

NTS : 92I/4W
LAT : 50 59N
LON :121 18W

**GEOLOGICAL AND GEOCHEMICAL REPORT
ON THE BARBECUE AND LANDSCAPE CLAIM GROUP
KAMLOOPS MINING DIVISION
BRITISH COLUMBIA**

BY
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SUMMARY

The Barbecue and Landscape mineral claim group comprises the Barbecue, and the Landscape claims, totaling twenty-four units, lies approximately 28 kilometers north of Cache Creek, in south-central British Columbia.

Geologically, the area of the property is underlain by rocks of the Cache Creek Complex consisting of acidic to intermediate volcanic lava, and minor basalt and diabase units. The initial geological investigation on the claim group indicated the presence of three lenses of pumice lava rocks, all occurrences are well exposed along the main logging road, outcrops range from 350 - 650 meters in length for approximately three Kilometers and 75 - 150 meters in width, suggesting sufficient reserves for several decades, and an enormous industrial mineral potential for several applications and uses such as landscaping purposes, flame bed material in the Barbecue industry, soil mixing, and sports tracks.

Since the property enjoys an excellent location to the near by cement plant in Marble Canyon, the pumice of the property was chemically tested for its pozzolonic properties. All chemical results meet the ASTM specifications, and the pumice chemically can be used as a mineral admixture in concrete, however the physical characteristic still needs to be tested and pass the ASTM specifications.

The expected low mining costs due to the location value of the property, supported by the excellent road access, and the full exposure of the lava rocks along the main road suggest that the Barbecue and the Landscape Claim Group have an enormous potential for developing pumice deposit sufficient to support the Canadian market.

It is concluded that a resource evaluation program is highly warranted to evaluate the industrial mineral potential of the property, to estimate the reserves, and to determine the commercial values of the deposit

A second phase exploration program with a total budget of **\$7,000.00** is proposed to follow-up on the successful results obtained from the 1999 program.

TABLE OF CONTENTS

		Page
	Summary.....	
1.0	Introduction.....	1
2.0	Location, access & Physiography.....	1
3.0	Property Status.....	1
4.0	Area History.....	5
5.0	Regional Geology.....	5
6.0	1999 Fieldwork Program.....	6
6.1	Scope & purpose.....	6
6.2	Method & procedures.....	6
7.0	Results.....	7
7.1	Property Geology.....	7
7.2	The chemical and the physical characteristics of the Claim Group Pumice	12
8.0	Uses of Lava Rock products	15
9.0	The Industrial Mineral Potential of the claim group.....	16
10.0	Discussion and conclusion.....	17
11.0	Recommendations.....	18
12.0	Proposed Budget.....	19
	References	
	Certificates of qualifications	
	Cost Statement	

LIST OF FIGURES

Figure 1	General location Map.....	2
Figure 2	Claim Location Map.....	3
Figure 3	Topographic Claim Location Map.....	4
Figure 4	Geology and Sample Location Map.....	8

LIST OF APPENDICES

Appendix A	Rock Sample Descriptions
Appendix B	Analytical Results

LIST OF PHOTOGRAPHS

Photo # 1	Red Pumice of the western outcrop	9
Photo # 2	The central outcrop	10
Photo # 3	Black Lava of the central outcrop	11
Photo # 4	Red - massive lava of the eastern outcrop	13

1.0 INTRODUCTION

This Report presents the results of the 1999 fieldwork program completed on the Barbecue and Landscape Claim Group. The main purpose of this report is to evaluate the industrial mineral potential of the property, as well as the 1999 results of the geological, and geochemical surveys carried out on the property. The report also describes the regional geology and the past exploration activities in the area, and outlines a budget proposed for the next phase exploration program.

The work was performed by Fayz Yacoub, P. Geo., F.G.A.C. and a field assistant.

This report is based upon the geological and geochemical data collected during the 1999 exploration activities on the property, and on a review of government assessment reports, regional geological maps, and claim data from the Vancouver Mining Recorder's office. The writer was on the property between July 12-July 17 1999, and supervised all the 1999 fieldwork.

2.0 LOCATION, ACCESS & PHYSIOGRAPHY (Figure 1)

The Barbecue and Landscape claim group is located in south-central British Columbia, approximately 28 kilometers north of Cache Creek. The center of the claim group lies 7.5 kilometers northeast of the confluence of Scottie Creek and the Bonaparte River.

Access to the property is via Highway #97 north from Cache Creek to the Scottie Creek road. A well maintained logging road, runs off Scottie Creek Road to the southeast onto the claim group providing easy access to most of the property area.

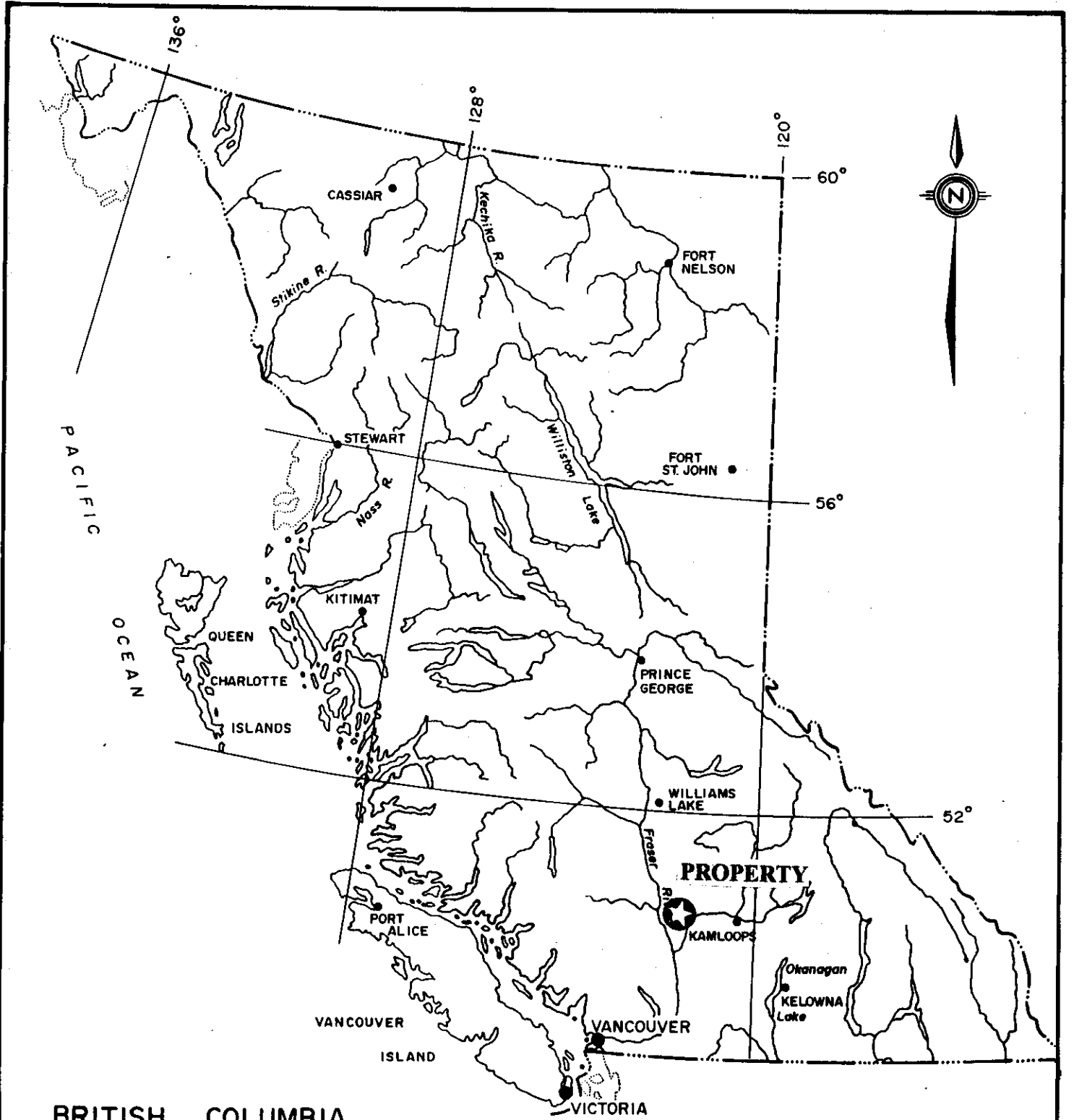
Topography in the area consists of rolling hills and steep ridges. Elevations vary from 2900 to 4100 feet with the total relief in the order of 1200 feet.

Much of the property is covered by overburden with several huge outcrops confined to steep ridges and the main logging road. Vegetation is sparse and consists mainly of sage brush and scrub pine. The property lies within the interior dry belt so precipitation is minimal and weather is mild.

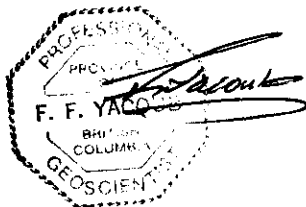
3.0 PROPERTY STATUS (Figure 2 & 3)

The Barbecue and Landscape claim group consists of two contiguous mineral claims, totaling of 22 units. The claim group lies in the Kamloops mining division. The property is wholly owned by Fayz Yacoub of Surrey, B.C.

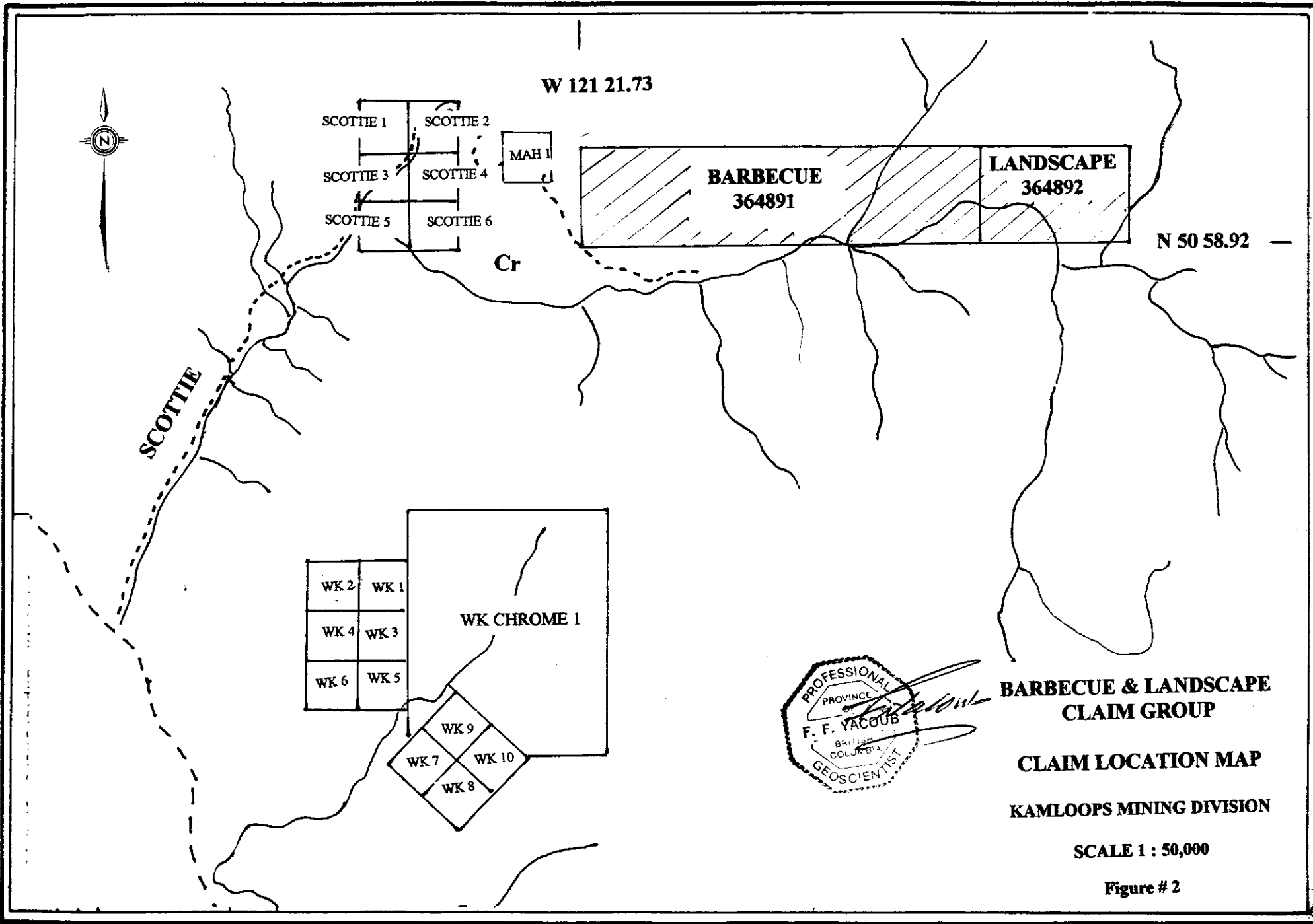
Claim Name	Record #	Units	Expiry Date
Barbecue	364891	16	Aug. 14/ 2001
Landscape	364892	6	Aug. 21/ 2001

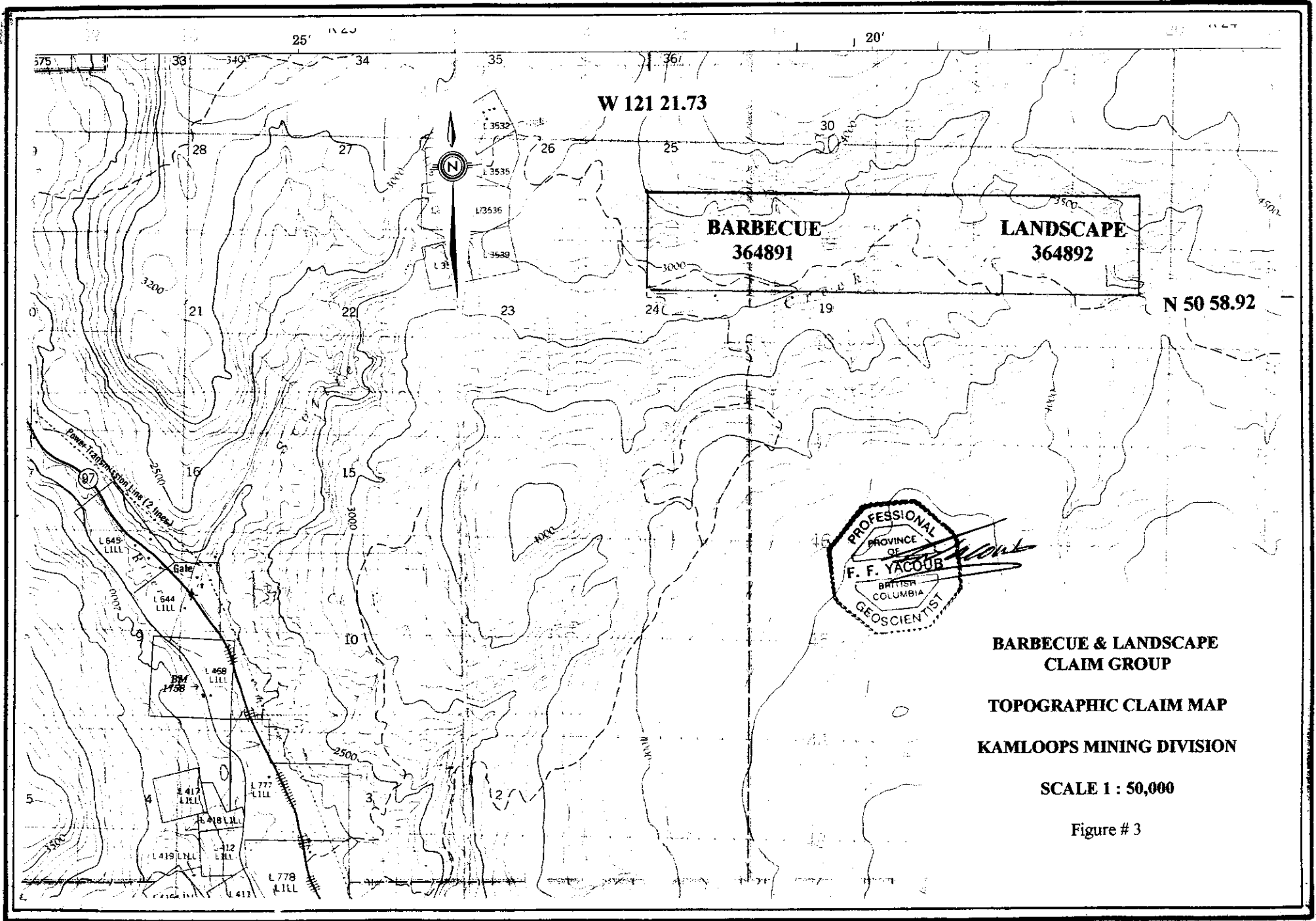


BRITISH COLUMBIA



BARBECUE & LANDSCAPE CLAIMGROUP	
GENERAL LOCATION MAP	
Scale 1:7500000	By :
Date :	Figure 1



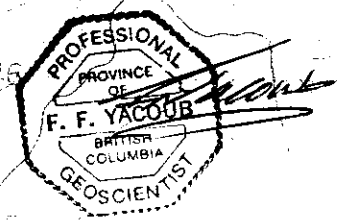


W 121 21.73

BARBECUE
364891

LANDSCAPE
364892

N 50 58.92



**BARBECUE & LANDSCAPE
CLAIM GROUP**

TOPOGRAPHIC CLAIM MAP

KAMLOOPS MINING DIVISION

SCALE 1 : 50,000

Figure # 3

The total area of the claim group is 5.5 square kilometers, 550 hectares, 1358.5 acres.

The legal corner posts of the Barbecue and Landscape claims are located by the writer at G.P.S. readings (N 50 58.922 - W 121 21.739), and (N 50 59.064 - W 121 18.040) respectively.

4.0 AREA HISTORY

In the early 1920's, chromite deposit was discovered on Chrome Creek and the north fork of Scottie Creek. Samples taken from these two creeks assayed between 0.69 g/ton, and 4.8 g/ton platinum (Thomlinson 1920). Two panned samples collected at 400 and 800 meters upstream from the mouth of the Chrome Creek yielded 0.14 oz/ton and 0.04 oz/ton platinum.

In 1939, the Consolidated Mining and Smelting Company of Canada Limited drove an audit to test the Ferguson Creek showing, and a resource potential of 18,000 tones with 15% chromite and further 18,000 tones of equivalent material was estimated by Rice of the Geological Survey.

In 1994 Tilava Mining Corporation carried out an exploration program on the tertiary volcanic tuffs along the upper area of the Ferguson Creek to test the potential of the property for natural pozzolan and zeolites.

In 1986, five rock samples were collected by from the Barbecue claim (previously known as Plat IV). Elements related to platinum mineralization were low, and there was no detectable platinum or palladium.

During the 1987 fieldwork investigation by the Geological Survey of Canada massive rhyolite ash was discovered near and in Scottie Creek Valley (where the Barbecue and Landscape claims are located), two lenses up to 100 meters thick and three kilometers long consist of rhyolite ash containing layers of andesite volcanic conglomerate with clasts lying in the acid tuff matrix.

In 1998 the Barbecue and the Landscape mineral claims were staked to be evaluated for their industrial mineral potential for pumice and pozzolan material.

5.0 REGIONAL GEOLOGY

The Barbecue and Landscape Claim Group is situated within the intermontane belt near the eastern margin of the Cache Creek assemblage. This assemblage comprises three facies belts. A western belt of Triassic chert, argillite and siltstone encloses Upper Triassic volcanic clastics. A central belt includes massive mid-late Permian carbonates of the Marble Canyon Formation and also includes minor thin-bedded carbonate, tuff and chert of Triassic age.

An eastern belt contains large bodies of probably late Permian basalt, ultramafics and melange. The melange consists of late Permian to late Triassic chert, and argillite matrix, with blocks of carbonates, chert, basalt and ultramafic blocks of unknown age, and acidic volcanic clastics.

Overlying the upper Cache Creek group is the upper Triassic Nicola group consisting of basic to acidic volcaniclastic rocks and intercalated argillite. These rocks tend to be more acidic in the west and basic in the east.

6.0 THE 1999 FIELDWORK PROGRAM

6.1 Scope & Purpose

From July 9 -12, 1999, a two-man crew consisting of the writer and helper, carried out a fieldwork program of geological mapping, rock sampling, and grid work. The purpose of this program was to:

A) To cover the target area of the property with geological, and geochemical surveys in order to define the size, and the chemical and physical characteristics of the volcanic lava rock, exposed along Scottie Creek logging Road.

B) To evaluate the industrial mineral potential of the claim group, and to determine the commercial value of the lava rock deposit of the property.

C) Testing the physical characteristics of the lava rock such as color, size, and specific gravity.

D) Testing the chemical characteristics of the lava rock to define the availability of any fumes and toxic materials such as Lead, Arsenic, and Mercury.

E) To find if the lava rock of the claim group complies with the chemical and the physical requirements to be used as a mineral admixture (Pozzolan) in concrete.

6.2 Methods & Procedures

Utilizing compass and hipchain, a slope corrected flagged grid was laid out over the most western lava outcrop exposed along Scottie Creek Road. Line intervals were 100 meters, and the stations were marked at 25 meters. A total of 1.2 line kilometers were surveyed. The base line was run at 90 degrees azimuth, starting at the L.C.P as a base point.

Geological mapping and rock sampling was performed at scale 1:5,000 over small part of the property along the logging road. Control for mapping was established using G.P.S., compass, hipchain, topographic map, and the survey grid.

A total of 23 rock samples were collected from the property during the 1999 fieldwork program. All samples were sent to ACME Analytical Laboratories, eleven samples for geochemical whole rock I.C.P. analysis, five samples for multi - element I.C.P. analysis conducted before and after igniting the samples at 900 degrees C, and five samples were examined for detectable odors, evidence of fracturing, and explosion, see figure # 4 for sample location and Appendix B for chemical results.

7- RESULTS

7.1 PROPERTY GEOLOGY (Figure 4)

The area of the property is underlain by rocks of the Cache Creek complex consisting of rhyolite to basaltic lavas, pumice, and volcanic ash. This assemblage is thought to correlate with the Chilcotin Group. The initial geological investigation during the 1999 fieldwork program on the property indicated the presence of three outcrops of light to dark brown, red and black pumice volcanic lava. All three outcrops are well exposed along the main logging road, ranging between 350 - 650 meters in length, and between 75 - 150 meters in width over a vertical elevation of 25 - 30 meters, suggesting sufficient reserves for several decades.

7.1.1 The Western Outcrop (Photo # 1& Figure # 4)

This outcrop is located just 50 meters east of the Barbecue claim L.C.P, at the southwest corner of the claim group. Light brown to red in color, very fine grained, glassy, vesicular pumice rocks, formed by gas bubbles puffing up the viscous crust of rhyolitic to andesitic composition. Cavities range from less than 1 mm to 5 mm in diameter occupying 40 - 50% of the total rock volume. The rocks contain 54 - 57% silica indicating the antiseptic composition of the lava.

The outcrop exposed between line 0+00, and line 4+00, trending almost 110 - 120 degrees, for 400 meters, with an average width of 50 meters. All rocks are lightweight, with pumice texture, ranges between .94 and 1.27 in specific gravity.









An intensive clay alteration zone, located at the northwest corner of the outcrop. The alteration zone, largely composed of clay minerals, possibly montmorillonite.

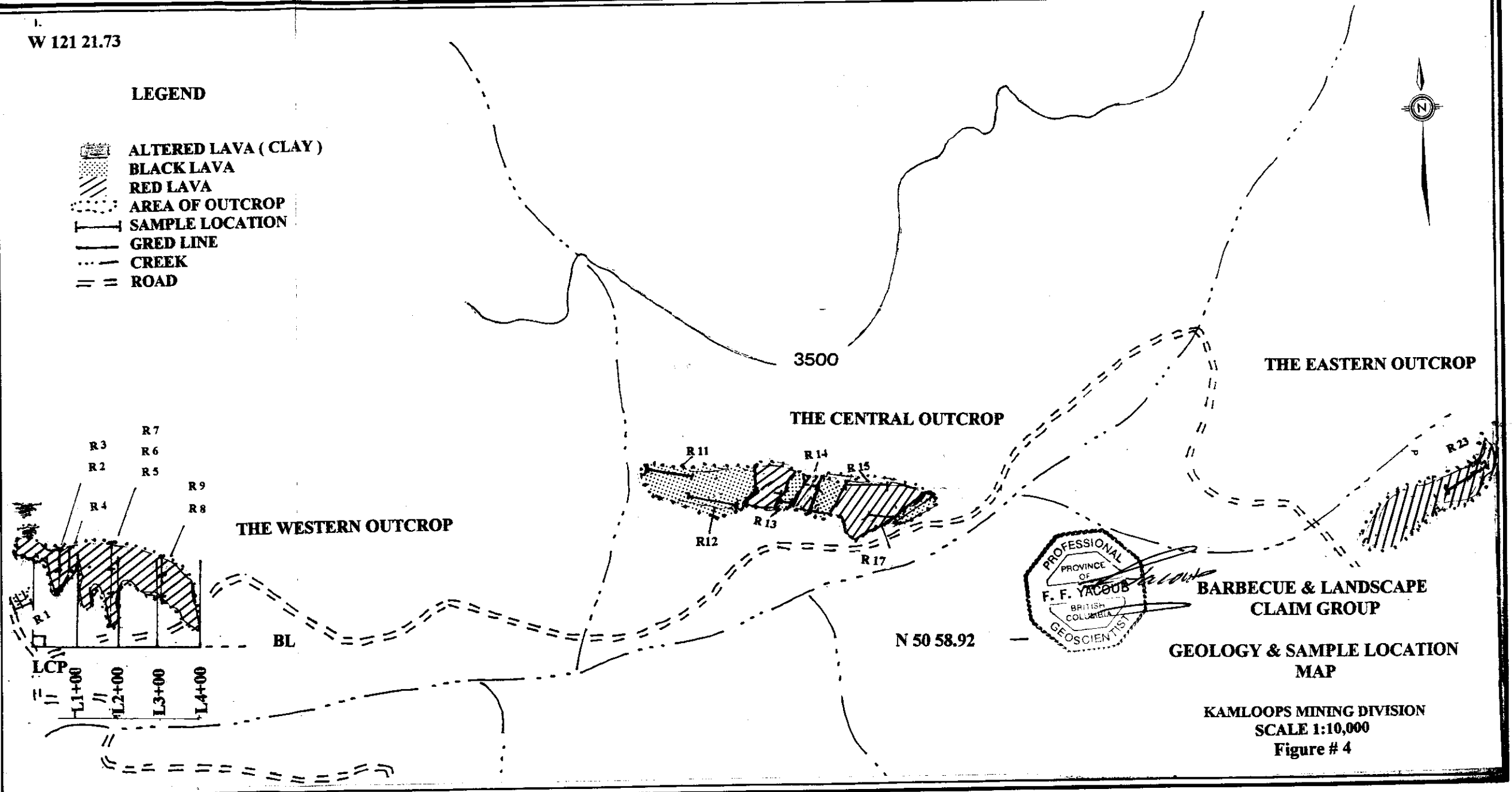
7.1.2 The central Outcrop (Photo # 2 & three & Figure # 4)

Light grey to black, and red volcanic lava, occupies the central part of the Barbecue claim, approximately 1.7 km east of the L.C.P between G.P.S. readings, N 50 59.084 - W 121 20.662 and N 50 58.968 - W 121 20.217. Rocks are light grey to red in color, fine-grained vesicular texture, 60 - 70% cavities with sharp cutting edges. They are antiseptic in composition consisting essentially of calcic plagioclase, pyroxene, and siliceous fragments.

W 121 21.73

LEGEND

-  ALTERED LAVA (CLAY)
-  BLACK LAVA
-  RED LAVA
-  AREA OF OUTCROP
-  SAMPLE LOCATION
-  GRED LINE
-  CREEK
-  ROAD



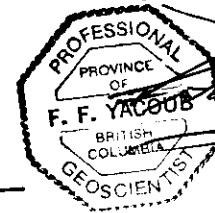
THE EASTERN OUTCROP

THE CENTRAL OUTCROP

THE WESTERN OUTCROP

3500

N 50 58.92



BARBECUE & LANDSCAPE CLAIM GROUP

GEOLOGY & SAMPLE LOCATION MAP

KAMLOOPS MINING DIVISION
SCALE 1:10,000

Figure # 4



RED PUMICE OF THE WESTERN OUTCROP

PHOTO # 1



**THE CENTRAL OUTCROP EXPOSURE
(MORTH OF THE MAIN ROAD)**

PHOTO # 2



**BLACK LAVA OF THE CENTRAL OUTCROP
PHOTO # 3**

The central part of the outcrop composed of siliceous fragments cemented by red colored matrix. Rocks are fully exposed along the north side of the logging road for a total length of 650 meters, and an average width of 100 meters. The red colored lava occupies approximately 40% of the outcrop, and has specific gravity between 1.10 and 1.27, while the black lava is relatively lighter with specific gravity of .9, and silica contents between 54.52% and 56.39%. The outcrop is trending East - West.

7.1.3 The Eastern outcrop (photo # 4 & Figure # 4)

This outcrop is located at the southeast corner of the Barbecue claim, approximately 3.2 kilometers east of the L.C.P, between G.P.D. reading N 50 58.985 - W 121 19.394, and N 50 59.01 0 - W 121 19.065. Rocks are fine-grained to glassy, porous volcanic lava, light cream, brown and red color, with disconnected cavities ranges from less than 1 mm to 10 mm in diameter, occupying 50 to 60% of the total volume. The lava rock composed of siliceous fragments connected by a red colored matrix of antiseptic composition. The outcrop is fully exposed along the north side of the main logging road, for 450 meters, with an average width of 100 meters, and a minimum of 25 meters vertical elevation. The outcrop is trending northeast - southwest.

7.2 THE CHEMICAL AND PHYSICAL CHARACTERISTICS OF THE PUMICE ROCKS OF THE PROPERTY.

Pumice is a glassy, vesicular volcanic lava formed by rapid cooling of molten material near the surface, generally of rhyolitic to antiseptic composition
Physical and chemical characteristics such as, specific gravity, density, size, color, soundness, percentage of expansion or contraction, fineness, chemical composition, and toxic contents. These characteristics are responsible for the commercial value of any pumice deposit.

7.2.1 The Chemical Characteristics of the pumice

The Explosion Test

Five samples were tested and examined by ACME Laboratories for detectable odors, and visually examined for evidence of fracturing, or explosion. The results indicated no evidence of fracturing, no detectable odor and no explosion when the lava rock was heated to 900 degrees for 40 minutes. This test indicated that the lava rock of the Barbecue and Landscape Claim Group are chemically suitable to be used as a flame bed material in the barbecue industry (see appendix B).



**RED - MASSIVE LAVA OF THE EASTERN OUTCROP
PHOTO # 4**

The loss of ignition Test

Five samples were tested to determine the loss of ignition (L.O.I.) of the lava rock. Samples are dried at 60 degrees for two hours then crushed and pulverized. A portion of pulp is placed in a ceramic bowl and heated to 900 degrees for 40 minutes. Subsequently the samples are removed, cooled and analyzed by I.C.P.-MS. Comparison of I.C.P.-MS data for the same samples before and after the ignition. A significant decrease in the concentration of most elements (up to 50%) were noticed. This is not attributed to volatilization of the metals but rather to sintering of the samples. Minute forms glass upon cooling which locks in the elements and makes them less available to acid digestion. Firing of the lava rock may make the rock more inert to chemical attack (see appendix B).

The Pozzolanic Material Test

Eleven samples were tested for ASTM chemical requirements to be used as mineral admixture class N. All samples contained SiO₂ ranging from 54.52% to 57.45%, Al₂O₃ from 15.61% to 16.54, and Fe₂O₃ from 6.33% to 8.54%. The combined sum of these three oxides exceeds 70% in every sample. The total sulphur present as all species is less than or equal to 0.05% in all samples. If present in the form of SO₃, the maximum concentration would be 0.12%. Lost of Ignition content ranges from 1.6% to a maximum of 6.0% (see appendix B). Accordingly all samples meet the chemical requirements for N class Pozzolanic materials.

7.2.2 The Physical Characteristics of the pumice

• Size and Color

The pumice deposit of the Barbecue and Landscape Claim Group can produce three different sizes, and two different colors.

Small size (½ to 1 inch, pumice pebbles), suitable as a decorative pumice for indoor uses.

Medium size (1 to 1 ½ inch, pumice cobbles), suitable for outdoor, decorative and landscaping uses.

Large size (2 to 3 inches, pumice cobbles), suitable as a flame bed material in the Barbecue industry.

The pumice deposit of the property has two different colors includes, 70% red color and 30% light grey to black color.

• Specific Gravity

The specific gravities of five rock samples collected from both red, and black pumice within the property, were tested by ACME. Laboratories The results indicated that the pumice of the Barbecue and Landscape Claim Group has specific gravity ranges from .94 to 1.27 with an average of 1.1. The black pumice has less specific gravity than the red lava (see appendix B).

8.0 USES OF LAVA ROCK PRODUCTS

Uses of Lava Rock in Landscaping

The high quality landscaping lava rock is attractive in all forms. The large, massive lava rock can easily be placed as boulders, and will be perfect around ponds and waterfalls as a unique product of nature.

The medium size products will be attractive as a maintenance free exterior products when it compared to maintenance and replacement costs of traditional landscape materials, such as bark.

The products will be as an attractive ground cover in landscape areas, where products will not fade or decomposed.

The lava rock products can also be used as interior landscape materials and will display the following special characteristics:

- 100% nature
- Contains minerals essential to plant growth
- Helps retain moisture
- Fireproof
- For use in atriums, planters and pots

The fine-grained to dusty products can be used in gardening, soil mixing, greenhouses and house plants

Uses of Lava Rock in Barbecue

The quality of the lava rock products for the Barbecue uses will depend on the following factors:

- 1- The presence of any detectable levels of high toxic fumes such as arsenic, lead, cadmium, mercury and antimony in the products.
- 2- The ability of the lava rock to explode under high temperatures.

The volcanic lava rock occurrences within the claim group includes extensive east-west trending outcrops, well exposed along the main logging road for three kilometers, and that can provide economic potential of pumice deposit located in the south-central part of the province.

Uses of Lava rock as a mineral admixture in concrete (Pozzolan)

The term (Pozzolan) has been defined by the American Society as a siliceous or siliceous andluminous material which itself possesses little or nocementitious value but will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxides at ordinary temperatures to form compounds possessing cementitious properties” .

Recently it has been recognized thatpozzolan can impart certain desirable properties to Portland cement mixes. Among the advantages claimed forpozzolan, Portland cement are generally cheaper in cost; lowering of heat of hydration. Earlier development of a maximum rate of heat development, improved work ability, increased plasticity, decreased in segregation of the concrete ingredients; decrease in bleeding of water; improved water tightness of the concrete; improved tensile strength.

Pozzolan can be used to replace from 10 to 40 per cent by weight of the Portland cement in a concrete mix to produce light weight concrete.

9.0- THE INDUSTRIAL MINERAL POTENTIAL OF THE CMIM GROUP

Massive Volcanic Lava deposit was recently recognized on the Barbecue and landscape claim group in central British Columbia.The deposit is readily accessible by Highway #97 and all seasons logging road.

The volcanic Lava rock deposit on the Barbecue and landscape property can be an excellent opportunity for British Columbia to develop, produce, and market its products in Canada.

The Volcanic Lava Rock deposit has several important applications such as Landscaping and gardening, flame bed material for barbecues and fireplaces, and as a soil additive for agriculture purposes. The Lava rock is considered a natural commodity, environmentally friendly and can be presented to the market as a packaged consumer products of several types of considerable values.

The Volcanic Lava rock production will be largely used for decorative and Landscaping purposes. The high quality (high porosity, less density lava) will be used for the Barbecue industry as a flame bed materials. The fine materials of the Lava rock can be used for soil mixing and sports tracks.

The expected low production cost of the deposit, supported by the excellent road access to the property, the good exposure of the lava rock, and the different varieties of the products will make the deposit viable since the Canadian market for the Lava rock is presently still dominated by the United States.

The production process will be as follows:

- Crushing
- Screening and sorting the products to different sizes and colors to meet the market demands.
- Packing and shipping.

The Lava rock can also be used as a mineral admixture in concrete to produce up to 40% by weight of Portland cement. The deposit was chemically tested and passed the chemical requirements as a possible source of pozzolan, however the deposit still have to be tested for the ASTM physical requirements.

10.0 DISCUSSION AND CONCLUSION

The recent completed program on the Barbecue and Lava rock Claim Group has recognized a new source of pumice rock in British Columbia, with possible potential of natural products. The program also added several new information on the chemical and physical characteristics of the lava rock of the property.

The massive volcanic lava rock deposit recently recognized on the barbecue and Landscape claim group in central B.C. suggests a strong potential with possible lifetime supply of low-cost natural pumice.

The lava rock occurrences within the property includes an extensive east-west trending outcrops, well exposed along the main logging road for three kilometers, which can provide enormous economic potential for natural products. The lava rock within the property have a variety of colors with 75% red lava and 25% between gray, sage, and black lava. The red lava is the most attractive color for the landscaping use, and the gray to black lava will be suitable as flame bed material for the barbecue use.

All lava rock products can be crushed, screened, bagged and shipped at the site, which is located 28 kilometers north of Cache Creek.

The chemical characteristic of the lava rock is very important, especially the tendency of the lava rock to explode, as well as the toxic contents.

Five samples were tested and examined by ACME Laboratories for detectable odors, and visually examined for evidence of fracturing, or explosion. The results indicated no evidence of fracturing, no detectable odor and no explosion when the lava rock was heated to 900 degrees for 40 minutes. This test indicated that the lava rock of the Barbecue and Landscape Claim Group are chemically suitable to be used as a flame bed material in the Barbecue industry.

Eleven samples were tested to determine the loss of ignition (L.O.I.), and analyzed to determine the total carbon (C/TOT) and the total Sulphur (S/TOT) contents. The results of these tests indicated that all samples meet the chemical requirements for N Class Pozzolanic materials, however the physical ASTM test still to be determined.

The Barbecue and Landscape Claim Group is considered the closest property to the cement plant in Marble Canyon.

Field programs to date have covered only a small portion of the property. Good potential exists for locating more varieties of lava rocks on the remainder of the Barbecue and Landscape Claim Group. For this reason further exploration work is warranted and recommended.

10.0 RECOMMENDATIONS

A resource evaluation program should be initiated on the property consisting of:

- 1- Geological mapping at scale 1:1000 to evaluate the size, and the surface exposure of each lava rock outcrop.
- 2- Estimate the lava rock reserves on the property.
- 3- Determine the commercial value of the deposit by:
 - More testing to identify the physical characteristics of the lava rock such as porosity, specific gravity, and to determine the Pozzolanic action of the lava rock.
 - More testing to determine the availability of any toxic elements such as Lead, Arsenic, Cadmium, Mercury, and Antimony that might affect the economic value of the Lava rock.
 - Testing the availability of Potassium, Calcium, Magnesium, Nitrogen, and Phosphate in order to determine the quality of the Lava rock to be used in gardening, and soil mixing.

Initiate a business plan to bring the volcanic Lava rock deposit of the property into production.

11.0 PROPOSED BUDGET

Phase 2: Project Geologist, two Geotechnicians, 10 days.

Project Preparation		\$1,600.00
Mob/Demob		2,550.00
Field Crew		8,000.00
Field Costs		4,825.00
Lab Analysis		2,800.00
Petrographic Analysis		400.00
Data compilation and report		5,000.00
	Subtotal	<hr/> 25,175.00
G.S.T@ 7%		1,762.00
	TOTAL	26,937.00
	SAY	27,000.00

Respectfully Submitted

Fayz Yacoub, P. Geo. , F.G.A.C.

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CERTIFICATE OF QUALIFICATIONS

I, FAYZ F. YACOUB, of 6498-128B Street, Surrey, British Columbia, V3W 9P4, do hereby declare that:

- 1) I am a graduate in: Geology and Chemistry from Assuit University, Egypt (B.Sc., 1967), and Mining Exploration Geology of the international Institute for Aerial Survey and Earth Sciences (I.T.C.), Holland (Diploma 1978);
- 2) I am a fellow in good standing with the Geological Association of Canada;
- 3) I am a professional geologist and a member of the Association of the Professional Engineers and Geoscientists of British Columbia.
- 4) I have actively pursued my career as a geologist for the past twenty years;
- 5) The information, opinion, and recommendations in this report is based upon fieldwork carried out by myself, and on published literature. I was present on the subject property between July 9-12/1999.
- 6) I am the owner and have 100% interest in the Barbecue and Landscape Claim Group.

Fayz Yacoub, P.Ge., F.G.A.C.
September 1999

**THE BARBECUE CLAIM GROUP
1999 WORK PROGRAM**

**COST STATEMENT
two man crew-4 days**

Project Preparation includes: Maps, aerial photographs preparation, notice of work application, etc.		\$485.00
Mob/Demob includes: food & accommodation, car rentals, and fuel		1109.38
Field Crew		
Geologist @ \$350/day x 4 days	1440	
Field Assistant @ \$175/day x 4 days	700	
	<hr/>	2149.00
Field supplies includes: G.P.S., flagging, and hipchain, etc.		650.00
Analytical cost ACME Lab		472.13
Report writing includes: Report writing, plotting, drafting, word processing, photocopying, and binding.		1900.00
	TOTAL COST	\$6756.51

APPENDIX A

ROCK SAMPLE DESCRIPTIONS

Sample R1 - Sample R9

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Sample R1 - R9 are chip samples collected over a widths of 50 to 100 meters from the western outcrop. Red to light brown, vesicular pumice, rhyolitic to andesitic in composition. Rocks are very fine grained to glassy, with cavities range from less than 1mm to 5mm in diameter occupying 40 - 50% of the total rock volume. All rocks are lightweight, with puffy, pumice texture. Specific gravity ranges between .94 and 1.27.

Samples R11, R12, R13, and R15

Four samples were collected over 450 meters of massive, light grey to black volcanic lava occupies seventy percent of the central outcrop. Rocks are light grey to black with fine grained, vesicular texture, contains 60 -70% cavities with sharp cutting edges. The black lava is relatively lighter in density than the red lava of the western outcrop. The specific gravity ranges between .94, and 1.15. Silica contents between 54.52 and 56.39%.

Sample R14, and R15

Two chip samples collected over the red lava of the central outcrop. Rock are fine grained siliceous fragments cemented by red colored matrix. Cavities range from 1mm to 5mm in diameter occupying more than 50% of the total rock volume. The specific gravity of R14. And R15 are 1.1, and 1.15 respectively. Sample R17

Red, massive pumice occupies the eastern portion of the central outcrop. Rocks are vesicular in texture with 60 -70% cavities, consisting of calcic plagioclase, pyroxene and siliceous fragments, cemented by red colored matrix. The specific gravity of sample R17 is 1.27.

Sample R23

Rock sample R23 represents the red lava of the eastern outcrop. Rocks are light cream, brown and red in color, fine grained to glassy in texture with disconnected cavities ranges from less than 1mm to 10 mm in diameter, occupying 50 to 60% of the total rock volume .

APPENDIX B

ANALYTICAL RESULTS



WHOLE ROCK ICP ANALYSIS



Yacoub, Fayz File # 9902275

6498 - 1288 St., Surrey BC V3W 9P4 Submitted by: Fayz Yacoub

SAMPLE#	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Ni	Sr	Zr	Y	Nb	Sc	LOI	C/TOT	S/TOT	SUM
	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	%
L0+00E R1	54.94	15.81	7.33	3.14	6.20	3.51	1.76	1.09	.44	.09	.035	1000	57	845	95	18	<10	10	5.0	.06	.04	99.58
L1+00E R2	56.82	16.05	6.97	3.49	5.97	3.99	2.05	1.07	.45	.11	.035	1062	49	836	101	15	<10	10	2.5	.19	.01	99.75
L1+00E R3	56.80	16.43	6.82	3.00	5.93	4.01	2.07	1.11	.43	.08	.036	1089	53	865	100	15	<10	10	2.8	.06	<.01	99.76
L2+00E R6	56.96	16.54	6.93	3.18	6.00	3.94	1.83	1.11	.39	.09	.040	1052	44	867	99	15	<10	10	2.4	.13	<.01	99.65
L3+00E R8	57.45	16.26	6.89	3.49	6.00	3.87	2.29	1.10	.46	.10	.037	1083	43	890	107	14	<10	10	1.6	.06	.03	99.80
R11	56.39	15.92	6.33	2.72	5.90	3.30	2.15	.97	.54	.09	.039	951	45	819	92	21	<10	11	5.2	.22	.02	99.77
R13	55.64	16.52	7.25	2.72	6.49	3.95	1.74	1.01	.89	.10	.038	979	61	823	91	21	<10	12	3.2	.26	.01	99.78
RE R13	55.55	16.45	7.32	2.70	6.45	4.04	1.70	1.01	.88	.10	.037	982	55	822	92	19	<10	12	3.3	.26	<.01	99.77
R14	54.52	15.78	6.76	3.14	6.14	3.40	1.28	1.02	.78	.10	.036	869	55	824	89	20	<10	11	6.6	.34	.01	99.77
R15	56.19	15.85	6.49	2.64	5.88	3.27	2.14	.96	.59	.09	.038	984	54	825	96	20	<10	11	5.4	.29	.05	99.77
R17	56.61	15.61	6.44	3.21	5.83	3.08	2.20	.95	.48	.10	.040	932	60	796	98	18	<10	11	4.9	.22	.04	99.67
R23	54.54	16.01	8.54	3.50	7.10	4.20	2.10	1.10	.64	.12	.053	997	81	825	96	18	<10	13	1.6	.12	.01	99.74
STANDARD SO-15/CSB	49.05	12.81	7.30	7.26	5.87	2.41	1.85	1.66	2.70	1.39	1.060	1921	64	396	711	23	<10	10	5.9	2.41	5.36	99.63

.200 GRAM SAMPLES ARE FUSED WITH 1.5 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3. OTHER METALS ARE SUM AS OXIDES.
TOTAL C & S BY LECO (NOT INCLUDED IN THE SUM).

- SAMPLE TYPE: ROCK Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 16 1999 DATE REPORT MAILED: *July 29/99* SIGNED BY: *C. Toy* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS



GEOCHEMICAL ANALYSIS CERTIFICATE



Yacoub, Fayz File # 9902275

6498 - 1288 St., Surrey BC V3W 9P4 Submitted by: Fayz Yacoub

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	Tl	Hg	Se	Te	Ga	S
	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	ppm	ppm	ppb	ppm	ppm	ppm	%	
R11	.55	24.42	2.62	46.5	12	26.9	9.3	301	2.05	.6	.8	<1	7.4	53.0	.03	<.02	<.02	47	.65	.134	12.1	30.0	.43	149.5	.180	3	.79	.061	.15	.4	.04	<.5	<.1	<.02	2.6	<.01
R13	.37	22.60	2.86	48.3	12	39.3	13.0	413	2.21	.5	1.8	<1	6.5	52.5	.03	<.02	<.02	44	.95	.312	15.1	32.4	.47	149.0	.160	2	.73	.059	.10	.4	.03	13	<.1	<.02	2.6	<.01
RE R13	.33	22.06	3.50	47.5	13	38.4	12.2	399	2.11	<.1	1.8	<1	4.3	49.6	.03	<.02	<.02	43	1.02	.316	14.5	31.8	.46	141.9	.159	2	.68	.060	.11	.4	.02	9	<.1	<.02	2.7	<.01
R14	.45	28.07	4.62	53.6	20	48.0	12.4	447	2.27	.6	1.9	<1	3.3	57.4	.04	<.02	<.02	41	1.31	.262	15.3	24.3	.84	196.4	.213	2	1.10	.058	.12	.3	.05	11	<.1	<.02	3.7	<.01
R15	.56	25.13	2.40	43.9	12	41.5	10.3	296	1.97	.4	1.3	<1	2.0	53.3	<.01	<.02	<.02	41	.69	.153	11.2	29.8	.46	160.0	.179	3	.76	.063	.13	.5	.04	11	<.1	<.02	2.5	<.01
R17	.48	20.25	2.31	38.1	17	46.1	9.9	299	1.69	.7	.6	4	1.6	50.6	.02	<.02	<.02	41	.56	.105	7.9	28.2	.51	133.9	.168	2	.73	.065	.16	.4	.04	8	<.1	<.02	2.4	<.01
STANDARD DS2	14.53	135.85	33.98	172.3	255	42.0	13.9	892	3.66	63.3	20.9	206	4.7	32.1	11.81	9.95	11.15	83	.57	.897	13.7	176.0	.70	161.1	.123	<1	1.37	.035	.15	7.2	2.14	258	2.7	1.34	5.3	.01

1 GRAM SAMPLE IS DIGESTED WITH 6 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 20 ML WITH WATER, ANALYSIS BY ICP/ES & MS.
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K GA AND AL.
- SAMPLE TYPE: ROCK Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 16 1999 DATE REPORT MAILED: *July 29/99* SIGNED BY: *C. Long* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS



GEOCHEMICAL ANALYSIS CERTIFICATE



Yacoub, Fayz File # 9902275A
6498 - 128B St., Surrey BC V3W 9P4 Submitted by: Fayz Yacoub

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppb	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppb	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Tl ppm	Hg ppb	Se ppm	Te ppm	Ga ppm	S.S.G. %	
R11	.47	9.07	1.28	13.4	4	7.0	3.1	115	.89	.4	.4	<1	.7	17.4	.03	.06	.07	19	.36	.122	8.8	8.7	.16	32.7	.067	1	.16	.067	.05	.5	<.02	<.02	.2	<.02	.7	.01	1.15
R13	.35	11.29	1.63	23.1	6	20.0	8.1	302	1.42	1.0	1.3	<1	2.0	29.3	.05	.08	.06	30	.83	.308	13.7	18.6	.30	52.7	.100	1	.25	.088	.06	.5	<.02	<.02	<.02	1.3	.02	.94	
R14	.57	13.56	2.11	22.9	10	20.1	7.1	273	1.46	.8	1.1	<1	2.1	24.4	.07	.11	.09	27	.61	.255	14.8	12.7	.58	68.4	.161	1	.33	.122	.09	.4	.02	<.02	<.02	1.8	.02	1.10	
R15	.64	11.19	1.64	16.5	7	14.4	5.3	202	1.00	.6	1.0	<1	.8	23.4	.04	.08	<.02	20	.47	.156	10.9	7.9	.26	71.0	.079	1	.21	.098	.08	.8	<.02	<.02	.9	.05	1.15		
R17	.46	16.09	1.34	21.0	9	26.7	6.4	243	1.10	.3	.5	<1	.8	26.2	.03	.06	<.02	22	.44	.100	7.1	13.8	.35	70.9	.076	3	.32	.115	.16	.5	.02	<.02	.1	.02	1.1	.08	1.27
RE R17	.54	17.11	1.69	22.9	6	29.7	6.5	253	1.17	.5	.5	<1	.8	30.3	.08	.07	.02	22	.46	.096	6.9	15.3	.37	72.9	.076	1	.34	.118	.18	.5	.04	<.02	.1	<.02	1.2	.13	-
STANDARD DS2	14.85	129.38	28.26	164.2	235	37.7	12.2	819	3.14	63.0	20.3	199	3.6	29.0	11.53	9.70	10.64	83	.56	.081	11.7	171.3	.63	144.0	.110	2	1.82	.042	.16	7.1	2.14	239	2.5	1.85	6.0	.03	-

1 GRAM SAMPLE IS DIGESTED WITH 6 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 20 ML WITH WATER, ANALYSIS BY ICP/ES & MS.
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K GA AND AL.
- SAMPLE TYPE: ROCK Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 16 1999 DATE REPORT MAILED: *Aug 10/99* SIGNED BY: *C. Leong* D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS



Geochemical Certificate

CLIENT: Yacoub, Fayz
 6498 – 128 St.
 Surrey, BC V3W 9P4

FILE: 9902275A
PAGE: 1A

TEST METHOD: Pozzolan Materials Test

PROCEDURE: Samples are dried at 60°C for 2 hrs, crushed and pulverized. A 0.2 g aliquot is fused with lithium meta-borate, digested with 4% nitric acid then analyzed by ICP to determine SiO₂, Al₂O₃, Fe₂O₃, MgO, CaO, Na₂O, K₂O, TiO₂, P₂O₅, MnO, Cr₂O₃, Ba, Ni, Sr, Zr, Y, Nb and Sc. A 1 g aliquot is weighed, heated to 950°C, cooled in a desiccator then weighed again to determine Loss on Ignition (LOI). A 0.1 g aliquot is analyzed by the Leco method to determine Total Carbon (C/TOT) and Total Sulphur (S/TOT). Results are presented in the attached certificate.

ASTM Designation C 618-89a places the following restrictions on Class N (Raw or Calcined Natural) Pozzolan materials.

	Mineral Admixture Class
	N
Silicon dioxide (SiO ₂) plus aluminum oxide (Al ₂ O ₃) plus iron oxide (Fe ₂ O ₃), minimum %	70.0
Sulphur trioxide (SO ₃), maximum %	4.0
Loss on Ignition (LOI), maximum %	10.0

RESULTS: The samples tested contained SiO₂ ranging from 54.52% to 57.45%, Al₂O₃ from 15.61% to 16.54% and Fe₂O₃ from 6.33% to 8.54%. The combined sum of these three oxides exceeds 70% in every sample. The total sulphur present as all species is less than or equal to 0.05% in all samples. If present in the form of SO₃, the maximum concentration would be 0.12%. LOI content ranges from 1.6 % to a maximum of 6.0%.

All samples meet the chemical requirements for N Class Pozzolan materials.

SIGNED BY: C. Leong D. Toye, C. Leong, J. Wang BC Certified Assayers
DATE: Aug 12 / 99