

LOG NO: 1210

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ACTION:

FILE NO: 87-867-16606

A Report on Geological and Geochemical Surveys

FILMED

on the McNiel Creek Group

including Mineral Claims RAM 1, RAM 2 and MAR 3

situated in

the Fort Steele Mining Division

NTS 82F/8E and 82G/5W

Latitude 49° 21' 25"

Longitude 115° 59' 40"

Registered Owner and Operator: Ed Frost

Consultant and Authour: Frank O'Grady, P.Eng.

Statement of Exploration and Development Submitted:  
September 8, 1987

Report Submitted: December 7, 1987

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

16,606

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## INTRODUCTION

The McNiel Creek Group consists of 3 claims constituting 24 units, as follows:

<u>NAME</u>	<u>RECORD #</u>	<u>MONTH</u>	<u>UNITS</u>
RAM 1	1730	November	4
RAM 2	1731	November	8
MAR 3	765	September	12

The registered owner and operator of the property is Ed Frost of Box 53, Fort Steele, B.C. V0B 1Z0.

This claim group is situated approximately 13.5 Kilometers northwest of the town of Moyie, B.C. at longitude  $115^{\circ} 59'W$ , latitude  $49^{\circ} 21'N$ . It is located on NTS map sheets 82F/8 and 82G/5. Map 1 is a general location map and Map 2 is the McNiel Creek Group claim map.

The group is on the east slope of the McNiel Creek valley. The elevation ranges from 1600 meters above sea level at McNiel Creek to 1930 meters above sea level along the eastern boundary of the claim group.

Access to the property is by proceeding south of Cranbrook on Highway 3 a distance of 12 Kilometers to the Lumberton Road, also known as the Moyie River Road. This road is followed west a distance of 13 Kilometers to the junction with the Semlin Creek

Road. The Semlin Creek Road is followed south to the 4 km sign, during which the Moyie River is crossed. The McNiel Creek Road is then followed to the south a distance of 9 Kilometers. The 9 km sign on the McNiel Creek Road is approximately the midpoint of several shear zones exposed on the property.

Pb and Zn mineralization was initially discovered by prospector Ed Frost in 1978. During the next few years a considerable amount of trenching was carried out on the shear zones to better expose them. Also, in 1979 the St. Eugene Mining Company conducted a geochemical survey on the property. Assessment Report 7660 covering this survey was submitted by John R. Wilson on October 30, 1979.

The rocks underlying this claim group are of the Aldridge formation. Geological evidence indicates the rocks underlying the claim group are at a similar stratigraphic horizon to the Sullivan Mine at Kimberley, B.C., 35 Kilometers due north. In addition to the potential for stratobound massive sulphides, there is a potential for an economic deposit in the shear zones exposed on the McNiel Creek Road.

During November 1986 a program of linecutting, geological mapping and soil sampling was conducted. Six Kilometers of blaze and chain line was established. A total of 1.8 square Kilometers was geologically mapped at a scale of 1:5,000 (1 cm = 50 m). 108 soil samples and 11 sediment samples were collected and analysed for Pb and Zn.

## GEOLOGICAL SURVEY

The rocks underlying the claim group consist of the Aldridge formation.

The sedimentary outcrops mapped along the McNiel Creek logging road and in the trenches are thin bedded quartzites. Concretions were present in most of the quartzite outcrops. The quartzite beds strike at an azimuth of 340 degrees and dip easterly at 15 degrees.

The intrusive rock mapped on the claim group is a diorite. It is the author's opinion that this unit represents the Hiawatha Sill. The intrusive is exposed in one of the lower trenches and in several locations below the road in areas of steeper topography. The quartz vein crosscutting the sill was mapped in two different locations. It is shown on the McNiel Creek Geology Map, Map 3.

Five shear zones were mapped along the McNiel Creek logging road. The shear zones contain galena, pyromorphite, minor shalerite, well formed quartz crystals and some garnets.

Examination of float along McNiel Creek revealed argillites, quartzites, phyllites, conglomerates and minor tourmalinite. A thin section analysis of the tourmalinite forms Appendix 3 of this report.

## GEOCHEMICAL SURVEY

In preparation for a geochemical survey, a total of six kilometers of grid was established by compass and chain utilizing blazes and survey flagging. 108 soil samples were then taken at 50 meter intervals along lines of 250 meters separation. Each sample came from the B Horizon at depths of 8 cm to 18 cm, but usually at about 15 cm. In addition, 11 sediment samples were taken where the lines crossed springs seeping from the hillside. Grub hoes were used to recover the samples which were then placed in paper envelopes.

The samples were sent to Chemex Labs of North Vancouver, B.C. for soil preparation, and Pb and Zn analysis. The -80 mesh fraction was analysed by normal geochemical techniques. The certificates of analysis from Chemex form Appendix 1 and Appendix 2 of this report. Map 4 is the Pb Geochem Map and Map 5 is the Zn Geochem Map.

The geochemical survey was conducted between the McNiel Creek logging road to the east and McNiel Creek to the west.

The contact between the upper part of the lower Aldridge and the lower part of the middle Aldridge is believed, by the authour, to cross this area.

Two anomalous Pb-Zn areas were encountered:

1. Near the McNiel Creek logging road, and
2. Below the mapped diorite sill.

The first anomaly, near the McNiel Creek logging road, is probably a result of the Pb-Zn mineralization contained in the shear zones exposed along the road.

The second anomaly, below the mapped diorite dyke, may be the result of either mineralization in the shear zones under the overburden or massive sulphides laying conformably within the Aldridge sediments. The area containing the anomaly is completely covered by overburden.

In addition, a weak geochemical anomaly is present near McNiel Creek on the east side of the creek. This could be a result of transport of material from upslope or an anomaly from bedrock with the low values a function of increased overburden.

## ITEMIZED COST STATEMENT

## TOTAL COST

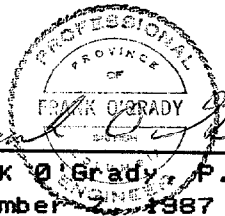
Linecutting (as per contract), Nov. 19-22, 1986 6 km @ \$300/km	\$1,800.00
Geological & Geochemical Surveys Frank O'Grady, P.Eng. Nov. 19-23, 1986 5 days @ \$300/day	1,500.00
Transportation, four-wheel drive Nov. 19-23, 1986 5 days @ \$50/day	250.00
Soil Sampler, Brian Bapty Nov. 22 & 23, 1986 2 days @ \$50/day	100.00
Soil & Sediment Sample Analysis 119 samples @ \$3.95/sample analysed for Pb and Zn	470.05
Delivery	25.45
Supplies - soil sample bags, flagging	43.73
Petrographic Report	57.00
Report Preparation Frank O'Grady, P.Eng. Sept. 10-11, 1987 2 days @ \$300/day	600.00
Typing	20.00
Office Expenses copying, postage, report binders	12.68
TOTAL	<hr/> \$4,878.91



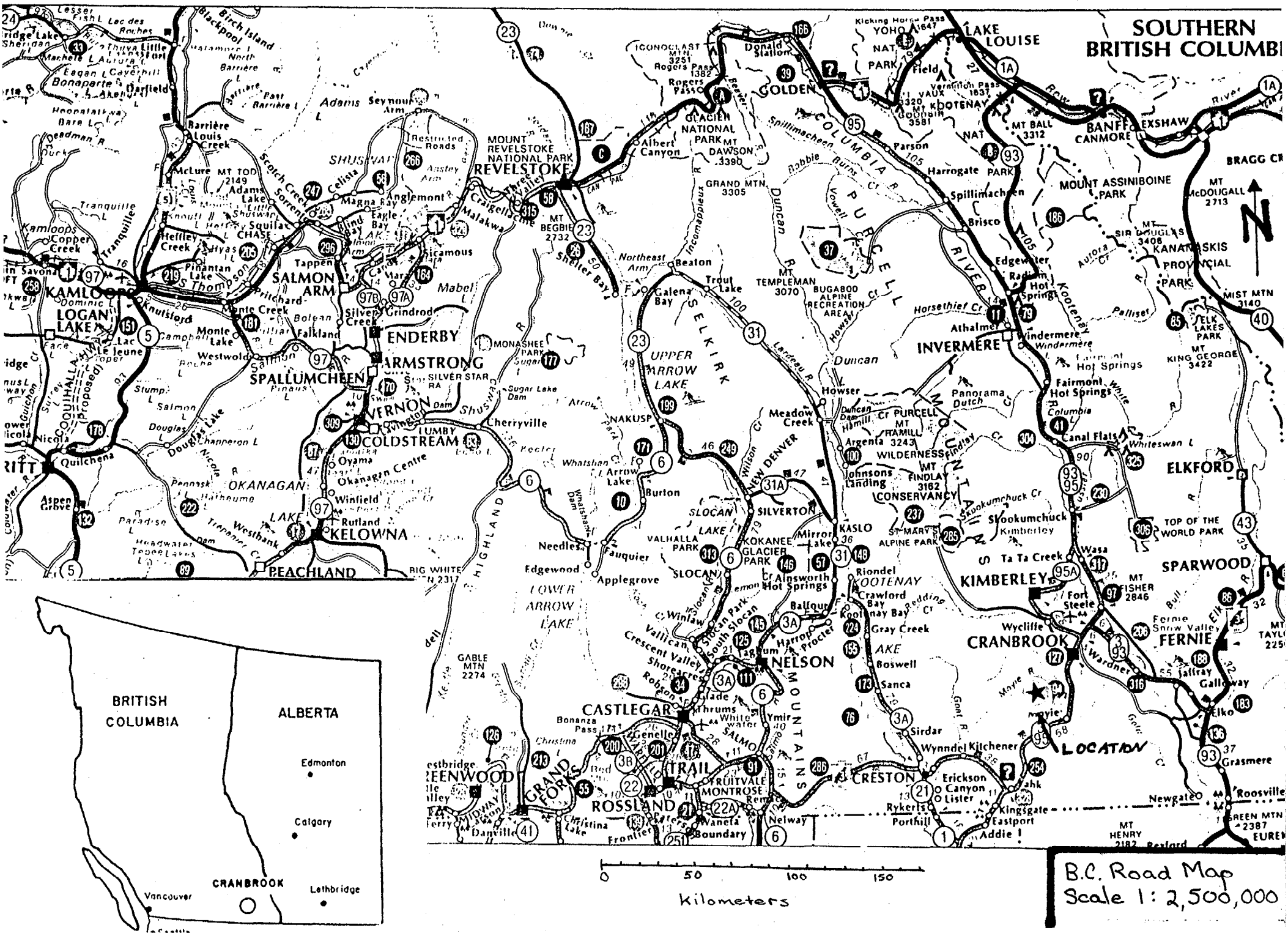
**AUTHOUR'S QUALIFICATIONS**

I, Frank O'Grady, address Box 56, Kimberley, B.C.,  
604-427-5670, hereby certify that:

- 1) I am a graduate of the University of British Columbia,  
B.Sc. in Geology 1969.
- 2) I am a graduate of the University of Missouri - Rolla  
(Missouri School of Mines), B.S. in Mining Engineering  
1977.
- 3) I am a registered Professional Engineer in the province  
of British Columbia since 1978.
- 4) I have practiced my profession as a Geologist since  
1969 and as a Geologist-Mining Engineer since 1977.



*Frank O'Grady*  
Frank O'Grady, P.Eng.  
December 2, 1987



B.C. Road Map  
Scale 1: 2,500,000



X ANGULAR CHERT  
FLOAT.



TOPOGRAPHIC  
BREAK

DIORITE

SHEAR  
ZONE

QUARTZITE

QUARTZITE

THIN BEDDED  
QUARTZ. 340/15

TRENCH, SHEAR ZONE  
CONTAINS Pb, Zn, WELL  
DEVELOPED QTZ. YTLs.  
PYROMORPHITE, COSSAN

X  
SED. FROM  
SPRING  
Pb 690  
Zn 150

DIORITE

QUARTZITE

DRIFT COVERED  
NO OUTCROP  
MOST BOULDERS  
QUARTZITE

M'NIEL CREEK

MAR 3  
CLAIM 12 UNITS

3W

3W

RAM 2  
CLAIM  
8 UNITS

2W

2W

ELEVATION AT  
ROAD 1846 M.  
9 K SIGN

340/15

ELEVATION AT  
CREEK 1538

16,606

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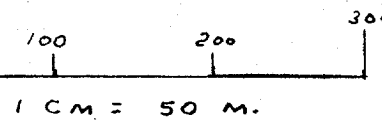
TRENCH, CALENA  
QUARTZ YTLs.  
PYROMORPHITE

QUARTZ

TRENCH, QUARTZ.  
SHEAR ZONE

TRENCH QUARTZITE  
SHEAR ZONE

DIORITE



□ CLAIM POST

② DIORITE

▣ QUARTZITE

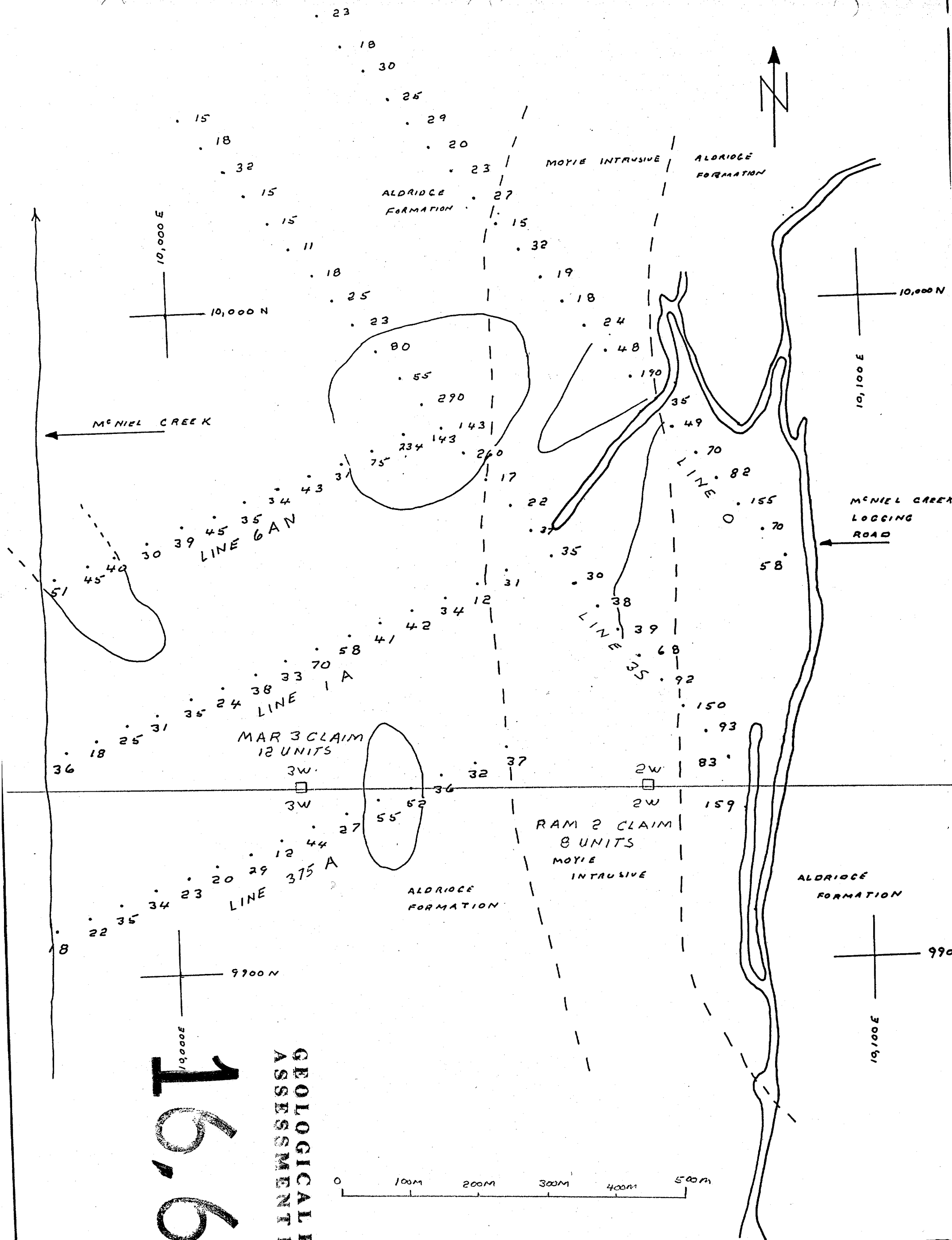
-- ASSUMED CONTACT

↗ SHEAR

⌋ TRENCH

MAP 3  
M'NIEL CREEK  
GEOLOGY MAP  
1:5000  
F. O'GRADY  
JULY 1987

Claim Posts and boundary locations  
were located by chain and compass  
and topographic map



Claim Posts and boundary locations were located by chain and compass and topographic map

MAP 4  
MC NIEL CREEK  
Pb GEOCHEM  
1:5000 1CM. = 50 M  
FRANK O'GRADY  
JULY 1987

16,606

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ASSESSMENT REPORT





# Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave.  
North Vancouver, B.C.  
Canada V7J 2C1

Phone: (604) 984-0221  
Telex: 043-52597

## CERTIFICATE OF ANALYSIS

TO : O'GRADY, MR. FRANK, P. ENG.

BOX 56  
KIMBERLEY, B.C.  
VIA 2Y5

CERT. # : A8615486-002-A  
INVOICE # : 18615486  
DATE : 30-NOV-86  
P.C. # : NONE

CC: ED FROST

Sample description	Prep code	Pb ppm	Zn ppm				
L3S 3+00W	201	68	109	--	--	--	--
L3S 3+50W	201	39	110	--	--	--	--
L3S 4+00W	201	38	86	--	--	--	--
L3S 4+50W	201	30	85	--	--	--	--
L3S 5+00W	201	35	90	--	--	--	--
L3S 5+50W	201	37	77	--	--	--	--
L3S 6+00W	201	22	82	--	--	--	--
L3S 6+50W	201	17	53	--	--	--	--
L3S 7+00W	201	260	220	--	--	--	--
L3S 7+50W	201	193	142	--	--	--	--
L3S 8+00W	201	435	148	--	--	--	--
L3S 8+00W SED	201	690	150	--	--	--	--
L3S 8+50W	201	55	58	--	--	--	--
L3S 9+00W	201	80	132	--	--	--	--
L3S 9+50W	201	23	58	--	--	--	--
L3S 10+00W	201	25	47	--	--	--	--
L3S 10+50W	201	18	50	--	--	--	--
L3S 11+00W	201	11	41	--	--	--	--
L3S 11+50W	201	15	70	--	--	--	--
L3S 12+00W	201	15	93	--	--	--	--
L3S 12+50W	201	32	210	--	--	--	--
L3S 13+00W	201	18	136	--	--	--	--
L3S 13+50W	201	15	43	--	--	--	--
L3S 13+75W SED	201	21	42	--	--	--	--
L3S 14+00W	201	22	38	--	--	--	--
L3S 14+00W SED	201	20	36	--	--	--	--
L3S 14+50W	201	36	115	--	--	--	--
L3S 15+00W	201	21	80	--	--	--	--
L3S 15+50W	201	11	45	--	--	--	--
L3S 16+00W	201	31	53	--	--	--	--

Certified by

*Hart Bichler*



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BOX 56  
KIMBERLEY, B.C.  
V1A 2Y5

CERT. # : A8619544-001-A  
INVOICE # : I8619544  
DATE : 27-DEC-86  
P.C. # : NCNE

CC: ED FROST

CC: GAVIN DIROM

Sample description	Prep code	Pb ppm	Zn ppm				
BLA 1+50 SED	201	50	90	--	--	--	--
<del>JON 1</del>	<del>217</del>	<del>8</del>	<del>42</del>	--	--	--	--
<del>JON 2</del>	<del>201</del>	<del>1</del>	<del>34</del>	--	--	--	--
L1A 0+00	203	31	67	--	--	--	--
L1A 0+50	217	12	28	--	--	--	--
L1A 1+00	201	34	58	--	--	--	--
L1A 1+50	201	42	42	--	--	--	--
L1A 2+00	201	41	47	--	--	--	--
L1A 2+50	201	58	53	--	--	--	--
L1A 3+00	201	70	60	--	--	--	--
L1A 3+50	201	33	44	--	--	--	--
L1A 4+00	201	38	74	--	--	--	--
L1A 4+50	201	24	62	--	--	--	--
L1A 5+00	201	35	155	--	--	--	--
L1A 5+50	201	31	211	--	--	--	--
L1A 6+00	201	25	200	--	--	--	--
L1A 6+50	201	18	100	--	--	--	--
L1A 7+00	201	36	146	--	--	--	--
L6AN 0+00	201	290	86	--	--	--	--
L6AN 0+50	201	234	87	--	--	--	--
L6AN 1+00	201	75	54	--	--	--	--
L6AN 1+50	201	31	45	--	--	--	--
L6AN 2+00	201	43	56	--	--	--	--
L6AN 2+50	201	34	40	--	--	--	--
L6AN 3+00	201	35	46	--	--	--	--
L6AN 3+50	201	45	45	--	--	--	--
L6AN 4+00	201	39	38	--	--	--	--
L6AN 4+50	201	30	54	--	--	--	--
L6AN 5+00	201	40	67	--	--	--	--
L6AN 5+50	201	45	58	--	--	--	--
L6AN 6+00	201	51	63	--	--	--	--
L6AN 1+25W SED	201	38	40	--	--	--	--
L6AN 5+00W SED	203	52	46	--	--	--	--
L6AN 5+25W SED	201	46	60	--	--	--	--
L6AN 5+75W SED	201	50	61	--	--	--	--
L375A 0+00	201	37	53	--	--	--	--
L375A 1+00	201	36	54	--	--	--	--
L375A 1+50	201	52	55	--	--	--	--
L375A 2+00	201	55	64	--	--	--	--
L375A 2+50	201	27	72	--	--	--	--

VOI rev. 4/85

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P.C. # : NGNE

CC: ED FROST

CC: GAVIN DIROM

Sample description	Prep code	Pb ppm	Zn ppm				
L375A 3+00	201	44	68	--	--	--	--
L375A 3+50	201	12	58	--	--	--	--
L375A 4+00	201	29	48	--	--	--	--
L375A 4+50	201	20	72	--	--	--	--
L375A 5+00	201	23	120	--	--	--	--
L375A 5+50	201	34	240	--	--	--	--
L375A 6+00	201	35	220	--	--	--	--
L375A 6+50	201	22	110	--	--	--	--
L375A 7+00	201	18	86	--	--	--	--
L375A 0+50W	201	32	60	--	--	--	--
L375A 4+35WSL	201	19	120	--	--	--	--

*Hart Bichler*



# Vancouver Petrographics Ltd.

JAMES VINNELL, Manager  
JOHN G. PAYNE, Ph.D. Geologist  
A.L. LITTLEJOHN, M.Sc. Geologist  
JEFF HARRIS, Ph.D. Geologist

P.O. BOX 39  
8887 NASH STREET  
FORT LANGLEY, B.C.  
VOX 1J0

PHONE (604) 888-1323

Report for: Frank O'Grady,  
c/o Terra Mines Ltd.,  
Box 670,  
SALMO, B.C.  
VOC 1Z0

July 24th, 1987

## Samples:

2 thin sections, numbered B-1 and D-1 respectively, for petrographic examination.

## Summary:

Slide B-1 is a micritic carbonate rock veined by coarser carbonate with quartz and fluorite.

Slide D-1 is a fine-grained, tourmaline-bearing, biotitic quartzite in which the dark colour is caused by dense, laminar impregnations of micron-sized opaque material.

Individual petrographic descriptions are attached.

J.F. Harris Ph.D.

Estimated mode

Quartz	45
Biotite	6
Sericite	2
Epidote(?)	7
Tourmaline	14
Granular opaques	1
Micron-sized opaques	25

This rock is essentially a rather even-grained siltstone or fine wacke, of grain size 0.03 - 0.07mm. Its original clastic texture has been modified by metamorphic crystallization and now consists of a rather diffuse-margined mosaic. It appears to consist predominantly of quartz, though it could very well contain a significant component of untwinned feldspar.

Biotite forms rather evenly disseminated, randomly oriented, stubby flakes, 0.05 - 0.1mm in size. Sericite forms much smaller, intergranular flecks.

Another accessory occurs as equidimensional patches of minutely fine-grained, sub-opaque material, similar in size to the biotite. It has somewhat the aspect of leucoxene but sometimes shows signs of having a rather strong, partly anomalous birefringence. It is believed to be epidote. Rare grains of better crystallized, more recognizable epidote are also seen.

Tourmaline is a prominent constituent, as evenly disseminated, individual, prismatic euhedra, mostly in the size range 0.05 - 0.2mm, but occasionally as longer, slender crystals.

Minor opaques (sulfides?) occur as scattered, small, anhedral individuals.

The black colour of the rock is caused by concentrations of micron-sized, opaque material of unknown composition - probably carbonaceous. This forms more or less dense, locally disrupted, laminar, varve-like zones on the scale 0.2 - 2.0mm. In these zones the opaque dust pervades and more or less obscures the normal crystalline fabric of the rock. These are intercalated with less common, opaque-free laminae.

The tourmaline occurs evenly throughout the rock, independent of the distribution of the opaque dust, and is clearly granoblastic. Sometimes slender tourmaline prisms pass uninterrupted from clear to essentially opaque laminae.

The microcrystalline epidote appears to be the latest component to form. It is sometimes seen partially enveloping tourmaline and biotite.

The rock shows no oriented fabric and the recrystallization and metamorphic mineral growth may be dominantly a thermal effect.

Although this rock is rich in accessory tourmaline, it is not a tourmaline 'chert' of the classic Aldridge type (in which wholesale replacement by minutely fine-grained tourmaline needles causes the dark colour, without admixture of opaque dust).



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V1A 2Y5

CERT. # : A8615486-001-A  
INVOICE # : I8615486  
DATE : 30-NOV-86  
P.C. # : NCNE

CC: ED FROST

Sample description	Prep code	Pb ppm	Zn ppm				
LO 0+50W	201	58	46	--	--	--	--
LO 1+00W	201	70	33	--	--	--	--
LO 1+50W	201	155	69	--	--	--	--
LO 2+00W	201	82	76	--	--	--	--
LO 2+50W	201	70	110	--	--	--	--
LO 3+00W	201	49	90	--	--	--	--
LO 3+50W	201	35	97	--	--	--	--
LO 4+00W	201	490	253	--	--	--	--
LO 4+50W	201	48	86	--	--	--	--
LO 5+00W	201	24	59	--	--	--	--
LO 5+50W	201	18	75	--	--	--	--
LO 6+00W	201	19	55	--	--	--	--
LO 6+50W	201	32	54	--	--	--	--
LO 7+00W	201	15	57	--	--	--	--
LO 7+50W	201	27	53	--	--	--	--
LO 8+00W	201	23	46	--	--	--	--
LO 8+50W	201	20	43	--	--	--	--
LO 9+00W	201	29	48	--	--	--	--
LO 9+50W	201	25	37	--	--	--	--
LO 10+00W	201	30	31	--	--	--	--
LO 10+50W	201	18	36	--	--	--	--
LO 11+00W	201	23	56	--	--	--	--
LO 11+50W	201	18	58	--	--	--	--
LO 11+70W SED	201	19	31	--	--	--	--
LO 12+00W	201	18	31	--	--	--	--
LO 12+50W	201	25	43	--	--	--	--
LO 13+00W	201	25	77	--	--	--	--
LO 13+50W	201	28	68	--	--	--	--
LO 14+00W	201	25	49	--	--	--	--
LO 14+50W	201	26	71	--	--	--	--
LO 15+00W	201	23	65	--	--	--	--
LO 15+50W	201	20	53	--	--	--	--
LO 16+00W	201	40	63	--	--	--	--
LO 16+00W SED	201	18	45	--	--	--	--
L3S 0+50W	201	159	73	--	--	--	--
L3S 1+00W	201	83	110	--	--	--	--
L3S 1+50W	201	93	180	--	--	--	--
L3S 2+00W	201	150	400	--	--	--	--
L3S 2+50W	201	92	195	--	--	--	--
L3S 2+50W SED	201	117	195	--	--	--	--

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