BIOGEOCHEMICAL
ASSESSMENT REPORT

on the

COPPER KEG CLAIM GROUP
ASHCROFT AREA
KAMLOOPS MINING DIVISION

by

MURRAY S. MORRISON, B. Sc.

MINERAL TITLES BRANCH
Rec'd.

AUG 1 2 1998
L.I.#
File
VANCOUVER, B.C.

CLAIMS: Copper Keg 1-14 and Copper Kettle 1-4 (18 units)
LOCATION: The Copper Keg Claim Group is situated on the south side of
            the Thompson River Valley, 9 km northeast of Ashcroft, B.C.
            Lat. 50°45'; Long. 121°10';
            N.T.S: 92-I-11 & 14E
OWNER: M. S. Morrison
OPERATOR: M. S. Morrison
DATE STARTED: May 3, 1998
DATE COMPLETED: May 5, 1998

GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

Kelowna, B.C. August 1, 1998

25,601
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Location and Access</td>
<td>6</td>
</tr>
<tr>
<td>Physical Features and Climate</td>
<td>6</td>
</tr>
<tr>
<td>Claim Status</td>
<td>9</td>
</tr>
<tr>
<td>History</td>
<td>10</td>
</tr>
<tr>
<td>Regional Geology</td>
<td>11</td>
</tr>
<tr>
<td>Property Geology</td>
<td>13</td>
</tr>
<tr>
<td>Summary from 1992 Geological Report</td>
<td>13</td>
</tr>
<tr>
<td>Summary of 1997 Mapping Program</td>
<td>14</td>
</tr>
<tr>
<td>Upper Triassic Nicola Group Andesite Agglomerate (Unit 1)</td>
<td>15</td>
</tr>
<tr>
<td>Early Jurassic Guichon Creek Intrusive (Unit 2)</td>
<td>16</td>
</tr>
<tr>
<td>Tertiary Kamloops Group Volcanics (Unit 3)</td>
<td>17</td>
</tr>
<tr>
<td>Pleistocene Sediments</td>
<td>18</td>
</tr>
<tr>
<td>Faulting</td>
<td>18</td>
</tr>
<tr>
<td>Barnes Creek Fault</td>
<td>18</td>
</tr>
<tr>
<td>The East-West Inferred Fault</td>
<td>19</td>
</tr>
<tr>
<td>Alteration and Mineralization</td>
<td>20</td>
</tr>
<tr>
<td>Biogeochemical Survey - 1998</td>
<td>22</td>
</tr>
<tr>
<td>Grid</td>
<td>22</td>
</tr>
<tr>
<td>Sampling</td>
<td>22</td>
</tr>
<tr>
<td>Results</td>
<td>23</td>
</tr>
<tr>
<td>Discussion</td>
<td>27</td>
</tr>
<tr>
<td>Conclusions and Recommendations</td>
<td>28</td>
</tr>
<tr>
<td>References</td>
<td>30</td>
</tr>
<tr>
<td>Appendix A Statement of Qualifications</td>
<td>31</td>
</tr>
<tr>
<td>Appendix B Statement of Expenditures</td>
<td>32</td>
</tr>
<tr>
<td>Appendix C Certificate of Analyses</td>
<td>33</td>
</tr>
<tr>
<td>Figure 1</td>
<td>Location Map (British Columbia)</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Claims and Access, Copper Keg Property</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Regional Geology - Guichon Creek Batholith</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Geology</td>
</tr>
<tr>
<td></td>
<td>Copper Keg 9-11 &amp; Copper Kettle 1 Mineral Claims</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Biogeochemical Survey - Cu, Zn &amp; As</td>
</tr>
<tr>
<td></td>
<td>Copper Keg 9-11 &amp; Copper Kettle 1 Mineral Claims</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Biogeochemical Survey - Mo, K &amp; Ag</td>
</tr>
<tr>
<td></td>
<td>Copper Keg 9-11 &amp; Copper Kettle 1 Mineral Claims</td>
</tr>
</tbody>
</table>
SUMMARY

The Copper Keg Claim Group, comprised of 18, 2-post mineral claims, covers a spectacular gossan on the southern side of the Thompson River Valley 9 km northeast of Ashcroft, B.C. The property is owned by the writer, M. Morrison of Kelowna, B.C., who staked the mineral claims in May, 1995 and 1996.

The property is located at the northern edge of the Early Jurassic Guichon Creek Batholith and it is dissected by a northwest-striking regional fault, the Barnes Creek Fault, which crosses the northern portion of the batholith. The fault separates andesitic rocks of the Upper Triassic Nicola Group on the southwest from a quartz diorite intrusive on the northeast. The intrusive is believed to be a hybrid phase of the Guichon Creek Batholith.

The gossan, comprised of pyritic, limonitic and clay-altered decomposed rock, overlies the quartz diorite-andesite contact zone. The bright-coloured altered zone is well exposed in a steep-sided ravine at the northern end of the property, but the southern extent of the zone is unknown. Deep Pleistocene drift and thin flows of the Kamloops Group volcanics cover the southern portion of the property.

It is thought that the intense alteration and pyritization on the Copper Keg property postdates the intrusion of the Guichon Creek Batholith and that the hydrothermal solutions that brought about the alteration and mineralization have emanated from a later cooling intrusive of possible Early Tertiary Age that is associated with the Barnes Creek Fault.

It is suggested that the spectacular gossan on the property could mark just the edge (i.e. halo) of a very large hydrothermal system that could have deposited concentrations of copper, molybdenum, or precious metals at any point along the Barnes Creek Fault. It is believed that there is potential for finding both primary and supergene ore along the Barnes Creek Fault.
SUMMARY (continued)

An east-west valley which runs obliquely towards the Barnes Creek Fault from the east was
the focus of a 1997 geological mapping program on the Copper Keg 9-11 and Coper Kettle 1
Mineral claims. The valley may represent another zone of faulting with associated clay-
alteration and pyritization at the southern contact of the quartz diorite plug in a situation
similar to that occurring at the Barnes Creek Fault on the southwest edge of the intrusive.

A strong east-west VLF-EM conductor identified during a 1996 survey aligns with a portion
of the east-west valley and lends support to the fault hypothesis.

An experimental biogeochemical survey (using sagebrush as a sample medium) was
conducted over the east-west valley and VLF-EM conductor centred on the Copper Kettle 1
mineral claim this year. Elevated potassium and molybdenum values were obtained in the
area and they strengthen the hypothesis that an altered and mineralized fault zone occurs
below the overburden at the southern contact of the quartz diorite intrusive.

Additional biogeochemical sampling is recommended on the southwest side of the Copper
Kettle 7 mineral claim where the Barnes Creek Fault is expected to underlie the thin cover of
Pleistocene drift.

A follow-up program of Percussion Drilling is recommended to test both the Barnes Creek
Fault and east-west inferred fault for economic copper and molybdenum mineralization, if the
second biogeochemical survey yields results similar to the initial survey.
INTRODUCTION

This report, written for government assessment work requirements, discusses the results of a biogeochemical survey carried out over portions of the Copper Keg 9 & 11 and Copper Kettle 1 mineral claims by the writer during early May, 1998.

The Copper Keg Group, comprised of 18 contiguous 2-post mineral claims, was staked by the writer in May, 1995 and 1996, to cover a spectacular gossan located on the southern side of the Thompson River, 9 km northeast of Ashcroft, B.C. The writer has, for several years, thought that the pyritic gossan could represent the outer limits of a large mineralized system associated with the Barnes Creek Fault which could host sizeable deposits of copper, molybdenum or precious metals.

The gossan, located immediately south of the Canadian Pacific Railway tracks, is coincident with a zone of highly fractured, altered and pyritized rock that is well exposed in a steep-sided ravine. The ravine marks the northwestern end of the Barnes Creek Fault - a late fault that cuts diagonally across the northeast corner of the Guichon Creek Batholith (McMillan, 1976). The fault separates a quartz diorite hybrid phase of the Early Jurassic Guichon Creek Batholith on the northeast from the Upper Triassic Nicola Group rocks that lie to the southwest on the Copper Keg property.

The Barnes Creek Fault is very well exposed in the ravine on the northern half of the Copper Keg Claim Group, but is hidden beneath a thin cover of Pleistocene drift and Tertiary basalt on the southern half of the property. Over a period of years, the writer has conducted several surveys (geological, magnetometer and VLF-EM) in an attempt to trace the fault from the ravine to the southern half of the property (Morrison, 1984, 91, 92 & 96).

A secondary fault may cross the centre of the property from east to west at the southern edge of the quartz diorite plug, and it is thought that fracturing, alteration and pyritization may all
occur along the southern border of the intrusive plug in a manner similar to that seen at the southwestern contact. This second fault (inferred) may intercept the Barnes Creek Fault in the vicinity of the Copper Keg 9 mineral claim.

A valley which crosses the centre of the property (coincident with the inferred fault) has been the focus of exploration for the past three years. In 1996, a VLF-EM survey outlined a strong conductor underlying the eastern half of the valley (Morrison, 1996). In 1997, the geology was mapped at a scale of 1: 2500, and it was determined that the VLF-EM conductor could represent a faulted contact between the quartz diorite intrusive and the Nicola Group andesites (Morrison, 1997). This year, 1998, an experimental biogeochemical survey was carried out over the area of the VLF-EM conductor in an effort to discover copper or other economic minerals on a region of the property where the glacial drift ranges from 1 to 7 metres deep.

The results of this year's survey which used sagebrush as the principle sample medium are presented on Figures 5 & 6 which accompany this report.

The geology map which accompanied the 1997 Assessment Report has been reproduced for this report (see Figure 4) along with most of the geological description of the 1997 report.
LOCATION and ACCESS

The Copper Keg Claim group is situated immediately south of the Thompson River, 9 km northeast of Ashcroft, B.C. (Lat. 50°45'; Long. 121°10'; N.T.S. Maps 92-I-11 & 14E). The property is reached from Ashcroft via the Highland Valley Highway (#97C) and the Barnes Lake Road (which is also known as logging road #44). A powerline road branches north from logging road #44 at 10.4 km, and this road gives access to the central portion of the property as illustrated on Figure 2.

The dirt road requires a four-wheel-drive vehicle during the wet Spring and Autumn seasons.

PHYSICAL FEATURES AND CLIMATE

The first four Copper Keg mineral claims (Copper Keg 1-4) cover a steep, rocky slope immediately south of the Canadian Pacific Railway tracks on the south side of the Thompson River. The slope rises from the 350 metre elevation at the tracks to the 670 metre elevation over a distance of just 0.5 km. The slope continues at a more moderate grade to the 760 metre elevation across the Copper Keg 5-8 mineral claims, and then levels out over the southern half of the property (Copper Keg 9-14 mineral claims) with an average elevation of 820 metres above sea level.

Precipitous bluffs on the eastern side of the Copper Keg 1 & 3 mineral claims are coincident with outcrop of intrusive rock.

A light, patchy forest of Ponderosa Pine, Douglas Fir, and juniper occurs on northern slopes and in ravines. Elsewhere, sagebrush is widespread across the property.

The Thompson River Valley at Ashcroft has a desert climate with less than 25 cm of precipitation annually and summer temperatures often greater than 30°C. The lower slopes on the Copper Keg property have the same desert climate as Ashcroft, but there is a marked
PHYSICAL FEATURES AND CLIMATE (continued)

increase in precipitation and vegetation with each 100 metre increase in elevation above the river. Much of the upland portion of the property receives enough precipitation to support summer range land for cattle. A creek lying just to the east of the property provides drinking water for the livestock.

The winter snow pack seldom exceeds 30 cm on the Copper Keg property and the snow lasts only from November until early March.
COPPER KEG CLAIM GROUP

Copper Keg 1-14 and Copper Kettle 1-4 (18 units)

Area of 1998 Survey

KAMLOOPS GROUP VOLCANICS

Copper Keg 1-14 Mineral Claims

Copper Kettle 1-4 Mineral Claims

Access Roads
Legal Corner Posts
Contacts
Creeks

Scale: 1:50,000

CLAIMS AND ACCESS

Ashcroft Area
Kamloops Mining Division, B.C.

Drawn by: M.M.
N.T.S. 92411+14E
August 1998
Figure No. 2
CLAIM STATUS

The mineral claims, making up the Copper Keg Group are 100% owned by the writer, M. Morrison of Kelowna, B.C. Specifics related to the 18, 2-post mineral claims located within the Kamloops Mining Division are given below:

<table>
<thead>
<tr>
<th>CLAIM NAME</th>
<th>UNITS</th>
<th>DATE OF RECORD</th>
<th>TENURE NUMBER</th>
<th>EXPIRY* DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper Keg 1</td>
<td>1</td>
<td>May 15, 1995</td>
<td>336345</td>
<td>May 15, 1999</td>
</tr>
<tr>
<td>Copper Keg 2</td>
<td>1</td>
<td>May 15, 1995</td>
<td>336346</td>
<td>May 15, 1999</td>
</tr>
<tr>
<td>Copper Keg 3</td>
<td>1</td>
<td>May 15, 1995</td>
<td>336347</td>
<td>May 15, 1999</td>
</tr>
<tr>
<td>Copper Keg 4</td>
<td>1</td>
<td>May 15, 1995</td>
<td>336348</td>
<td>May 15, 1999</td>
</tr>
<tr>
<td>Copper Keg 5</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336349</td>
<td>May 14, 1999</td>
</tr>
<tr>
<td>Copper Keg 6</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336350</td>
<td>May 14, 1999</td>
</tr>
<tr>
<td>Copper Keg 7</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336351</td>
<td>May 14, 1999</td>
</tr>
<tr>
<td>Copper Keg 8</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336352</td>
<td>May 14, 1999</td>
</tr>
<tr>
<td>Copper Keg 9</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336353</td>
<td>May 14, 2000</td>
</tr>
<tr>
<td>Copper Keg 10</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336354</td>
<td>May 14, 2000</td>
</tr>
<tr>
<td>Copper Keg 11</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336355</td>
<td>May 14, 1999</td>
</tr>
<tr>
<td>Copper Keg 12</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336356</td>
<td>May 14, 1999</td>
</tr>
<tr>
<td>Copper Keg 13</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336357</td>
<td>May 14, 1999</td>
</tr>
<tr>
<td>Copper Keg 14</td>
<td>1</td>
<td>May 14, 1995</td>
<td>336358</td>
<td>May 14, 1999</td>
</tr>
<tr>
<td>Copper Kettle 1</td>
<td>1</td>
<td>May 15, 1996</td>
<td>345861</td>
<td>May 15, 1999</td>
</tr>
<tr>
<td>Copper Kettle 2</td>
<td>1</td>
<td>May 15, 1996</td>
<td>345862</td>
<td>May 15, 1999</td>
</tr>
<tr>
<td>Copper Kettle 3</td>
<td>1</td>
<td>May 15, 1996</td>
<td>345863</td>
<td>May 15, 1999</td>
</tr>
<tr>
<td>Copper Kettle 4</td>
<td>1</td>
<td>May 15, 1996</td>
<td>345864</td>
<td>May 15, 1999</td>
</tr>
</tbody>
</table>

*Note: The new Expiry Date is based on the acceptance of this report for Assessment Work Credits.
The large gossan located immediately south of the Canadian Pacific Railway Tracks, and now covered by the Copper Keg Claim Group, was one of British Columbia's early prospects. It was known as the Burr property and it was first described in the Minister of Mines Annual Report for 1898, p. 1107 as follows:

"The Burr group of eight claims is situated about 5.5 miles east of Ashcroft on the C.P. Railway, which runs through the property. It has a large body of ore, carrying gold and silver, but principally copper, and lies between diorite and granite. The country rock is diorite.

About 80 feet of tunnelling has been run in on the claims which are most favourably situated for working, as the ore can be dumped into the cars without extra handling."

It wasn't until the late 1960's that the prospect was recorded again in the Minister of Mines Annual Reports (1969, p. 263; 1970, p. 348; and 1971, p. 362). It was called the Pyrite property. Soil geochemical and Induced Polarization surveys were conducted on the Pyrite property and this work was followed-up with the drilling of three diamond drill holes in 1970.

The exact locations of the three drill holes are unknown to the writer, but drill core lying on the ground at two sites, well to the west of the gossan zone, suggests that at least two of the drill holes were drilled to test targets other than the gossan zone.

The Burr 1 mineral claim was staked by the writer in 1982 to cover the main gossan zone. The gossan and surrounding region were prospected late in 1982 (Morrison, 1983). In 1984, the Burr 2 mineral claim of 20 units was added to the south side of the Burr 1 mineral claim and a ground VLF-EM survey was conducted over ground lying to the southeast of the gossan zone (Morrison, 1984).
HISTORY (continued)

The Burr property was allowed to lapse, but in May, 1990, the writer staked the Key 1-18, 2-post mineral claims to cover the gossan and territory lying to the southeast.

During April 1991, a ground magnetometer survey was conducted over portions of the Key 3-10 mineral claims (Morrison, 1991) and in 1992 a geological mapping program was carried out on the Key 5-8 mineral claims (Morrison, 1992).

The property was restaked for a second party as the Copper Key 1-18 mineral claims in 1994 and then restaked again by the writer in 1995 and 1996 as the Copper Keg 1-14 and Copper Kettle 1-4 mineral claims that now make up the Copper Keg Claim Group.

In 1996, a VLF-EM ground survey was conducted over portions of the Copper Keg 9 & 11 mineral claims, and in 1997 geological mapping at a scale of 1: 2500 was conducted on portions of the Copper Keg 9-11 and Copper Kettle 1 mineral claims (Morrison, 1996-97).

REGIONAL GEOLOGY

The regional geology of the Highland Valley Copper-Molybdenum District which extends from Ashcroft on the northwest to the old Craigmont Mine (near Merritt) on the southeast is illustrated on Figure 3 accompanying this report. The map which is centred over the Guichon Creek Batholith has been reproduced from a map appearing in C.I.M. Special Volume 15 titled “Porphyry Deposits of the Canadian Cordillera”. The map by W.J. McMillan accompanies a paper in Volume 15 entitled “Geology and Genesis of the Highland Valley Ore Deposits and the Guichon Creek Batholith”.

The outline of the Copper Keg property, situated northeast of Ashcroft, has been added to the regional map to illustrate the location of the property with respect to: the Barnes Creek Fault; the hybrid phase of the Guichon Creek Batholith; and the world class copper-molybdenum mines (Valley Copper, Lornex and Bethlehem) that lie 30 to 35 km to the southeast.
REGIONAL GEOLOGY (continued)

Several excellent geological papers have been written about the Guichon Creek Batholith and the large mines located near the centre of the batholith and the reader is referred to the paper cited above for further details.

In the vicinity of the Copper Keg Claim Group, Figure 3 shows that the Barnes Creek Fault dissects the property, separating a hybrid phase of the Guichon Creek Batholith on the northeast side of the property from Upper Triassic Nicola Group rocks on the southwest. Movement on the fault is believed to be left-lateral.

Tertiary volcanics unconformably overlie pre-Tertiary rocks on the southern half of the Copper Keg property.

A mantle of Pleistocene drift covers three-fourths of the property.

PROPERTY GEOLOGY

Summary from 1992 Geological Report

The geology of the Copper Keg property is relatively simple. A wide fracture zone (Barnes Creek Fault) is coincident with the contact of a quartz diorite plug that is intrusive into an andesite agglomerate. The quartz diorite lying to the northeast of the fracture zone is a medium grained hybrid phase of the Guichon Creek Batholith, while the andesite lying to the southwest is part of the Upper Triassic Nicola Group.

The fracture zone is pyritized, hydrothermally altered and bleached over a width of up to 200 metres. The fracturing, pyritization and clay alteration are particularly well exposed in the steep sided ravine on the Copper Keg 1 & 3 mineral claims, but less well exposed to the
Summary from 1992 Geological Report (continued)

southeast where a creek has just begun to cut through the deep drift to bedrock. Further south, on the Copper Keg 9-14 mineral claims, the southeast projection of the Barnes Creek Fault is entirely concealed by Tertiary Kamloops Group volcanics up to 35 metres thick.

Geological mapping in 1992 confirmed that the alteration and pyritization of the quartz diorite and andesite agglomerate postdates the Guichon Creek Intrusion. Both the quartz diorite and andesite have been altered by late hydrothermal solutions that have percolated through the Barnes Creek Fault Zone. It is thought that the hydrothermal solutions have emanated from a late-cooling magma that lies at some shallow depth below surface. Although the mineralization exposed in the ravine is pyrite, it is thought that copper, molybdenum, or precious metals may have been deposited by these same hydrothermal solutions at some point along the Barnes Creek Fault.

An east-west valley that is coincident with the southern edge of the quartz diorite intrusive may represent another fault that could be mineralize with pyrite and/or copper and molybdenum. This fault (inferred) which runs into the Barnes Creek Fault at an oblique angle from the east has been the focus of exploration for the past three years.

Summary of 1997 Mapping Program

The three major geological units that are described in the foregoing summary (i.e. Upper Triassic Nicola Group andesite, Early Jurassic Guichon Creek Intrusive, and Tertiary Kamloops Group Volcanics) underlie portions of the Copper Keg 9-11 and Copper Kettle 1 mineral claims mapped in 1997. The specifics related to these major lithological units will be described in the paragraphs that follow.
PROPERTY GEOLOGY (continued)

Upper Triassic Nicola Group Andesite Agglomerate (Unit 1)

A black andesite agglomerate of the Upper Triassic Nicola Group (Unit 1) underlies much of the Copper Keg 5, 6 and 8 mineral claims that were mapped in 1992. The agglomerate has been intruded by the Guichon Hybrid plug on the Copper Keg 5 mineral claim in the vicinity of the Barnes Creek Fault.

Although the andesite does not outcrop in the area covered by Figure 4, it is thought to occur below overburden as a narrow band just north and beyond the Tertiary volcanic contact at the northwest corner of the Copper Keg 9 mineral claim. Some angular float of andesite was found at this location.

A second broad area of Nicola Group andesite is thought to lie beneath relatively shallow overburden at the eastern end of the east-west valley on the central portion of the Copper Kettle 1 mineral claim (see Figure 4).

The profile diagrams of Figure 4 show the relationship between the Nicola Group andesite, the intruding Early Jurassic plug, and the Tertiary basalt cover rock.

The 1992 mapping found that the andesite agglomerate is highly indurated and often massive to blocky in outcrop. Some banding suggests that the agglomerate may strike at 150 degrees and dip vertically.

The agglomerate is made up of amorphous and porphyritic andesite lapilli and bombs of 1 to 15 cm, set in a matrix of tuff (20%). The andesite clasts (or bombs?) contain either white feldspar or black augite phenocrysts. The agglomerate is sometimes hornfelsic, or it can contain up to 5% epidote. Near the Barnes Creek Fault the rock has been well fractured and argillically altered or highly bleached to a white clay by hydrothermal solutions.
PROPERTY GEOLOGY (continued)

Upper Triassic Nicola Group Andesite Agglomerate (Unit 1) (continued)

The highly altered andesite weathers easily and this fact may account for the lack of outcrop of andesite in the area covered by Figure 4.

Early Jurassic Guichon Creek Intrusive (Unit 2)

The intrusive plug (Unit 2 on Figure 4) is a quartz diorite hybrid phase of the Early Jurassic Guichon Creek Batholith. It was mapped on the Copper Keg 5 and 7 mineral claims in 1992 and it occurs mostly to the north of Baseline 10N in this year's survey area on the northeastern halves of the Copper Keg 9 and Copper Kettle 1 mineral claims.

The quartz diorite intrudes the Upper Triassic Nicola Group andesite agglomerate on the property. In 1992, it was found that a contact zone of mafic-rich quartz diorite grades into hornfelsic andesite over a distance of 20 metres near the centre of the Copper Keg 5 mineral claim. At this location a wide fracture zone (Barnes Creek Fault) is coincident with the intrusive contact. The fracture zone extends only 10 to 20 metres into the intrusive, but up to 175 metres southwest into the andesitic rocks. Northeast of the fracture zone the intrusive is blocky to massive and it forms precipitous bluffs up to 60 metres high on the Copper Keg 5 mineral claim.

The same blocky to massive quartz diorite occurs along the northern edge of this year's survey area. Towards the southwest, however, the quartz diorite become finer grained and more mafic, and some aplite dykes cut the rock. It would seem that the hornfelsic andesite country rock is near at hand on this part of the property, but if so, it is concealed by overburden and the Tertiary volcanics.
PROPERTY GEOLOGY (continued)

Early Jurassic Guichon Creek Intrusive (Unit 2) (continued)

The quartz diorite a short distance away from the contact zone is a fresh, white to grey, medium grained, equigranular rock comprised of 65% plagioclase, 15% quartz, 10% hornblende, 5% biotite and minor orthoclase and augite. The mafic minerals vary from 10 to 25% locally and are noted to increase towards the perimeter of the intrusive. The rock is weakly chloritized near fractures.

Tertiary Kamloops Group Volcanics (Unit 3)

Tertiary Kamloops Group basalts underlie the southern half of the Copper Keg Claim Group and occur for the most part to the south of Baseline 10N in this year's map area.

The basalts are thought to be up to 35 metres in thickness and flat-lying as they form a plateau immediately to the south of this year's map area. They cover the pre-Tertiary rocks as illustrated on the cross-sections of Figure 4, and they may thin to the east as demonstrated by the profiles of L 7+50W and L 10+50W.

The basalts are generally black to grey, fine grained, and comprised of black feldspars and mafic minerals. Olivine equals less than 2% of the visible minerals, while vesicles equal up to 5% of the rock.

The basalt weathers blocky (Unit 3) to platy (Unit 3a) and some flows are less than 1 metre thick. Interflow horizons are occasionally rubbly and hematitic.

One unit near the base of the Kamloops Group at grid 9+95N, 9+50W is brecciated, hematitic and mended with up to 5% chalcedony veinlets.
PROPERTY GEOLOGY (continued)

Tertiary Kamloops Group Volcanics (Unit 3) (continued)

Weak clay alteration, pyrite mineralization, and zones of chalcedony veinlets were noted at a few sites within the basalt (e.g. at 10+00N, 10+50W; at 9+15N 13+50W; at 8+95N, 13+75W; and at 9+25N 16+30W).

Pleistocene Sediments

Overburden comprised of Pleistocene drift, 1-3 metres deep, is common on much of the property. The drift deepens to a possible 15 metres on the northeast side of the Copper Keg 8 mineral claim where there are low moraines and glacial benches. The drift also fills the eastern side of the east-west valley on the Copper Kettle 1 mineral claim to depths estimated to be 5 to 10 metres.

Several low morainal ridges indicate that the last ice cover moved towards the southeast.

Faulting

Barnes Creek Fault

The Barnes Creek Fault occurs as a wide shattered zone of rock that coincides with the Guichon Hybrid Intrusive - Nicola Group Andesite Agglomerate contact which is exposed on the Copper Keg 1-6 mineral claims. It was found, during the 1992 mapping program, that the well fractured rock extends for 20 metres into the intrusive and for up to 175 metres into the agglomerate on the Copper Keg 5 mineral claim. The zone is well exposed by the deep erosion of a ravine on the Copper Keg 1 & 3 mineral claims where the spectacular gossan occurs. The gossan extends 900 metres north-south and 200 metres east-west on this portion of the property. The gossan is
PROPERTY GEOLOGY  (continued)

Faulting (continued)

Barnes Creek Fault (continued)

comprised of intensely clay-altered and pyritized andesite and quartz diorite that has been flooded with hydrothermal solutions that have invaded the well fractured rock.

The shattered zone is made up of a complex series of fractures - none of which clearly define the strike of the Barnes Creek Fault that is thought to strike 150 degrees and dip nearly vertical. Evidence of the Barnes Creek Fault is lost under Pleistocene deposits on the Copper Keg 7 & 8 mineral claims, and under the thin cover of Kamloops Group basalt on all mineral claims to the southeast (i.e. Copper Keg 9-13).

The East-West Inferred Fault

The east-west valley crossing the Copper Keg 9 and Copper Kettle 1 mineral claims is thought to be coincident with a fault which defines the southern contact of the quartz diorite intrusive with Nicola Group andesites. It is thought that the intensity of fracturing, clay-alternation and pyritization on this fault could match that of the Barnes Creek Fault.

A strong east-west VLF-EM conductor identified during the 1996 survey occurs in the middle of the valley on the eastern side of the survey area and it is thought that this conductor could represent the fault with associated clay-alteration and pyritization.

Very little evidence of the fault could be found in the region covered by Figure 4 due to glacial drift and/or Kamloops Group Basalts. Some of the basalts near the valley are tectonically fractured and mended with late Chalcedony, but the fracture zones are
Faulting (continued)

The East-West Inferred Fault (continued)

poorly exposed. The fracture zones do, however, suggest relatively recent tectonic activity and the possible reactivation of an old fault.

The quartz diorite lying north of the inferred fault is generally blocky to massive and fresh, but this is the same situation that occurs immediately to the northeast of the Barnes Creek Fault where the quartz diorite is also intact and fresh just metres away from the fault. Therefore, the lack of fracturing of the quartz diorite lying north of Baseline 10N does not rule out the possibility that a strong fault could cross the property just tens of metres to the south.

Alteration and Mineralization

The spectacular gossan on the Copper Keg 1-6 mineral claims represents an area of intense hydrothermal alteration that is associated with highly fractured rock related to the Barnes Creek Fault. The rock is entirely altered to white clay minerals over areas measuring up to tens of metres in diameter. The altered rock contains 2% pyrite (or limonite after pyrite) generally and up to 5% pyrite locally. The pyrite is usually disseminated throughout the rock, but occasionally forms blebs and masses up to 2 cm in size filling the fractures. Chalcopyrite is sometimes present in small amounts.

The degree of alteration is directly proportional to the degree of fracturing, and it decreases sharply in either direction away from the fault. Both the Nicola Group andesite and the Guichon quartz diorite are altered, but the fracturing (and therefore, the alteration) extends much further into the andesite towards the southwest then towards the quartz diorite to the
Alteration and Mineralization (continued)

northeast. The quartz diorite forms massive cliffs just a few tens of metres northeast of the Barnes Creek Fault.

The hydrothermal alteration and pyritization clearly postdates the Guichon Intrusive event as the pyrite fills late fractures in both the quartz diorite and andesite agglomerate.

Weak clay alteration and pyritization of the Tertiary basalt was observed at a few scattered locations across the map area. Some of the alteration zones are cut by chalcedony veinlets and some vesicles are filled with chalcedony. Although the alteration of the basalt is nowhere intense, the alteration does point out that relatively recent hydrothermal solutions have invaded regions of the property.
BIOGEOCHEMICAL SURVEY - 1998

Grid

Stations on the 1997 geology grid (see Figure 4) were used for this year's limited experimental biogeochemical survey. Some stations had to be remeasured and reflagged due to weathering.

Sampling

Sagebrush is widespread in the survey area and it was used as a sample medium wherever possible. The juniper bush was used as a second choice medium and pine or fir trees were used only when sagebrush or juniper were not available. (Samples which were not sagebrush have been noted on Figure 5). A total of 30 samples were collected during the survey.

In all cases, deadwood twigs of 1/2 to 1 cm diameter were removed from three to five sagebrush (or other mediums) near the site. Bushes of equal size and age were selected where possible and the average bush was 1 metre tall. The twigs were cut into 10 cm lengths and placed in plastic “kitchen catcher” garbage bags with identification tags for shipment to the laboratory. Approximately 250 g of sample was collected at each site.

The deadwood twigs were used in place of “live” wood, or bark, because the writer has had some success in using this medium on several other properties in Southern British Columbia.

The samples were shipped to Acme Laboratories in Vancouver for standard ICP analyses of 30 elements. The lab procedures are listed in Appendix C along with the results.
Results

The analytical results of this year's biogeochemical samples are listed in Appendix C and six of the listed elements (copper, zinc, arsenic, molybdenum, potassium and silver) have been selected for plotting on Figures 5 & 6.

There are some notable features on the Certificate of Analysis and these can be quickly explained in terms of the sample medium used. The first three and last three samples on the list stand out from the rest in that the values for several of the elements are higher than the rest. This is particularly true for silver which equals as high as 8.6 parts per million (ppm). The first three samples were deadwood twigs of Douglas Fir and the last three samples were deadwood twigs of Ponderosa Pine. Clearly, these species retain higher concentrations of several elements compared with the regular sagebrush samples that comprised most of the survey medium.

Another sample on the list, L5+50W, 10+50N, stands out for having much lower values for many of the elements than the average sample. The sample at this survey station was comprised of "live" wood juniper twigs.

The examples just described illustrate the importance of using a common medium for biogeochemical sampling.

The small number of samples involved in the survey also affected the statistical analysis of the survey. Proper threshold and anomalous values could not be determined. Although the values for copper, zinc, arsenic, molybdenum, potassium and silver have been plotted on Figures 5 & 6, only the values of molybdenum and potassium have been contoured. The other four elements are too erratic in distribution to properly contour, and of course, the
mixing of sample mediums does not help the situation. The arsenic values are particularly erratic across the survey area.

The writer has conducted one other survey in the region using sagebrush as a medium (Morrison, 1990) and the results from the 1990 survey have been added to Appendix C for comparative purposes. With respect to the 1990 survey, the sagebrush of this year's survey yielded higher potassium, molybdenum and arsenic values. The potassium values are about 5% higher on average, while the molybdenum values range from 5 to 40 ppm higher. The arsenic values for this year's survey are 20 to 200 times greater than those of the 1990 survey.

A value of 17% potassium has been chosen for contouring on Figure 6. Although there is very little variation in the potassium content from one sample site to the next, the 17% contour correlates fairly well with the inferred fault and VLF-EM conductor on Figure 4.

There is not a wide range in molybdenum values in this year's survey area (6 to 58 ppm). The 18 ppm has been selected for contouring on Figure 6 as several of the molybdenum values above 18 ppm are coincident with the trace of the inferred fault and VLF-EM conductor on Figure 4.
Cu in parts per million

Zn in parts per million

arsenic in parts per million

Sample medium is sagebrush unless noted otherwise

Please see Figure 4 for geology, topography and mineral claims

COPPER KEG CLAIM GROUP
Biogeochemical Survey - Cu, Zn & As
Copper Keg 9-11 & Copper Kettle 1
Mineral Claims
Ashcroft Area
Kamloops Mining Division, B.C.

Drawn by: M.M.
N.T.S. 92-I-11+14E
Figure No. 5
August 1998

Scale 1:2500
molybdenum in parts per million

contour interval 18 ppm molybdenum.

potassium in per cent

contour interval 17.00% potassium

silver in parts per million

sample medium is sagebrush unless notated otherwise

Please see Figure 4 for geology, topography and mineral claims

COPPER KEG CLAIM GROUP

Biogeochemical Survey - Mo, K & Ag
Copper Keg 9-11 & Copper Kettle 1
Mineral Claims
Ashcroft Area
Kamloops Mining Division, B.C.

Drawn by: M.M.  N.T.S. 92-1-11+14E
August 1996  Figure No. 6
DISCUSSION

As mentioned under the previous title, the potassium, molybdenum and arsenic values obtained from the sagebrush biogeochemical samples of this year's survey are all elevated compared with the values of another sagebrush survey conducted by the writer in the region.

The high potassium values may reflect potassium alteration of the bedrock by hydrothermal solutions, while the high molybdenum and arsenic values may represent concentrations of these elements that have been introduced into the bedrock by the same hydrothermal solutions.

The fact that the highest potassium and molybdenum values are more or less coincident with the inferred fault and VLF-EM conductor on the Copper Kettle 1 mineral claim lends support to the hypothesis that a highly altered, and mineralized fracture zone may occur at the southern contact of the quartz diorite plug.

Before drill testing of the east-west contact zone is considered, another biogeochemical survey is recommended for the southwestern side of the Copper Keg 7 mineral claim where the Barnes Creek Fault occurs. If a similar pattern of elevated potassium and molybdenum values (in sagebrush) occurs over the Barnes Creek Fault, then a drilling program to test both the inferred east-west fault and Barnes Creek Fault for economic concentrations of copper and molybdenum is recommended.

Although the prime exploration target occurs on the Copper Keg 9 mineral claim where the two faults intersect, drill testing of the faults in the easily accessible sagebrush country should be conducted first. If the results are positive, then the drill can be moved to the more difficult set-ups on the Copper Keg 9 mineral claim.
CONCLUSIONS and RECOMMENDATIONS

This year's experimental biogeochemical survey, conducted on portions of the Copper Keg 9 & 11 and Copper Kettle 1 mineral claims, yielded elevated values for potassium and molybdenum coincident with an east-west inferred fault and a VLF-EM conductor which cross the centre of the Copper Kettle 1 mineral claim.

It is thought that the VLF-EM conductor may represent alteration, pyritization and fracturing on the southern contact of the quartz diorite intrusive located on the northeastern side of the Copper Keg Claim Group.

The elevated potassium values in this year's samples may indicate that potassic alteration is associated with the fracturing, and the elevated molybdenum values within the same samples may indicate that molybdenum has also been deposited by hydrothermal solutions passing through the fracture zone.

Highly anomalous arsenic values also occur in this year's samples, but they are erratically distributed across the survey area.

This year's survey also yielded data that demonstrates that a single sample medium should be used (if at all possible) during a survey. The few Douglas Fir, Ponderosa Pine and juniper samples, collected this year, yielded values that varied substantially from the sagebrush samples that were used for most of the survey.

It is recommended that the biogeochemical survey be expanded to include a portion of the Copper Keg 7 mineral claim underlain by the Barnes Creek Fault. If a similar pattern of elevated potassium and molybdenum occurs over the Barnes Creek Fault, then both the Barnes Creek Fault and the east-west inferred fault should be tested at depth for economic copper and molybdenum mineralization with a Percussion Drilling program.
CONCLUSIONS and RECOMMENDATIONS (continued)

The zone of intersection of the two faults (believed to underlie the Copper Keg 9 mineral claim) is a prime drill target, but the testing of this target would involve drilling through more cover (drift and basalt) and should await positive results from the first phase of drilling.

August 1, 1998
Kelowna, B.C.

Murray Morrison, B.Sc.
REFERENCES

Duffel, S. and McTaggart, K.C.

McMillan, W.J.

Morrison, M.S.
1983: Prospecting Report on the Burr # 1 Mineral Claim, Ashcroft Area, Kamloops Mining Division.*
1990: Geochemical Assessment Report, Brussels Claim Group, Kamloops Lake Area, Kamloops Mining Division.*
1991: Geophysical Assessment Report, Key Claim Group, Ashcroft Area, Kamloops Mining Division.*
1992: Geological Assessment Report, Key Claim Group, Ashcroft Area, Kamloops Mining Division.*
1996: Geophysical Assessment Report, Copper Keg Claim Group, Ashcroft Area Kamloops Mining Division.*
1997: Geophysical Assessment Report, Copper Keg Claim Group, Ashcroft Area Kamloops Mining Division.*

Northcote, K.E.
1969: Geology and Geochronology of the Guichon Creek Batholith, B.C. Dept. of Mines and Petroleum Resources, Bulletin No. 56

* Assessment Reports filed with the Ministry of Employment and Investment of British Columbia.
STATEMENT OF QUALIFICATIONS

I, Murray Morrison, of the City of Kelowna, in the Province of British Columbia, do hereby state that:

1. I graduated from the University of British Columbia in 1969 with a B.Sc. Degree in Geology.

2. I have been working in all phases of mining exploration in Canada for the past twenty-nine years.

3. During the past twenty-nine years, I have intermittently held responsible positions as a geologist with various mineral exploration companies in Canada.

4. I have conducted several geological, geochemical, and geophysical surveys on mineral properties in Southern British Columbia during the past twenty-nine years.

5. I conducted the Biogeochemical Survey outlined in this report.

6. I own a 100% interest in the Copper Keg 1-14 and Copper Kettle 1-4 mineral claims.

August 1, 1998
Kelowna, B.C.

Murray Morrison - B.Sc.
STATEMENT OF EXPENDITURES - ON THE COPPER KEG CLAIM GROUP
Statement of Expenditures in connection with a Biogeochemical Survey carried out on the Copper Keg Claim Group, located 9 km northeast of Ashcroft, B.C. (N.T.S. Maps 92-I-11 & 14E) for the year 1998.

BIOGEOCHEMICAL SURVEY (750 metres)
M. Morrison, geologist 2 days @ $300.00/day $ 600.
Truck, 4 x 4 (including gasoline and insurance) 2 days @ $75.00/day 150.
Meals and Lodging 2 days @ $63.00/day 126.
Flagging, belt chain thread, and sample bags

Sub-total $ 886.

ASSAYING COSTS
30 biogeochemical samples analyzed for 30 elements by ICP 30 @ $11.29 each $ 339.
Bus express samples to lab

Sub-total $ 351.

REPORT PREPARATION COSTS
M. Morrison, geologist 1½ days @ $300.00/day $ 450.
Drafting 18.
Typing 87.
Copying Reports 20.

Sub-total $ 575.

Grand Total $1,812.

I hereby certify that the preceding statement is a true statement of monies expended in connection with the Biogeochemical Survey carried out May 3 - 5, 1998.

August 1, 1998
Kelowna, B.C.

Murray Morrison, Geologist
APPENDIX C

Certificate of Analysis
| SAMPLE# | Mo | Cu | Pb | Zn | Ag | Ni | Co | Cr | Mn | Fe | As | Au | Th | Sr | Cd | Hg | Ba | Bi | V | Ca | % | % | % | % | % | % | % | % | % | % | % | % | % | % |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| L10+50S 10-<CON| 7 3140 | 73 | 1514 | 1.3 | 24 | 8 | 5247 | 1.04 | 239 | <8 | <2 | 20064 | 6.5 | <3 | <3 | 19 | 21.41 | <969 | 3 | 20 | 1.98 | 73 | 0.271 | .969 | <3 | 3 | 1.06 | <3 | 3 | 197 |
| L10+50S 10-<CON| 135263 | 1238 | 1088 | 2.1 | 17 | 12390 | 1.87 | 586 | <8 | <2 | 390 | 10.3 | <3 | <3 | 37 | 15.97 | 1.258 | 6 | 33 | 2.06 | 90 | 0.3294 | 1.21 | .30 | 4.40 | <1 | 7 | 210 |
| L9+50S 10-<CON| 1759 | 174 | 1001 | 1.3 | 25 | 12175 | 2.13 | 317 | <8 | <2 | 3160 | 4.8 | <3 | <3 | 44 | 15.35 | 1.435 | 8 | 39 | 1.45 | 71 | 0.2266 | 1.36 | .20 | 3.36 | <2 | 5 | 170 |
| L5+50S 10-<CON| 12352 | 20 | 710 | <3 | 27 | 6058 | 0.74 | 862 | <8 | <2 | 658 | 12.2 | <3 | <3 | 15 | 3.76 | <211 | 3 | 9.28 | 160 | 0.2296 | 48 | 14.85 | <3 | 2.4 | 18 | 114 |
| L5+50S 10-<CON| 16352 | 19 | 490 | <3 | 28 | 10565 | 1.37 | 1117 | 6 | 1938 | 0.4 | <3 | <3 | 19 | 3.82 | <271 | 6 | 19.3 | 827 | 0.271 | 90 | 1.269 | <3 | 3.0 | 133 |
| L6+50S 9+<CON| 12319 | 29 | 529 | <3 | 20 | 5816 | 0.74 | 611 | <8 | <2 | 1160 | 9.5 | <3 | <3 | 14 | 7.85 | <261 | 3 | 12.3 | 280 | 0.290 | 48 | 13.85 | <3 | 1.9 | 160 |
| L6+50S 9+<CON| 18283 | 19 | 387 | <3 | 28 | 12147 | 1.39 | 1268 | <8 | <2 | 1152 | 5.1 | <3 | <3 | 36 | 8.32 | 0.820 | 7 | 19 | 2.49 | 176 | 0.2222 | 1.01 | .30 | 13.12 | <3 | 3.8 | 152 |
| L6+50S 9+<CON| 11352 | 16 | 554 | <3 | 16 | 51109 | 0.62 | 1655 | <8 | <2 | 1671 | 6.8 | <3 | <3 | 11 | 11.56 | 1.091 | 2 | 10 | 3.23 | 83 | 0.2590 | 40 | 17.12 | <3 | 2.2 | 175 |
| L6+50S 9+<CON| 14296 | 26 | 832 | <3 | 20 | 6331 | 0.80 | 2221 | <8 | <2 | 1238 | 12.2 | <3 | <3 | 16 | 13.91 | 1.029 | 3 | 14.39 | 134 | 0.2216 | 46 | 10.58 | <2 | 2.2 | 173 |
| L7+50S 10-<CON| 18302 | 26 | 442 | <3 | 26 | 8055 | 1.18 | 1097 | <8 | <2 | 1154 | 8.4 | <3 | <3 | 22 | 0.80 | 1.042 | 5 | 17.23 | 170 | 0.2599 | 25 | 0.36 | <2 | 3.8 | 153 |
| L7+50S 10-<CON| 22329 | 26 | 577 | <3 | 16 | 41040 | 0.56 | 510 | <8 | <2 | 1309 | 10.8 | <3 | <3 | 10 | 10.41 | 1.050 | 2 | 9.03 | 103 | 0.1351 | 36 | 0.70 | 18.10 | <3 | 3.3 | 150 |
| L7+50S 10-<CON| 20364 | 19 | 575 | <3 | 22 | 5823 | 0.71 | 563 | <8 | <2 | 1283 | 9.2 | <3 | <3 | 13 | 10.15 | 1.021 | 2 | 14.28 | 144 | 0.2338 | 47 | 0.70 | 17.30 | <2 | 2.4 | 160 |
| L7+50S 10-<CON| 20369 | 25 | 555 | <3 | 26 | 6839 | 0.74 | 859 | <8 | <2 | 1421 | 9.2 | <3 | <3 | 10 | 13.40 | 1.043 | 2 | 12.92 | 145 | 0.2346 | 49 | 0.70 | 17.04 | <2 | 2.9 | 164 |
| L7+50S 10-<CON| 16456 | 31 | 538 | <3 | 16 | 10531 | 0.74 | 324 | <8 | <2 | 1143 | 7.6 | <3 | <3 | 26 | 10.03 | 0.596 | 5 | 21.29 | 833 | 0.2370 | 46 | 0.38 | 13.85 | <2 | 2.5 | 146 |
| L7+50S 10-<CON| 21290 | 22 | 543 | <3 | 23 | 8793 | 0.69 | 593 | <8 | <2 | 1136 | 5.2 | <3 | <3 | 12 | 9.41 | 1.077 | 2 | 11.31 | 96 | 0.2304 | 46 | 0.99 | 17.27 | <2 | 3.1 | 135 |

**DATE RECEIVED:** 15 JUL 1998  
**DATE REPORTED:** July 29/98  
**SIGNED BY:** C. T. TOYE, C. LEOING, J. WANG  
**CERTIFIED B.C. ASSAYERS**
MORRISON, M.S.
684 Balsam Road
Kelowna, BC
V1W 1B9

Inv.#: 9802860
Date: Jul 27 1998

<table>
<thead>
<tr>
<th>QTY</th>
<th>ASSAY</th>
<th>PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>30 ELEMENT ICP ANALYSIS @</td>
<td>6.60</td>
<td>198.00</td>
</tr>
<tr>
<td></td>
<td>30 ASHING UP TO 1 lb WET VEGETATION AT 475 DEG. C. @</td>
<td>3.95</td>
<td>118.50</td>
</tr>
</tbody>
</table>

GST Taxable
7.00% GST

CAD $

338.66

Samples submitted by M.S. Morrison

Please pay last amount shown. Return one copy of this invoice with payment.
TERMS: Net two weeks. 1.5 % per month charged on overdue accounts.
| SAMPLE# | Mo | Cu | Pb | Zn | Ag | Ni | Co | Mn | Fe | As | U | Au | Th | Sr | Cd | Sb | Bi | V | Ca | P | La | Cr | Mg | Ba | Ti | B | Al | Na | K | W | Au* | ASH | TOTAL |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| L15S 8+50W | 12442 28 665 | .4 | 8 | 2 | 926 | .71 | 10 | 5 | ND | 21984 | 1.9 | 2 | 2 | 16 | 9.01 | 12498 | 1 | 3 | 10.35 | 195 | 204 | 592 | .64 | .17 | 12.73 | 1 | 3 | 2.9 | 160 |
| L15S 8+25W | 18717 59 375 | .6 | 12 | 4 | 893 | 1.29 | 14 | 5 | ND | 2392 | 2.8 | 2 | 2 | 32 | 12.96 | 2296 | 4 | 15 | 2.97 | 361 | 368 | 103 | 523 | 1.34 | .10 | 9.36 | 2 | 10 | 2.5 | 110 |
| L15S 8+00W | 11586 51 626 | .4 | 14 | 3 | 1035 | .89 | 13 | 5 | ND | 1192 | 1.2 | 2 | 2 | 19 | 10.50 | 1432 | 4 | 14 | 4.26 | 447 | 702 | 520 | .74 | .17 | 11.00 | 4 | 2.6 | 150 |
| L15S 7+75W | 17700 58 540 | .4 | 12 | 2 | 1037 | 1.04 | 13 | 5 | ND | 21038 | 2.7 | 3 | 2 | 22 | 10.81 | 1428 | 4 | 16 | 3.26 | 449 | 305 | 568 | .86 | .20 | 11.24 | 5 | 3.0 | 160 |
| L15S 7+50W | 11614 41 389 | .3 | 10 | 3 | 953 | .96 | 19 | 5 | ND | 2639 | 1.0 | 2 | 2 | 22 | 11.32 | 1600 | 3 | 13 | 3.02 | 448 | 105 | 474 | .81 | .17 | 11.48 | 1 | 1.3 | 170 |
| L15S 7+25W | 8487 39 461 | .2 | 10 | 4 | 970 | 1.10 | 16 | 5 | ND | 2767 | 3.1 | 2 | 2 | 27 | 11.11 | 1305 | 4 | 15 | 3.69 | 432 | 205 | 478 | .92 | .15 | 10.45 | 1 | 3.1 | 160 |
| L15S 7+00W | 7479 29 500 | .4 | 10 | 2 | 764 | .50 | 21 | 5 | ND | 2172 | 1.2 | 2 | 2 | 11 | 8.57 | 1843 | 2 | 9 | 4.23 | 278 | 103 | 392 | .49 | .11 | 13.23 | 1 | 3.0 | 160 |
| L15S 6+75W | 14677 49 500 | .4 | 11 | 2 | 814 | .95 | 16 | 5 | ND | 21917 | 2.3 | 2 | 2 | 20 | 9.18 | 1678 | 4 | 15 | 4.75 | 402 | 105 | 527 | .80 | .17 | 11.29 | 1 | 2.9 | 160 |
| L15S 5+05W | 15616 50 491 | .4 | 12 | 4 | 1028 | .91 | 14 | 5 | ND | 21794 | 2.1 | 2 | 2 | 20 | 10.51 | 1335 | 4 | 13 | 3.98 | 372 | 105 | 641 | .80 | .19 | 11.31 | 4 | 3.2 | 170 |
| L15S 5+50W | 15728 50 514 | .2 | 12 | 2 | 964 | .99 | 19 | 5 | ND | 1666 | 2.1 | 2 | 2 | 22 | 11.55 | 1308 | 4 | 14 | 2.54 | 418 | 105 | 524 | .85 | .18 | 10.69 | 1 | 2.3 | 140 |
| L15S 5+00W | 12578 43 489 | .3 | 10 | 2 | 1038 | .63 | 15 | 5 | ND | 1942 | 1.8 | 2 | 3 | 13 | 10.24 | 1636 | 3 | 9 | 3.00 | 437 | 203 | 576 | .55 | .16 | 11.93 | 1 | 2.5 | 130 |
| L15S 5+25W | 16721 46 634 | .4 | 12 | 3 | 1122 | .92 | 21 | 5 | ND | 21074 | 2.3 | 2 | 5 | 19 | 11.51 | 1634 | 3 | 14 | 3.58 | 416 | 204 | 630 | .77 | .17 | 10.52 | 1 | 2.8 | 130 |
| L15S 5+50W | 15685 64 660 | .5 | 14 | 3 | 1063 | .99 | 22 | 5 | ND | 2512 | 9.3 | 2 | 2 | 20 | 13.43 | 1316 | 4 | 14 | 2.70 | 425 | 105 | 671 | .80 | .18 | 10.16 | 1 | 2.5 | 140 |
| L15S 5+75W | 10534 28 396 | .3 | 7 | 2 | 855 | .89 | 26 | 5 | ND | 12745 | 1.7 | 2 | 3 | 14 | 8.39 | 1130 | 3 | 10 | 5.07 | 380 | 103 | 692 | .57 | .16 | 12.10 | 1 | 2.8 | 150 |
| L15S 5+00W | 6500 30 373 | .2 | 12 | 2 | 685 | .60 | 26 | 5 | ND | 12086 | 1.7 | 2 | 3 | 17 | 11.64 | 1625 | 4 | 14 | 3.69 | 388 | 104 | 782 | .72 | .19 | 11.26 | 1 | 2.6 | 150 |

**ICP - .500 gram sample is digested with 5ML 3-1-2 HCl-HN03-H20 at 95 deg. C for one hour and is diluted to 10 ML with water. This leach is partial for Mn Fe Sr Ca P La Cr Mg Ba Ti B W and limited for Na K and Al. Au detection limit by ICP is 3 ppm.**

**Sample Type:** P1 Sagerbusht P2 Douglas Fir

**Au* Analysis by Acid Leach/AA from total sample.**

---

**DATE RECEIVED:** May 1, 1990

**DATE REPORT MAILED:** May 10/90

**SIGNED BY:** C. Leong, J. Wang; Certified B.C. Assayers

---

1990 Survey

To accompany a 1998 biogeochemical report by M.S. Morrison for comparative purposes.