide detailed information on relatively narrow mineralized zones in areas of thin cover. It is evident from the results of the survey that the known mineralized zones are not distinguishable by their resistivity from the adjacent unmineralized rocks.

CONCLUSIONS

1. It is concluded that the geophysical methods utilized in the test survey over the known mineralized zone are not effective in distinguishing the mineralized material.
2. No anomalous indications were obtained elsewhere in the survey areas which could reasonably be attributed to sulphide zones.
3. Utilization of these geophysical methods on other parts of the property is not warranted on the basis of the results of the work described in the present report.

REFERENCES

1. Cockfield, W.E., "Geology and Mineral Deposits of the Nicola Mpa-Area, B.C.; G.S.C. Memoir 249, 1961.
2. Mark, D.G., "Geochemical Report on the Sam Claim Group, Kamloops, M.D."; Assessment Report No. 8043, 1980.
3. Mitchell, J.A., "Report on Magnetic Survey of Tia Group of Mineral Claims"; Assessment Report No. 3714, 1972.
4. Mitchell, J.A., "Report on Geochemical Survey of Tia Group of Mineral Claims"; Assessment Report No. 3762, 1972.
5. Sookochoff, L., "Geological Report on the Edith claim of the Sam Claim Group"; Assessment Report No. 14310, 1985.

ITEMIZED COST STATEMENT
PROJECT ARGENTA, NUMBER 1343

Personnel

W. R. Bergey, P.Eng. April 6-8, 1986 2-1/2 days @ \$400/day		\$1,000.00
G. Lovang, Prospector April 4-9, 1986 6 days @ \$157.75/day		946.50
R. A. Wilhelm, Assistant April 7-9, 1986 3 days @ \$120/day		360.00

Transportation

4-Wheel drive vehicle April 4-9, 1986 6 days @ \$40/day	\$240.00	
Fuel	<u>90.00</u>	<u>330.00</u>

Accommodation, Meals

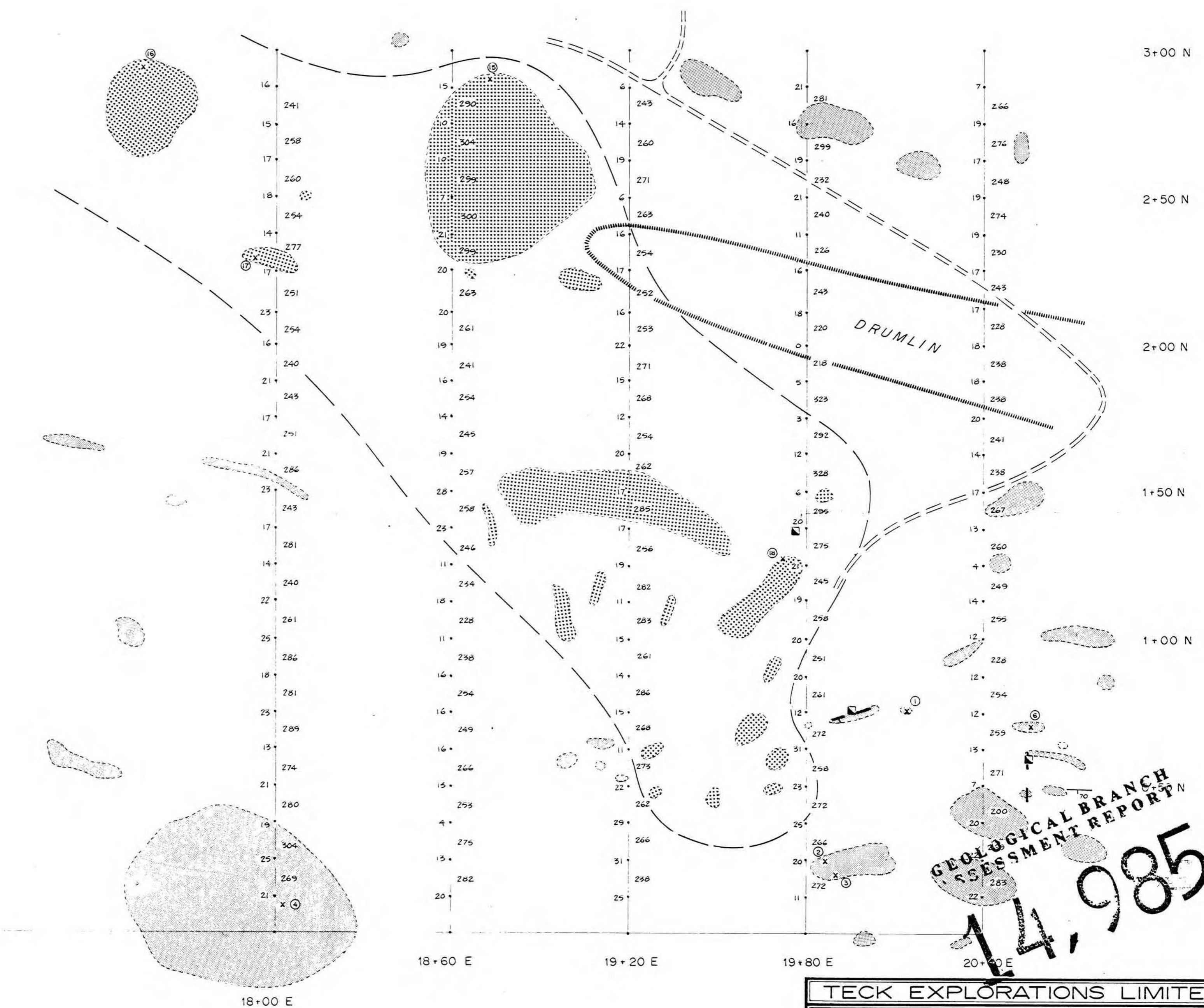
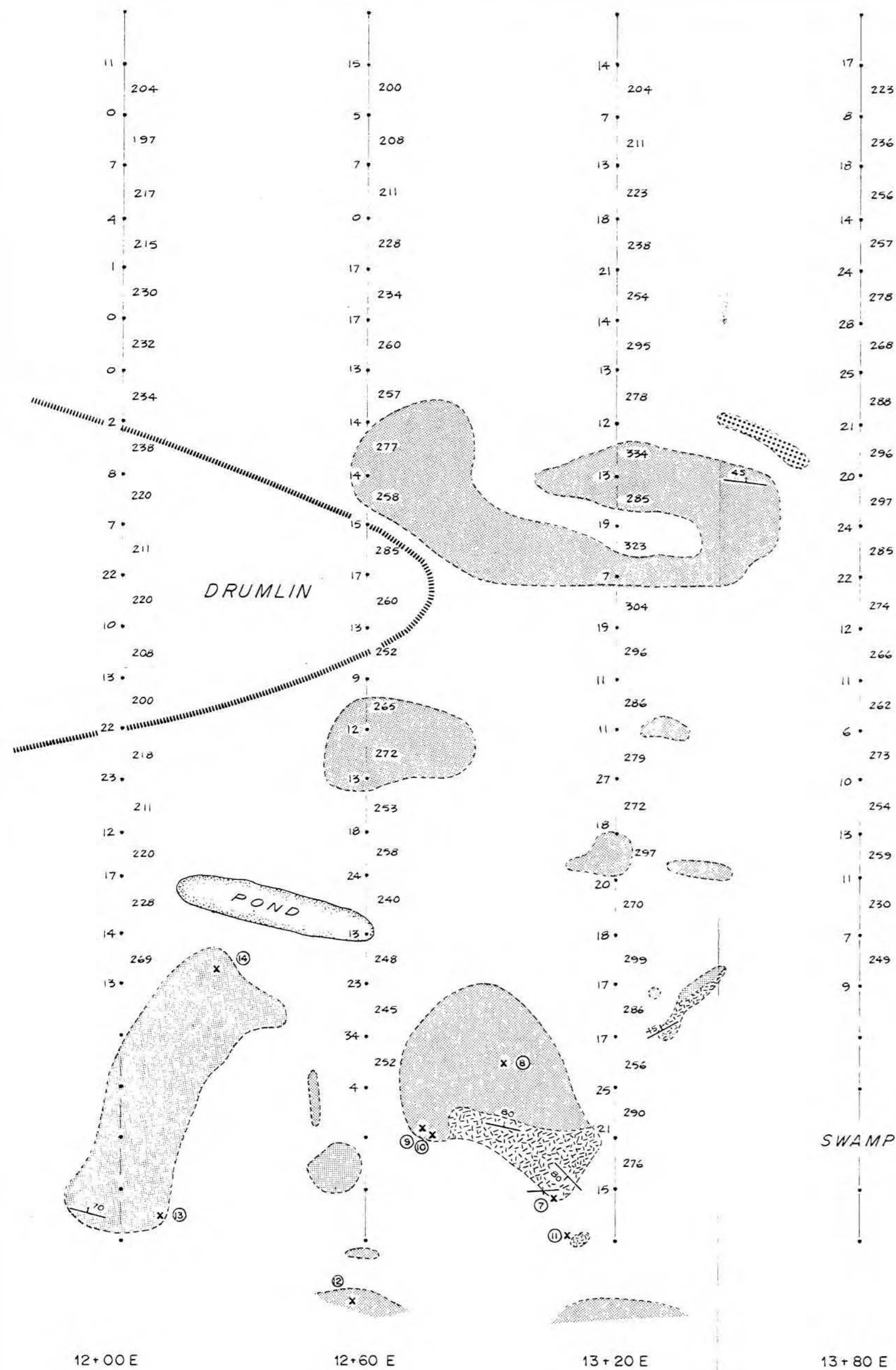
Motel and meals for Bergey and Lovang Total 9 days @ \$60/day		540.00
Expendable supplies (batteries, flagging, etc.)		73.50
Report preparation, drafting, printing		<u>400.00</u>
	Total	<u>\$3,650.00</u> =====

STATEMENT OF QUALIFICATIONS

I, William Richard Bergey, of the District of West Vancouver do hereby certify:

1. I am a graduate of McMaster University in Geology and have undertaken post-graduate studies at the University of Toronto (geology) and Colorado School of Mines (geophysics).
2. I am a member of the Association of Professional Engineers of B.C.
3. I have been engaged in the professional practice of geology and geophysics in the mineral industry for the past 39 years.
4. I personally supervised the work described in the report accompanied by this Statement.

A handwritten signature in black ink, appearing to read "W. R. Bergey". The signature is written in a cursive style with a large, sweeping initial "W".



LEGEND

- SELF POTENTIAL in millivolts
- APPARENT RESISTIVITY in $100 \log_{10}$ ohm metres
- Shaft
- Vein
- Strike and dip of bedding
- Sample
- Geological contact
- Road

GEOLOGY

- Diorite
- Dark-grey, fine-grained bedded tuff
- Mafic to intermediate pyroclastic rocks, mainly crystal-lithic tuff

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**
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TECK EXPLORATIONS LIMITED
KAMLOOPS MINING DIVISION

RESISTIVITY AND SELF-POTENTIAL SURVEYS OF PART OF EDITH CLAIM

Metres 0 50 100
1:1000

COMPILED: W. Bergey DRAWN: WR DATE: JULY 1986 NTS: 921/9W