Gulf Minerals Canada Limited

A Combined Report on Geological, Geochemical and Airborne Geophysical Surveys on the Leech River Project

Claims: SOOKE 1-8 Inclusive, 124 mineral claims

82 - 211 - 10278

VICTORIA MINING DIVISION

NTS M92B/12W, M92B/12E

Latitudes: 48°31'00" - 48°34'50"
Longitudes: 123°44'45" -123°51'15"

Owner and Operator: GULF MINERALS CANADA LIMITED

Consultant: DIGHEM LIMITED

Authors: J. Malczak (geologist)
S. Vergos (geophysicist)
Z. Dvorak (geophysicist)

March 26, 1982.

ATTESTATION OF QUALIFICATIONS

1) I received a Bachelor of Science degree in geology from McMaster University, Hamilton, Ontario, in 1976.

2) I received a Master of Applied Science degree (specializing in Mineral Exploration) from McGill University, Montreal, Quebec, in 1981.

3) I have been actively employed in the mining industry by Gulf Minerals Canada Limited on a contract or full time basis since 1978. In addition, I was employed in the field of geology on a part time or contract basis from 1974 to 1978.

4) I am presently on permanent staff for Gulf Minerals Canada Limited in Toronto, Ontario.

5) I reside at 565 Sherbourne St., Apt. #1711, Toronto, Ontario.

John Malczak

J. Malczak
Project Geologist
March, 1982.

Gulf

TABLE OF CONTENTS

SECTION 1

Note: SECTION 2 is a separate report on the airborne geophysical survey.

ILLUSTRATIONS

APPENDICES

Appendix I — Listing of Stream Sediment Geochemical Data from the Leech River Property

Appendix II — Itemized Cost Statement for the Leech River Exploration Surveys.

LIST OF PLATES

1.0 INTRODUCTION

The Leech River property is situated within the Insular Mountains of Vancouver Island, approximately 30 kilometres northwest of Victoria B.C. The property covers an area over the north branch of the Leech River and includes Survey Mountain, the major local topographic feature. (Figure 1). Access to the property is provided by logging roads from the towns of Shawnigan Lake and Sooke.

Little information on mineral exploration in this vicinity has been filed for assessment. Ground VLF-EM and Magnetometer surveys, soil geochemical surveys and very limited diamond drilling were reported for assessment on a few mineral claim units within the past six years. No major base or precious metal mineralization was reported. At present Gulf Minerals hold eight contiguous claim blocks (Sooke 1-8) which contain 124 mineral claim units.

During the 1981 field season, Gulf Minerals carried out a geological and stream geochemical survey to evaluate the base and precious metal potential of the property. A total of 92 stream sediment samples were collected during the survey, half of these were sieved in preparation for heavy mineral analyses (Appendix I). Geological mapping was carried out over the 31 square kilometre property with the use of aerial photographs at a scale of 1:20,500 (approximate). All information was plotted on base maps with a scale of 1:10,000.

A Dighem II airborne electromagnetic/resistivity/magnetic survey was flown over the Leech River property in November, 1981. The survey covered 249 line kilometres. The geophysical survey is discussed in Section 2.

All exploration activities were performed over the entire Leech River property represented by claim blocks labelled Sook 1-8 (124 mineral claim units).

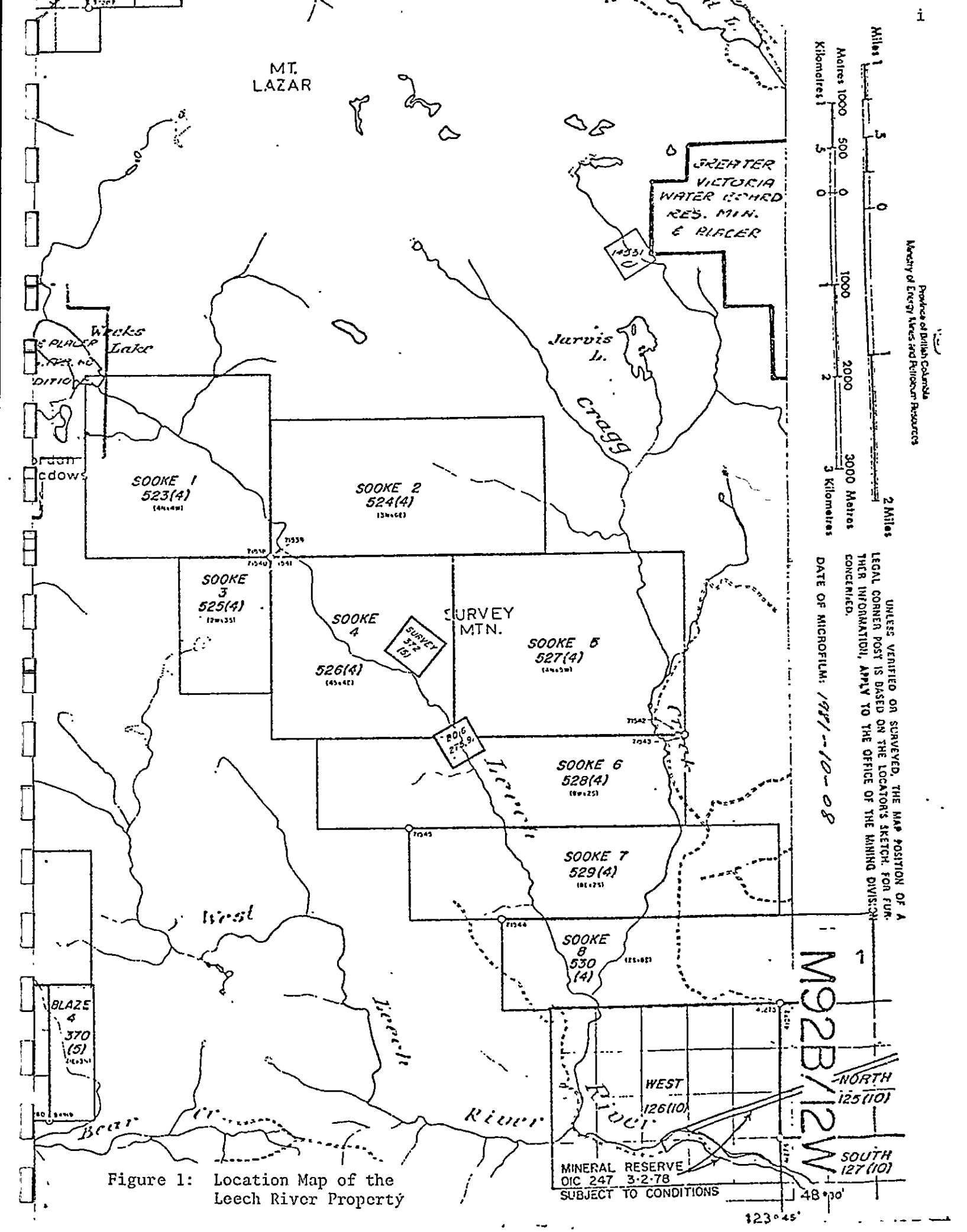

Figure 1: Location Map of the Leech River Property

2.0 METHOD OF INVESTIGATION

The mineral potential of the Leech River property was assessed by a combined survey which included geological mapping, stream sediment sampling and an airborne magnetic and electromagnetic survey.

The geological survey was carried out over the entire claim group, a total of 124 mineral claims. The area was mapped with the use of aerial photographs at a scale of 1:20,500 however, all information was transferred to base maps with a scale of 1:10,000.

A stream sediment survey was conducted over segments of the Leech and Cragg rivers and a number of active primary drainage channels on the property. A regular and "heavy mineral" stream sediment sample was collected from most locations in order to compare the effectiveness of the two geochemical methods. "Heavy mineral" stream sediment samples are essentially sieved to -20 mesh in the field while regular samples are collected without preparation. A total of forty-six 0.5 kg samples of each type of stream sediment were shipped to the Min-En laboratories in Vancouver for analysis. Heavy minerals were extracted from the sieved samples by specific gravity floatation methods and then analyzed for Cu, Pb, Zn, Au, Ag, As and Sb by atomic absorption. Regular stream sediment samples were treated in the regular fashion and analyzed by the same method.

The airborne magnetics and electromagnetics survey was carried out by Dighem Limited in the fall of 1981. Approximately 250 traverse line kilometres were flown with the use of a rotary wing aircraft which maintained a terrain clearance of approximately 40 m and flight line spacing of 150 m. The electromagnetic results were obtained from

the Dighem II system which employs 2 orthogonal transmitter coils (vertical coaxial and horizontal coplanar) at about 900 Hz and 2 receiver coils 8.5 m from their transmitting coils. The magnetics survey was carried out with the use of a Geometrics 803 total field magnetometer. The results of the airborne geophysical survey were presented on maps at a scale of 1:10,000.

3.0 GENERAL GEOLOGY

The Leech River property covers a segment of the northeastern part of the Leech River Formation, a sequence of metamorphosed sedimentary and volcanic rocks of Triassic? age. Rock outcrops are best exposed along crests of ridges and along stream valleys while over 60% of the area is covered by relatively thin, discontinuous glacial debris. The interpretation of geologic contacts was facilitated by the use of the airborne magnetics/resistivity/electromagnetic survey results.

In this locality, the Leech River Formation is bounded to the northeast by the Survey Mountain Fault which marks the contact with the dioritic Wark gneisses (Muller, 1980). The rocks within the property are comprised of several subparallel, northwesterly trending (east dipping) sequences of sedimentary and volcanic rocks (See Plate 1). These sequences are generally between 0.5 and 1.0 kilometres in width and may extend for over 6.0 kilometres through the property. For convenience, the geology can be described by considering two sections separately, one on either side of the "long diagonal" through the property. This division is not completely arbitrary as it approximately coincides with the contact between a sequence of purely sedimentary rocks and a transitional sequence of both sedimentary and volcanic rocks to the east.

The eastern section of the property is comprised of a core of volcanic rocks flanked on either side by sequences of interbedded sedimentary and fragmental volcanic rocks. The volcanic core is centred over a topographic ridge dominated by Survey Mountain (942 m elevation). These volcanic rocks are dominated by mafic massive, pillowed and brecciated flows. This sequence also contains mafic ash-lapilli tuff

units with a small gabbroic plug. The northern end of the volcanic belt appears to end or taper off abruptly into a sequence of sedimentary and volcanic rocks. This offset is generally consistent with the discontinuities of magnetic and electromagnetic features. Other offsets indicated on the map may be apparent. An irregular gabbroic plug, less than 1.0 square kilometres in area, occurs within the volcanic sequence near the southeastern corner of the property. The volcanic rocks adjacent to the intrusive are strongly foliated and highly metamorphosed.

The volcanic rocks south of the gabbroic plug are not well known due to the limited exposure. These rocks appear to be comprised of mafic ash tuff units and flows.

The belt of rocks east of the volcanic sequence is a poorly exposed zone of sedimentary and fragmental volcanic rocks.

The predominant rock types are argillites which are commonly brecciated and mixed with fragments of volcanic tuff units and flows. Little chert was found interbedded with argillite. Volcanic rocks occur in isolated localities in the northeastern corner of the property, however, their extent is not known. The sequence of rocks west of the volcanic belt is also a combination of sedimentary and volcanic rocks however, the units are better defined and more easily identifiable. This sequence appears to be a transitional zone between the volcanic belt to the east and the purely sedimentary sequence to the west. The transitional sequence is dominantly comprised of interbedded argillites and greywackes with abundant intercalated units of mafic and felsic ash-lapilli tuff.

Well banded or bedded units of "ribbon" chert are found within the trasitional zone, especially near or at the contact with the volcanic belt.

The western section of the property is comprised of two sequences of of sedimentary rocks separated by a volcanic sequence. The eastern most sequence is comprised of thick interbedded units of argillite and greywacke. These rocks are well bedded and conformable with one another. The relatively high percentage of coarse sedimentary rocks indicates that the depositional basin may have been shallower than that in which the rocks of the eastern section were deposited. A volcanic sequence forms the southwestern boundary of the sedimentary belt described above. The volcanic sequence is not well exposed but it appears to be comprised of mafic ash-lapilli tuff units. Isolated units of felsic ash tuffs and possibly mafic flows were also observed. The southwestern most sequence of the property is comprised of argillites. Rock exposures in this zone are more numerous than indicated on the geology map.

3.1 Metavolcanic Rocks

Massive Mafic Flows

Most of the rocks within the volcanic belt over Survey Mountain are massive flows. These flows are typically massive to weakly foliated fine to medium grained mafic lavas. Weathered outcrops are light grey in colour while fresh surfaces are a medium gray-brown colour. Few flows are porphyritic and may contain up to 15% plagioclase phenocrysts 2.0 mm in length. The flows contain a trace amount of pyrite and pyrrhotite in disseminated grains or veinlets. Few zones are weakly chloritized or silicified however, no clear alteration pattern is evident.

Mafic Pillowed Flow

Mafic pillowed flows are close associated with the massive flows described above. The rock textures are identical however, no porphyritic varieties exist. Weathered outcrops are usually light green while fresh surfaces are medium gray-brown in colour. The pillow structures are irregular in form, usually elongate (0.5 x 0.2 m), and have poor top indicators. Pillowed flows also contain minor amounts of pyrite and pyrrhotite.

Felsite

Felsic dykes or units form a small component of few isolated volcanic outcrops. These rocks are massive to weakly foliated, fine grained rhyolites. Weathered surfaces are white while fresh surfaces are reddish in colour. Sericitic and possibly kaolinitic alteration is moderate.

Mafic Ash-Lapilli Tuff

Mafic ash and lapilli tuff units are most common within the southern volcanic sequence and within the transitional volcanic and sedimentary sequence west of the major volcanic belt. The ash tuff units are moderately to strongly foliated and often have a laminated appearance. Lapilli tuff units contain up to 70% mafic volcanic fragments (<64 mm) and to a lesser degree argillite and chert fragments. The matrix is usually argillite or graphitic argillite and occasionally chlorite. The fragments are almost always lighter in colour than the matrix or weathered outcrops.

Mafic Agglomerate

Few volcanic units are classified as agglomerates. These rocks represent either brecciated mafic flows or coarser equivalents of the mafic lapilli tuffs described above.

Felsic Ash-Lapilli Tuff

A number of interbedded felsic ash-lapilli tuff units are found within the transitional sedimentary and volcanic sequence west of the major volcanic belt. These units are well foliated and strongly sericitized. Felsic lapilli tuff units contain up to 40% irregular flattened fragments of rhyolite and may have either a sericitic or pelitic matrix. The massive, aphanitic texture of these fragments may however represent chert fragments in at least a few cases. Weathered outcrops are very light grey to white in colour. Fragments are usually more resistant to weathering than is the matrix material.

Felsic Agglomerate

Felsic agglomerate units are scarce. They are coarse fragmental equivalents of the felsic lapilli tuff units described previously.

3.2 Metasedimentary Rocks

Argillite

Metamorphosed argillite or pelites are widespread. They are moderately to strongly foliated, fine-grained biotite rich rocks. They are often well bedded and illustrate structural features clearly. The dark grey or black colour of the argillites is the result of the high content of biotite and in places, graphite. Argillite also occurs in the matrix of fragmented volcanic and sedimentary rocks.

Greywacke

Greywacke units are most common in the sedimentary sequence of the west section of the property. These rocks are relatively massive, medium to coarse-grained sedimentary rocks. They are commonly found in thick, well bedded units interlayed with argillites. Quartz veins are commonly observed in the greywacke units.

Chert

Chert is found within and along the western boundary of the major volcanic belt and within the adjacent transitional sedimentary and volcanic sequence to the west. The chert units are well banded or bedded sequences up to 30 m in thickness. The term "ribbon" chert has been used by Muller to indicate the well banded appearance of these rocks. This appearance is the result of numerous layers of chert 1.0 to 4.0 cm in thickness separated by very thin chloritic, sericitic or argillaceous layers. The chert is typically very hard and brittle and has aphanitic texture. Weathered outcrops are white while fresh surfaces are light gray or brown in colour. Chert sequence are clearly deformed in places as tight folds and minor offsets can be observed.

3.3 Mafic Intrusive Rocks

Gabbro

A small gabbroic plug (1.0 square km) is situated in the sothern half of the major volcanic belt. The rock is a massive to foliated (lineated) medium-grained gabbro. In areas, the plagioclase content may exceed 35-40%, the rocks may then be classified as either a leucogabbro or diorite.

3.4 Granitoid Rocks

The northeast boundary of the Leech River Formation is in contact with the dioritic wark gneisses described by Muller (1980). Outcrops of the gneiss were not observed in the vicinity of the property.

4.0 MINERAL SHOWINGS

During the field season of 1980, the Leech River area was selected for further investigation for volcanogenic massive sulphide deposits due to the occurrence of a poorly known sequence of volcanic rocks. Interest in this area was enhanced by the discovery of a gold rich sulfide float sample (ave.7,500 ppb 0.24 oz./tonne Au) which was collected along the west slope of the Survey Mountain ridge, immediately below the contact with the volcanic belt.

The most significant mineralization occurs in a relatively extensive gossan zone along the crest of the Survey Mountain ridge. The zone is generally less than 4 m in width and may extend for up to 1 kilometre in length. The gossan zone is hosted in mafic pillowed flows and breccias and in localities is associated with and conformable to a thin graphitic argillite unit.

This zone is well exposed by a few secondary logging roads, one of which cuts the zone obliquely at a low angle. The sulphide mineralogy includes pyrite, pyrrhotite and trace amounts of chalcopyrite and possibly sphalerite. In general, the sulphide minerals are disseminated and comprise 5 to 15% of the rock. Massive sulphides were observed in large, irregular blocks at th peak of Survey Mountain, near the southern outcrop of the gossan zone. In this locality, the gossan zone appears to splay out somewhat however it is likely that the massive sulphides are derived from a segment of the same zone. Masive sulphide samples contain up to 60% pyrite and pyrrhotite which occurs in irregular veins and veinlets. Gangue minerals include quartz and possibly calcite and chlorite. Several samples of the gossan zone were analyzed for gold, however values did not exceed 22 ppb Au.

The source of the gold rich float sample discovered in the previous year remains unresolved however the gossan zone on Survey Mountain deserves further detailed investigation.

5.0 STRUCTURAL GEOLOGY

The structural trends of all of the geologic sequences within the Leech River property are consistent. The foliation and bedding planes, where recognized, are nearly coincident with one another and are generally oriented at 295°-335° with dips 40°-85° northeast. According to a study by Fairchild (1980), the Leech River Formation has undergone at least two stages of deformation, however only folds of the latest stage were clearly evident during the investigation of the property last season. The latest stage of deformation is characterized by relatively tight folds with fold axes oriented approximately 100°/020° (trend/plunge). These folds were observed in a few outcrops of argillite within the transitional and sedimentary sequences west of the major volcanic belt.

6.0 METAMORPHISM

The metmorphic mineral assemblages within the volcanic and pelitic (argillites) rocks indicate a grade of metamorphism ranging from the greenschist to the amphibolite grade.

7.0 STREAM SEDIMENT SURVEY

A stream sediment survey was completed within the Leech River property. Samples were collected from the Leech and Cragg rivers and along a few active primary drainage channels. In most cases, two samples were collected from each site, one was sieved to -20 mesh and the other was left untreated. A total of 92 samples were collected during the survey. All samples were shipped to Min-En laboratories in Vancouver. The sieved samples were processed by specific gravity floatation methods to extract the heavy minerals while the regular samples were split using standard procedures. The samples were analyzed for Cu, Pb, Zn, Au, Ag, As and Sb by atomic absorption. The results of the analyses are listed in Appendix 1. Sample locations and metal values are plotted on Plates 2-5 inclusive.

None of the metal values are considered to be geochemically anomalous. Neither of the two types of stream sediment samples gave consistently higher metal values when analyzed. The results of the survey may indicate that there is little base or precious metal mineralization in these drainage basins. The low metal values could also be attributed to the nature of the sediment within the streams samples. Most of the stream sediments were relatively coarse making it difficult to collect sieved samples. The sediments are effectively winnowed by these streams due to their high gradients and the lack of recent runoff and seepage due to precipitation. The lack of appreciable amounts of fine sediment generally hinders the effectiveness of stream sediment surveys in detecting dispersion patterns of metals or minerals. It would have been more appropriate to sample the stream channels during flood stages in places where the break in slope is most abrupt.

8.0 REFERENCES

Fairchild, L.N.

1979: The History of the Leech River Fault, Southern Vancouver Island, British Columbia and Implications for the Tertiary Evolution of the Pacific Northwest. Unpublished Masters Thesis.

Muller, J.E.

1980: Geology of the Victoria Map Area, Vancouver Island and Gulf Islands, B.C. Map 92B/NW and part of B/SW. Open File Map 701, Geological Survey of Canada.

Muller, J.E.

1977: Geology of Vancouver Island (East Half) Open File Map 463, Geological Survey of Canada

APPENDIX I

MIN-EN Laboratories Ltd.

705 WEST 15th STREET,
NORTH VANCOUVER, B.C., CANADA V7M 1T2
TELEPHONE (604) 980-5814

ANALYTICAL REPORT

Project ..... Leach River AFE 1418 ... Date of report ..... Aug. 7/81 .....

File No. ..... 1-535 ..... Date samples received ..... July 23/81 .....

Samples submitted by: ..... B. Kotila .....

Company: ..... Gulf Minerals Canada .....

Report on: ..... 46 soils, 46 HM ..... Geochem samples

..... Assay samples

Copies sent to:

1. Gulf Minerals, Toronto, Ont.
2. .....
3. .....

Samples: Sieved to mesh ..... -80 soil ..... Ground to mesh ..... HM -20 Mesh

Prepared samples stored ☒ discarded ☐

rejects stored ☐ discarded ☐

Methods of analysis: ..... Specific gravity flotation and routine geochem analysis.

Remarks: .....

SPECIALISTS IN MINERAL ENVIRONMENTS

COMPA. Gulf Minerals Canada

F. No. 1-535

GEOCHEMICAL ANALYSIS DATA SHEET

MIN - EN Laboratories Ltd.
705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

PROJECT No.: Leach River AFE 1418

DATE: Aug. 7, 1981.

ATTENTION: B. Kotila

Heavy Mineral

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb	Sb ppm	HM %
G 87051		2.0	1.9	3.8			0.6			1.1		5	3.5	1.0 - 5.0
52		2.9	1.9	4.6			0.6			1.2		5	5.0	1.1 - 4.3
53		1.60	6.8	1.60			0.8			3.1		10	5.5	1. - 2.1
54		4.5	2.2	7.0			0.8			4.0		5	6.0	5. - 1.5
55		3.6	1.9	5.1			0.4			1.8		20	5.5	1.9 - 5.3
56		2.8	2.0	5.2			0.4			1.7		10	4.2	.7 - 4.0
57		4.0	2.7	7.5			0.6			1.4		10	9.0	5. - 5.8
58		4.6	1.9	4.9			0.7			4.1		5	5.2	1.6 - 9.4
59		3.0	1.3	4.2			0.6			1.8		5	4.4	2.2 - 3.1
60		3.8	1.8	4.9			0.6			5		5	3.8	.9 - 8.2
61		3.4	1.2	4.3			0.5			2.1		10	4.0	2.0 - 1.8
62		4.0	1.7	4.8			0.6			8		5	3.5	1.1 - 8.0
63		2.4	1.1	3.9			0.4			2.0		10	3.0	3.2 - 9.6
64		3.0	1.4	4.8			0.5			7		5	4.0	2.3 - 0.1
65		2.4	1.2	3.7			0.4			1.9		10	3.5	1.3 - 0.7
66		2.2	1.2	4.0			0.4			1.0		5	5.5	2.8 - 7.4
67		2.4	1.3	3.9			0.5			1.0		5	3.5	2.8 - 2.0
68		2.8	1.3	3.7			0.4			1.3		5	5.5	1.7 - 7.0
69		3.2	1.3	4.7			0.6			3		10	5.5	1.9 - 8.2
70		5.0	1.6	5.3			0.6			5		5	7.5	6. - 4.4
71		4.2	1.3	4.0			0.8			1.0		5	7.0	1.4 - 8.0
72		4.8	2.3	4.9			0.9			2.2		10	6.5	1.6 - 7.4
73		3.2	1.1	4.8			0.5			5		5	3.5	1.8 - 6.3
74		3.2	1.2	4.6			0.4			2		5	4.0	1.9 - 7.0
75		6.0	1.3	5.1			0.5			1.5		5	3.5	1.5 - 9.2
76		4.0	1.8	5.4			0.5			1.3		5	6.5	9. - 5.3
77		2.4	.7	2.9			0.4			4		10	4.5	2.7 - 1.7
78		2.2	1.1	3.5			0.4			1.1		5	3.5	1.8 - 4.7
79		2.8	.8	4.1			0.4			1.1		5	4.0	8.3 - 9.8
G 87080		2.4	.8	3.3			0.5			9		5	3.5	3.5 - 4.8

COMPANY: Cominco Ltd.

GEOCHEMICAL ANALYSIS DATA SHEET

PROJECT No.: Leach River AFE-1418

MIN - EN Laboratories Ltd.
705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

DATE: Aug. 7, 1981.

ATTENTION: Brian Katila

Heavy Minerals

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb	Sb ppm	HM %
G-87-81		44	22	69			.6			5.0		5	7.5	5.6.3
82		33	16	42			.4			1.3		15	6.0	1.1..2.3
83		59	20	53			.7			2.4		10	5.5	5..1.3
84		52	17	54			.6			2.0		5	6.0	1.1..5.0
85		55	17	61			.6			2.2		5	7.5	1.1..5.8
86		52	16	57			.5			2.9		5	8.5	1.3..4.5
87		43	9	49			.6			6.3		10	6.5	1.3..6.0
88		25	7	30			.6			9		5	5.0	3.7..0.8
89		27	12	32			.4			7		5	3.5	4.6..5.9
90		27	9	29			.8			9		5	4.0	3.1..0.4
91		27	10	37			.4			5.0		10	4.0	4.3..3.6
92		40	11	38			.6			1.8		15	3.5	3.4..9.0
93		30	11	36			.4			4.5		5	4.0	3.8..3.9
94		36	10	42			.5			2.7		5	5.0	3.7..2.1
95		22	9	34			.5			1.4		5	3.8	5.3..3.7
G-87-96		28	11	32			.6			8		15	3.5	3.9..1.4

CERTIFIED BY:

COMPANY: Gulf Mineral Canada

GEOCHEMICAL ANALYSIS DATA SHEET

FILE No. 3

PROJECT No.: Leach River AFE 1418

MIN - EN Laboratories Ltd.
705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

DATE: Aug. 1981.

ATTENTION: B. Kotila

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb	Sb ppm		
G 8801		46	21	90			11			12		5	22		
02		51	20	114			08			6		5	20	(40mesh)	
03		80	25	193			10			7		5	16		
04		59	17	66			09			<1		10	8		
05		39	23	115			08			8		5	15	(40mesh)	
06		57	20	108			07			<1		5	22		
07		58	19	98			08			2		5	14	(40mesh)	
08		41	17	71			07			4		5	8		
09		55	20	96			07			<1		10	15		
10		49	22	93			06			6		10	12	(40mesh)	
11		49	19	81			06			6		15	24		
12		46	17	65			08			<1		5	15		
13		42	15	62			10			4		5	8	(40mesh)	
14		44	19	69			06			6		5	22		
15		54	19	76			07			<1		10	18		
16		40	14	80			08			<1		5	22	(40mesh)	
17		42	15	83			09			5		10	26		
18		41	13	64			08			2		5	24		
19		43	19	108			07			6		5	15		
20		73	24	109			10			8		10	25		
21		46	23	74			05			5		5	18		
22		70	18	85			05			4		5	26		
23		50	13	78			08			4		5	22		
24		58	18	64			08			1		5	25		
25		69	16	70			07			2		5	15		
26		54	21	103			06			<1		10	35		
27		55	13	47			07			<1		5	26		
28		58	15	70			08			6		5	25		
29		53	19	69			09			1		mes	12	(40mesh)	
G 8830		51	15	61			07			2		5	8		

COMPANY: Kalana

GEOCHEMICAL ANALYSIS DATA SHEET

MIN - EN Laboratories Ltd.
705 WEST 15th ST., NORTH VANCOUVER, B.C. V7M 1T2
PHONE (604) 980-5814

PROJECT No.: Leach River AFE 1418

ATTENTION: B. Kotila

DATE: Aug. 7, 1981

Sample Number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Ag ppm	Fe ppm	Hg ppb	As ppm	Mn ppm	Au ppb	Sb ppm	
G 88316		30	17	69			03			8		5	45	
32		25	15	69			04			4		5	30	(40 mesh)
33		47	19	90			05			3		5	55	
34		47	21	106			03			7		5	60	
35		46	19	101			07			6		10	80	
36		50	21	105			05			5		10	55	
37		48	16	92			05			11		5	45	
38		41	11	46			03			2		5	20	
39		38	12	54			03			<1		5	20	
40		38	13	55			04			2		10	10	
41		41	11	54			03			<1		10	8	
42		52	12	69			04			2		5	35	
43		63	22	118			05			2		5	25	
44		54	18	91			04			3		10	60	
45		33	8	51			05			3		5	15	
G 88446		41	12	51			04			4		5	18	

Robert Dunn

APPENDIX II

APPENDIX II

ITEMIZED COST STATMENT

Wages

June 17 to July 19, 1981, 23 days; wages of project geologist
A $80/man/day. - $1840 Total Cost

June 18 to July 19, 1981, 32 days; wages of project geologist
B $70/man/day. $2240 Total Cost

June 17 to July 19, 1981, 33 days; wages of geological assistant
A $50.8/man/day $1678 Total Cost

June 18 to June 30, 1981, 13 days; wages of geological assistant
B $50.8/man/day $661 Total Cost

July 10 to July 19, 1981, 10 days; wages of geological assistant
C $33.3/man/day $330 Total Cost

Food + Accommodation (For above dates)

23 days, one project geologist; $24.00/man/day (est)
$552.00 Total Cost

32 days, other project geologist; $17.25/man/day (est)
$552.00 Total Cost

33 days, geological assistant; $18.00/man/day (est)
$594.00 Total Cost

Cont'd....

13 days, geological assistant 2; $25.00/man/day (est)
$325.00 Total Cost

10 days, geological assistant 3; $29.05/man/day (est)
$290.00 Total Cost

Transportation

June 17 to July 19, 1981, 33 days - 2x trucks at $875/mo = $1925
- 2x campers at $540/mo = $1188
- gasoline (2 trucks) = $ 583

Total Cost $3696

Contracted Geophysical Survey

November 4 - November 10, 1981, 7 days

- ferry and mobilization charges	$10000.
- Digham II airborne electromagnetic/ resistivity/magnetic survey:	
-249 line-km at $54.50/line-km =	$13570.
-229 line-km at $17.70/line-km =	$ 4053*
-bad weather charge, 3 days at $1000/day	$ 3000.
- Air photo of the Leech River property -scale 1:10,000	$ 6125.
Total Cost	$36748

* "Short line" charges.

Geochemical Analyses

June 18 to July 19, 1981, 32 days. 92 stream sediment samples analyzed for Cu, Pb, Zn, Ag, As, Au, Sb; at $26.88/sample (ave) - $2472.50 Total Cost.

Gulf

Report Preparation

February 1 to February 14, 1982. One project geologist x 10 work days
2 weeks salary = 0.45 x $2,500/mo. = $1125 Total Cost.

TOTAL COST $53,103.50

123° 49'

48° 34'

Weeks Lake

SURVEY MOUNTAIN FAULT

LEECH RIVER

CRAGG RIVER

FLOAT (0.24 oz/tonne Au)

Survey Mountain

4a,3a,c

4a,b

1m,p

1m,p,3b

4a,3?

5a

4a,b,3a,c

3a,1m

3a,1

4a

N

LEGEND

METAVOLCANIC ROCKS

1m mafic flow
1p mafic pillowed flow

2a felsite

3a mafic ash to lapilli tuff
3b mafic agglomerate
3c felsic ash to lapilli tuff
3d felsic agglomerate

METASEDIMENTARY ROCKS

4a argillite
4b greywacke
4e chert

MAFIC INTRUSIVE ROCKS

5a gabbro, diorite

GRANITOID ROCKS

6g gneiss

inferred geologic contact
inferred fault
property boundary, approximate location
75° foliation
orientation of pillow structures
75° bedding

Py pyrite
Po pyrrhotite
Cpy chalcopyrite
G gossan
S sulfides

streams
secondary logging road
primary logging road

10,278

SCALE

FEET
1,000 0 2,000

METRES
200 0 600

Gulf Minerals Canada Limited

LEECH RIVER PROJECT

GEOLOGICAL MAP

AREA 29
BRITISH COLUMBIA

DATE	SCALE	DRAWN BY	PLATE 1
NOVEMBER 1981	1:10,000	S.NORRIS	N.T.S. 92B/12 E