PROSPECTING REPORT

TROOPER 4 PROPERTY

(Record No. 3503, New Westminster M.D.)

Foley Lake, Chilliwack River Area, B.C.
Mapsheet 92 H4/E

Lat: 49 07 30. Long 121 34 30

for:

CASTLEFORD RESOURCES LTD.

c/o 816 - 850 West Hastings St.,
Vancouver, B.C.,
V6C 1E2 681-9159

by:

RAPITAN RESOURCES INC.,

B.J.Price, M.Sc., FGAC. - Consulting Geologist

2505 W.1st Ave., Vancouver, B.C., V6K 1G8
Tel: (604) 733-6902 FAX: (604) 682-4488

February 1, 1990

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SUMMARY

Preliminary sampling and mapping was completed between August 18 and 23 on the Trooper 4 Mineral Claim by prospectors Pat Crook and Jack Zakodnik and geologist W.Howell under the supervision of Consulting Geologist Barry Price. Total cost of the program was $8,896.50, of which $5,400 was applied, advancing the expiry date of the claim to December 2, 1992, with the balance going to the Portable Assessment Credit (PAC) account of Castleford.

The Trooper 4 claim, owned by Castleford Minerals Ltd., is situated at Foley Lake, approximately 28 km due east of Sardis B.C., and is accessed by a good gravel road extending up Foley Creek from the paved Chilliwack Lake access road along Chilliwack River. The claim is heavily forested and extends northward up the steep slope from Foley Lake toward Foley Peak.

Interest in the area was sparked by significant drill intersections of copper-gold skarn mineralization on the Lucky Four property on Foley Peak.

Work done included 135 soil and silt samples, 2 pan concentrate samples, and 45 rock samples, taken along roads and traverses. Samples were analyzed by Chemex Labs Ltd, Vancouver, B.C., using 32 element ICP analysis as described in the Appendix. One VLF traverse was done.

Rocks in the area of the claim include fine grained green dacitic to andesitic tuffs interbedded with black argillites and graphitic phyllites. One microdiorite equigranular dyke about 1 meter wide was seen and a large fault bounded mass of serpentinized ultramafic rock was seen.

Mapping by the Geological Survey in the area outlines Chilliwack Group volcanics and sediments overlain by Mesozoic Cultus Formation balck argillaceous sediments. The contact crosses the property near Foly Lake.

Mineralization of disseminations and clots of pyrrhotite with lesser amounts of chalcopyrite were seen in two localities, adjacent to the roads at the eastern end of Foley Lake. The mineralization appeared to be on open ground. Additional staking was recommended, and the Copper 1 and Copper 2 claims were subsequently located over the area.

The mineralization was extensively sampled, and rock sampling indicated the horizon contains anomalous copper, zinc, cadmium and phosphorus, with elevated molybdenum values as well. Additional prospecting and mapping has been recommended.

Valley sides are covered with a thick mantle of boulder till which could be 50 meters thick in places. Soil samples were taken at the top of till where possible, but these may not reflect bedrock with any degree of accuracy.

One VLF EM traverse was done over what appeared to be a favorable volcanic/sedimentary contact northwest of Foley Lake.

A prominent bluff on the north side of the lake is volcanic flows and tuffs; the adjoining gully marks a strong north trending fault containg a mass of sheared serpentine. Additional large areas of serpentine are expected in the valley of the prominent south flowing stream adjacent to the logging landing on which camp was situated.

Minister of Mines Report for 1919 indicates the copper mineralization present on the Rico property crown grants was traced by original prospector Williamson southward from the ridge crest; this mineralization comprised replacements and stockworks of chalcopyrite in argillaceous sediments, and thus the mineralization seen near Foley Lake may be comparable in style and origin.

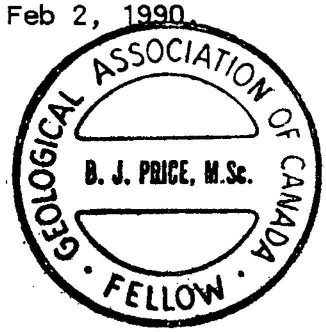
Higher parts of the property are virtually inaccessable from the valley floor and would be most easily prospected by placing a fly camp at Williamson Lake or at the McNellen camp, (preferrably before October 15).

Geochemical response from the black shale area was not encouraging for base metals; the precious metal potential for the area remains unknown. Further prospecting is recommended however, to follow up the interesting stratiform copper occurrence at Foley Lake.

respectfully submitted

Barry Price

Barry Price, M.Sc., FGAC
Consulting Geologist,
Feb 2, 1990.



PROSPECTING REPORT

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INTRODUCTION:

At the request of Richard Simpson, the writer, accompanied by Geologist William Howell, B.Sc., and prospectors Pat Crook and Jack Zacognick completed a prospecting program on the Trooper 4 mineral claim at Foley Lake, New Westminster Mining Division. This brief report describes the results of the prospecting program.

LOCATION AND ACCESS:

The Trooper 4 claim, owned by Castleford Minerals Ltd., is situated at Foley Lake, approximately 28 km due east of Sardis B.C., and is accessed by a good gravel road extending up Foley Creek from the paved Chilliwack Lake access road along Chilliwack River. The claim is heavily forested and extends northward up the steep slope from Foley Lake toward Foley Peak.

CLAIMS:

The Trooper 4 claim, 18 units was staked Dec 2 1988 by A.Anczykowsi,and has record date December 2 1988. The claim is held by Castleford Minerals Ltd., c/o 816 - 850 West Hastings Street, Vancouver, B.C. The claims adjoin a number of crown granted claims on Foley Peak being explored by McNellen Resources Ltd.

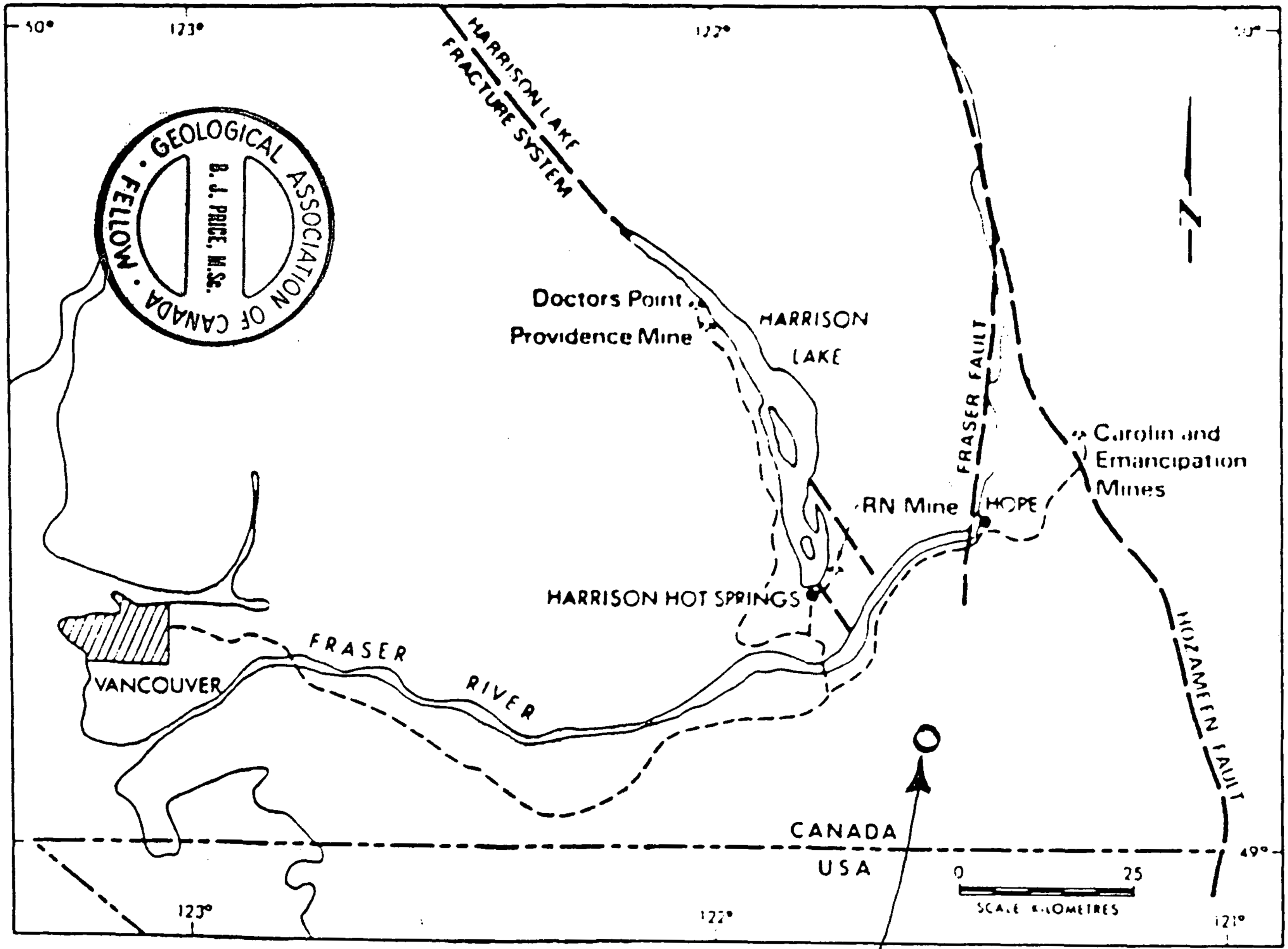
Examination of the claim map indicated possible fractional areas between the Trooper 4 claim and the Rico claims to the west, and an open area to the south. For this reason, the COPPER 1 and COPPER 2 claims of 12 and 20 units respectively were staked. These claims are not as yet grouped with Trooper 4, and the assessment work outlined by this report has been filed solely on the Trooper 4 claim, advancing the expiry date to December 2, 1992.

1989 WORK PROGRAM:

Preliminary sampling and mapping was completed between August 18 and 23, 1989 on the Trooper 4 Mineral Claim by prospectors Pat Crook and Jack Zadognik and geologist W.Howell under the supervision of Consulting Geologist Barry Price.

Work was done from a tent camp established on a logging landing northeast of Foley Lake. Supplies were purchased in Sardis, B.C. Vehicles owned by Pat Crook and the writer were used for access.

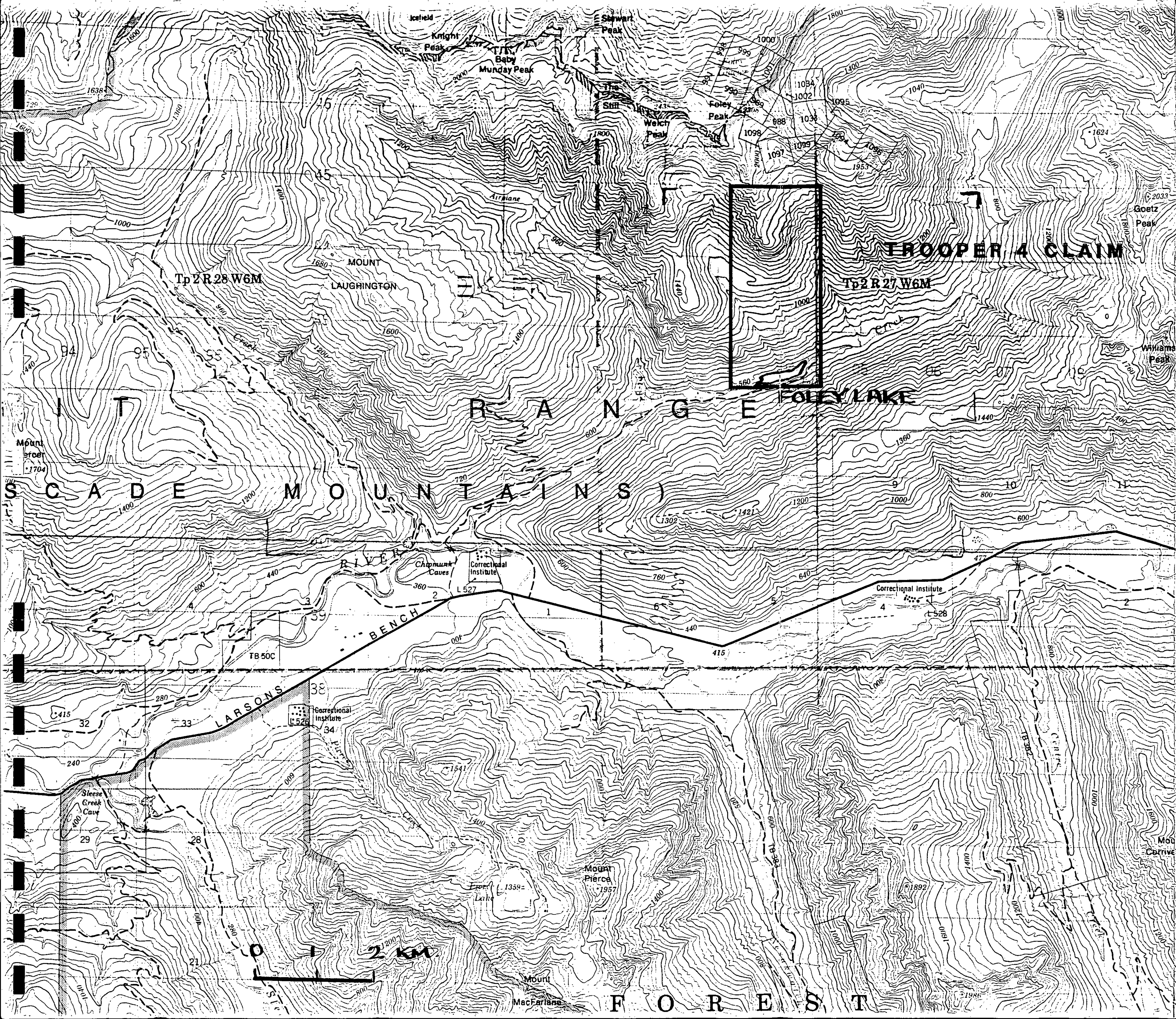
Total cost of the program was $8,896.50, of which $5,400 was applied, advancing the expiry date of the claim to December 2, 1992, with the balance going to the Portable Assessment Credit (PAC) account of Castleford.



TROOPER 4 CLAIM

FIG 1

LOCATION MAP



Use diagram only to obtain numerical values
APPROXIMATE MEAN DECLINATION 19
FOR CENTRE OF MAP
Annual change decreasing 4'

N'utiliser le diagramme que pour obtenir des valeurs numériques
DÉCLINAISON MOYENNE APPROXIMATIVE
AU CENTRE DE LA CARTE EN 19
Variation annuelle décroissante 4'

ONE THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 10
QUADRILLAGE DE MILLE MÈTRES
TRANSVERSE UNIVERSELLE DE MERCATOR

B. J. PRICE, M.Sc.
GEOLOGICAL ASSOCIATION OF CANADA
FELLOW

FIG 1B

CASTLEFORD MINERALS LTD.

TROOPER 4 CLAIM
FOLEY LAKE

LOCATION MAP
FOLEY LAKE AREA.

DRAWN: BDS/ER	N.T.S. 92H - 4E	SCALE: 1: 5000	DATE: FEB. 1990

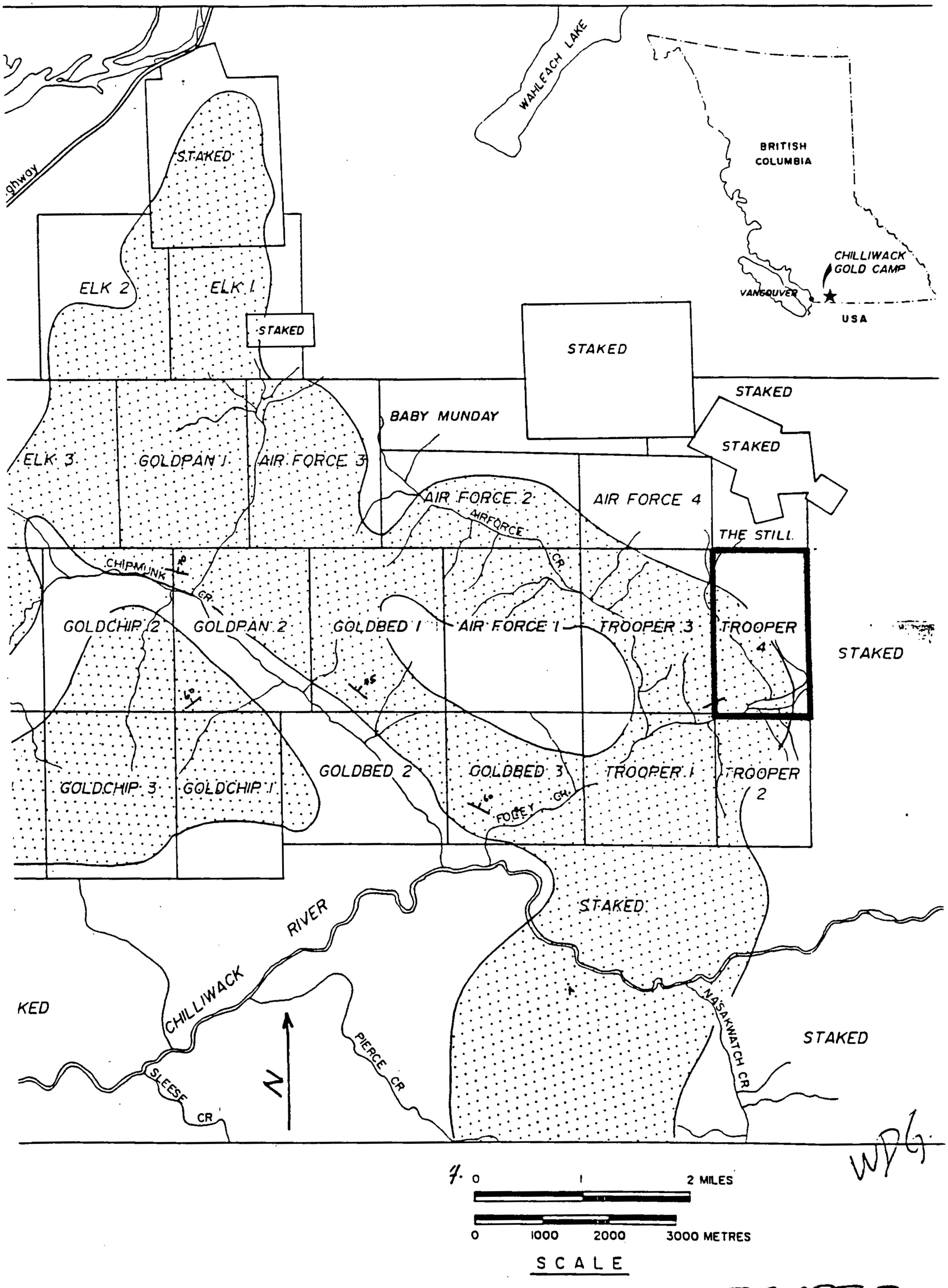


FIGURE 2

CLAIM MAP.

Work done included 135 soil and silt samples, 2 pan concentrate samples, and 45 rock samples, taken along roads and traverses. Samples were analyzed by Chemex Labs Ltd, Vancouver, B.C., using 32 element ICP analysis as described in the Appendix.

REGIONAL GEOLOGY:

The property is situated in the Cascade Mountains, due south of the Cheam Range, and has been mapped by Daly (1912), and Monger, (1966). In the vicinity of Foley Lake, volcanic and sedimentary rocks of the Chilliwack Group (late Paleozoic) are overlain disconformably by carbonaceous phyllites of the Cultus Formation, (Early Mesozoic) as shown in the accompanying stratigraphic columns. Rocks of the Chiiliwack Group include fissile shales, massive to tuffaceous volcanics, and thick Permian Limestone units. The Cultus Formation includes rusty weathering pyritic and graphitic shales and phyllites. Both units are strongly folded and faulted as described by Monger, (1966). Regional Geology is shown in the accompanying maps.

Fault bounded slices of serpentinized ultramafics of unknown age occur throughout the area, and Tertiary dioritic rocks of the Mt Barr Batholith, to the north, and the Chilliwack Batholith, to the south, have intruded the Paleozoic and Mesozoic rocks. The intrusions are dated at 19 to 26 Million years.

Regionally, gold deposits are associated with the northwest trending Harrison Fracture Zone, extending southeastward from Lillooet River through Harrison Lake toward the Mt.Barr Batholith, and the Fraser River Fault, extending southward through Hope and into northern Washington, where it is called the "Straight Creek Fault". These major faults are intruded by the Tertiary plutons.

MINERAL DEPOSITS IN THE AREA:

Gold deposits along the Harrison Lake Fracture Zone at its northern end include epithermal style deposits at Fire Creek and the Aranlee property at Sloquet Creek. Gold veins also occur on Fire Mountain. Arsenical gold bearing quartz veins are associated with dioritic stocks at Doctors Point, where Rhyolite Resources have developed about 150,000 tons of geologic reserves grading 0.10 oz/ton gold. At the RN property near Harrison Hot Springs, Abo Resources and partners have explored disseminated gold and quartz stockworks associated with late Tertiary dioritic stocks, and current reserves are about 6 million tons grading 0.10 oz/ton.

In the vicinity of Laidlaw, southwest of Hope, gold occurs in quartz veins, accompanied by pyrrhotite, arsenopyrite and chalcopyrite, adjacent to the northern contact of the Mt.Barr Batholith. Near the southern contact, copper-gold skarns have recently been explored by McNellen Resources, with wide drill intersections with semi-massive chalcopyrite and good gold values.

Farther south, a cluster of gold properties occurs along the western margin of the Chilliwack Batholith. Of these, the most important are the Boundary Red Mountain Mine, in Washington, which from 1913 to 1946, produced ore worth close to $1 million U.S., (est about 50,000 oz gold). The nearby Lone Jack Mine had production from 1902-1924 of about $550,000

Data compiled from published and unpublished reports.

Accuracy of location:

- ● known within a radius of 2,000 feet
- ▲ 2,000 feet to 2 miles
- ■ not known within 2 miles

Location and name subject to revision. Data known to be incomplete.

Copies of this map may be obtained for $1.00 per sheet. Orders for maps should specify the map-number and letter, for example, 92H S.W. (MI). Orders should be addressed, with prepayment, to the

Chief of the Mineralogical Branch,
Department of Mines and Petroleum Resources,
Victoria, B. C.

MAP NO.		NAME	PROPERTY NO.
92H/S.W.	1	A.M. (Cu, Ag, Mo)	773
	2	INVERMAY (Au, Ag, Pb, Zn, Cu)	3600
	3	MAMMOTH (Ni, Cu, Mo, W, Ag)	3601
	4	PRIDE OF EMORY (Ni, Cu)	771
	5	BEA (Cu, Ni)	3602
	6	MURPHY (Ag, Cu, Au, Pb, W)	3603
	7	LUCKY FOUR (Cu, Mo)	3604
	8	EMPRESS (Cu, Mo, Ag)	3605
	9	POPKUM (Limestone)	3606
	10	-------- (Mo)	3607
	11	EUREKA - VICTORIA (Ag, Cu, Pb)	3608
	12	D & J (DIAMOND; SILVER BELL) (Cu, Au, Ag)	3609
	13	HARRISON (Cu, Au, Pb, Zn)	3610
	14	GOLD COIN (NORTH STAR) (Au, Ag, Cu, Pb, Zn)	3611
	15	VALLEY VIEW (PF-MIDNIGHT (Cu)	3612
	16	SILVER CHIEF (Ag, Pb, Zn)	3613
	17	BLUE CHIP (DIANE) (Au, Ag, Pb)	3614
	18	EUREKA (Ag, Pb, Zn)	3615
	19	SOUTHERN NO. 8 FR. (Ag, Pb, Zn, Sb)	3616
	20	BLUE BELL (Ag, Pb, Zn)	3617
	21	QUEEN BESS (Ag, Pb, Zn)	3618
	22	INDIANA (Ag, Pb, Zn)	3619
	23	SUMMIT (EVENING STAR) (Ag, Pb, Zn)	3620
	24	IDEAL GOLD (Au, Ag)	3621
	25	SILVER DAISY (Au, Ag, Cu, Pb, Zn)	3622
	26	FAITH (DOLLY VARDEN) (Au, Ag, Cu, Pb, Zn)	3623
	27	JULY (Au, Ag, Cu, Zn)	3624
	28	SUNRISE (Zn, Au, Ag, Pb)	3625
	29	SUNSET (SILENT FRIEND; HOPE) (Zn, Cu, Ag, Au, Pb)	3626
	30	GRANDVIEW INTERNATIONAL (Au, Ag, Cu, Pb)	3627
	31	FAIRPLAY (?Cu)	3628
	32	SLEESE CREEK (Au)	3629
	33	ANNA (CONTACT) (Au, Ag, Cu)	3630
	34	EMANCIPATION (Au, Ag, Cu)	3631
	35	MORNING (BROKEN HILL) (Au, Pb)	3632
	36	AUFEAS (JUMBO) (Au, Ag, Cu, As)	3633
	37	MARY JANE - ANNIE LOU (Mo)	3634
	38	LAST CHANCE (Mo, Au, Ag, Cu, ?Ni)	3635
	39	STAR NO. 1 (Au, Ag, Cu)	3636
	40	FORKS (Ni)	3637
	41	DEFIANCE (?)	3638
	42	BB (RAINBOW; HORSESHOE) (Au, Ag, Cu, Pb, Sb)	3639
	43	MASTER ACE (Au, Ag, Cu, Mo)	3640
	44	ST. PATRICK (Au)	3641
	45	U.S. RAMBLER (Au, Ag, Pb, Zn)	3642
	46	BLACKJACK (Au, Ag, Pb, Zn)	3643
	47	HALL'S (Au, Ag, Zn)	3644
	48	GOLD MOUNTAIN (Au, Ag, Cu, Pb)	3645
	49	SUPERIOR (Au, Ag, Cu, Pb)	3646
	50	JOHN BULL (Au, Ag, Cu)	3647
	51	MARSELLAISE (Au, Ag)	3648
	52	SPOKANE - VANCOUVER (Au)	3649
	53	QUEEN (Au, Ag)	3650
	54	KING (Au)	3651
	55	STEAMBOAT MOUNTAIN (Cu)	3652
	56	YELLOW JACKET (?)	3653
	57	ELLA (?)	3654
	58	UTAH (Cu)	3655
	59	DUNDEE - JOSEPHINE (Au, Ag)	3656
	60	PACIFIC MINES (BRETT) (Au, Ag)	3657
	61	IRON MOUNTAIN (Fe)	3658
	62	SILVER KING (Au, Ag, Pb)	3659
	63	PIERCE MOUNTAIN (Au, Ag)	3660
	64	JUMBO (Ag, Au)	3661
	65	MOUNT CHEAM NO. 2 (Cu)	3662
	66	RAINY (Zn, Cu)	3663
	67	CLOVER LEAF (Au, Ag, Ni, Cu, talc)	3664
	68	JON (Cu, Mo)	3665
	69	LUV, STONEY, DS (Cu, Zn)	3666
	70	ARANY, EMILE (Cu, Pb, Zn, Ag)	3667
	71	NIK (Ni, Cu)	3668
	72	ASCOT (FEW) (Cu, Zn)	3669
	73	TA (Mo, Cu)	3670
	74	MORNING STAR (Ag, Pb, Cu, Au)	3718
	75	SKAGIT GIANT (Cu, Fe, Au)	4712
	76	NORTH STAR (Ag, Pb, Zn)	4713
	77	BILLICAN (?CLEAR CREEK) (Ag, Pb, Zn, Cu, Sb, Au, Fe)	4714
	78	ELK HORN (Ag, Pb, Zn)	4715
	79	LUCKY FOUR-EAST ZONE (Cu)	4716
	80	DAVID (Cu)	4717
	81	NI (Ni)	

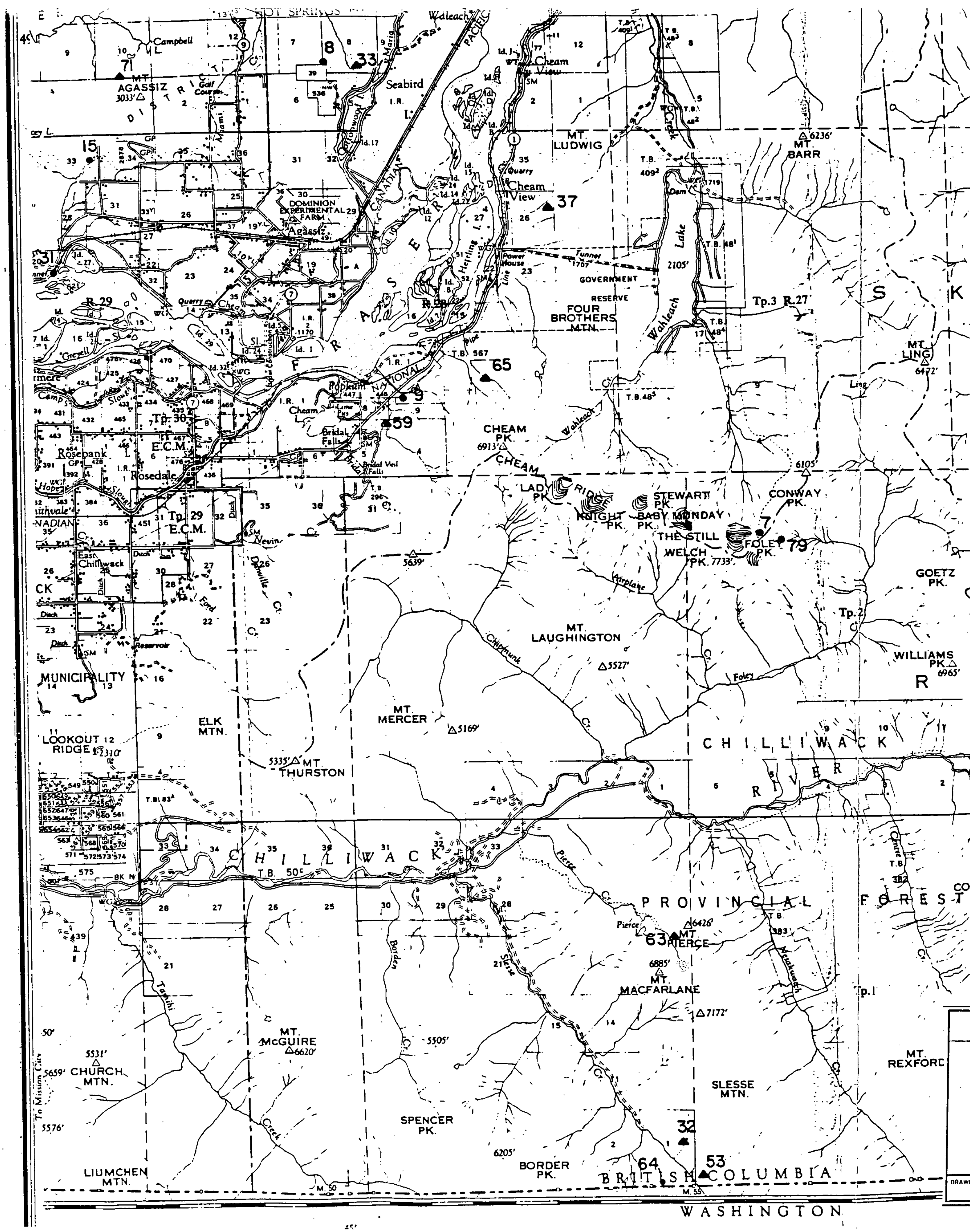


FIG 3

CASTLEFORD MINERALS LTD.

TROOPER 4 CLAIM
FOLEY LAKE

MINERAL DEPOSITS CHILLIWACK RIVER

DRAWN	NTS	SCALE:	DATE:
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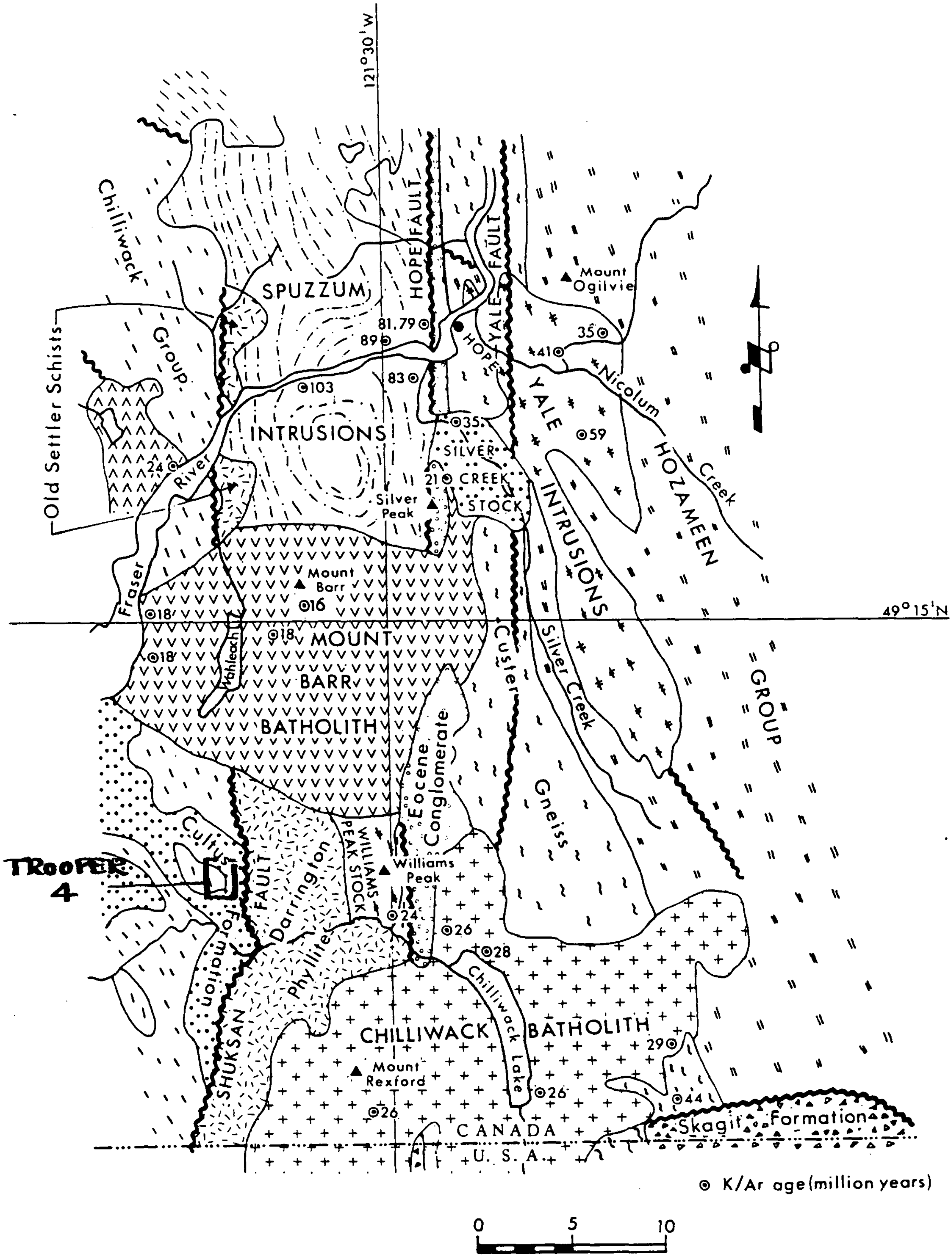

Figure 4. General geology of mapped area.

FIGURE 4

REGIONAL GEOLOGY

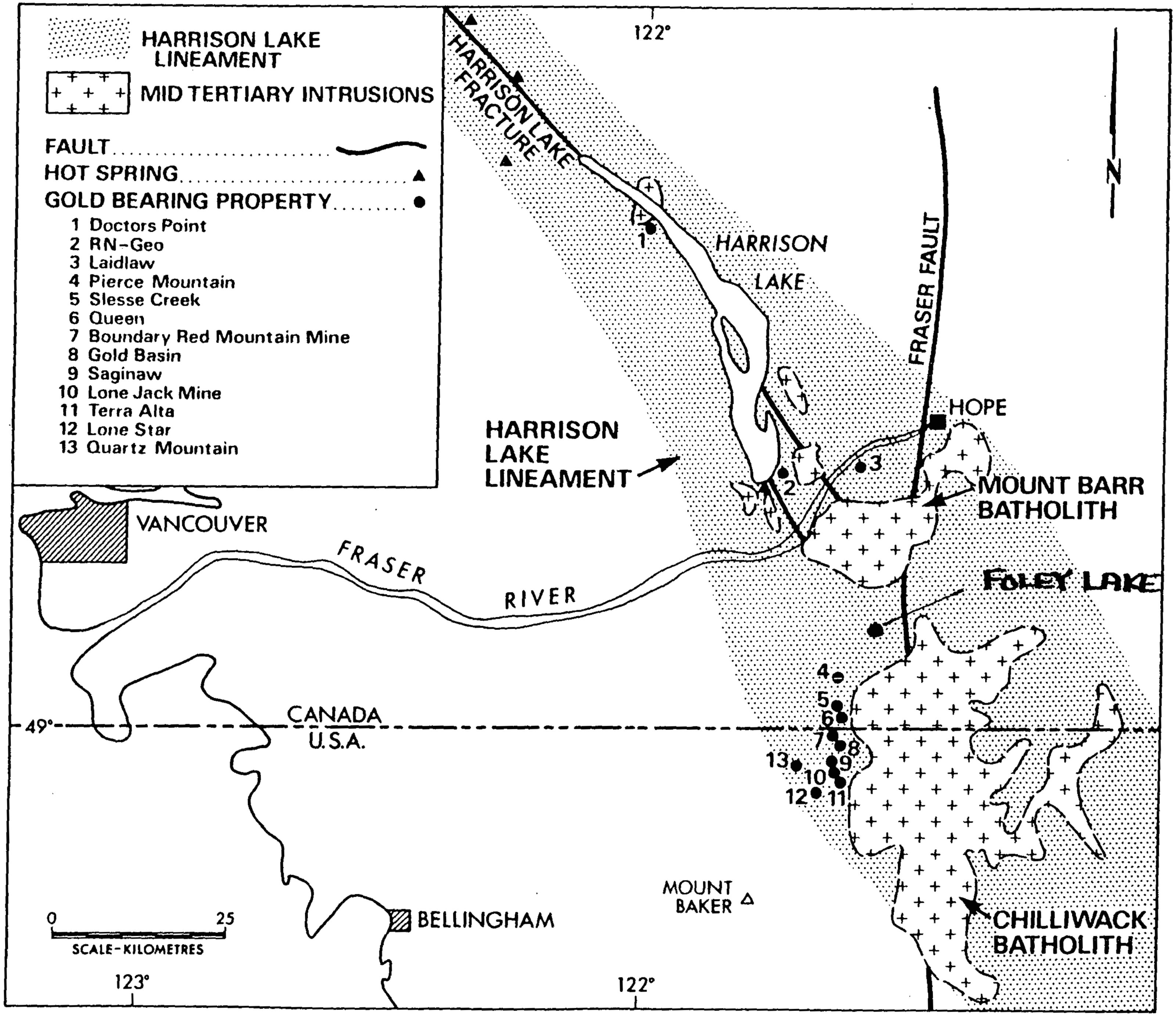

FIG 5

Figure 10-1. Location of gold occurrences and related Mid-Tertiary plutons along the Harrison Lake lineament.

in gold, from similar high grade veins. Numerous other gold prospects in B.C. and Washington are described by Ray, (1986) and others. Additional details are provided in the Appendix.

HISTORY OF THE TROOPER PROPERTY:

Although it is likely the property has been staked before, there is no record of signifcant geological or geochemical work being done previously on the property and the writer is not aware of any workings on the claims. The horse trail to the Lucky Four crosses the property and is in reasonably good shape.

GEOLOGY OF THE PROPERTY:

Rocks in the area of the claim include fine grained green dacitic to andesitic tuffs interbedded with black argillites and graphitic phyllites. One microdiorite equigranular dyke about 1 meter wide was seen and a large fault bounded mass of serpentinized ultramafic rock was seen.

Mineralization of disseminations and clots of pyrrhotite with lesser amounts of chalcopyrite were seen in two localities, adjacent to the roads at the eastern end of Foley Lake. The mineralization appeared to be on open ground and was protected by later staking of the Copper 1 and 2 claims.

The mineralization was extensively sampled, and several hand specimens are submitted with this report.

Valley sides are covered with a thick mantle of boulder till which could be 50 meters thick in places. Soil samples were taken at the top of till where possible, but these may not reflect bedrock with any degree of accuracy.

One VLF EM traverse was done over what appeared to be a favorable volcanic/sedimentary contact northwest of Foley Lake.

A prominent bluff on the north side of the lake is volcanic flows and tuffs; the adjoining gully marks a prominent north trending fault containg a mass of sheared serpentine. Additional large areas of serpentine are expected in the valley of the prominent south flowing stream adjacent to the logging landing on which camp was situated.

GEOCHEMICAL RESULTS:

Several soil sampling traverses were undertaken; these are shown on the accompanying sample location map. (Figure 7).

Pan Concentrates:

Two pan concentrates were made, the first from a south flowing tributary of Foley Creek about 100 meters east of the Padlocked logging road gate. The second sample was from Airplane Creek at the road bridge near its junction with Foley Creek. The samples are not particularly significant. Sample PC-1 has anomalous Nickel (211 ppm) resulting from considerable amounts of serpentinized ultramafics in float in the creek. Sample PC-3 is anomalous in Arsenic (80 ppm). The samples were not analyzed for gold or platinum group elements.

Rock Sample Traverses:

Rock sampling traverses along the main road and logging roads north and south of Foley Lake tested the most likely looking rocks.

Mineralization was seen at the east end of Foley Lake, at the junction of the main road, and a now abandoned logging road extending eastward along the south side of Foley Creek. The mineralization exposed in the road bank is disseminated to near massive laminations of pyrite and chalcopyrite in greyish clay-altered tuffaceous beds interbedded with black argillite. Samples P89 1 t 9 were taken along the lower road, just south of the bridge, and samples p89 29-34 on the upper road. The best two samples were P89-1 and 2, which have up to 2 ppm silver, 535 ppm arsenic, 51 ppm cadmium, 207 ppm copper, >15 % iron, 2 ppm mercury, 45 ppm molybdenum, 2170 ppm zinc, and in excess of 1 % phosphorus.

The zone is very aluminous and phosphatic, and is strongly anomalous in all the elements listed above. Base metal values are sub-economic, but gold was not analyzed. Several other rock samples are anomalous in phosphorus, perhaps confirming the stratiform nature of the occurrence.

Outside of this zone, rocks are generally barren. Copper was seen in a narrow dioritic dyke about 2oo meters east of the padlocked gate, near camp. The black to rusty weathering argillites and phyllites have pyritic laminae, but base-metal values are generally low in these rocks. Only two samples outside the mineralized zone have in excess of 300 ppm zinc, and only 3 in excess of 100 ppm copper, which may be considered threshold values for these elements. Sample P89-29 has 26 ppm Mo, and P89-32 has 650 ppm Ba, these values are strongly anomalous.

Serpentine float occurs in many of the creeks on the north side of the valley, for example Crooks Creek, and Williamson Creek, and rock samples of this material are high in Ni, Co, Cr, but are not strongly altered. A large mass, or several smaller masses of serpentine such as the outcrop along the Williamson horse trail, have shed this debris downslope.

Quartz veins up to 1 meter occur near Foley Lake, along the main road. These were not mineralized, but are worthy of testing for gold and silver.

Soil Sample Traverses:

Traverse FN (North side of Foley Lake)
Samples FN 18+50E -- 29+00E, 24 samples:

Samples are generally low in all elements with little contrast. However, several samples have slightly elevated levels of Cd,Cu,Mn,Zn,and Ag, perhaps reflecting underlying volcanics. Non of these can be considered strongly anomalous or worthy of follow-up except for 27+50E (50 ppm As and 7.03 % Fe).

Traverse FNR (along road, north side of Foley Creek, below Lake)
Samples FNR 0600E -- 1800E, (25 samples)

Again, most elements are low, except for 9+50E (0.8 ppm Ag), 10+50 E (2 ppm Bi), and 11+00E, (171 ppm Cu, 7.90% Fe, 24 ppm Pb).

Sample FNR 16+50 E has 0.6 ppm Ag, 50 ppm As, 15.5 ppm Cd, 7.28 % Fe, and 9 ppm Mo. - these values are moderately anomalous and worthy of follow up.

Traverse WT. (Williamson Trail) WT 00+25--Wt 10+00 (40 samples)

Most elements are uniformly low, with the exception of Ultramafic associated elements Co,Ni,Cr,Ti, V, associated with the serpentine body outcropping along the trail. No follow up is necessary unless gold analysis indicates gold anomalies.

Traverse FRS-2. (Road east of foley Lake, south side)
Samples FRS-2-0+50E -- 12+50 E (25 samples)

These samples show a little more contrast, and a few are moderately anomalous. Threshold values are: (in ppm)

Ag	As	Cu	Fe	Mo	Pb	Zn	P
0.4	20	100	4%	2	15	225	1500

Values in excess of the above limit are worthy of follow up, particularly samples FRS 2-10+50 -- 12+50E.

Traverse RFSA (West from the mineralized zone)
Samples 000 -- 3+50 W.

Sample 3+00 has elevated copper and silver.

Silt Samples

Most silt samples are not anomalous, with the exception of Silt No.5, which has elevated As,Cd,Cu,Mo,and Zn, and should be followed up.

VLF Traverse:

A VLF-EM traverse was completed along the "North Foley Creek" road, from the end of the road, 18+50 E, to 8+50 E, a distance of 2 km. Stations used were Lualalei, Hawaii, and Annapolis, R.I.

The VLF data is shown as two profiles.

SUMMARY:

It is difficult to assess the precious metal potential of the area without analysis of the samples for gold. The sedimentary association of gold as hypothesized by Grove is discounted, but stratiform copper-zinc mineralization, seen elesewhere in the area (Tam property) may be represented by the mineralization found at Foley Lake, and diorite-associated gold, as described by Ray, could be present in the area. No mineralization was seen in or associated with serpentine.

CONCLUSIONS:

Stratiform mineralization at Foley lake, associated with phosphatic and clay altered tuffaceous horizons, should be followed up along strike on both sides of the valley.

RECOMMENDATIONS

Further prospecting work should include rock and soil sampling on close spacing adjacent to the Foley Lake copper mineralization, and wider spaced sampling within the two newly-staked claims. Efforts should be made to find the Rico claim posts east of the Trooper and Copper claims. One or two days prospecting at higher elevations should be done during dry weather to try and locate extensions of the copper skarns present on the Lucky Four (McNellen Resources) property - this should be done by helicopter supported fly camp.

Further VLF-EM traverses may be usefult to try and extend the mineralized zone.

It is recommended that expenditures for the above program be limited to $10,000, until such time as significant showings are found.

respectfully submitted

Barry Price, M.Sc., FGAC.
Consulting Geologist.

GEOLOGICAL ASSOCIATION OF CANADA
B. J. PRICE, M.Sc.
FELLOW

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APPENDIX I - ASSAY SHEETS

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 BROOKSBANK AVE., NORTH VANCOUVER,
BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

To: DOMINION PIONEER RESOURCES LTD.

816 - 850 W. HASTINGS ST.
VANCOUVER, BC
V6C 1E2

Comments:

A8926012

CERTIFICATE A8926012

DOMINION PIONEER RESOURCES LTD.
PROJECT : CASTLEFORD MINERALS
P.O.# :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 1-OCT-89.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
235	2	Pan concentrate: Ring pulverize
238	2	ICP: Aqua regia digestion

* NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
921	2	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
922	2	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	200
923	2	As ppm: 32 element, soil & rock	ICP-AES	5	10000
924	2	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
925	2	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
926	2	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
927	2	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
928	2	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
929	2	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
930	2	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
931	2	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
932	2	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
933	2	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
951	2	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
934	2	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
935	2	La ppm: 32 element, soil & rock	ICP-AES	10	10000
936	2	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
937	2	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
938	2	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
939	2	Na %: 32 element, soil & rock	ICP-AES	0.01	5.00
940	2	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
941	2	P ppm: 32 element, soil & rock	ICP-AES	10	10000
942	2	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
943	2	Sb ppm: 32 element, soil & rock	ICP-AES	5	10000
958	2	Sc ppm: 32 elements, soil & rock	ICP-AES	1	100000
944	2	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
945	2	Ti %: 32 element, soil & rock	ICP-AES	0.01	5.00
946	2	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
947	2	U ppm: 32 element, soil & rock	ICP-AES	10	10000
948	2	V ppm: 32 element, soil & rock	ICP-AES	1	10000
949	2	W ppm: 32 element, soil & rock	ICP-AES	10	10000
950	2	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 BROOKSBANK AVE., NORTH VANCOUVER,
BRITISH COLUMBIA, CANADA V7J-2C1

PHONE (604) 984-0221

To : DOMINION PIONEER RESOURCES LTD.

816 - 850 W. HASTINGS ST.
VANCOUVER, BC
V6C 1E2

Project : CASTLEFORD MINERALS
Comments:

Date : 1-OCT-89
Invoice # : I-8926012
P.O. # :

CERTIFICATE OF ANALYSIS A8926012

SAMPLE DESCRIPTION	PREP CODE		Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
PC-1	235	238	2.81	< 0.2	5	260	< 0.5	< 2	0.67	< 0.5	21	387	45	4.57	< 10	< 1	0.49	10	3.23	600	1
PC-3	235	238	2.31	< 0.2	80	170	< 0.5	< 2	0.88	0.5	17	282	61	7.02	< 10	< 1	0.17	10	1.72	720	1

CERTIFICATION : B. Cargill

Chemex Labs Ltd.
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SAMPLE DESCRIPTION	PREP CODE		Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
PC-1	235	238	0.10	211	590	2	< 5	10	39	0.22	< 10	< 10	103	< 10	106
PC-3	235	238	0.06	97	830	10	< 5	7	40	0.26	< 10	< 10	109	< 10	180

CERTIFICATION : B. Cargill

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Samples submitted to our lab in Vancouver, BC.
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SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	44	Rock Geochem: Crush,split,ring
217	1	Geochem:Ring only,no crush/split
238	45	ICP: Aqua regia digestion

• NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
921	45	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
922	45	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	200
923	45	As ppm: 32 element, soil & rock	ICP-AES	5	10000
924	45	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
925	45	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
926	45	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
927	45	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
928	45	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
929	45	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
930	45	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
931	45	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
932	45	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
933	45	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
951	45	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
934	45	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
935	45	La ppm: 32 element, soil & rock	ICP-AES	10	10000
936	45	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
937	45	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
938	45	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
939	45	Na %: 32 element, soil & rock	ICP-AES	0.01	5.00
940	45	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
941	45	P ppm: 32 element, soil & rock	ICP-AES	10	10000
942	45	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
943	45	Sb ppm: 32 element, soil & rock	ICP-AES	5	10000
958	45	Sc ppm: 32 elements, soil & rock	ICP-AES	1	100000
944	45	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
945	45	Ti %: 32 element, soil & rock	ICP-AES	0.01	5.00
946	45	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
947	45	U ppm: 32 element, soil & rock	ICP-AES	10	10000
948	45	V ppm: 32 element, soil & rock	ICP-AES	1	10000
949	45	W ppm: 32 element, soil & rock	ICP-AES	10	10000
950	45	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

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Page No. : 1-A
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P.O. # :

CERTIFICATE OF ANALYSIS A8926011

SAMPLE DESCRIPTION	PREP CODE		Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
P89-01	205	238	5.39	0.6	330 *	80	< 0.5	< 2	5.40	21.5 *	12	174	123	>15.00 *	10	2	0.06	< 10	2.18	945	19
P89-02	205	238	7.42 *	2.0	535 *	50	< 0.5	< 2	2.19	51.0 *	15	305	207	>15.00 *	30	< 1	< 0.01	40	2.61	1050	45
P89-03	205	238	1.15	< 0.2	20	40	< 0.5	< 2	0.13	1.5	6	142	21	3.03	< 10	< 1	0.02	< 10	0.95	430	2
P89-04	205	238	3.59	< 0.2	25	180	< 0.5	< 2	0.71	1.0	26	65	83	8.01	10	< 1	0.14	10	2.96	1035	1
P89-05	205	238	1.28	< 0.2	5	340	< 0.5	< 2	1.05	< 0.5	9	83	64	3.23	< 10	1	0.27	< 10	0.97	265	2
P89-06	205	238	2.03	< 0.2	40	70	< 0.5	< 2	4.61	< 0.5	13	82	34	4.17	< 10	< 1	0.04	< 10	1.38	805	2
P89-07	205	238	2.02	< 0.2	5	100	< 0.5	< 2	2.51	< 0.5	9	52	42	5.21	< 10	< 1	0.12	< 10	0.89	815	3
P89-08	205	238	2.17	< 0.2	5	90	< 0.5	< 2	0.15	< 0.5	7	67	51	4.98	< 10	1	0.08	< 10	0.84	740	5
P89-09	205	238	1.51	< 0.2	< 5	20	< 0.5	< 2	1.28	< 0.5	18	38	62	3.35	< 10	5	0.03	< 10	0.90	465	< 1
P89-10	205	238	3.35	< 0.2	< 5	20	< 0.5	< 2	2.10	< 0.5	25	361	41	6.89	< 10	< 1	< 0.01	< 10	4.29	1420	< 1
P89-11	205	238	3.54	< 0.2	5	40	< 0.5	< 2	5.73	< 0.5	28	495	41	9.35	< 10	< 1	< 0.01	< 10	3.22	1490	< 1
P89-12	205	238	1.56	0.4	15	20	< 0.5	< 2	4.48	4.5	14	294	168	8.93	< 10	2	< 0.01	< 10	0.84	455	11
P89-13	205	238	2.43	< 0.2	5	120	< 0.5	< 2	2.66	< 0.5	7	139	16	3.65	< 10	< 1	0.13	< 10	0.97	805	1
P89-14	217	238	1.41	0.4	30	190	< 0.5	< 2	0.23	< 0.5	4	207	41	7.31	< 10	< 1	0.33	10	0.55	230	3
P89-15	205	238	0.15	< 0.2	< 5	< 10	< 0.5	< 2	0.13	< 0.5	65	609	7	2.45	< 10	< 1	< 0.01	< 10	6.98	365	< 1
P89-16	205	238	1.06	< 0.2	10	60	< 0.5	< 2	0.18	< 0.5	7	106	22	2.98	< 10	< 1	0.12	10	0.80	210	1
P89-17	205	238	2.93	< 0.2	15	10	< 0.5	< 2	1.06	< 0.5	27	18	328	8.17	< 10	< 1	0.01	< 10	2.29	1135	2
P89-18	205	238	1.32	< 0.2	5	210	< 0.5	< 2	1.21	< 0.5	7	56	24	2.62	< 10	< 1	0.21	< 10	0.91	565	1
P89-19	205	238	0.34	< 0.2	5	70	< 0.5	< 2	0.53	< 0.5	1	112	11	1.00	< 10	2	0.04	< 10	0.25	250	< 1
P89-20	205	238	0.44	< 0.2	< 5	30	< 0.5	< 2	0.08	< 0.5	9	158	32	1.07	< 10	1	0.01	< 10	0.14	375	< 1
P89-21	205	238	3.09	0.2	25	50	< 0.5	< 2	0.36	< 0.5	18	38	76	6.25	< 10	< 1	0.09	10	0.98	675	< 1
P89-22	205	238	2.47	0.2	< 5	40	< 0.5	< 2	1.09	2.5	10	30	90	6.30	< 10	< 1	0.05	< 10	1.07	630	6
P89-25	205	238	2.39	0.4	20	130	< 0.5	< 2	0.19	< 0.5	11	69	73	5.31	< 10	2	0.24	20	1.01	550	1
P89-26	205	238	0.40	< 0.2	5	10	< 0.5	< 2	0.55	< 0.5	3	157	15	0.80	< 10	< 1	< 0.01	< 10	0.23	165	< 1
P89-27	205	238	2.05	0.8	20	100	< 0.5	< 2	0.13	< 0.5	12	108	43	9.10	10	< 1	0.23	20	1.38	420	26
P89-28	205	238	1.33	< 0.2	15	30	< 0.5	< 2	0.28	< 0.5	10	152	32	3.09	< 10	< 1	0.07	< 10	1.06	605	1
P89-29	205	238	1.96	< 0.2	10	10	< 0.5	< 2	2.87	< 0.5	16	80	33	3.64	< 10	< 1	0.09	< 10	1.80	645	< 1
P89-30	205	238	1.62	< 0.2	10	20	< 0.5	< 2	4.99	< 0.5	16	121	61	3.03	< 10	< 1	0.10	< 10	1.46	360	< 1
P89-31	205	238	0.81	< 0.2	< 5	< 10	< 0.5	< 2	0.33	< 0.5	78	1675	14	4.54	< 10	< 1	< 0.01	< 10	13.55	565	< 1
P89-32	205	238	6.24	< 0.2	25	650	< 0.5	< 2	2.42	< 0.5	15	80	54	4.23	10	6	1.58	< 10	1.44	625	< 1
P89-33	205	238	1.26	0.2	< 5	70	< 0.5	2	0.57	< 0.5	12	147	58	2.44	< 10	< 1	0.29	< 10	1.05	520	2
P89-34	205	238	0.27	< 0.2	< 5	< 10	< 0.5	< 2	>15.00	< 0.5	25	377	11	1.75	< 10	< 1	< 0.01	< 10	11.95	2280	< 1
P89-35	205	238	0.35	< 0.2	15	120	< 0.5	< 2	9.80	1.5	11	29	48	5.30	< 10	< 1	0.12	< 10	3.40	1110	< 1
P89-36	205	238	0.67	< 0.2	10	180	< 0.5	2	2.10	< 0.5	5	88	34	1.89	< 10	< 1	0.17	< 10	0.45	250	< 1
P89-37	205	238	3.85	< 0.2	15	100	< 0.5	< 2	2.49	< 0.5	25	17	60	8.79	10	< 1	0.05	< 10	2.35	1370	< 1
P89-39	205	238	0.87	< 0.2	45	140	< 0.5	< 2	1.70	< 0.5	19	43	75	5.22	< 10	< 1	0.14	< 10	1.08	615	< 1
P89-41	205	238	3.06	0.2	35	30	< 0.5	< 2	3.98	7.0	7	133	145	14.80	10	< 1	< 0.01	< 10	2.66	960	4
P89-42	205	238	1.73	< 0.2	40	120	< 0.5	< 2	0.25	< 0.5	11	18	31	4.04	< 10	< 1	0.18	10	1.22	975	1
P89-43	205	238	0.48	< 0.2	< 5	70	< 0.5	< 2	2.46	0.5	4	107	28	1.95	< 10	< 1	0.10	< 10	0.43	395	1
P89-44	205	238	1.05	< 0.2	5	90	< 0.5	< 2	2.63	< 0.5	7	53	50	2.20	< 10	< 1	0.27	< 10	0.61	360	1

CERTIFICATION : B. Cargill

Chemex Labs Ltd.
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To : DOMINION PIONEER RESOURCES LTD.

816 - 850 W. HASTINGS ST.
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Project : CASTLEFORD MINERALS
Comments :

Page No. : 1-B
Tot. Pages: 2
Date : 1-OCT-89
Invoice # : I-8926011
P.O. # :

CERTIFICATE OF ANALYSIS A8926011

SAMPLE DESCRIPTION	PREP CODE		Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
P89-01	205	238	< 0.01	79	>10000	42	5	17	144	< 0.01	< 10	< 10	519	10	1060
P89-02	205	238	0.01	125	9110	22	< 5	23	45	0.01	< 10	< 10	940	< 10	2170
P89-03	205	238	< 0.01	24	340	10	< 5	4	4	< 0.01	< 10	< 10	68	< 10	280
P89-04	205	238	< 0.01	31	1990	< 2	< 5	9	24	0.02	< 10	< 10	108	< 10	238
P89-05	205	238	0.01	25	440	16	< 5	3	36	0.01	< 10	< 10	28	< 10	142
P89-06	205	238	0.02	16	680	< 2	< 5	6	242	0.15	< 10	< 10	118	< 10	102
P89-07	205	238	0.03	17	760	6	< 5	6	117	0.13	< 10	< 10	42	< 10	132
P89-08	205	238	0.03	11	660	< 2	< 5	5	10	0.02	< 10	< 10	36	< 10	104
P89-09	205	238	0.05	4	620	2	< 5	3	48	0.25	< 10	< 10	96	< 10	56
P89-10	205	238	0.02	71	450	< 2	< 5	22	46	0.56	< 10	< 10	280	< 10	80
P89-11	205	238	0.03	127	480	10	< 5	26	111	0.55	< 10	< 10	243	10	90
P89-12	205	238	0.01	95	>10000	38	< 5	5	124	0.08	< 10	< 10	994	< 10	396
P89-13	205	238	0.01	13	1850	4	< 5	6	348	0.20	< 10	< 10	47	< 10	104
P89-14	217	238	0.02	38	720	6	< 5	3	12	0.07	< 10	< 10	49	< 10	174
P89-15	205	238	< 0.01	1315	10	4	< 5	2	7	< 0.01	< 10	< 10	3	< 10	16
P89-16	205	238	0.01	66	570	8	< 5	2	5	0.12	< 10	< 10	28	< 10	82
P89-17	205	238	0.02	5	1960	< 2	< 5	4	35	0.33	< 10	< 10	140	< 10	54
P89-18	205	238	0.01	9	270	4	< 5	4	102	0.11	< 10	< 10	23	< 10	72
P89-19	205	238	0.02	5	90	6	< 5	1	89	0.01	< 10	< 10	9	< 10	28
P89-20	205	238	0.01	12	100	8	< 5	< 1	5	0.01	< 10	< 10	6	< 10	44
P89-21	205	238	0.04	21	650	12	< 5	5	14	0.16	< 10	< 10	45	< 10	108
P89-22	205	238	0.02	30	660	10	< 5	8	50	< 0.01	< 10	< 10	57	< 10	244
P89-25	205	238	0.02	25	600	12	5	4	14	< 0.01	< 10	< 10	34	< 10	118
P89-26	205	238	0.03	6	90	2	< 5	< 1	21	0.04	< 10	< 10	30	< 10	16
P89-27	205	238	0.01	32	1340	16	< 5	6	8	< 0.01	< 10	< 10	151	< 10	168
P89-28	205	238	< 0.01	28	220	12	< 5	5	8	0.08	< 10	< 10	41	< 10	58
P89-29	205	238	0.04	18	230	< 2	< 5	2	226	0.18	< 10	< 10	91	< 10	60
P89-30	205	238	0.03	34	290	< 2	5	3	326	0.21	< 10	< 10	64	< 10	42
P89-31	205	238	< 0.01	1405	< 10	< 2	< 5	9	5	0.01	< 10	< 10	39	10	36
P89-32	205	238	0.54	28	690	< 2	5	15	164	0.21	< 10	< 10	119	< 10	142
P89-33	205	238	0.01	38	360	14	< 5	4	32	0.09	< 10	< 10	41	< 10	86
P89-34	205	238	< 0.01	326	10	4	5	3	381	< 0.01	< 10	< 10	14	10	14
P89-35	205	238	0.02	22	280	8	15	5	570	< 0.01	< 10	< 10	30	< 10	156
P89-36	205	238	< 0.01	16	600	4	< 5	1	101	< 0.01	< 10	< 10	13	< 10	78
P89-37	205	238	0.02	9	490	< 2	5	20	215	0.07	< 10	< 10	327	< 10	144
P89-39	205	238	0.01	6	240	2	< 5	4	126	< 0.01	< 10	< 10	53	< 10	64
P89-41	205	238	0.01	113	8290	10	< 5	9	120	0.01	< 10	< 10	382	< 10	526
P89-42	205	238	0.01	16	680	< 2	< 5	5	13	< 0.01	< 10	< 10	34	< 10	114
P89-43	205	238	0.02	17	240	8	< 5	2	93	< 0.01	< 10	< 10	22	< 10	90
P89-44	205	238	< 0.01	14	360	10	5	1	163	< 0.01	< 10	< 10	20	< 10	56

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PHONE (604) 984-0221

To : DOMINION PIONEER RESOURCES LTD.

816 - 850 W. HASTINGS ST.
VANCOUVER, BC
V6C 1E2

Project : CASTLEFORD MINERALS
Comments :

Date : 1-OCT-89
Invoice # : I-8926011
P.O. # :

CERTIFICATE OF ANALYSIS A8926011

SAMPLE DESCRIPTION	PREP CODE		Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
P89-45	205	238	1.50	< 0.2	10	50	< 0.5	4	0.32	< 0.5	12	141	72	2.37	< 10	< 1	0.13	10	1.70	550	4
QIZFLT CK3 2530E	205	238	0.28	< 0.2	20	30	< 0.5	< 2	0.14	< 0.5	1	327	8	1.00	< 10	< 1	< 0.01	< 10	0.09	150	1
FN 2050E FLT	205	238	1.93	1.2	35	730	< 0.5	< 2	1.73	< 0.5	4	109	79	9.23	< 10	< 1	0.14	10	0.63	1070	1
FN 2885 R-CK FLT	205	238	0.47	< 0.2	5	50	< 0.5	< 2	0.12	< 0.5	7	143	84	1.25	< 10	< 1	0.09	10	0.24	285	< 1
FR52-CK7E FLT	205	238	1.30	0.2	< 5	250	0.5	< 2	0.42	< 0.5	3	95	22	3.31	10	< 1	0.40	60	0.69	405	1

CERTIFICATION : B. Cargli

Chemex Labs Ltd.
Analytical Chemists • Geochemists • Registered Assayers
212 BROOKSBANK AVE., NORTH VANCOUVER, BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

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SAMPLE DESCRIPTION	PREP CODE		Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
P89-45	205	238	< 0.01	68	340	18	< 5	6	9	0.18	< 10	< 10	37	< 10	116
QTZFLT CK3 2530E	205	238	0.04	15	80	6	< 5	< 1	19	0.02	< 10	< 10	7	< 10	18
FN 2050E FLT	205	238	0.02	11	7410	< 2	< 5	6	66	0.09	< 10	< 10	164	< 10	88
FN 2885 R-CK FLT	205	238	< 0.01	24	320	6	< 5	1	11	< 0.01	< 10	< 10	13	< 10	22
FR52-CK7E FLT	205	238	0.02	12	1990	16	< 5	2	9	0.01	< 10	< 10	6	< 10	56

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816 - 850 W. HASTINGS ST.
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A8926009

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CERTIFICATE A8926009

DOMINION PIONEER RESOURCES LTD.
PROJECT : CASTLEFORD MINERALS
P.O.# :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 1-OCT-89.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
201	130	Dry, sieve -80 mesh; soil, sed.
203	5	Dry, sieve -35 mesh and ring
238	135	ICP: Aqua regia digestion

* NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
921	135	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
922	135	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	200
923	135	As ppm: 32 element, soil & rock	ICP-AES	5	10000
924	135	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
925	135	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
926	135	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
927	135	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
928	135	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
929	135	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
930	135	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
931	135	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
932	135	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
933	135	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
951	135	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
934	135	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
935	135	La ppm: 32 element, soil & rock	ICP-AES	10	10000
936	135	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
937	135	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
938	135	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
939	135	Na %: 32 element, soil & rock	ICP-AES	0.01	5.00
940	135	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
941	135	P ppm: 32 element, soil & rock	ICP-AES	10	10000
942	135	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
943	135	Sb ppm: 32 element, soil & rock	ICP-AES	5	10000
958	135	Sc ppm: 32 elements, soil & rock	ICP-AES	1	100000
944	135	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
945	135	Ti %: 32 element, soil & rock	ICP-AES	0.01	5.00
946	135	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
947	135	U ppm: 32 element, soil & rock	ICP-AES	10	10000
948	135	V ppm: 32 element, soil & rock	ICP-AES	1	10000
949	135	W ppm: 32 element, soil & rock	ICP-AES	10	10000
950	135	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

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Project : CASTLEFORD MINERALS
Comments:

Date : 1-OCT-89
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CERTIFICATE OF ANALYSIS A8926009

SAMPLE DESCRIPTION	PREP CODE		Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
FN 18+50E	201	238	2.17	0.4	30	190	< 0.5	< 2	0.64	1.0 x	32	36	119	5.69	10	< 1	0.20	10	0.96	1535	2
FN 19+00E	201	238	2.45	0.4	20	170	< 0.5	< 2	0.57	1.0 x	27	59	101	4.92	< 10	< 1	0.17	10	1.14	1040	1
FN 19+50E	201	238	2.17	< 0.2	15	150	< 0.5	< 2	0.42	< 0.5	18	94	71	3.09	< 10	< 1	0.18	10	1.17	420	< 1
FN 20+00E	201	238	2.43	0.2	< 5	180	< 0.5	< 2	0.65	1.5 x	32	61	97	5.62	10	< 1	0.19	10	1.36	1265	1
FN 20+50E	201	238	2.37	0.2	35	240	< 0.5	< 2	0.49	1.0	32	63	108	5.39	< 10	< 1	0.19	10	1.01	1105	2
FN 21+00E	201	238	2.85	0.2	40	250	< 0.5	< 2	0.60	1.5 x	29	78	104	5.56	< 10	< 1	0.17	10	1.17	1215	1
FN 21+18E	201	238	2.52	0.2	25	220	< 0.5	< 2	1.00	0.5	25	89	71	4.28	< 10	< 1	0.19	10	1.10	1275	1
FN 21+50E	201	238	2.93	0.2	30	150	< 0.5	< 2	0.28	< 0.5	19	101	67	4.33	< 10	< 1	0.14	10	1.12	590	1
FN 22+00E	201	238	3.13	0.2	45	130	< 0.5	< 2	0.20	< 0.5	15	94	37	4.30	< 10	< 1	0.06	< 10	0.74	920	1
FN 22+50E	201	238	2.42	0.2	25	90	< 0.5	< 2	0.11	< 0.5	8	55	13	3.49	< 10	< 1	0.03	< 10	0.33	465	1
FN 23+00E	201	238	2.30	< 0.2	20	130	< 0.5	< 2	0.16	< 0.5	9	71	27	3.78	< 10	< 1	0.05	< 10	0.64	555	2
FN 23+50E	201	238	2.34	0.2	20	160	< 0.5	< 2	0.25	< 0.5	15	105	39	4.57	10	< 1	0.07	< 10	0.84	590	1
FN 24+00E	201	238	2.89	0.2	15	90	< 0.5	< 2	0.23	< 0.5	10	113	29	5.74	10	< 1	0.05	10	0.82	420	< 1
FN 24+50E	201	238	3.53	0.2	< 5	200	< 0.5	< 2	0.18	< 0.5	20	116	27	4.57	10	< 1	0.06	< 10	0.96	580	< 1
FN 25+00E	201	238	3.62	< 0.2	30	140	< 0.5	2	0.19	< 0.5	16	104	47	4.23	10	< 1	0.09	< 10	1.03	660	< 1
FN 25+50E	201	238	3.47	0.4	40	150	< 0.5	< 2	0.25	< 0.5	10	80	45	4.24	10	< 1	0.07	< 10	0.74	310	< 1
FN 26+00E	201	238	2.78	0.2	10	140	< 0.5	< 2	0.46	0.5	10	57	41	3.62	10	< 1	0.08	10	0.53	430	1
FN 26+25E	201	238	2.32	< 0.2	15	150	< 0.5	< 2	1.09	2.5	23	113	75	4.55	< 10	1	0.13	10	1.21	895	1
FN 26+50E	201	238	2.11	< 0.2	30	80	< 0.5	< 2	0.23	< 0.5	17	76	78	3.63	< 10	< 1	0.05	< 10	0.83	345	1
FN 27+00E	201	238	1.38	0.2	< 5	130	< 0.5	< 2	0.36	0.5	9	66	31	4.05	10	< 1	0.07	10	0.42	495	< 1
FN 27+50E	201	238	1.89	0.2	50 *	110	< 0.5	< 2	0.40	< 0.5	17	29	37	7.03 *	10	< 1	0.04	< 10	0.32	1180	2
FN 28+00E	201	238	2.92	0.2	10	120	< 0.5	< 2	0.24	0.5	15	72	52	4.47	< 10	2	0.05	< 10	0.59	650	< 1
FN 28+50E	201	238	3.22	< 0.2	10	210	< 0.5	< 2	0.32	< 0.5	25	120	71	4.28	10	< 1	0.17	10	1.39	690	1
FN 29+00E	201	238	3.69	< 0.2	15	150	< 0.5	< 2	0.32	< 0.5	22	183	53	5.48	10	< 1	0.06	10	1.40	560	< 1
FNR 06+00E	201	238	2.77	0.2	25	170	< 0.5	< 2	0.67	1.5	26	77	83	4.54	< 10	< 1	0.08	10	1.16	885	1
FNR 06+50E	201	238	2.46	0.2	35	160	< 0.5	< 2	0.56	1.0	17	70	71	4.34	< 10	< 1	0.09	10	0.94	750	< 1
FNR 07+00E	201	238	2.61	0.2	20	170	< 0.5	< 2	0.73	1.0	25	73	83	4.47	10	< 1	0.10	10	1.05	1105	1
FNR 07+50E	201	238	3.56	< 0.2	35	190	< 0.5	< 2	0.21	< 0.5	18	59	68	4.78	< 10	< 1	0.08	10	0.83	580	4
FNR 08+00E	201	238	2.94	< 0.2	20	220	< 0.5	< 2	0.74	0.5	22	75	86	4.75	10	< 1	0.14	10	1.12	785	2
FNR 08+50E	201	238	3.16	0.2	5	180	< 0.5	2	0.32	0.5	17	76	36	4.87	10	< 1	0.10	10	0.77	425	1
FNR 09+00E	201	238	2.02	0.2	5	230	< 0.5	< 2	0.64	0.5	20	59	71	4.89	10	< 1	0.17	10	1.08	775	< 1
FNR 09+50E	201	238	3.59	0.8 *	25	150	< 0.5	< 2	0.40	< 0.5	18	75	47	4.73	10	< 1	0.08	10	0.61	645	< 1
FNR 10+00E	201	238	4.97	0.4	20	310	< 0.5	< 2	0.80	< 0.5	33	162	110	5.58	10	< 1	0.09	10	1.18	900	< 1
FNR 10+50E	201	238	3.91	0.4	25	140	< 0.5	2	0.53	< 0.5	31	182	50	6.74	10	< 1	0.09	10	1.42	925	1
FNR 11+00E	201	238	5.58	< 0.2	< 5	290	< 0.5	< 2	1.17	0.5	46	236	171	7.90	10	< 1	0.25	20	2.92	1075	< 1
FNR 11+50E	201	238	2.69	< 0.2	15	160	< 0.5	< 2	0.84	< 0.5	24	134	69	4.33	10	< 1	0.17	10	1.70	675	2
FNR 12+00E	201	238	3.38	< 0.2	30	140	< 0.5	< 2	0.79	< 0.5	37	230	91	5.39	10	1	0.25	10	2.42	905	< 1
FNR 12+50E	201	238	3.74	0.2	25	130	< 0.5	< 2	0.35	< 0.5	25	145	49	4.80	10	< 1	0.11	10	1.36	505	1
FNR 13+00E	201	238	3.35	< 0.2	< 5	110	< 0.5	< 2	0.52	0.5	24	164	57	4.93	10	< 1	0.11	10	1.68	645	< 1
FNR 13+50E	201	238	3.14	< 0.2	10	150	< 0.5	< 2	0.63	< 0.5	28	185	60	5.15	10	1	0.15	10	1.81	1135	< 1

CERTIFICATION : B. Cargli

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CERTIFICATE OF ANALYSIS A8926009

SAMPLE DESCRIPTION	PREP CODE	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
FN 18+50E	201 238	0.01	49	1100	2	< 5	7	26	0.22	< 10	< 10	58	< 10	276
FN 19+00E	201 238	0.01	54	890	4	< 5	7	25	0.22	< 10	< 10	68	< 10	220
FN 19+50E	201 238	0.01	207	930	< 2	< 5	6	19	0.22	< 10	< 10	73	< 10	90
FN 20+00E	201 238	0.01	67	1100	18	< 5	8	26	0.24	< 10	< 10	82	< 10	210
FN 20+50E	201 238	0.01	63	1230	< 2	< 5	6	31	0.23	< 10	< 10	71	< 10	222
FN 21+00E	201 238	0.01	81	890	14	< 5	8	29	0.26	< 10	< 10	83	< 10	236
FN 21+18E	201 238	0.02	97	1020	4	< 5	8	35	0.25	< 10	< 10	83	< 10	170
FN 21+50E	201 238	0.01	97	1470	< 2	< 5	7	13	0.25	< 10	< 10	93	< 10	130
FN 22+00E	201 238	0.01	71	990	6	< 5	6	10	0.23	< 10	< 10	90	< 10	136
FN 22+50E	201 238	0.01	27	820	4	< 5	4	6	0.23	< 10	< 10	83	< 10	88
FN 23+00E	201 238	0.01	50	1060	6	< 5	4	9	0.25	< 10	< 10	88	< 10	102
FN 23+50E	201 238	0.01	66	1010	2	< 5	5	13	0.27	< 10	< 10	104	< 10	116
FN 24+00E	201 238	0.01	55	940	6	< 5	5	9	0.43	< 10	< 10	145	< 10	106
FN 24+50E	201 238	0.01	80	1090	8	< 5	6	10	0.31	< 10	< 10	104	< 10	118
FN 25+00E	201 238	0.01	87	1060	< 2	< 5	7	11	0.26	< 10	< 10	107	< 10	104
FN 25+50E	201 238	0.01	54	1790	2	5	6	17	0.19	< 10	< 10	112	< 10	104
FN 26+00E	201 238	0.01	43	870	< 2	< 5	4	35	0.19	< 10	< 10	90	< 10	156
FN 26+25E	201 238	0.01	111	910	18	< 5	6	78	0.17	< 10	< 10	96	< 10	292
FN 26+50E	201 238	0.01	87	1000	2	< 5	4	14	0.16	< 10	< 10	84	< 10	134
FN 27+00E	201 238	0.01	28	870	< 2	< 5	3	26	0.23	< 10	< 10	106	< 10	74
FN 27+50E	201 238	0.01	10	3390	8	< 5	4	37	0.22	< 10	< 10	129	< 10	82
FN 28+00E	201 238	0.01	50	1200	< 2	< 5	4	16	0.19	< 10	< 10	80	< 10	100
FN 28+50E	201 238	0.01	213	770	8	< 5	8	18	0.28	< 10	< 10	109	< 10	106
FN 29+00E	201 238	0.01	140	740	< 2	5	7	13	0.33	< 10	< 10	118	< 10	128
FNR 06+00E	201 238	0.01	79	620	16	< 5	9	54	0.23	< 10	< 10	87	< 10	254
FNR 06+50E	201 238	0.01	56	690	< 2	< 5	7	33	0.21	< 10	< 10	97	< 10	156
FNR 07+00E	201 238	0.02	56	760	< 2	< 5	10	66	0.19	< 10	< 10	85	< 10	176
FNR 07+50E	201 238	0.01	47	610	12	< 5	7	16	0.24	< 10	< 10	90	< 10	200
FNR 08+00E	201 238	0.01	76	900	10	< 5	8	46	0.25	< 10	< 10	88	< 10	202
FNR 08+50E	201 238	0.01	65	630	< 2	< 5	6	16	0.26	< 10	< 10	100	< 10	158
FNR 09+00E	201 238	0.01	53	1030	8	< 5	7	50	0.24	< 10	< 10	112	< 10	176
FNR 09+50E	201 238	0.01	62	800	< 2	< 5	9	28	0.19	< 10	< 10	81	< 10	146
FNR 10+00E	201 238	0.01	207	1190	< 2	< 5	10	68	0.28	< 10	< 10	104	< 10	194
FNR 10+50E	201 238	0.01	159	1290	10]	< 5	8	22	0.43	< 10	< 10	110	< 10	226
FNR 11+00E	201 238	0.02	229	1220	24]	< 5	18	48	0.69	< 10	< 10	188	< 10	212
FNR 11+50E	201 238	0.02	131	840	6	< 5	10	32	0.44	< 10	< 10	104	< 10	110
FNR 12+00E	201 238	0.03	294	950	< 2	< 5	13	30	0.43	< 10	< 10	116	< 10	130
FNR 12+50E	201 238	0.01	127	1160	8	< 5	9	14	0.40	< 10	< 10	108	< 10	192
FNR 13+00E	201 238	0.01	178	1360	4	< 5	9	13	0.43	< 10	< 10	101	< 10	120
FNR 13+50E	201 238	0.01	182	1850	6	< 5	9	16	0.40	< 10	< 10	101	< 10	124

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FNR 14+00E	201	238	2.08	< 0.2	25	130	< 0.5	< 2	0.72	< 0.5	25	117	93	4.15	< 10	< 1	0.17	10	1.62	655	1
FNR 14+50E	203	238	3.38	< 0.2	30	200	< 0.5	< 2	1.14	< 0.5	38	214	123	5.46	10	< 1	0.32	10	2.65	1075	1
FNR 15+00E	201	238	2.83	0.2	< 5	60	< 0.5	< 2	0.32	< 0.5	12	80	56	4.80	10	< 1	0.05	< 10	0.74	325	< 1
FNR 15+50E	201	238	2.78	< 0.2	15	140	< 0.5	< 2	0.63	< 0.5	26	155	111	4.51	10	< 1	0.14	10	1.84	750	< 1
FNR 16+00E	201	238	3.76	< 0.2	< 5	100	< 0.5	< 2	0.63	< 0.5	44	331	149	5.79	10	< 1	0.04	10	2.79	685	< 1
FNR 16+50E	201	238	1.68	0.6 *	50 *	220	< 0.5	< 2	0.41	15.5	25	11	144	7.28	< 10	< 1	0.17	20	0.73	765	9
FNR 17+00E	201	238	2.36	0.2	20	210	< 0.5	< 2	0.76	1.5	25	58	118	5.95	10	< 1	0.20	10	1.17	1125	4
FNR 17+50E	201	238	2.21	0.2	< 5	210	< 0.5	< 2	0.66	2.0	32	28	122	5.20	< 10	< 1	0.21	10	0.89	1215	2
FNR 18+00E	201	238	2.21	0.2	< 5	180	< 0.5	< 2	0.75	1.5	24	49	110	4.66	< 10	< 1	0.21	10	1.09	1150	< 1
FRS-2 00+50E	201	238	4.66	0.4	< 5	90	< 0.5	2	0.14	0.5	14	67	40	3.80	< 10	< 1	0.06	10	0.68	315	< 1
FRS-2 01+00E	201	238	3.03	0.2	35	70	< 0.5	< 2	0.26	< 0.5	11	69	39	3.19	< 10	< 1	0.05	< 10	0.75	340	< 1
FRS-2 01+50E	201	238	2.14	< 0.2	25	100	< 0.5	< 2	0.31	< 0.5	16	74	39	3.73	< 10	< 1	0.05	10	0.88	650	< 1
FRS-2 02+00E	201	238	5.64	0.4	60 *	110	< 0.5	< 2	0.23	< 0.5	7	72	27	5.39	10	< 1	0.05	10	0.55	280	< 1
FRS-2 02+50E	201	238	3.58	0.4	30	100	< 0.5	< 2	0.22	< 0.5	14	70	44	3.86	10	< 1	0.05	10	0.61	670	1
FRS-2 03+00E	201	238	2.82	0.2	5	110	< 0.5	< 2	0.26	< 0.5	15	71	51	3.42	< 10	< 1	0.09	< 10	0.90	550	< 1
FRS-2 03+50E	201	238	3.05	0.2	15	80	< 0.5	< 2	0.18	< 0.5	11	61	47	3.28	< 10	< 1	0.04	< 10	0.62	375	2
FRS-2 04+00E	20!	238	3.65	0.2	5	110	< 0.5	< 2	0.22	< 0.5	12	75	45	4.14	< 10	< 1	0.07	10	0.83	510	2
FRS-2 04+50E	201	238	3.28	0.2	< 5	90	< 0.5	< 2	0.19	< 0.5	14	68	45	3.53	< 10	< 1	0.07	10	0.79	460	< 1
FRS-2 05+00E	201	238	3.62	0.2	30	100	< 0.5	< 2	0.24	< 0.5	14	84	59	3.78	< 10	< 1	0.04	10	0.79	380	2
FRS-2 05+50E	201	238	3.35	0.2	25	80	< 0.5	< 2	0.11	< 0.5	7	54	28	3.57	< 10	< 1	0.04	< 10	0.41	240	1
FRS-2 06+00E	201	238	4.23	0.4	< 5	90	< 0.5	< 2	0.14	0.5	10	59	27	4.09	10	< 1	0.04	10	0.38	570	< 1
FRS-2 06+50E	201	238	3.49	0.4	5	90	< 0.5	< 2	0.16	< 0.5	13	68	41	3.61	10	< 1	0.06	10	0.63	470	< 1
FRS-2 07+00E	201	238	4.18	< 0.2	25	100	< 0.5	2	1.48	< 0.5	36	195	57	6.95	10	< 1	0.08	10	2.84	1115	< 1
FRS-2 07+50E	201	238	3.17	0.2	10	80	< 0.5	< 2	0.17	< 0.5	9	67	30	3.34	< 10	< 1	0.05	< 10	0.58	355	1
FRS-2 08+00E	201	238	3.64	0.4	50	130	< 0.5	< 2	0.32	< 0.5	20	112	54	5.53	10	< 1	0.05	10	0.67	1035	3
FRS-2 08+50E	201	238	5.37	0.4	25	80	< 0.5	< 2	0.12	< 0.5	10	83	25	4.00	< 10	< 1	0.03	< 10	0.70	340	2
FRS-2 09+00E	201	238	5.20	0.2	20	90	< 0.5	< 2	0.11	< 0.5	16	108	39	5.37	< 10	< 1	0.03	10	0.67	795	2
FRS-2 09+50E	201	238	3.91	0.4	30	200	< 0.5	< 2	0.13	< 0.5	33	134	114	5.75	10	< 1	0.13	30	1.06	1725	3
FRS-2 10+00E	201	238	2.33	0.2	45	160	< 0.5	< 2	1.38	< 0.5	25	142	130	3.05	< 10	< 1	0.09	10	1.09	475	4
FRS-2 10+50E	201	238	4.09	0.8 *	15	140	< 0.5	< 2	0.54	0.5	18	92	81	3.89	< 10	< 1	0.06	30	0.65	780	1
FRS-2 11+00E	201	238	3.97	0.2	10	100	< 0.5	< 2	0.09	< 0.5	13	66	38	4.57	< 10	< 1	0.04	10	0.53	665	< 1
FRS-2 11+50E	201	238	3.48	0.6	15	240	< 0.5	< 2	0.21	0.5	39	153	142	6.68	10	< 1	0.09	30	1.18	1935	4
FRS-2 12+00E	201	238	3.32	0.6	25	210	< 0.5	< 2	0.08	< 0.5	33	103	119	6.78	< 10	< 1	0.11	20	0.64	1760	4
FRS-2 12+50E	201	238	3.98	0.6	15	170	< 0.5	< 2	0.17	< 0.5	27	116	77	6.80	10	< 1	0.09	20	0.61	1400	2
RFSA 00+00	201	238	4.56	< 0.2	45	200	< 0.5	< 2	0.14	< 0.5	29	264	62	4.95	< 10	< 1	0.20	10	1.84	665	3
RFSA 00+50W	201	238	4.35	< 0.2	< 5	190	< 0.5	< 2	0.22	0.5	31	297	62	4.99	10	< 1	0.22	10	2.16	955	2
RFSA 01+00W	201	238	3.28	< 0.2	5	180	< 0.5	< 2	0.68	< 0.5	23	214	56	4.32	10	< 1	0.25	10	2.11	810	1
RFSA 01+50W	201	238	6.55	0.2	< 5	110	< 0.5	< 2	0.23	0.5	11	86	35	3.68	< 10	< 1	0.13	10	0.70	270	3
RFSA 02+00W	201	238	6.41	< 0.2	35	110	< 0.5	< 2	0.15	< 0.5	12	74	23	4.23	< 10	< 1	0.08	10	0.53	400	3
RFSA 02+50W	201	238	3.24	0.2	25	140	< 0.5	< 2	0.24	< 0.5	14	90	36	4.06	< 10	< 1	0.09	10	0.77	375	< 1

CERTIFICATION : B. Cargli

Chemex Labs Ltd.
Analytical Chemists • Geochemists • Registered Assayers
212 BROOKSBANK AVE., NORTH VANCOUVER,
BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

To: DOMINION PIONEER RESOURCES LTD.

816 - 850 W. HASTINGS ST.
VANCOUVER, BC
V6C 1E2
Project : CASTLEFORD MINERALS
Comments:

Date : 1-OCT-89
Invoice # : I-8926009
P.O. # :

CERTIFICATE OF ANALYSIS A8926009

SAMPLE DESCRIPTION	PREP CODE		Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
FNR 14+00E	201	238	0.02	169	1040	6	< 5	8	35	0.29	< 10	< 10	117	< 10	92
FNR 14+50E	203	238	0.04	231	1090	2	< 5	13	57	0.46	< 10	< 10	115	< 10	134
FNR 15+00E	201	238	0.01	47	960	< 2	< 5	5	15	0.26	< 10	< 10	94	< 10	84
FNR 15+50E	201	238	0.01	152	970	< 2	< 5	9	22	0.32	< 10	< 10	95	< 10	122
FNR 16+00E	201	238	0.01	411 *	830	2	< 5	8	27	0.31	< 10	< 10	114	< 10	146
FNR 16+50E	201	238	0.01	49	930	26	< 5	7	34	0.17	< 10	< 10	64	< 10	968
FNR 17+00E	201	238	0.01	56	920	14	< 5	8	31	0.26	< 10	< 10	104	< 10	284
FNR 17+50E	201	238	0.01	50	810	6	< 5	7	25	0.31	< 10	< 10	45	< 10	270
FNR 18+00E	201	238	0.01	44	880	2	< 5	7	32	0.24	< 10	< 10	60	< 10	202
FRS-2 00+50E	201	238	0.01	30	1020	2	< 5	6	12	0.24	< 10	< 10	71	< 10	98
FRS-2 01+00E	201	238	0.01	35	810	6	< 5	4	15	0.17	< 10	< 10	55	< 10	72
FRS-2 01+50E	201	238	0.01	40	620	< 2	< 5	4	16	0.20	< 10	< 10	69	< 10	84
FRS-2 02+00E	201	238	0.01	20	1040	< 2	< 5	6	21	0.26	< 10	< 10	81	< 10	94
FRS-2 02+50E	201	238	0.01	32	830	6	< 5	5	16	0.20	< 10	< 10	71	< 10	94
FRS-2 03+00E	201	238	0.01	36	980	< 2	< 5	4	14	0.17	< 10	< 10	61	< 10	82
FRS-2 03+50E	201	238	0.01	25	810	8	< 5	4	10	0.18	< 10	< 10	59	< 10	68
FRS-2 04+00E	201	238	0.01	38	930	< 2	< 5	5	13	0.18	< 10	< 10	68	< 10	104
FRS-2 04+50E	201	238	0.01	36	990	12	< 5	5	10	0.17	< 10	< 10	61	< 10	86
FRS-2 05+00E	201	238	0.01	47	650	6	< 5	5	14	0.21	< 10	< 10	62	< 10	88
FRS-2 05+50E	201	238	0.01	22	550	< 2	< 5	4	7	0.20	< 10	< 10	72	< 10	62
FRS-2 06+00E	201	238	0.01	20	880	4	< 5	5	11	0.21	< 10	< 10	76	< 10	82
FRS-2 06+50E	201	238	0.01	33	710	< 2	< 5	5	11	0.19	< 10	< 10	68	< 10	80
FRS-2 07+00E	201	238	0.01	97	1320	4	< 5	17	52	0.71	< 10	< 10	112	< 10	130
FRS-2 07+50E	201	238	0.01	27	780	< 2	< 5	4	11	0.18	< 10	< 10	64	< 10	76
FRS-2 08+00E	201	238	0.01	51	850	8	< 5	6	29	0.16	< 10	< 10	87	< 10	140
FRS-2 08+50E	201	238	0.01	33	970	18	< 5	5	8	0.18	< 10	< 10	61	< 10	118
FRS-2 09+00E	201	238	0.01	34	1970	12	< 5	7	7	0.23	< 10	< 10	85	< 10	92
FRS-2 09+50E	201	238	0.01	123	1450	12	< 5	8	11	0.11	< 10	< 10	63	< 10	208
FRS-2 10+00E	201	238	0.01	119	900	20	< 5	4	93	0.07	< 10	< 10	48	< 10	204
FRS-2 10+50E	201	238	0.01	65	1100	8	< 5	6	37	0.13	< 10	< 10	57	< 10	130
FRS-2 11+00E	201	238	0.01	29	1140	4	< 5	5	7	0.19	< 10	< 10	69	< 10	102
FRS-2 11+50E	201	238	0.01	122	1190	8	< 5	9	12	0.06	< 10	< 10	57	< 10	230
FRS-2 12+00E	201	238	0.01	86	1560	20	< 5	5	7	0.05	< 10	< 10	65	< 10	192
FRS-2 12+50E	201	238	0.01	60	1980	2	< 5	5	9	0.06	< 10	< 10	55	< 10	190
RFSA 00+00	201	238	0.01	202	650	10	< 5	11	9	0.26	< 10	< 10	116	< 10	116
RFSA 00+50W	201	238	0.01	248	620	2	< 5	11	10	0.28	< 10	< 10	122	< 10	118
RFSA 01+00W	201	238	0.02	167	980	6	< 5	8	56	0.21	< 10	< 10	109	< 10	114
RFSA 01+50W	201	238	0.01	50	1460	< 2	< 5	8	22	0.17	< 10	< 10	106	< 10	62
RFSA 02+00W	201	238	0.01	27	1120	2	< 5	7	15	0.20	< 10	< 10	102	< 10	92
RFSA 02+50W	201	238	0.01	63	660	< 2	< 5	5	15	0.20	< 10	< 10	109	< 10	74

CERTIFICATION : B. Cargill

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 BROOKSBANK AVE., NORTH VANCOUVER,
BRITISH COLUMBIA, CANADA V7J-2C1

PHONE (604) 984-0221

To: DOMINION PIONEER RESOURCES LTD.

816 - 850 W. HASTINGS ST.
VANCOUVER, BC
V6C 1E2

Project : CASTLEFORD MINERALS
Comments:

Date : 1-OCT-89
Invoice # : I-8926009
P.O. # :

CERTIFICATE OF ANALYSIS A8926009

SAMPLE DESCRIPTION	PREP CODE		Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
RFSA 03+00W	201	238	3.28	1.0	30	100	< 0.5	< 2	0.75	< 0.5	18	122	147	3.57	10	< 1	0.15	10	1.10	495	< 1
RFSA 03+50W	201	238	5.29	0.4	25	70	< 0.5	< 2	0.22	< 0.5	13	107	50	4.73	10	< 1	0.07	10	0.56	285	1
WT 00+25N	201	238	3.05	< 0.2	5	150	< 0.5	< 2	0.63	< 0.5	38	386	61	6.25	10	< 1	0.08	10	2.56	925	4
WT 00+50N	201	238	3.30	< 0.2	5	90	< 0.5	< 2	0.67	< 0.5	48	596	44	5.55	< 10	< 1	0.01	10	4.19	1080	2
WT 00+75N	201	238	3.27	< 0.2	< 5	50	< 0.5	< 2	0.55	< 0.5	55	840	50	5.16	< 10	< 1	< 0.01	10	5.94	855	< 1
WT 01+00N	201	238	3.14	< 0.2	< 5	60	< 0.5	< 2	0.55	< 0.5	52	730	55	5.79	< 10	< 1	< 0.01	10	3.78	1280	< 1
WT 01+25N	201	238	2.22	< 0.2	< 5	110	< 0.5	< 2	0.45	< 0.5	76	525	39	5.67	< 10	< 1	0.01	< 10	4.63	1225	< 1
WT 01+50N	201	238	1.80	< 0.2	< 5	80	< 0.5	< 2	0.35	< 0.5	41	200	44	5.56	< 10	< 1	0.01	< 10	2.98	1245	< 1
WT 01+75N	201	238	2.75	< 0.2	15	70	< 0.5	< 2	0.51	< 0.5	36	134	71	6.61	< 10	< 1	0.02	10	1.09	895	< 1
WT 02+00N	201	238	2.92	< 0.2	20	70	< 0.5	< 2	0.62	< 0.5	61	598	30	5.14	< 10	< 1	0.04	10	5.36	905	< 1
WT 02+25N	201	238	3.64	< 0.2	< 5	40	< 0.5	< 2	0.64	< 0.5	62	756	34	5.38	< 10	< 1	< 0.01	10	6.85	935	< 1
WT 02+50N	201	238	2.22	< 0.2	< 5	70	< 0.5	< 2	0.40	< 0.5	80	651	60	5.65	< 10	< 1	0.04	10	8.64	1140	2
WT 02+75N	201	238	1.77	< 0.2	< 5	100	< 0.5	< 2	0.67	< 0.5	88	590	50	4.69	< 10	< 1	0.02	10	7.35	1320	1
WT 03+00N	201	238	1.44	< 0.2	5	30	< 0.5	< 2	0.32	< 0.5	139	639	72	5.27	< 10	< 1	< 0.01	< 10	13.65	2410	< 1
WT 03+25N	201	238	1.48	< 0.2	< 5	120	< 0.5	< 2	0.25	0.5	53	634	23	5.53	< 10	< 1	< 0.01	< 10	4.40	1355	< 1
WT 03+50N	201	238	1.28	< 0.2	< 5	50	< 0.5	< 2	0.18	< 0.5	63	637	13	6.82	< 10	< 1	< 0.01	< 10	4.42	745	< 1
WT 03+75N	201	238	2.37	< 0.2	< 5	60	< 0.5	< 2	0.17	< 0.5	20	192	28	3.90	< 10	< 1	0.04	< 10	0.98	590	4
WT 04+00N	201	238	2.36	0.2	< 5	70	< 0.5	< 2	0.23	< 0.5	8	91	61	4.12	< 10	< 1	0.04	< 10	0.59	540	< 1
WT 04+25N	201	238	3.03	0.2	< 5	80	< 0.5	< 2	0.15	< 0.5	9	68	31	3.43	< 10	< 1	0.04	< 10	0.63	310	1
WT 04+50N	201	238	2.75	0.2	10	60	< 0.5	< 2	0.14	< 0.5	7	80	24	3.89	< 10	< 1	0.03	< 10	0.59	265	< 1
WT 04+75N	201	238	2.63	< 0.2	< 5	70	< 0.5	< 2	0.18	< 0.5	7	98	25	4.10	10	< 1	0.04	10	0.70	260	2
WT 05+00N	201	238	3.23	0.4	5	90	< 0.5	< 2	0.21	< 0.5	14	106	33	4.53	10	< 1	0.06	10	0.97	380	1
WT 05+25N	201	238	2.48	0.4	10	50	< 0.5	< 2	0.18	< 0.5	8	100	22	5.21	10	< 1	0.03	10	0.44	225	1
WT 05+50N	201	238	4.06	< 0.2	10	110	< 0.5	2	0.26	< 0.5	20	121	39	6.02	10	< 1	0.10	10	1.45	560	1
WT 05+75N	201	238	2.54	0.2	55	60	< 0.5	< 2	0.34	< 0.5	8	119	16	5.46	10	4	0.05	10	0.53	320	2
WT 06+00N	201	238	2.95	< 0.2	95 *	40	< 0.5	< 2	1.88	< 0.5	14	226	36	4.98	10	< 1	0.03	10	0.58	545	3
WT 06+25N	201	238	2.70	< 0.2	25	90	< 0.5	< 2	0.42	< 0.5	25	145	39	5.32	10	< 1	0.04	10	0.55	1475	2
WT 06+50N	201	238	4.16	< 0.2	< 5	100	< 0.5	< 2	0.27	< 0.5	23	135	57	5.88	10	< 1	0.07	10	1.17	1010	3
WT 06+75N	201	238	3.10	0.2	20	70	< 0.5	< 2	0.22	< 0.5	11	118	24	5.36	10	< 1	0.04	10	0.61	310	1
WT 07+00N	201	238	2.56	0.2	< 5	60	< 0.5	< 2	0.18	< 0.5	10	115	16	4.12	10	< 1	0.03	< 10	0.41	605	2
WT 07+25N	201	238	2.09	0.2	< 5	40	< 0.5	< 2	0.13	< 0.5	4	74	12	4.00	10	< 1	0.01	10	0.24	180	2
WT 07+50N	201	238	2.76	0.4	< 5	50	< 0.5	< 2	0.23	0.5	6	60	20	4.29	10	< 1	0.02	10	0.29	210	1
WT 07+75N	201	238	4.85	0.4	20	80	< 0.5	2	0.18	< 0.5	14	108	32	5.30	10	< 1	0.04	10	0.75	370	1
WT 08+00N	201	238	2.89	0.4	< 5	90	< 0.5	< 2	0.12	< 0.5	13	148	22	4.39	10	< 1	0.03	10	0.76	395	< 1
WT 08+25N	201	238	4.31	0.2	5	100	< 0.5	< 2	0.22	< 0.5	17	133	39	5.17	10	< 1	0.06	10	1.28	500	< 1
WT 08+50N	201	238	1.93	0.4	< 5	80	< 0.5	< 2	0.22	0.5	3	40	16	3.67	10	< 1	0.05	10	0.28	355	< 1
WT 08+75N	201	238	2.72	0.2	10	90	< 0.5	< 2	0.16	< 0.5	4	42	20	4.28	10	< 1	0.07	10	0.33	840	1
WT 09+00N	201	238	2.87	0.4	< 5	100	< 0.5	< 2	0.11	< 0.5	7	50	30	4.07	10	< 1	0.04	10	0.32	605	1
WT 09+25N	201	238	3.20	0.4	< 5	130	< 0.5	< 2	0.12	0.5	13	80	59	5.27	10	< 1	0.05	10	0.54	630	1
WT 09+50N	201	238	6.39	0.4	15	80	< 0.5	< 2	0.08	< 0.5	18	49	46	5.37	< 10	< 1	0.05	10	0.31	1670	2

CERTIFICATION : B. Cargill

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CERTIFICATE OF ANALYSIS A8926009

SAMPLE DESCRIPTION	PREP CODE		Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
RFSA 03+00W	201	238	0.04	73	960	6	< 5	9	50	0.19	< 10	< 10	94	< 10	88
RFSA 03+50W	201	238	0.01	58	640	6	< 5	7	18	0.25	< 10	< 10	112	< 10	80
WT 00+25N	201	238	0.01	247	1860	16	< 5	6	24	0.31	< 10	< 10	97	< 10	220
WT 00+50N	201	238	0.01	378	990	8	< 5	6	18	0.36	< 10	< 10	91	< 10	164
WT 00+75N	201	238	< 0.01	586	750	< 2	< 5	6	16	0.21	< 10	< 10	79	< 10	126
WT 01+00N	201	238	0.01	383	1150	2	< 5	6	14	0.24	< 10	< 10	93	< 10	136
WT 01+25N	201	238	0.01	639	1330	< 2	< 5	4	18	0.17	< 10	< 10	61	< 10	108
WT 01+50N	201	238	0.01	234	1810	6	< 5	3	15	0.20	< 10	< 10	77	< 10	116
WT 01+75N	201	238	0.01	105	1310	12	< 5	4	22	0.31	< 10	< 10	128	< 10	112
WT 02+00N	201	238	0.01	555	710	< 2	< 5	6	10	0.46	< 10	< 10	74	< 10	114
WT 02+25N	201	238	0.01	640	660	2	< 5	6	8	0.40	< 10	< 10	78	< 10	114
WT 02+50N	201	238	< 0.01	932	800	2	< 5	9	14	0.18	< 10	< 10	68	< 10	126
WT 02+75N	201	238	0.01	882	850	12	< 5	7	36	0.12	< 10	< 10	50	< 10	124
WT 03+00N	201	238	< 0.01	1525	200	4	< 5	10	13	0.09	< 10	< 10	48	< 10	88
WT 03+25N	201	238	< 0.01	528	970	< 2	< 5	3	9	0.15	< 10	< 10	55	< 10	98
WT 03+50N	201	238	< 0.01	690	300	< 2	< 5	4	6	0.15	< 10	< 10	52	< 10	100
WT 03+75N	201	238	0.01	209	690	6	< 5	4	6	0.29	< 10	< 10	72	< 10	112
WT 04+00N	201	238	0.01	85	640	4	< 5	4	15	0.33	< 10	< 10	97	< 10	80
WT 04+25N	201	238	0.01	52	640	4	< 5	5	6	0.17	< 10	< 10	64	< 10	84
WT 04+50N	201	238	0.01	43	930	12	< 5	5	8	0.34	< 10	< 10	87	< 10	98
WT 04+75N	201	238	0.01	36	890	< 2	< 5	6	6	0.37	< 10	< 10	102	< 10	94
WT 05+00N	201	238	0.01	64	900	16	< 5	7	8	0.40	< 10	< 10	105	< 10	116
WT 05+25N	201	238	0.01	43	620	10	< 5	4	10	0.50	< 10	< 10	137	< 10	96
WT 05+50N	201	238	0.01	74	760	< 2	< 5	9	12	0.53	< 10	< 10	132	< 10	142
WT 05+75N	201	238	0.01	43	840	24	< 5	6	17	0.61	< 10	< 10	163	< 10	88
WT 06+00N	201	238	0.01	67	460	14	< 5	5	159	0.37	< 10	< 10	178	< 10	100
WT 06+25N	201	238	0.01	57	1600	6	< 5	5	13	0.33	< 10	< 10	113	< 10	144
WT 06+50N	201	238	0.01	99	1320	8	< 5	7	12	0.41	< 10	< 10	108	< 10	194
WT 06+75N	201	238	0.01	45	1010	8	< 5	5	7	0.51	< 10	< 10	111	< 10	134
WT 07+00N	201	238	0.01	31	1240	10	< 5	4	7	0.38	< 10	< 10	91	< 10	112
WT 07+25N	201	238	0.01	17	570	12	< 5	3	4	0.48	< 10	< 10	117	< 10	56
WT 07+50N	201	238	0.01	19	860	2	5	4	6	0.37	< 10	< 10	103	< 10	86
WT 07+75N	201	238	0.01	53	1110	8	< 5	7	6	0.50	< 10	< 10	106	< 10	148
WT 08+00N	201	238	0.01	104	760	8	< 5	5	6	0.35	< 10	< 10	102	< 10	124
WT 08+25N	201	238	0.01	74	1170	6	< 5	8	10	0.50	< 10	< 10	102	< 10	164
WT 08+50N	201	238	0.01	13	650	10	< 5	5	7	0.32	< 10	< 10	101	< 10	64
WT 08+75N	201	238	0.01	13	2080	14	< 5	5	7	0.30	< 10	< 10	84	< 10	100
WT 09+00N	201	238	0.01	17	840	< 2	< 5	6	6	0.28	< 10	< 10	85	< 10	88
WT 09+25N	201	238	0.01	31	1850	16	< 5	5	7	0.29	< 10	< 10	85	< 10	130
WT 09+50N	201	238	< 0.01	17	2440	14	< 5	7	5	0.18	< 10	< 10	54	< 10	152

CERTIFICATION : B. Cargill

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Project : CASTLEFORD MINERALS
Comments :

Date : 1-OCT-89
Invoice # : I-8926009
P.O. # :

CERTIFICATE OF ANALYSIS A8926009

SAMPLE DESCRIPTION	PREP CODE		Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
WT 09+75N	201	238	3.54	0.6 X	10	100	< 0.5	< 2	0.13	< 0.5	12	76	45	4.77	10	< 1	0.07	10	0.72	585	2
WT 10+00N	201	238	3.56	0.4 X	15	110	< 0.5	< 2	0.11	< 0.5	6	77	33	5.80	10	1	0.05	< 10	0.37	550	2
P89-24	201	238	2.14	< 0.2	< 5	130	< 0.5	< 2	0.57	1.0 X	15	51	57	4.68	< 10	< 1	0.13	10	1.29	725	3
FN SILT 1 2068E	203	238	1.55	< 0.2	< 5	130	< 0.5	2	0.56	0.5	26	319	41	4.78	< 10	< 1	0.17	10	3.36	745	2
FN SILT 2 2365E	201	238	3.18	< 0.2	20	210	< 0.5	< 2	0.70	< 0.5	25	313	61	5.24	10	< 1	0.35	10	2.89	895	1
FN SILT 3 2535E	201	238	2.59	< 0.2	< 5	130	< 0.5	2	0.54	0.5	22	172	48	5.62	< 10	< 1	0.13	10	2.44	880	1
FN SILT 5 2585E	201	238	2.87	< 0.2	15	140	< 0.5	< 2	0.63	< 0.5	22	187	44	5.60	10	< 1	0.15	10	2.20	960	< 1
FRS2 SILT 1	201	238	1.69	0.2	< 5	330	< 0.5	< 2	0.45	0.5	12	44	56	5.29	< 10	< 1	0.12	20	0.85	645	2
FRS2 SILT 2	201	238	1.94	< 0.2	25	120	< 0.5	< 2	0.44	< 0.5	11	69	28	3.44	< 10	< 1	0.06	10	0.97	550	< 1
FRS2 SILT 3	201	238	1.59	< 0.2	15	70	< 0.5	< 2	0.62	0.5	18	127	41	4.01	< 10	< 1	0.11	10	2.16	615	< 1
FRS2 SILT 4	201	238	1.38	< 0.2	< 5	50	< 0.5	< 2	0.44	< 0.5	11	86	32	2.94	< 10	< 1	0.06	10	0.95	385	< 1
FRS2 SILT 5	201	238	1.43	0.2	25	240	< 0.5	< 2	0.45	1.0 X	27	173	134 ✓	5.42	< 10	< 1	0.15	30	1.35	1700	6
FRS2 SILT 6	203	238	3.13	< 0.2	15	160	< 0.5	< 2	0.61	< 0.5	25	281	57	5.92	10	< 1	0.21	20	2.18	1360	1
FRS2 SILT 7	203	238	2.34	< 0.2	25	170	< 0.5	< 2	0.43	< 0.5	17	182	64	4.99	10	< 1	0.21	20	1.62	1010	[illegible]
FRS2 SILT 8	203	238	1.91	< 0.2	5	190	< 0.5	< 2	0.39	< 0.5	30	383	80	4.92	< 10	< 1	0.16	20	3.25	1090	[illegible]

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SAMPLE DESCRIPTION	PREP CODE		Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
WT 09+75N	201	238	0.01	36	1350	< 2	< 5	7	5	0.33	< 10	< 10	84	< 10	140
WT 10+00N	201	238	0.01	19	1560	14	< 5	5	6	0.28	< 10	< 10	90	< 10	134
P89-24	201	238	0.04	53	750	6	< 5	5	38	0.17	< 10	< 10	61	< 10	190
FN SILT 1 2068E	203	238	0.01	338	530	20	< 5	5	27	0.13	< 10	< 10	50	< 10	150
FN SILT 2 2365E	201	238	0.04	155	840	6	< 5	8	30	0.36	< 10	< 10	107	< 10	132
FN SILT 3 2535E	201	238	0.01	126	750	8	< 5	7	28	0.23	< 10	< 10	97	< 10	192
FN SILT 5 2585E	201	238	0.01	136	720	12	< 5	7	30	0.36	< 10	< 10	113	< 10	170
FRS2 SILT 1	201	238	0.01	33	660	6	< 5	5	31	0.13	< 10	< 10	60	< 10	186
FRS2 SILT 2	201	238	0.01	49	250	12	< 5	4	34	0.18	< 10	< 10	66	< 10	98
FRS2 SILT 3	201	238	0.01	124	810	8	< 5	5	36	0.12	< 10	< 10	62	< 10	158
FRS2 SILT 4	201	238	0.01	36	690	4	< 5	3	21	0.19	< 10	< 10	68	< 10	60
FRS2 SILT 5	201	238	< 0.01	138	670	16	< 5	6	31	0.02	< 10	< 10	38	< 10	282
FRS2 SILT 6	203	238	0.02	116	720	10	< 5	9	35	0.25	< 10	< 10	99	< 10	178
FRS2 SILT 7	203	238	0.02	83	660	< 2	5	6	22	0.14	< 10	< 10	61	< 10	152
FRS2 SILT 8	203	238	0.01	253	640	14	< 5	7	24	0.05	< 10	< 10	53	< 10	152

CERTIFICATION : B. Cargill

APPENDIX II

DESCRIPTIONS OF ADJACENT GOLD PROPERTIES

GOLD ASSOCIATED WITH A REGIONALLY DEVELOPED MID-TERTIARY PLUTONIC EVENT IN THE HARRISON LAKE AREA SOUTHWESTERN BRITISH COLUMBIA (92G/9; 92H/3, 4, 5, 6, 12)

By G. E. Ray

INTRODUCTION

Recent studies by the British Columbia Ministry of Energy, Mines and Petroleum Resources indicate that a regional episode of Mid-Tertiary plutonism in the Harrison Lake area, approximately 100 kilometres east of Vancouver, is associated with widespread vein-type gold mineralization. This magmatic event was structurally controlled and resulted in the emplacement of numerous, variably sized plutons along a major, northwesterly trending lineament (Fig. 10-1). These plutons intrude a variety of sedimentary and volcanic rocks that range in age from Pennsylvanian to Cretaceous; the plutons are diorite to quartz diorite to granodiorite in composition and yield K/Ar (biotite) ages between 19 and 26 Ma (Table 10-1). In part, the lineament follows the Harrison Lake fracture system, which is associated with regional hot spring activity (Fig. 10-1); the location of its northwesterly continuation beyond Harrison Lake is uncertain. Southeastward, it is traceable to the 48th parallel in Washington State where it is probably marked by the 20 to 22-Ma-old Cloudy Pass and Cascade Pass plutons (Crowder, *et al.*, 1966; Misch, 1966; Grant, 1969).

The largest pluton along the lineament, the composite Chilliwack batholith, straddles the Canada-United States border approximately 125 kilometres east-southeast of Vancouver (Fig. 10-1); it yields K/Ar ages between 16 and 35 Ma (Richards and White, 1970; Richards and McTaggart, 1976; Vance, 1985). This batholith exceeds 950 square kilometres in area, and is spatially associated with at least 10 separate gold-bearing properties, including two former producing gold mines (Boundary Red Mountain and Lone Jack). Further north, numerous smaller bodies of similar age and mineralogy to the Chilliwack batholith occur sporadically along the lineament for more than 100 kilometres. The two most northern areas of Mid-Tertiary, diorite-related gold mineralization occur on Harrison Lake at Doctors Point and at the RN-Geo property; both lie close to the Harrison Lake fracture, being situtated 95 kilometres northeast and 100 kilometres east of Vancouver respectively (Fig. 10-1). The Doctors Point property is being explored by Rhyolite Resources Inc. and Harrison Lake Gold Mines Ltd., while the RN-Geo property was recently optioned by Abo Oil Corporation to Kerr Addison Mines Ltd.

THE GEOLOGY OF GOLD PROPERTIES ASSOCIATED WITH THE MID-TERTIARY PLUTONISM

The Rhyolite Resources Inc.-Harrison Lake Gold Mines Ltd. property at Doctors Point, on the western shore of Harrison Lake (Fig. 10-1), represents the most northerly example of Mid-Tertiary, diorite-related precious metal mineralization yet identified along the Harrison Lake lineament. Drilling has outlined approximately 132 300 tonnes grading 3.5 grams gold per tonne on the property. The area is underlain by a variety of intermediate to basic volcanic and volcaniclastic rocks, together with some metasedimentary rocks of Early Cretaceous (Middle Albian) age. These are intruded by five diorite-quartz diorite plutons that range from less than 50 metres to more than 1 kilometre in diameter. The plutons are surrounded by hornfelsic envelopes up to 250 metres in width. The gold and silver is hosted in long, narrow, gently dipping mineralized veins that contain abundant quartz, pyrite, and arsenopyrite; geochemically they are sporadically enriched in bismuth, antimony, and mercury. The veins show an overall spatial association to the pluton margins, and some pass without interruption from diorite out into the hornfels. The veins were apparently controlled by, and injected along low angle, cone sheet fractures developed during the later stages of the diorite intrusion. K/Ar ages obtained from biotite and hornblende samples suggest the diorites were emplaced between 19 and 25 Ma ago, while K/Ar analysis on muscovite taken from a gold-bearing vein suggests the mineralization took place 23 Ma ago (Table 10-1).

In 1983 and 1984, Abo Oil Corporation completed a drilling and bulk sampling program on their RN-Geo property, at the southern end of Harrison Lake (Fig. 10-1); this yielded some promising gold values (Huber, 1983); the property is currently being explored by Kerr Addison Mines Ltd. The area is underlain by deformed and hornfelsed metapelites of presumed Mesozoic age; these are intruded by several, small diorite-quartz diorite plutons between 50 and 200 metres in diameter. Gold is hosted in quartz veins and stringers that intersect the plutons; the veins consist of several, variably orientated sets; locally they form closely spaced stockworks which may be suitable for bulk mining. The veins carry visible gold together with pyrite and pyrrhotite; there is sporadic geochemical enrichment of arsenic and bismuth but no mercury enhancement. A K/Ar analysis on hornblende suggests the diorites were emplaced 26 Ma ago, while analysis on sericite taken from a gold-bearing quartz vein indicates that mineralization occurred 24.5 Ma ago (Table 10-1). This is essentially synchronous with the plutonism and mineralization at Doctors Point.

The Laidlaw gold property, which is about 14 kilometres southwest of Hope (Fig. 10-1), is described by McClaren (1971). A sequence of deformed metasedimentary rocks are intruded by several small, elongate diorite-quartz diorite bodies that are less than 75 metres in width. These bodies are probably related to the Mount Barr batholith which lies 6 kilometres further south (Fig. 10-1); this batholith covers 160 square kilometres and has yielded K/Ar biotite ages between 16 and 24 Ma (Richards and White, 1970; Richards and McTaggart, 1976). Native gold at the Laidlaw property is hosted in two quartz vein sets which cut the diorite bodies; these veins also carry pyrrhotite, arsenopyrite, chalcopyrite, and secondary marcasite, as well as traces of bismuth tellurides.

The remaining 10 properties containing probable Mid-Tertiary gold mineralization lie close to the main Chilliwack batholith in both Canada and the U.S.; details on the U.S. properties is given by Moen (1969). The Lone Jack and Boundary Red Mountain properties (Fig. 10-1) were producing mines during the early part of this century. At the Boundary Red Mountain mine, gold-bearing quartz veins follow the sheared intrusive contact between a diorite body and older metasedimentary rocks. The veins contain minor amounts of pyrite, chalcopyrite, and pyrrhotite, and traces of bismuth tell-

British Columbia Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork, 1985, Paper 1986-1.

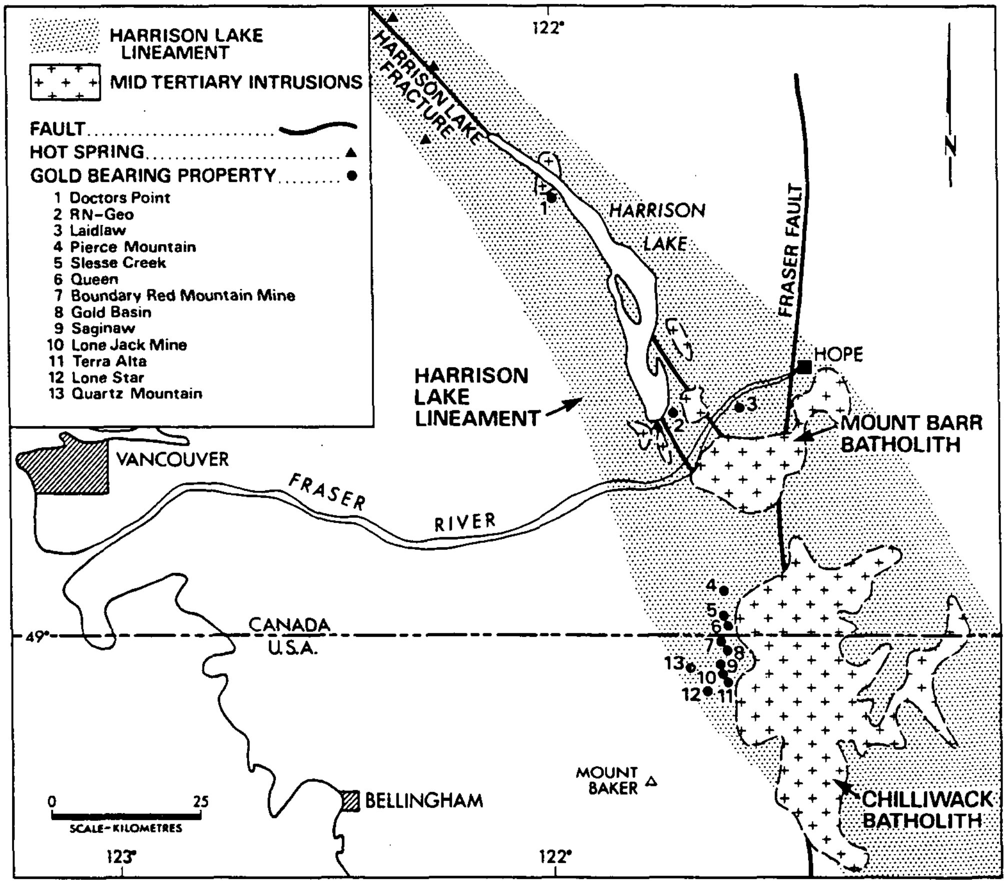

Figure 10-1. Location of gold occurrences and related Mid-Tertiary plutons along the Harrison Lake lineament.

TABLE 10-1
K/Ar AGES FROM THE HARRISON LAKE AREA

SAMPLE NO.	UTM CO-ORDINATES	MINERAL	%K	Ar^{40*1}	COMMENTS	AGE (Ma)
RR 54	591200E; 5465100N	Hornblende	0.19 ± 0.002	0.1915	Taken from diorite pluton at the RN mine exploratory adit, Harrison Lake	25.7 ± 1.0
RR 55	591200E; 5465100N	Sericite	8.38 ± 0.13	8.021	Taken from a gold-bearing quartz-sericite-pyrrhotite vein, RN mine exploratory adit, Harrison Lake	24.5 ± 1.0
RR 56	573100E; 5500100N	Biotite	6.91 ± 0.02	6.268	Drill core from the Doctors Bay pluton (diorite)	23.2 ± 0.8
RR 56	573100E; 5500100N	Hornblende	1.112 ± 0.01	1.083	Drill core from the Doctors Bay pluton (diorite)	24.7 ± 1.0
RR 64A	573250E; 5499950N	Muscovite	8.65 ± 0.03	7.695	Taken from kaolin-muscovite alteration halo adjacent to a gold-bearing quartz sulphide vein that cuts the Doctors Bay pluton	22.7 ± 0.8
RR 127	572300E; 5501600N	Biotite	7.40 ± 0.02	5.907	Taken from the Doctors Point pluton (quartz diorite)	20.4 ± 0.8
RR 127	572300E; 5501600N	Hornblende	0.391 ± 0.002	0.295	Taken from the Doctors Point pluton (quartz diorite)	19.3 ± 0.8

[1]x 10^{-6} cc/gm
All samples collected by G. E. Ray.
Potassium analyses completed at the British Columbia Ministry of Energy, Mines and Petroleum Resources Laboratory.
Argon analyses completed by J. Harakal, Geochronology Laboratory, University of British Columbia.

uride. In 1916 the Boundary Red Mountain mine produced 11 460 tonnes of ore grading 24 grams gold per tonne, while total gold production between 1913 and 1946 was valued at just under 1 million U.S. dollars.

At the Lone Jack mine, the quartz veins occupy fissures in phyllitic schists; no dioritic rocks are seen at the mine, but outcrops of the main Chilliwack batholith lie only 1.5 kilometres east of the property. The veins carry visible gold with pyrite, pyrrhotite, and traces of bismuth tellurides. Moen (1969) estimates that gold production from the Lone Jack mine between 1902 and 1924 valued approximately 555 000 U.S. dollars.

Gold-bearing veins at the Pierce Mountain, Slesse Creek, Gold Basin, and Quartz Mountain properties (Fig. 10-1) are all spatially associated with dioritic bodies that intrude metasedimentary rocks; the veins at the Lone Star property carry bismuth tellurides.

EXPLORATION GUIDES FOR MID-TERTIARY PRECIOUS METAL MINERALIZATION ALONG THE HARRISON LAKE LINEAMENT

Since many of the Mid-Tertiary plutons emplaced along the Harrison Lake lineament are associated with precious metal mineralization, a search for other intrusive bodies of this age should represent a viable exploration method for gold in the region. Furthermore, outlining possible northwesterly and southeasterly extensions of both the lineament and the Harrison Lake fracture system could result in the discovery of other mineralized plutons. For example, the Cascade Pass and Cloudy Pass plutons, and parts of the Snoqualmie batholith in Washington State (Baadsgaard, *et al.*, 1961; Crowder, *et al.*, 1966; Misch, 1966), probably belong to this intrusive suite, and thus could have associated vein-type gold mineralization. It should also be noted that the east-west dimension of the lineament is unknown; it may be considerably wider than shown on Figure 10-1. Many of the mineralized intrusive bodies located to date are relatively small; consequently the reconnaissance style of geological mapping completed in the region 30 or more years ago may have overlooked many small plutons. These could be located and outlined by prospecting followed by detailed geologic mapping and K/Ar analyses to determine their intrusive ages. The Geological Survey of Canada is currently conducting a mapping program in the Hope (west half) map sheet (J.W.H. Monger, personal communication, 1985) which will provide more geological data on the Harrison Lake area.

Many of the Mid-Tertiary gold-bearing veins in the region contain bismuth tellurides; consequently regional and detailed geochemical exploration for this type of mineralization could use bismuth (and gold) as pathfinder elements. The use of mercury, arsenic, and antimony could be successful locally. At Doctors Point the veins are geochemically enriched in these elements, while at the RN-Geo and Laidlaw properties, mercury is absent, and arsenic and antimony enrichment is weak and sporadic. Arsenic enrichment is not reported at either the Boundary Red Mountain or Lone Jack mines.

CONCLUSIONS

The Harrison Lake lineament and fracture system of southwestern British Columbia, and its southeastern extension into Washington State, is marked by a 19 to 26-Ma period of dioritic-quartz dioritic plutonism which is temporally and genetically related to 13 separate areas of gold mineralization. These Mid-Tertiary plutons vary in size from the composite Chilliwack batholith, which covers 950 square kilometres, down to small bodies less than 50 metres across. The gold ± silver mineralization is generally hosted in quartz veins filling tension fractures and is commonly associated with bismuth tellurides; however, the degree of arsenic, mercury, and antimony geochemical enrichment associated with the mineralization is highly variable. Many mineralized veins in the region are hosted either within the diorite bodies or close to their intrusive margins, where competency differences resulted in brittle, open space fracturing. The morphology of the mineralized veins is highly variable; it includes shallow-dipping features controlled by cone sheet fracturing, stockwork and crackle breccia veinlets, and steeply dipping veins injected along the sheared margins of the plutons.

Exploration for this Mid-Tertiary precious metal mineralization should involve prospecting, geological mapping, and geochronology to locate and identify other plutons of this age in the Harrison Lake area and along projected northwesterly and southeasterly extensions of the lineament. Follow-up exploration using soil and silt sampling could use gold as well as bismuth, arsenic, antimony, and mercury as pathfinder elements.

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north-facing, nearly vertical cliff, a prospect hole exposes a thin veinlet that averages 1 inch in width and consists mainly of bornite and chalcopyrite. This veinlet occurs in greatly sheared and altered argillite along a major fault zone. Some of the copper sulfide minerals resemble clinker and are accompanied by pyrite and drusy quartz. Only about 4 feet of the veinlet is exposed in the prospect hole. About 150 feet east of this prospect hole, on the crest of the ridge near its precipitous north slope, a second prospect shaft has been sunk 6 feet in sparsely metalized dacite tuff. Here, pyrite and chalcopyrite occur as disseminated grains along closely spaced shear zones; much iron oxide and a small amount of malachite accompany the sulfide minerals. However, the metalized area does not appear to be extensive, as the country rock is barren a few feet away from the prospect shaft.

Blonden (Goat Mountain) mine

The Blonden mine is in the NE¼ sec. 28, T. 40 N., R. 9 E., on the north slope of Goat Mountain at an altitude of 5,000 feet. The mine is about 2,000 feet south-southwest of the Evergreen mill building on Swamp Creek and is now part of the Evergreen group of claims. In 1902 and 1903 a small portable one-stamp mill was used to crush free-milling gold ore that assayed $30 to $40 per ton in gold. The gold occurs in quartz fissure veins 6 to 12 inches wide that have a general northeast strike and that dip steeply southeast. The host rocks of the veins consist of sheared and contorted pre-Jurassic phyllite and graywacke. The lower adit of the mine, at an altitude of 5,000 feet, heads S. 45° E. for 520 feet. At about 300 feet from the portal a 5-foot-wide quartz-mineralized shear zone has been crosscut but not drifted upon. At the face of the adit a 9-foot-wide quartz vein was crosscut. The upper adit is about 300 feet south of the lower adit and is in the bed of a small creek. This adit heads S. 50° E. for 60 feet, at which point a drift follows a narrow quartz vein northeast for 35 feet and southwest for 24 feet. The quartz vein, which is 2 to 6 inches wide, assays 0.01 ounce per ton in gold and 0.18 ounce in silver. Fine-grained pyrite is the only metallic mineral that is visible in the quartz, and the pyrite makes up less than 1 percent of the vein. However, old assays show as much as $1,000 in gold from quartz veins at the Blonden mine.

Boulder Creek prospect

This occurrence is on the north bank of Boulder Creek in the SW¼ sec. 22, T. 40 N., R. 6 E., at an altitude of 1,500 feet. At this location small lenticular bodies of chalcopyrite and pyrite occur in a N. 70° E.-trending shear zone in basalt. The chalcopyrite and pyrite are accompanied by kidneys of fine-grained magnetite. Although the lenticular bodies of chalcopyrite and pyrite of the shear zone are small—not much more than 1 foot wide and several feet long—boulders as much as 6 feet in diameter and composed of a mixture of pyrite, magnetite, and chalcopyrite have been found in Boulder Creek. Several individuals, as well as at least one large mining company, have attempted to find the source of the copper-bearing minerals, but to date they have been unsuccessful.

Boundary Red Mountain mine

The Boundary Red Mountain mine is in sec. 3, T. 40 N., R. 9 E., and sec. 34, T. 41 N., R. 9 E., on the north slope of Mount Larrabee (formerly Red Mountain) (Fig. 30). The claims of the mine are one-quarter to three-quarters of a mile south of Border Monument 54 and are at altitudes of 4,000 to 5,500 feet. The Boundary Red Mountain group consists of six patented claims: Rocky Draw, Klondike, Mountain Boy, Glacier, Climax, and Climax Extension No. 1, all of which were surveyed under Mineral Survey 699. Tom Bourn, Kitsap Lake, Wash., and John P. Wiatrick, Chicago, Ill., are the owners of the claims.

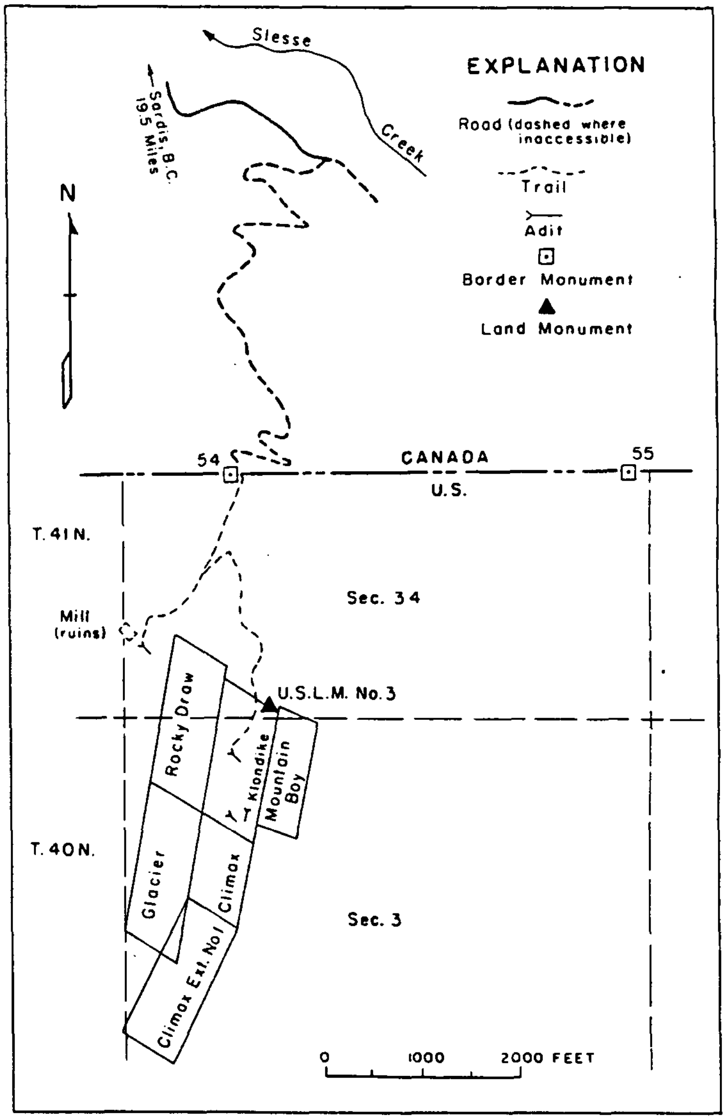


FIGURE 30.—Location and claim map of Boundary Red Mountain mine.

Accessibility.—Although the mine is accessible by 8 miles of trail from Twin Lakes, the most commonly used route to the mine is through Canada. From Sardis, British Columbia, which is about 18 miles northeast of Sumas, the Chilliwack River road is followed 13

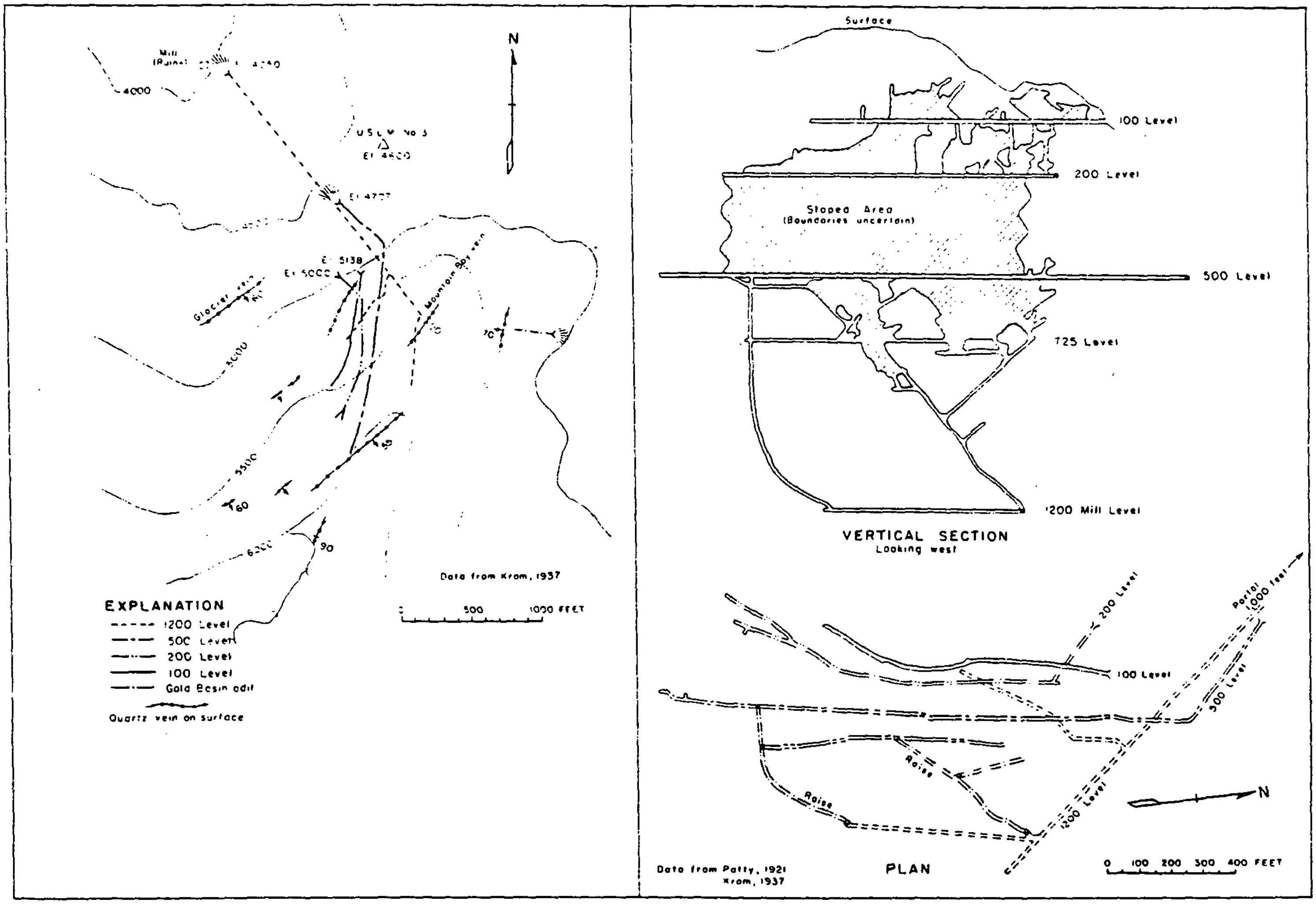


FIGURE 31.—Boundary Red Mountain mine workings and veins.

1931, was $12 per ton. This represents a low of $7 per ton in 1931 to a high of $14.43 in 1916, all at $20.67 gold prices. In 1935 the ore averaged $14.90 per ton and in 1941 it averaged $17 at $35 gold prices that had been in effect since 1934. The fineness of the gold ranged from 936 to 946, and the silver content of bullion shipments was less than 0.5 percent.

Mining and milling.—To date (1967), mining has been confined to the Boundary Red Mountain vein (Fig. 31). Steep mountainous terrain allowed the vein to be mined from four drifts and crosscuts over a vertical distance of 950 feet from the surface to the lowest workings of the mine. In the early years of mining, the uppermost 100-foot level, at the 5,138-foot elevation, was driven on the vein in a southerly direction for about 900 feet. Two ore shoots, which raked steeply south, were encountered and stoped for about 100 feet to near the surface. The 200-foot level, at the 5,000-foot elevation, crosscut the vein at about 300 feet from the portal, and the vein was drifted upon for 1,075 feet. The ore shoots that had been mined in the 100-foot level were encountered in the new drift and had increased in stope length. The first ore shoot had lengthened from 150 to 300 feet, and the second, from 200 to 500 feet. The average width of the vein on the 200-foot level was about 2½ feet, whereas on the 100-foot level the vein had averaged about 2 feet in width. In 1917 the 500-foot level was started at an altitude of 4,707 feet. The vein was crosscut at 370 feet and drifted upon for about 1,500 feet, at which point it was faulted off. At 1,200 feet on the vein a raise was driven to the 200-foot level. To the north of the raise the vein was mined from several stopes. In June 1923 the 1,200-foot level, which is the lowest and longest level of the mine, was begun at the 4,050-foot elevation, near the mill. In March 1924 the 10- by 10-foot crosscut encountered the vein 2,200 feet from the portal; however, the vein proved to be only 2 to 8 inches wide. The vein was drifted upon to the south in hope that it would increase in width, but only thin discontinuous quartz veins were found in the fault zone. After 500 feet of drifting on the fault zone, a raise was pushed to the 500-foot level. On the 1,200-foot level another raise, beginning at the vein intersection, was extended upward to the 500-foot level and connected with 525-, 725-, 765-, 800-, and 850-foot intermediate levels. As far as can be determined from mine maps, most mining took place above the 725-foot level. Below this level some stoping was done from the 765-foot and 800-foot levels. Parts of the Boundary Red Mountain vein have yet to be mined; however, any future mining operations will depend mainly on a rise in the price of gold. It is also possible that the faulted-off south end of the miles to Slesse Creek, thence 6.5 miles up Slesse Creek to the end of the road. From the end of the road a roughed-in bulldozer road is followed south for about 1 mile to the International Boundary, from which point a trail leads about half a mile farther south to the old millsite at an altitude of 4,050 feet.

History.—The original claims, which were the Klondike and the Climax, were located in August 1898 by C. W. Roth et al. In 1900 the other claims of the group were staked for the Red Mountain Gold Mining Co., and under the leadership of Judge Elmon Scott, of Bellingham, development work was begun on the claims. By 1913 gold ore was being crushed in a 5-stamp mill, and in 1914 the mine was the main producer of gold in the county; the production for 1914 was about $15,000. In 1915 George Wingfield, of Nevada, leased the mine, and in the following year 5 additional stamps were added to the mill. From April to December in 1916 the gold production from 10,441 tons of ore amounted to $148,578; the mill heads ran $14.43 per ton at the existing $20 gold price. The chronological notes and production records on the Boundary Red Mountain mine that follow were compiled mainly from U.S. Bureau of Mines Yearbooks, company reports, and private reports:

1917—$132,000 produced, but because of fire and war conditions operations were suspended.
1918—Powerplant on Slesse Creek destroyed by fire.
1921—Production, $30,000; upper tramway destroyed by fire.
1922—Production, $95,679.
1923—Production, $60,000; ore averaged $14 per ton.
1924—Mill idle; mainly development work.
1925—Production, around $90,000.
1926—Mill idle; mainly development work.
1927—Production, $86,822; mine under lease to A. H. Westall as Boundary Red Mountain Mining Co.
1928—Production, $62,000.
1929—Production, $55,274.
1930—Production, $71,822.
1931—Production, $12,475.
1932—Production, $8,876.
1933—Production, $13,907.
1934—Property idle.
1935—Production, $15,831; operated as International Gold Mines, Ltd.
1936—Production, $2,000.
1939—Production, $12,000 from cleanup of 5-stamp mill.
1940—Production, $12,000.
1941—Production, $8,515.
1942—Production, $1,000; mill destroyed by snowslide.
1946—Production, $1,800 from tailings.

From 1913 to 1946 the total gold and silver production from the Boundary Red Mountain mine was $947,579, most of which was gold. Since 1946 the property has been under lease to several parties; however, mining has not been undertaken. In the mid-1950's a steep single-track road was roughed in to the International Boundary from existing logging roads on the Canadian side of the border; however, the road was never maintained and at present (1966) is suitable only for foot travel. The mill and bunkhouses at the mine, as well as the powerhouse on Slesse Creek at the border, are no longer standing.

Geology.—The Boundary Red Mountain vein is in schist and diorite that form a contact belt between Slesse Diorite and weakly metamorphosed rocks of the Chilliwack Group. The schist is composed mainly of carbonaceous amphibole and quartz schist, and the diorite is chiefly a fine-grained hornblende diorite. Disseminated fine-grained pyrite is present in both the schist and the diorite. The contact zone contains numerous faults and fractures; some of these have been filled with quartz, whereas others have offset the quartz veins. The gold-bearing veins appear to have been formed during two stages of mineralization. During the initial stage, fractures in the rock were filled with quartz that contained small amounts of pyrite, pyrrhotite, and chalcopyrite. Later, recurrent movement along the veins produced microbrecciation of the quartz that permitted hydrothermal gold-bismuth telluride solutions to infiltrate parts of the quartz vein. The main veins of the Boundary Red Mountain claims, as mapped by Krom (1937), are the Glacier, Boundary Red Mountain, and Mountain Boy. The Gold Basin vein appears to be part of the Red Mountain vein system but is not part of the Boundary Red Mountain group of claims.

The veins on Boundary Red Mountain are true quartz fissure veins in diorite and schist. The veins, which range in width from a few inches to 10 feet and average 3 feet, strike N. 14° E. and dip 50° E. to vertical. On the surface the veins crop out for as much as 900 feet along strike, but because of several northward-trending faults, continuous parts of the vein are not much more than 100 feet long. On the Boundary Red Mountain vein, mining was carried to a depth of about 850 feet beneath the outcrop. At about 1,000 feet below its outcrop the vein pinches to a narrow stringer along a gouge seam and the gold values are low.

The main ore mineral of the Boundary Red Mountain vein is native gold that is accompanied by minor amounts of pyrite, chalcopyrite, pyrrhotite, and the bismuth telluride mineral tellurbismuth. What little silver is present appears to be alloyed with the gold. The gold is distributed irregularly and has a tendency to follow microbrecciated parts of the vein that parallel the margins of the main vein. The brecciated zones contain distinctive wavy brown bands of iron oxide in an otherwise vitreous milk-white quartz. Although most of the gold occurs in a finely divided state that is invisible to the unaided eye, grains of gold as much as 2 millimeters across were present in several ore shoots. In some parts of the vein, gold occurred as sheets as much as 1 inch square that filled thin fractures in the quartz. The thickness of the sheet gold probably did not exceed 1 micron. The bismuth telluride that accompanied the gold occurred as steel-gray bladed flexible crystals that averaged about 1 millimeter in length; however, some crystals were as much as ¼ inch long. No records were kept on the telluride content of the veins. The average value of gold ore from the Boundary Red Mountain vein, based on mint sales from 1915 to

Boundary Red Mountain vein can be found through detailed geologic mapping and diamond drilling.

Mining of the Boundary Red Mountain vein was by overhand stoping, and waste was used for fill, a method that made little timbering necessary (Patty, 1921, p. 308). Chutes were spaced at 25-foot intervals, and raises and manways at 150-foot intervals. During the summer months the mine was extremely wet; about 500 gallons of water per minute drained through the main adit. This excess water is due to melting glaciers that occupy a glacial cirque above the mine workings. Because of the wet mine conditions, as well as low wages, isolation, and poor working conditions, it was difficult to keep miners at the mine. Krom (1937, p. 26) makes the following statement regarding labor at the mine:

> Labor turnover was so rapid that it required the proverbial three crews—one coming, one working, and one going—to keep the mine in operation. Not uncommonly, men arrived and departed without having worked one full shift. During August, 13 men quit. During the single month of September, labor turnover was 96 percent.

Normally, about 30 men were employed in the mine.

Milling operations at the mine in 1920 have been described by Patty (1921, p. 308-309). His description of the milling operations is as follows:

> The ore is delivered to the tramway from storage bins near the portal of No. 5 level. The length of the tram is 1,600 feet, approximately, and the difference in elevation between the terminals is 700 feet. The buckets have a capacity of 850 pounds of ore, and the tram delivers to the mill 120 buckets during a 9-hour shift.
>
> The buckets dump into a mill bin, from which the ore is drawn over a grizzly set to 1 inch. The coarse rock is broken to 1 inch in a 7- by 10-inch Blake jaw-crusher, and then joins the fines, which are by-passed to the stamp bins. Two Challenge feeders deliver the ore to a battery of 10 stamps weighing 1,000 pounds each. The height of drop varies between 7 and 8 inches; rate of drop, 101 times per minute, and the height of discharge, 6 inches, the ore being crushed to pass a 12-mesh battery screen. There are two outside amalgamation plates separated by a slight drop. The plates are both 5½ by 10 feet and are set with a slope of ¾ inch to the foot. The pulp next passes through a mercury trap delivering to a classifier. The classifier makes two products, sand and slime. The sands go to a small Marathon mill for re-grinding and are then returned to the plates. An amalgamating head is attached to the Marathon mill. The slimes are delivered to a Little Betty amalgamation barrel.

By 1935 the mill circuit had been changed slightly and corduroy was used to save additional gold. According to Krom (1937) the following recovery was obtained:

	Percent
No. 1 mortar, inside	31.94
No. 2 mortar, inside	33.37
No. 1 amalgam plate	11.68
No. 2 amalgam plate	12.28
Corduroy cloth in front of stamps	1.32
Rod mill and tailing corduroy	4.79
Classifier clean-up	1.98
Tailing amalgam plates	2.40
Miscellaneous recovery, amalgamated copper	0.24
	100.00

Mining and milling costs for 1921 and 1925 are reported by Krom (1937, p. 25-26). It is interesting to note that in 1921, ore that averaged $12.26 per ton was mined and milled for $14.36, at a loss of $2.10 per ton. In 1925, $15 ore was mined and milled for $7.62, at a profit of $7.38 per ton. Krom gives the following breakdown for mining and milling costs:

Mining and milling costs at Boundary Red Mountain mine, 1921 and 1925

	1921	*1925*
Mining	$7.159	$3.1187
Development	1.407	1.4449
Tramway	0.292	0.2573
Milling	2.487	1.3693
General	3.000	0.8070
Administrative	.....	0.6245
Total	$14.36	$7.62

Power for the mine was generated at a powerhouse on Slesse Creek at the International Boundary. Under a 30-foot head a Hendy-Francis turbine drove a 25-kv.-a. generator. The electrical power of 2,300 volts was utilized at the mine, where three 25-hp. 2,300-volt motors drove three 9- by 8-inch compressors for drills. The mill required 70 hp. (Patty, 1921, p. 308).

Chain Lakes prospect

This prospect is in the NW¼ sec. 24, T. 39 N., R. 8 E., on a narrow strip of land that separates Galena and Hayes Lakes. The altitude of the lakes is about 4,800 feet. Several open cuts and one short adit (35 feet long) expose disseminated marmatite, as well as small amounts of pyrite, chalcopyrite, and bornite, over a width of 12 to 20 feet and a length of 300 to 400 feet. The host rock for the minerals consists of brecciated iron oxide-stained andesite. Although the ore minerals are generally sparse, select samples as much as 6 inches in diameter consist almost wholly of massive marmatite and pyrite. According to Stoess (1934, pt. 163, p. 1), a select sample assayed 47.8 percent zinc, 11.3 percent iron, and 1.6 ounces in silver.

Conway prospect

This property is 1.75 miles north of Welcome Pass and is in the SW¼ sec. 24, T. 40 N., R. 8 E.; the altitude is about 3,600 feet. The property once consisted of 12 claims that were staked in 1900 at the headwaters of Damfino Creek by J. Conway, president of Mount Baker-Shuksan Mining Co. According to a prospectus issued by the company in 1904, the ore body is over 840 feet wide and 3,000 feet long and carries gold, silver, and copper. Assays as high as $231 per ton have been reported; however, the average value is reported as $4.25 per ton. The metallic minerals consist of chalcopyrite, pyrite, and free gold that occur in quartz veins and as disseminated grains in argillite and greenstone of the Chilliwack Group. On the Red Crest lode an adit was driven east for over 500 feet. The adit is on the east bank of Damfino Creek and is about 200 feet south of a per ton; assays on 7 representative samples of the pyritized zone taken by the writer showed only a trace of gold, 0.02 to 0.14 ounce in silver, and 0.05 percent copper. The gold probably is associated with the pyrite and pyrrhotite, as native gold does not appear to be present. Stoess also reports the presence of a 120-foot adit and a 60-foot adit. The 60-foot adit is on the north slope of Shuksan Arm at an altitude of 4,400 feet. The 120-foot adit is on the south slope at an altitude of 4,500 feet and is near the center of the pyritized zone. Neither adit is conspicuous.

Lone Jack mine

The Lone Jack mine is in secs. 22 and 23, T. 40 N., R. 9 E. It is on the east slope of Bear Mountain at an altitude of about 5,000 feet. The property consists of 7 patented claims and 17 unpatented claims. The patented claims are: Lone Jack, Whist, Lulu, Jennie, and Sidney (Pl. 8), which were surveyed in 1899 under Mineral Survey 534, and the Jumbo and the Mt. Vernon, both surveyed in 1903 under Mineral Survey 744. The property is under lease to R. J. Cole, of Maple Falls, Wash., from Harry Bullene, of Bellingham.

Accessibility.—The mine can be reached from Shuksan, on State Highway 542, by 8.5 miles of Forest Service road to Twin Lakes. From the lakes a single track dozer road and a trail lead 1.5 miles to the mine. Very seldom is the route from Twin Lakes to the mine accessible by means other than by foot, for near the lakes the road is covered much of the time with rockslides and snowfields. The topography of the area is shown in Figure 26, on page 66.

History.—The original Lone Jack discovery was made by R. S. Lambert, Jack Post, and L. G. Van Valkenberg in August 1897. In 1898 the claims were sold to Henry Hahn and Leo Friede, of Portland, Oreg., for $50,000, and the Mount Baker Mining Co. was organized. In 1900, by means of a steam donkey and horses, a 10-stamp mill was hauled over a trail from Glacier and erected near Silesia Creek at a point 4,000 feet from the mine. In 1901 a 50-ton aerial tram was installed between the mine and the mill; 5 additional stamps were also added to the mill. From the beginning of mining operations the Lone Jack vein contained sufficient free-milling gold to mine profitably by single jacking with hand steel. The mine became the main producer of gold in the county, but operations ceased in July 1907, when the mill was destroyed by fire. In 1915 the mine was leased to Messrs. Clark and Sperry, who organized the Boundary Gold Co. A 10-foot Lane grinding mill was built on the hillside above the old mill; most of the gold from this operation was recovered on amalgamation plates. After only several hundred tons of ore had been treated, mining and milling operations were halted in 1917. In 1919 Philip Brooks, of Portland, Oreg., purchased the mine, and operations were begun under the direction of an associate, Carl Willis. In 1923 a 100-ton mill was completed on the hillside below the Lulu portal, and for power a hydroelectric plant was built on Silesia Creek. In 1924, after the mill was destroyed by a snowslide, the mine was deeded to Brooks-Willis Metals Inc. The company then built a new 75-ton amalgamation mill near the site of the destroyed mill. By mining ore from the Lulu vein, the company recovered $18,770 in gold before operations were suspended. Operations at the mine were usually carried on during the 5 or 6 months of favorable weather, as during the winter months as much as 20 feet of snow was on the ground; the average was 8 to 12 feet. Inasmuch as the mill and bunkhouse were on the steep slope of Bear Mountain snowslides were a constant threat. After 1924 no gold was produced, but general improvements were made at the mine until 1928. In 1941 the mine was leased by R. J. Cole, who has performed annual assessment work on the unpatented mining claims. Much of the work has consisted of building a road from Twin Lakes to the mine, a distance of about 2 miles. At present (1966) about 1 mile of road remains to be built.

One of the latest developments in the history of the Lone Jack mine occurred on August 27, 1964. At that time U.S. Forest Service officials became alarmed by 500 cases of dynamite that had been stored in the Lulu drift since the 1920's, and they exploded the powder. Other than destroying the mine tracks and air lines, little damage was done to the underground workings.

Accurate production figures are not available for the mine, but it is estimated that from 1902 to 1924 the production of gold was about $550,000. Of this amount $332,583.65 can be verified by mint receipts. Although mining was undertaken on both the Lone Jack and Lulu veins, the Lone Jack was by far the richest. From 1902 until 1905 the Lone Jack vein produced $360,000 in gold (Huntting, 1956, p. 178).

Geology.—The veins of the Lone Jack group are quartz fissure veins in pre-Jurassic black phyllitic schist. The schist also contains numerous stringers and lenses of exsolved quartz that formed during the metamorphism of the schist. Except for small amounts of fine-grained pyrite, the exsolved quartz is barren of metallic minerals. At least three well-defined quartz fissure veins occur on the Lone Jack claims—these are the Lone Jack, Lulu, and Whist veins. The gold-bearing vein quartz is younger than the exsolved quartz and is probably related to granitic rocks of the area. Although no sizable bodies of granitic rocks crop out on the Lone Jack claims, the western border of the Chilliwack Batholith (Miocene) is 1 mile east of the claims.

The Lone Jack vein has a general N. 10°-20° W. strike and it dips 45° W. The vein crops out for about 500 feet and ranges in width from 1 to 6 feet; the average width is about 2½ feet. The south end of the vein pinches out, and the north end terminates against a fault. Ordinarily, the gold in the vein is not visible to the unaided eye, but in some parts of the vein gold and tellurbismuth occur as grains up to pinhead size. The gold is localized in ore shoots that occur near and parallel to the wall rocks of the vein. At least two generations of quartz are present in the gold-bearing veins. The early quartz is white, coarse-grained, allotriomorphic quartz that contains small amounts of pyrite and pyrrhotite. Movement along the vein micro brecciated some of the quartz, which was later recemented by fine-grained quartz. The gold and tellurbismuth occur in this second-generation quartz, which is generally iron oxide stained. On the basis of mint receipts and the volume of quartz mined from the Lone Jack vein, it is estimated that the ore averaged about 2.5 ounces of gold per ton (R. J. Cole, oral communication, 1966).

The Lulu vein is about 700 feet northeast of the Lone Jack portal and crops out on the face of a steep rocky cliff. The vein has a general eastward strike, and it dips 8° to 60° S.; it pinches and swells from several inches to 9 feet in width and in the main stope has an average width of about 6 feet. In order of decreasing abundance, the vein contains pyrrhotite, pyrite, chalcopyrite, tellurbismuth, and gold. Polished section work by Lindstrom (1941) showed the following paragenesis: Pyrite $\rightarrow$ pyrrhotite $\rightarrow$ chalcopyrite $\rightarrow$ tellurbismuth $\rightarrow$ gold. According to Lindgren (1933), the mineral assemblage is that of the mesothermal zone of deposition. The gold and tellurbismuth for the most part occur in a finely divided state; however, some parts of the vein contain pinhead-size specks of gold and platy flakes of tellurbismuth as much as ⅛ inch in diameter. The value of the ore mined from the Lulu vein was from $15 to $35 per ton at $20.67 gold prices. In the last year of operation (1924), 1,557 tons of ore yielded 907 ounces of gold and 38 ounces of silver, which amounts to 0.58 ounce of gold per ton and 0.024 ounce of silver. Assuming that all the silver was alloyed in the gold, the fineness of the gold was about 955.

The Whist vein, which is the smallest vein of the Lone Jack group, is about 150 feet north of the Lulu vein. The Whist averages about 2 feet in width, strikes N. 10° E., and dips 80° SE. It consists of white quartz that contains sparsely disseminated pyrite and chalcopyrite. Only about 80 feet of the vein is exposed on a steep rocky cliff, as the ends of the vein are concealed by talus. To date (1966), no exploration or development work has been undertaken on the Whist vein. However, the vein has possibilities, as is indicated by an assay of the vein showing 0.83 ounce in gold and 0.10 ounce in silver per ton.

Mining and milling.—The Lone Jack vein was mined from an adit the portal of which is at an altitude of 5,300 feet, about 130 feet vertically below the outcrop of the vein. The adit heads N. 75° E. for about 400 feet, and 310 feet from the portal an ore chute and manway connect with a sublevel 65 feet above the adit level. From the sublevel several raises extend upward for about 30 feet to the vein. The vein was stoped to the surface and mined for about 350 feet along its strike before it terminated against several faults. Mining was not undertaken below the sublevel.

The Lulu adit (Pl. 8) is at an altitude of 4,400 feet and extends westward 680 feet into the mountain; several crosscuts and raises have been driven from the adit. At 460 feet from the portal a raise extends 45° upward for 40 feet to a transfer level on the Lulu vein. From the transfer level the vein has been stoped for about 200 feet along the strike of the vein and from 80 to 120 feet along its dip. Parts of the stope are open to the surface on the steep rocky face of the mountai above the Lulu portal.

The first mill that was built at the Lone Jack mir in 1900 utilized 15 stamps to crush the ore, after whic the free gold was recovered by amalgamation plates. To recover the non-amalgamable tellurides, th tailings were tabled. When the second mill was built, i 1915, a 10-foot Lane grinding mill replaced the stamp When the mill was rebuilt in 1923, rodmills, amalgar ation plates, and flotation cells were used to give tl mill a 100-ton-per-day capacity. The percentage of r covery from the milling operations is not known. Hov ever, tests by Lindstrom (1941, p. 44-52) on ore fro the Lulu vein indicate that as much as 97 percent the gold can be recovered. Amalgamation tests show a recovery of 82 percent by grinding 68 percent of t ore to minus 100 mesh, and an 80 percent recovery grinding 78 percent of it to minus 100 mesh. Flotati recovered 60 to 70.2 percent of the gold, and cyanid tion recovered 80 to 97 percent.

Lone Star prospect

The Lone Star prospect is on Willow Creek, a trib tary to Swamp Creek. The prospect is on the nor slope of Goat Mountain and is in the SE¼ sec. 20, T. N., R. 9 E., and the NE¼ sec. 29, T. 40 N., R. 9 E. T claims of the Lone Star prospect were staked by Hen Ehlers et al. in 1897, and development work consist of two adits that were driven on a 25-foot vein white quartz (Landes and others, 1902, p. 45). In 19 the adits were 60 and 20 feet long, but inasmuch work continued at the property until the 1920's, sever hundred feet of underground workings may exist. T quartz vein contained native gold, some of which w visible to the unaided eye, and tellurides. The wri attempted to find the adits on several different occ sions, but was unsuccessful.

Many Sisters prospect

This property is in the NE¼ sec. 33, T. 40 N., R. E., at an altitude of 2,700 feet on Many Sisters Cre Although a narrow-gauge wagon road at one time from State Highway 542 to the prospect, the road is longer discernible. The property is best reached following Many Sisters Creek upstream from the hi way for about ½ mile to the prospect. On the east si of the creek near the 2,700-foot elevation, two ad have been driven on a northward-trending shear z in Jurassic-Cretaceous phyllite. The two adits badly caved and are connected by a 50-foot raise. B adits follow a 6- to 18-inch-wide quartz-calcite v that contains sparsely disseminated pyrite and arse pyrite. Gold and silver are present in the vein; h ever, the vein does not average more than $2 in co bined gold and silver.

Nooksack mine

The Nooksack mine is 6 miles south of Sumas an miles east of Everson. It is on the western slope Sumas Mountain. The mine workings are near the

QUALIFICATIONS

BARRY JAMES PRICE, M.SC.
Consulting Geologist

2505 West 1st Avenue, Vancouver, B.C.
V6K 1G8 (604) 733 6902
Fax: 604-682-8728

EDUCATION:

High School:	Smithers, B.C. Graduated 1961
University:	University of British Columbia, Vancouver, B.C.
	B.Sc. (Honors Geology) 1965. Thesis Topic: "Tertiary Sediments at Driftwood Creek, Smithers Map Area, B.C."
	M.Sc. Geology. 1972. Thesis Topic: "Minor Elements in Pyrite and Exploration Applications of Minor Element Studies".

EMPLOYMENT RECORD:

1961	QUALITY SPRUCE SAWMILL, Topley, B.C., Greenchain, Resaw.
1962	B.C.FOREST SERVICE, Houston, B.C. Cooks Helper.
1963	GEOLOGICAL SURVEY OF CANADA, Calgary, Alberta. Micropalaeontology Lab., supervised by T.P.Chamney
1964	GEOLOGICAL SURVEY OF CANADA. Junior Field Assistant, Geological mapping party, Kananaskis and Canal Flats Mapsheets, Alberta and B.C. Supervised by Dr.G.B.Leech.
1965 - 1968	CHEVRON STANDARD LTD. Calgary, Alberta. Senior Field Assistant on mapping party in Mackenzie and Richardson Mountains. Subsurface exploration studies, Carbonate reef research, Wellsite supervision and Production Department duties.
1968	MANEX MINING LTD, Smithers, B.C. Geological mapping and diamond drill supervision
1969	MANEX MINING LTD., Smithers, B.C. Property mapping and evaluation, geophysical and geochemical surveys, supervision of Diamond Drilling, Evaluation of Jade deposits.
1970	ARCHER, CATHRO AND ASSOCIATES, Party Chief, Sedimentary Copper exploration, Mackenzie Mountains, regional map preparation and coordination of prospectors.

1971	J.R.WOODCOCK CONSULTANTS LTD., Project Geologist in Massive Sulphide exploration project. Regional exploration and property geology, geophysics and geochemistry. Barriere and Adams Plateau areas.
1972-76	MANEX MINING LTD. Vancouver, B.C. Senior Geologist Consulting geological work for a variety of corporate clients
1976	PETRA GEM EXPLORATIONS OF CANADA LTD., Vice-President and managing director. Exploration for gem materials and Geological Consulting. Exploration and development of precious metal, base metal and industrial mineral deposits. Exploration for jade deposits and kimberlites. Exploration in Canada, Mexico and Republic of Phillipines.
1979 - 1989	RAPITAN RESOURCES INC. President and sole shareholder. Consulting Geological Services for major companies and speculative junior companies. Management of prospecting programs. Development of exploration plays and preparation of qualifying reports. Property evaluation. Development of geological computer programs.

PROJECTS:

1979 - KERR ADDISON MINES LTD.

Six month contract managing a regional exploration project in the Lillooet area, B.C. Three man crew - prospecting, panning, examining prospects. Results led to discovery of an epithermal gold silver prospect later drilled by Kerr Addison and farmed out.

1979 - YANG, ANDERSON AND ABRAHAM.

Served as an expert witness regarding the evaluation of all the deposits in the Whitehorse Copper camp, including ore-reserve calculations and a Mini-Feasibility study for the purpose of determining valuation of Whitehorse Copper Ltd. (an operating mine) and its shares.

1980 - 81 - JMT SERVICES CORP:

Several long term prospecting projects in Central B.C. and Queen Charlotte Islands, working with 5 other geologists. Staked about 30-40 prospects including porphyry copper-molybdenum deposits, epithermal gold-silver deposits, massive sulphide deposits and gold-silver arsenic vein systems. Several of the properties were farmed out to major companies and several formed the original qualifying property for junior companies.

1985 ENERGEX MINERALS LTD.

Organized and completed an exploration program valued at >$1 million on an epithermal gold prospect owned by Petra Gem Exploration. Project involved building 20 man camp and drilling 8,000 feet on three deposits. Developed geological reserves leading to the construction of a pilot mill.

1987-88 - ASHTON MINING LTD:

Organized and managed a research program identifying platinum group element targets in North America for a major Australiam diamond producing company. Ashton has not yet begun operations as a Canadian exploration company, but are still contracting with Rapitan to identify interesting projects for referral.

JADE EXPLORATION PROJECTS

1969-70 JADE QUEEN MINES LTD:

Mapped and prepared detailed geological report outlining jade reserves in the O'Neel Creek prospect, Omineca Mining Division.

1972-1974 NEW WORLD JADE LTD/FAR NORTH JADE LTD:

Mapped jade prospects on Ogden Mountain, Omineca Mining Division for both companies. Discovered new jade deposit for New World Jade Ltd. Supervised drilling, explored for new deposits using ground magnetic surveys. Prepared detailed reports and assessment reports, prpared exploration plans and compiled reserve estimations.

1974-1979 DELPHI RESOURCES INC./NEPHRO-JADE CANADA LTD.:

Supervised exploration and evaluation of placer and hardrock jade deposits at Provencher Lake, Dease Lake area, Liard Mining Division. Mapped jade property in Watson Lake area for and associated company, Arctic Jade Ltd. Staked new jade occurrences and prepared summary geological reports, reserve estimations, and exploration plans.

1979 PETRA GEM EXPLORATIONS OF CANADA LTD.:

Explored and mapped a property in the Phillipines for a carving material known locally as "Phillipine Jade" (actually a gem quality sericite schist or soapstone). Supervised mining operations there

1988: JADE WEST RESOURCES LTD.:

Prepared technical report summarizing recent developments on the Ogden Mountain jade site and prepared recommendations for further exploration.

CORPORATE DIRECTORSHIPS

DELPHI RESOURCES LTD.: 1974 to 1984

TERRITORIAL GOLD PLACERS LTD.: 1975 TO 1982

PETRA GEM EXPLORATIONS OF CANADA LTD.: 1976 TO PRESENT

GOLDEN EYE MINERALS LTD.: 1983-PRESENT

GEOSTAR MINING CORP 1985 - PRESENT

MIRAMAR ENERGY CORP 1985 - 1988

ISLAND ARC MINING CORP 1988 - PRESENT

LAYFIELD RESOURCES INC. 1989

AQUILINE RESOURCES INC 1989

PROFESSIONAL MEMBERSHIPS

GEOLOGICAL ASSOCIATION OF CANADA: Fellow, 1975-Present

B.C. YUKON CHAMBER OF MINES 1979 - Present

SOCIETY OF EXPLORATION GEOLOGISTS 1986 - Present

PUBLICATIONS

Sinclair, A.J., Fletcher, A.K., Price, B.J., Bentzen, A, and Wong, S.S; (1977) Minor Elements in Pyrites from some Porphyry-Type Deposits, British Columbia. Transactions of Society of Mining Engineers, June 1977, vol.262, pp.94-100.

Godwin, Colin I. and Price, Barry J., (1988); Geology of the Mountain Diatreme Kimberlite, North-Central Mackenzie Mountains, District of Mackenzie, Northwest Territories. CIM. Special Volume on MIneral Deposits of the Northern Canadian Cordillera.

APPENDIX IV
ITEMIZED COST STATEMENT

TROOPER 4 CLAIM, NEW WEST M.D.
Record No. 3503

Registered Owner: Richard S.Simpson
Beneficial Owner: Castleford Resources Ltd.

Work Program August 18-22, 1989:

B.Price, M.Sc.,	Supervising Geologist;	5 days @ $350	$1,750.00
W.Howell, B.Sc.,	Geologist/Prospector;	5 days @ $250	1,250.00
Pat Crook	Prospector/Sampler	5 days @ $200	1,000.00
Jack Zakodnick	Prospector/Sampler	5 days @ $200	1,000.00
Camp Costs:	20 man days @ $35/day		700.00
Truck Rentals	2 vehicles @ $55/day (incl gas/oil)		550.00
Misc Supplies and Hardware			100.00
Geochem analyses	Chemex Labs		1,546.50
Report Costs:	Rapitan Invoice	Feb 13, 1990	1,478.38

TOTAL COSTS	$9,374.88
AMOUNT CLAIMED ON WORK APPLICATION	$8,896.50
AMOUNT APPLIED ON CLAIMS	5,400.00
	=========
EXCESS WORK CLAIMED	3,496.50

Respectfully Submitted

Richard S.Simpson.

SAMPLING PROCEDURES

SOILS: Soil samples were taken with a prospectors pick or mattock. Soils were organic due to the deep rainforest cover, but where possible, this material was removed and samples were taken from the underlying B Horizon. Some of the material on steeper and rocky slopes was actually talus fines.

Samples are placed in a gusseted kraft paper envelope, partially dried in camp and then transported to the analytical laboratory. All samples were analyzed by Chemex Labs Ltd. using 32 element ICP-AES techniques on dry sieved -80 mesh fractions.

ROCK SAMPLES: Samples were taken as a number of chips from the outcrop face and placed in clean plastic rock-sample bags. At the lab., samples were crushed to -35 mesh and then pulverized. Analysis was done with ICP-AES methods by Chemex Laboratories Ltd.

PAN SAMPLES: Samples were panned by hand down to approximately 1 tablespoon full, inspected for visible gold or sulphides, then placed in clean kraft sample bags and dried. At the lab., the entire sample was digested with aqua regia, diluted and analyzed by Chemex Laboratories Ltd. using standard ICP-AES methods.

VLF INSTRUMENT AND METHODS:

The instrument used was a Phoenix VLF-2 electromagnetic reciever which measures strength and orientation of secondary electromagnetic fields resulting from modification of primary fields generated by several submarine navigation signals from transmitters at Seattle, Hawaii, Annapolis, R.I. and Cutler, Maine. Traverses are generally run along grid lines or roads and the dip angles and field strengths plotted as profiles, which were further interpreted by the writer using a "Fraser Filter" program on Lotus 1-2-3 spreadsheet facilities on an IBM compatible computer. The method is further described on the following pages.

SAMPLE DATA	All Samples are Grabs
	SAMPLE SERIES BP-89 1-44 (rOCKS)
PROJECT	Trooper Claims
AREA	Foley Lake
COMPANY	Castleford Minerals Ltd.

NO	LOCATION	DESCRIPTION
		ROAD TRAVERSE SOUTH SIDE FOLEY LAKE
1	425m	V.rusty phyllite w pyrite beds, chalcopyrite +quartz in veinlets
2	428m	Phyllite, as above w chalcopyrite, pyrite, 428 m.
3		Quartz lens, no sulphides in qtz but along margin,
4		Quartz lens w. dissem pyrite, pyrrhotite
5	438M	Green Tuff, 10 m west of No.4
6		Qtz veins about 1 m wide, road junction
7	700m W	Phyllite, rusty stained and pyritic, 700 m.
8	1915m W	Black phyllite w quartz veins
		ROAD TRAVERSE NORTH SIDE FOLEY LAKE
9	1850m E	Dioritic float from cliff above road
10	1850 mE	Sheared volcanic tuff
11	1830m E	Sheared foliated tuff, strong pyrrhotite, pyrite, Float
12	1780m E	Black strongly pyritic gossanous phyllite float, 1780 m.
13	1710m E	black phyllite w quartz knots, rusty
14	1590m E	Pan concentrate rusty debris, black phyllites, Slide Creek
15	1590m E	Float, talcose skarn w brown garnets
16	1590m E	Sulphide clots from foliated black argillite
17	1470m E	Float, chloritic tuff with 15% pyrrhotite
18	1420m E	Black argillite
19	1420m E	White quartz with minor sulphides
20	1120m E	Black argillite w irregular quartz vein
21	1120m E	Rusty black argillite
22	1025m E	Sheared pyritic argillite w yellow jarosite
		WILLIAMSON CREEK TRAIL, NORTH SIDE FOLEY CREEK
23		No description
24		No description
25	40M	Rusty argillite w quartz stringers
26	160M	Quartz plagioclase float boulder, no sulphides
27	275M	Float strongly altered and rusty shale
28	250M	Float rusty quartz with argillite, Float in gully
		OUTCROP BELOW CAMP AND FLOAT IN GATE CREEK
29		Sheared tuff, green, minor qtz along fractures
30		Similar to 29 with more quartz.
31		Float from Gate Creek, dark serpentinite
32		Float meta argillite, w pyrrhotite,
33		Black phyllite w pyrite, pyrrhotite and quartz
34		Float, Carbonate-quartz vein in serpentinite

SAMPLE DATA	All Samples are Grabs
	SAMPLE SERIES BP-89 1-44 (rOCKS)
PROJECT	Trooper Claims
AREA	Foley Lake
COMPANY	Castleford Minerals Ltd.

NO	LOCATION	DESCRIPTION
		TRAVERSE SOUTH SIDE FOLEY CREEK EAST FROM P89-6
35	21m E	Quartz carbonate alteration in argillite
36	30m E	Argillite outcrop
37	30m E	Tuffs, green grey sheared phyllitic
38	35m E	Shear, qtz-carbonate, minor chalcopyrite
39	47m E	Rusty argillite with 10% pyrite
40	47m E	Contact rock as above
41	65m E	Black silicified argillite outcrop
42	95m E	Rusty arggillite, scattered outcrop
43	110m E	Rusty argillite w quartz stringers, pyrite fracture fillings
44	450m E	Black argillite and quartz

VLF-EM SURVEY RESULTS

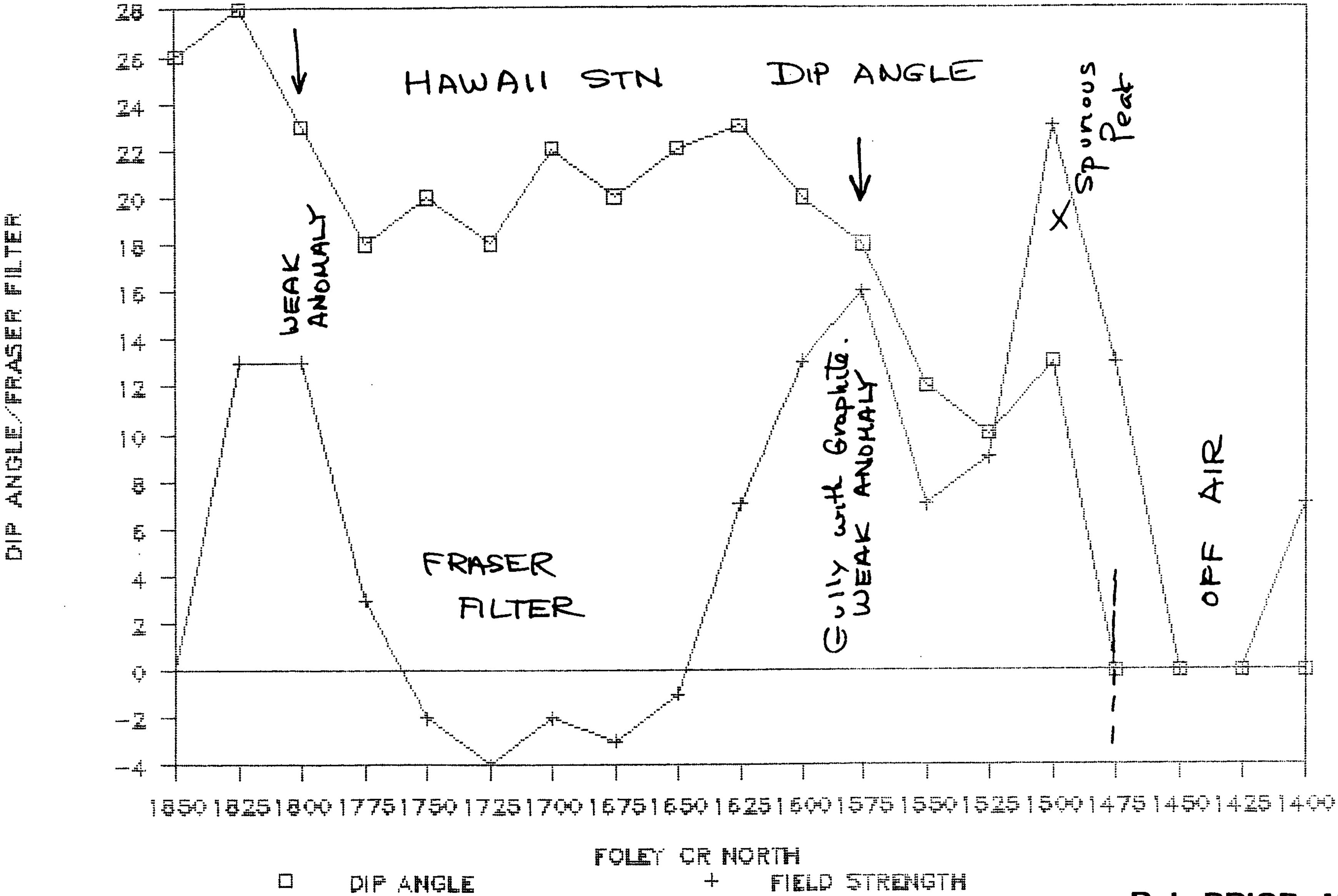
TROOPER 4 CLAIM.

B. PRICE, M.Sc.

VLF-EM DATA

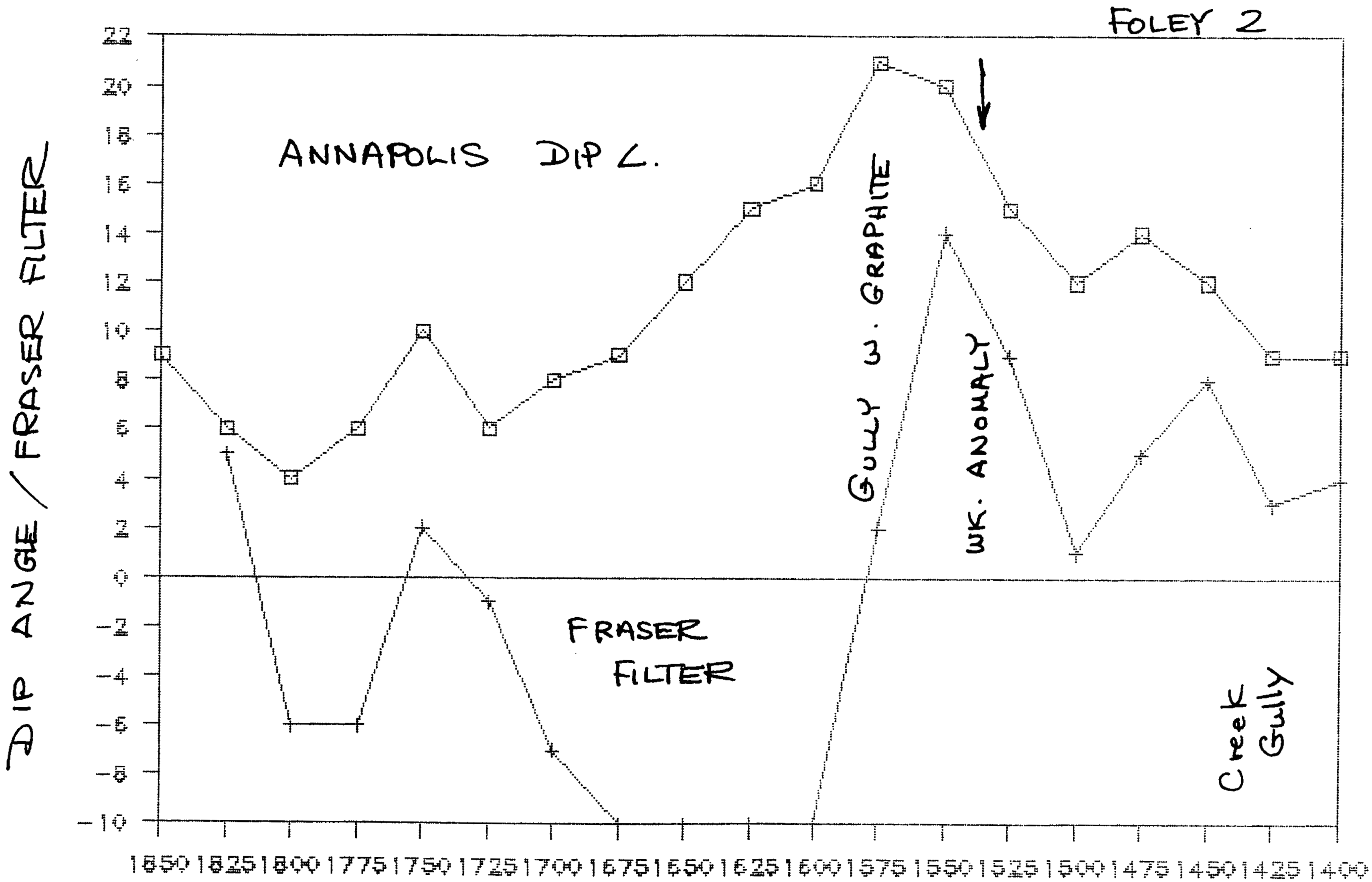
CASTLEFORD – FOLEY LK.

FOLEY 1



PROFILE OF VLF DATA.

B.J. PRICE, M.Sc
CONSULTING GEOLOGIST
2505 West 1st Avenue
Vancouver, B.C.
V6K 1G8 733-6902



PROFILE OF VLF DATA

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CONSULTING GEOLOGIST
2505 West 1st Avenue
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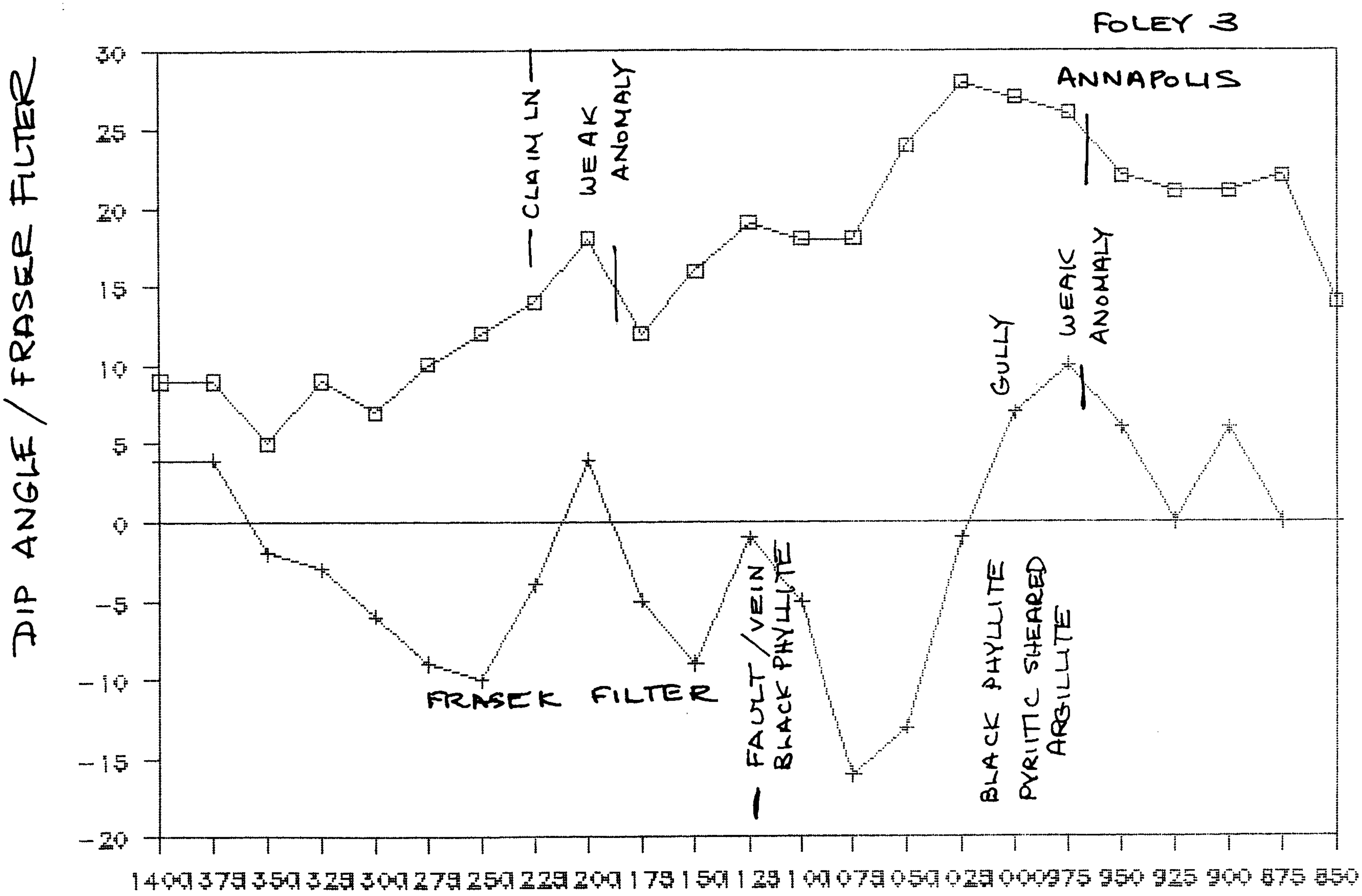
V6K 1G8 733-6902



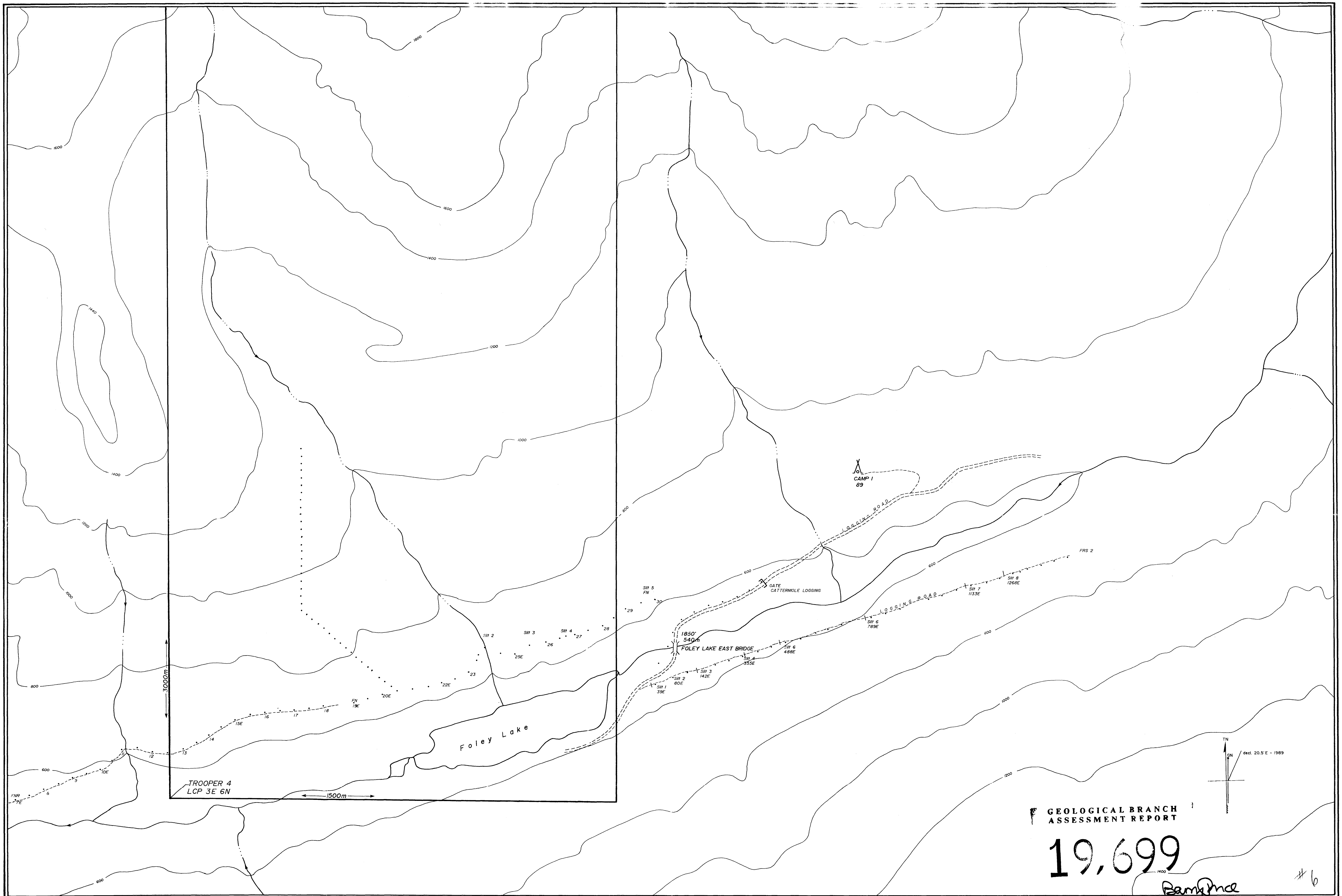
TRAVERSE - FOLEY CREEK NORTH.

PROFILE OF VLF DATA.

B.J. PRICE, M.Sc
CONSULTING GEOLOGIST
2505 West 1st Avenue
Vancouver, B.C.
V6K 1G8 733-6902

VLF EM EVALUATION		RAPITAN 1989	VLF001
CLIENT:	CASTLEFORD	STATION 1	HAWAII
LOCATION:	FOLEY CR.	STATION 2	ANNAPOLIS
LINE:	FOLEY NORTH	DATE	AUG 20/89

GRID MKR	F1	F.S. 1	F2	F.S.2	FF 1	FF2
1850 EAST	26	40	9	80		
1825	28	38	6	80	13	5
1800	23	36	4	80	13	-6
1775	18	38	6	84	3	-6
1750	20	38	10	82	-2	2
1725	18	35	6	80	-4	-1
1700	22	36	8	84	-2	-7
1675	20	36	9	80	-3	-10
1650	22	36	12	80	-1	-10
1625	23	36	15	84	7	-10
1600	20	34	16	88	13	-10
1575	18	36	21	80	16	2
1550	12	37	20	72	7	14
1525	10	38	15	68	9	9
1500	13	38	12	70	23	1
1475			14	76	13	5
1450			12	70	0	8
1425			9	72	0	3
1400			9	72	7	4
1375			9	80	0	4
1350			5	70	0	-2
1325			9	74		-3
1300			7	72		-6
1275			10	72		-9
1250			12	72		-10
1225			14	72		-4
1200			18	70		4
1175			12	72		-5
1150			16	75		-9
1125			19	76		-1
1100			18	74		-5
1075			18	70		-16
1050			24	72		-13
1025			28	70		-1
1000			27	68		7
975			26	60		10
950			22	64		6
925			21	58		0
900			21	66		6
875			22	60		
850			14	62		



GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,699

#6

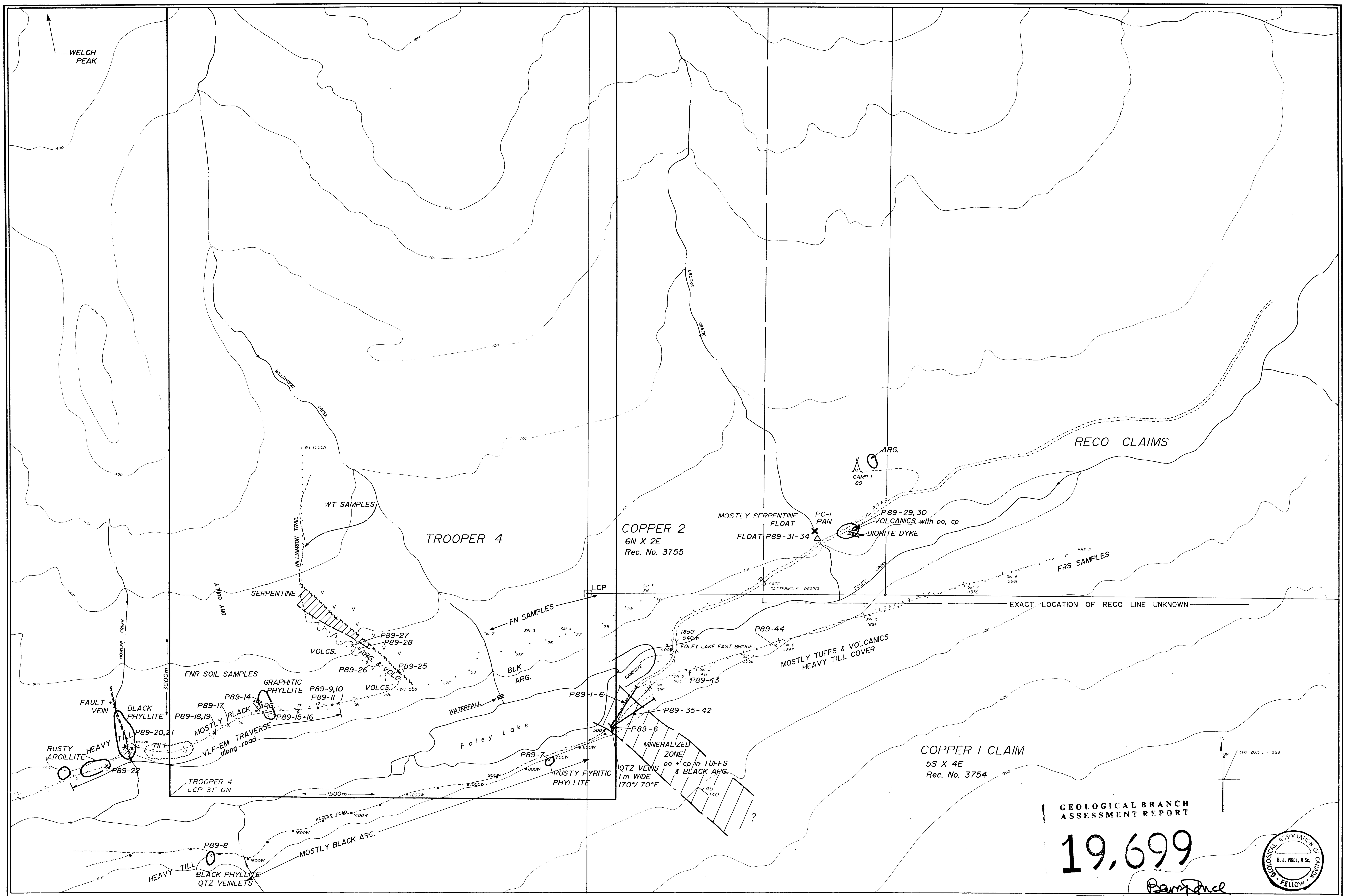
CASTLEFORD RESOURCES LTD.

TROOPER 4 CLAIM
FOLEY LAKE

BASE MAP

GEOLOGICAL ASSOCIATION OF CANADA
B. J. PRICE, M.Sc.
FELLOW

DRAWN: BDS/ER	N.T.S. 92H - 4E	SCALE: 1 : 5000	DATE: FEB. 1990



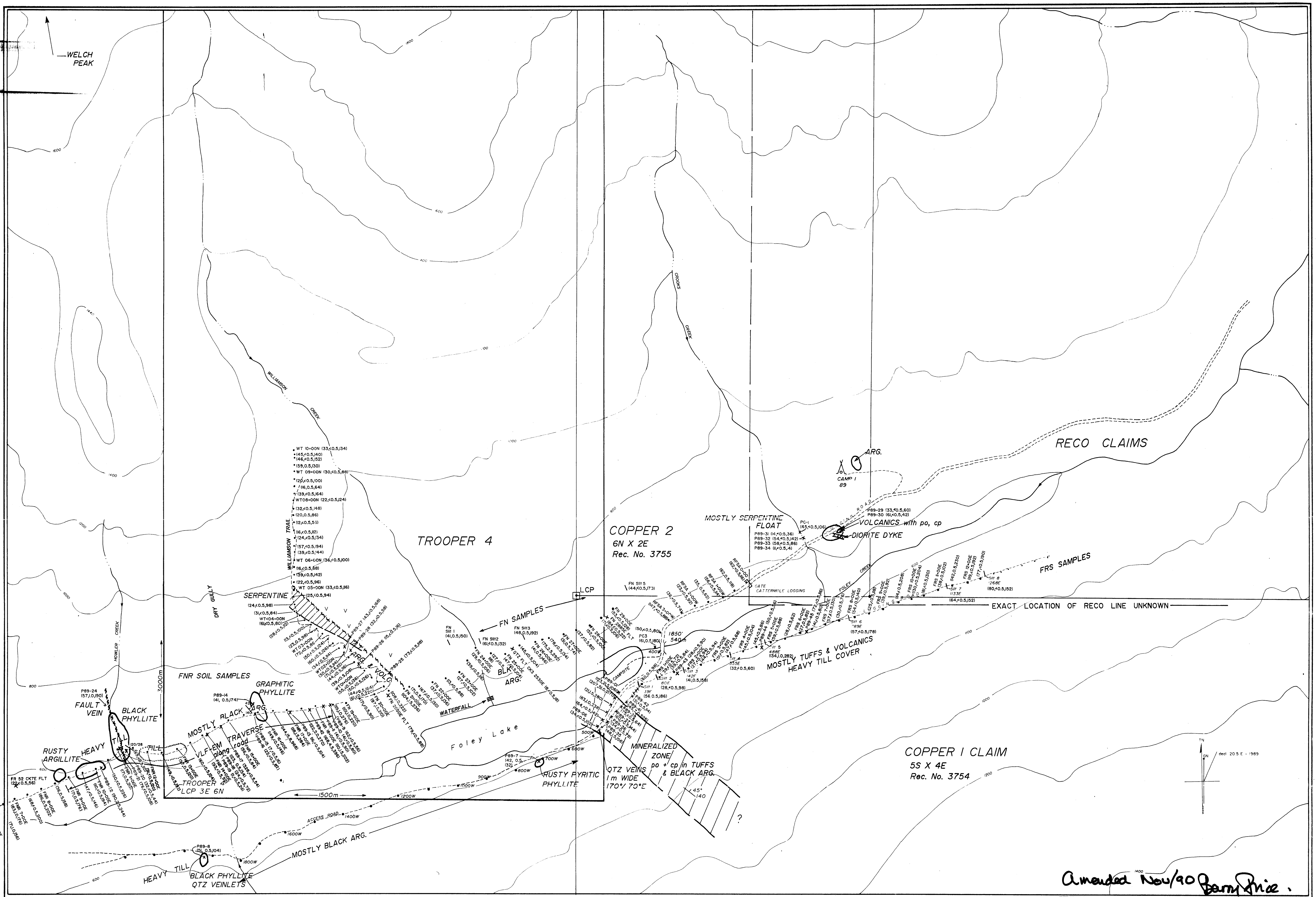
CASTLEFORD RESOURCES LTD.

TROOPER 4 CLAIM
FOLEY LAKE

#7

SAMPLE LOCATION MAP
&
INTERPRETATION

DRAWN	N.T.S.	SCALE	DATE
BDS/ER	92H - 4E	1 : 5000	FEB. 1990



Amended Nov/90 Barry Price.

A.R. 19699

100 0 100 200 300 400 500
metres

LEGEND

(53, 0.5,128) = (Cu,Cd,Zn) all values are in ppm

× Rock sample location

• Soil sample location

CASTLEFORD RESOURCES LTD.

TROOPER 4 CLAIM
FOLEY LAKE

SAMPLE LOCATION MAP & INTERPRETATION

DRAWN	N.T.S.	SCALE	DATE
BDS/ER	92H - 4E	1 : 5000	NOVEMBER 1990