85-409-13812
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Geology of Mineral Claims Near
China Creek, Hazelton, British Columbia
Omineca Mining Division

Willard D. Tompson

November 2, 1984

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SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Volcanic rocks which underlie the area between Porphyry Creek and China Creek are extensively altered by hydrothermal activity.

Scattered exposures occur through a distance of about 5500 meters, in bluffs above the Bulkley River, in rock cuts along High 16, and in rock cuts of Canadian National Railway.

Alteration varies from typical propylytic alteration, in which minerals are replaced by chlorite and calcite, to argillic facies alteration with the flooding of silica and with mineral replacements by clays, sericite and calcite. An area is identified in which the low pH assemblage, as described by Buchanan (see Buchanan, 1981) occurs. The low pH assemblage is characterisitic of wall rock and cap rock mineralogy in epithermal gold-silver deposits, which occur in volcanic rocks.

A detailed rock geochemical survey is proposed in conjunction with VLF-EM surveys. The rock geochemical survey is expected to identify leakage halos associated with gold-silver mineralization. The geophysical survey (VLF-EM) will identify electrical conductors. Metallic bodies in the ground will be identified by the VLM-EM, as will wet, conductive, clay-filled faults which normally are associated with epithermal mineral deposits in volcanic rocks.

Cost of the proposed exploration program is $80,000. This however does not include the cost of drilling, which must follow geochemical and geophysical exploration.

Geology of Mineral Claims
China Creek, Hazelton, British Columbia

PROPERTY

Six mineral claims comprising 38 units were staked in a northwesterly-striking direction between lower Luno Creek and upper China Creek. The area is 52 kilometers north-northwest of Smithers and 16 kilometers southeast of New Hazelton (Figure 1) and is centered near the old Grand Trunk Pacific Railway siding, at Beament.

Part of the present claim area was held by Utah Mining Co. from 1967 to 1970 and was known as the Orbi property. Some geological mapping, geochemical sampling and induced polarization were done and in 1970, and two diamond drill holes were drilled for a total of about 1000 feet.

Mineral claims which are the subject of this report were staked during the summer of 1984, by Gail M. Tompson and are held by her as trustee for Skeena Syndicate (Figure 2).

The claims are:

Claim Name	Record Date	Record Number	Units
Bear	June 29, 1984	6315	6
RET	June 29, 1984	6316	6
GMT	June 29, 1984	6317	6
Colt	June 29, 1984	6318	6
Ram			8
Tuff			4

LOCATION

The claims lie in west-central interior of British Columbia at Latitude, 55°10'N., Longitude, 127°23'W. Elevation is from 340 meters to 915 meters. China Creek flows easterly through the northwest part of the claim block and Luno Creek flows westerly through the Ram claim on the southeastern part of the block. Bulkley River flows northerly and north-easterly through the area (Figures 1-3).

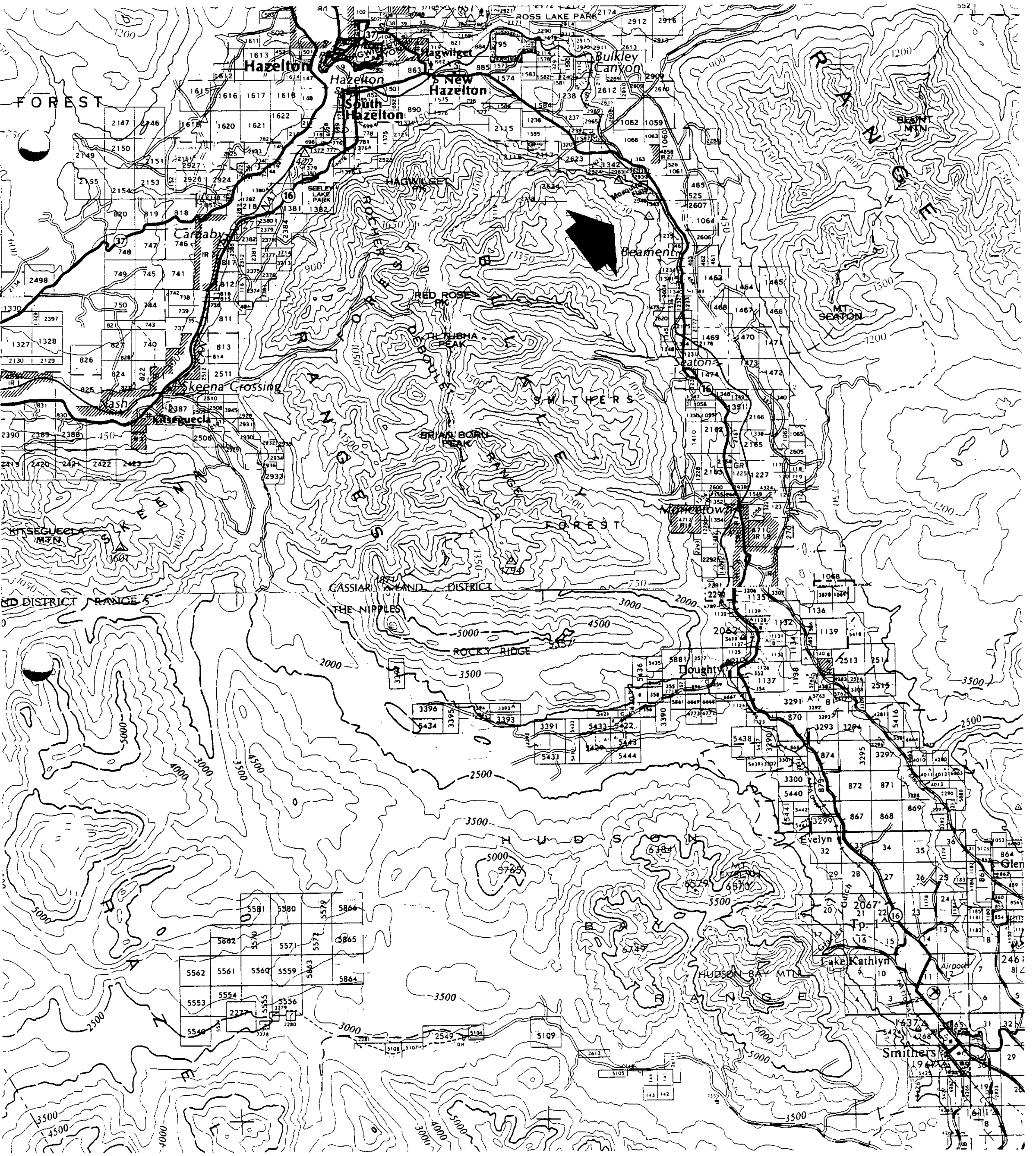

Figure 1. - Topographic map showing prospect area.
Scale of map, 1:250,000

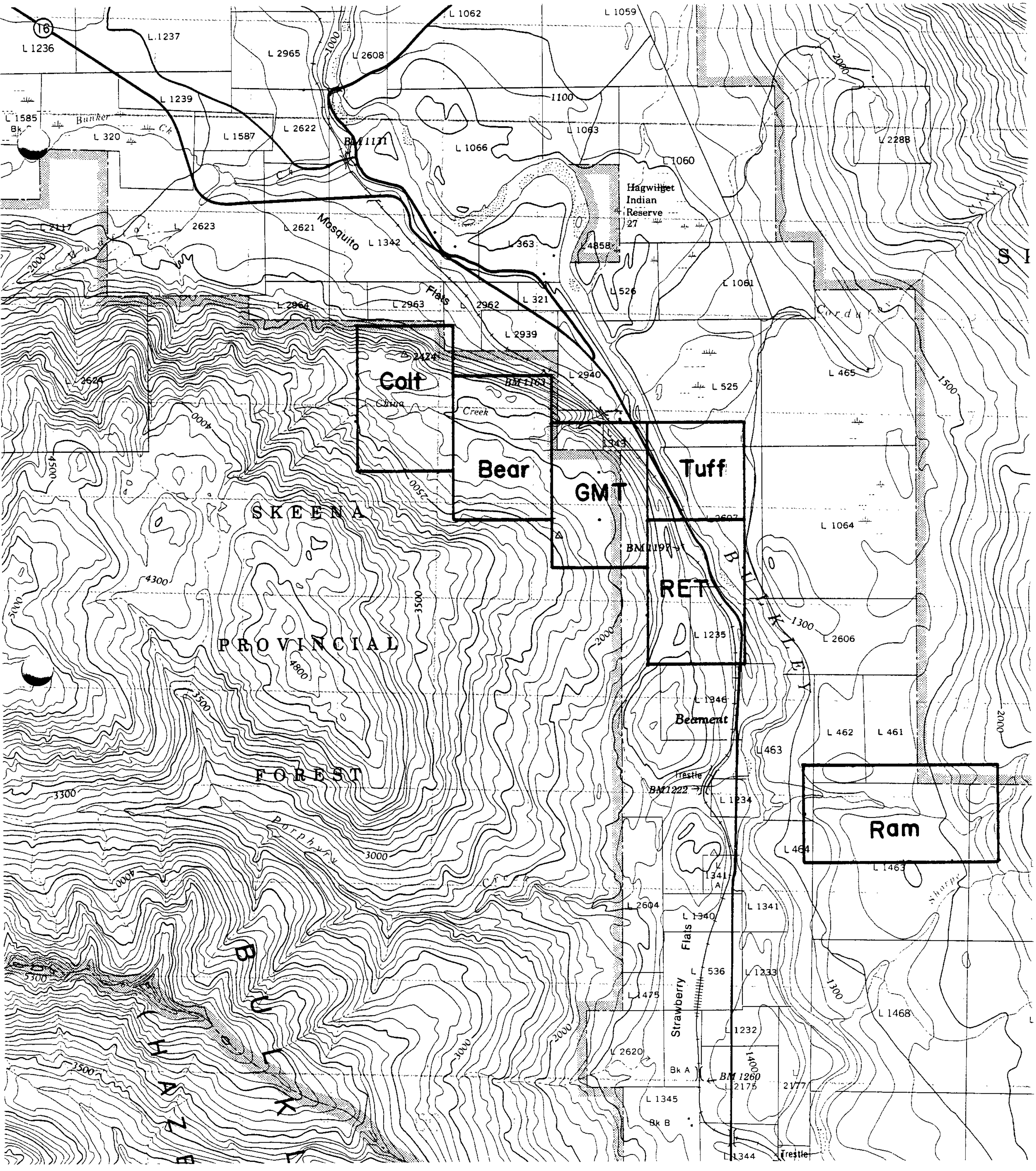

Figure 2. - Topographic map showing location of claims in China Creek area. Scale of map, 1:50,000

B.C. Highway 16 (Yellowhead Highway) and Canadian National Railway follow the route of the Bulkley River. Rock cuts along the highway and railway provide excellent rock exposurers for mapping and sampling. Power transmission lines of B.C. Hydro and Power Authority cross the area just west of the railway (Plate I).

GEOLOGY

Megascopic Description of Rocks

The area is underlain by volcanic rocks which are believed to be Mid to Upper Jurassic in age (Carter and Kirkham, 1969). The rocks may be grouped into six principal rock types;

Rhyolite and rhyolitic tuff
Porphyriytic dacite
Andesite and andesite breccia
Andesitic to dacitic tuff and lapilli tuff
Volcanic breccia
Granodiorite

Rhyolite and Rhyolitic Tuff

All outcrops of rhyolite and rhyolitic tuff are stained rusty-yellow and brown due to pyritization of the rhyolite flows and tuffs. The fresh, unstained surfaces of rhyolite and rhyolitic tuff are white to creamy in color. All are altered to argillic facies, as a result of the hydrothermal solutions which introduced pyrite into the rocks. Feldspar phenocrysts are now mostly clay and sericite. Clasts in tuffaceous rocks are commonly white as a result of argillization.

Bedding in tuffaceous rocks is well developed and readily visible in some outcrops. Road cuts on Highway 16 expose bedded tuff at a point 180 meters north of Porphyry Creek.

Porphyritic Dacite

Porphyritic dacite is very fine grained, and is dark olive-green or gray-green to grayish brown in color. It commonly contains very fine grained pyrite as tiny desseminated grains or as sparse, tiny, discontinuous films in the rock.

Variations in rock colors are due to rock alteration, which appears to vary from propylytic to sericitic.

Andesite and Andesite Breccia

Andesite and andesite breccia are fine grained and commonly are olive green in color. The rocks are chloritized, but are competent, and commonly form areas of high relief, and with the porphyritic dacite, form most of the cliffs in the area.

Andesitic and Dactic Tuff and Lapilli Tuff

The tuffs are volcaniclastic rocks which are mostly white to a creamy gray color and which have a prominent clastic appearance in outcrop and in the hand specimen.

Lithic clasts are up to 10 mm in diameter and are mostly white, although black clasts are locally abundant. These black clasts are probably shale fragments derived from underlying sedimentary rocks which were torn from the walls of the conduit and extruded during a period of volcanism.

Hydrothermal alteration is widespread in the tuffaceous rocks. Sericitic alteration and argillic alteration have produced a ubiquituous whitish color in rocks which normally are dark gray.

Volcanic Breccia

Volcanic breccia occurs at two localities in the area; 800 to 900 meters south of Porphyry Creek, between the highway and railway tracks and 850 meters south of China Creek on the west side of the highway. The two localities are 4400 meters apart (Plate I).

The southernmost occurance, near Porphyry Creek appears to be a mass of dacite and andesite blocks in a matrix of tuff and lapilli tuff. The breccia is pyritized, and fine grained pyrite occurs in volumes of up to 10 percent. Weathering has oxidized pyrite and has developed limonite which stains the outcrop area a rusty yellowish-brown.

South of China Creek (Figure 3) a prominent outcrop exposes volcanic breccia near the highway. In this occurrence large blocks of volcanic rock occur with many clasts of sedimentary rocks. Size of clasts is up to 30 centimeters in diameter. These volcanic breccias were reworked and display distinct sedimentary bedding.

Grandodiorite

Medium grained, biotite-rich granodiorite occurs about 1800 meters east of Bulkley River on Luno Creek. The rock appears to be relatively fresh except that biotite is chloritized. The granodiorite is probably intrusive into the volcanic rocks.

Topographic Relationships

Bulkley River flows north-northwesterly through the area. The river occupies the westernmost part of a flood-plain which is up to 2000 meters wide and which displays some prominent terraces east of the present river channel. In the south part of the area, Bulkley River occupies a steep-walled canyon.

The mountain front rises sharply west of the river and produces some abrupt cliffs.

A distinct topographic low strikes northwesterly across the area from near the mouth of Luno Creek, through the area of the Beament gossan and to upper China Creek, a distance of 7000 meters (Figure 2).

Figure 3

Geological Map of Highway and Railway Cuts

China Creek Area

Omineca Mining Division, B.C.

Willard D. Tompson — October 15, 1984

Scale, 1:2400

This topographic low dissects some otherwise steep terrain, and is believed to have developed on less competent (faulted and hydrothermally altered) rocks. Some of these altered rocks are exposed near the river canyon in the vicinity of Porphyry Creek. The distribution of the altered rocks is important in the planning of additional exploration in the area.

Outcrops and Overburden

Good bedrock exposures occur in the river canyon near the mouth of Luno Creek and up to 1500 meters north of the confluence of Bulkley River and Porphyry Creek.

Highway cuts and railway cuts produce many bedrock exposures hundreds of meters in length and up to 30 meters high. The mountain front near China Creek has high cliffs with abundant exposures of bedrock.

Otherwise, the area is totally covered by overburden.

Gravel of the Bulkley River covers most areas east of the present river channel up to 60 meters above present water level. Outwash from Luno Creek, Porphyry Creek, China Creek and Corduroy Creek covers large areas (Plate I).

Talus covers bedrock through broad areas along the mountain front near China Creek and in the high country north of Beament.

Large areas of landslide debris (Plate I) occur south of China Creek and obscure bedrock through much of the proposed exploration target area.

More than 95 percent of the area is covered by overburden which limits the application of geological mapping. The character of the overburden, e.g. deep river gravels and landslide debris, renders broad geochemical soil surveys inappropriate.

Structures

Faults

Strong easterly-striking faults are visible in rock outcrops along highway and railway cuts (Figure 3). Most faults dip 40° to 70° to the north. Fault gouge commonly consists of heavy whitish to gray clay, with some gouge zones up to 60 centimeters wide.

Other fault zones are inferred from lineaments which are visible on aerial photographs (Plate I).

A major northwesterly-striking zone of faulting and hydrothermal alteration is believed to occur, lying between lower Luno Creek and upper China Creek. This zone is about 1800 meters wide and 7000 meters long. The zone is exposed in outcrops of pyritized, sericitized and argillized rhyolite and rhylotic tuff near Porphyry Creek and in a small road cut east of Bulkley River. An outcrop also occurs on a small tributary of lower Luno Creek.

The zone is believed to be reflected by topography northwest of Beament. A prominent zone of relatively low relief up to 1200 meters wide, is bounded by steep mountains to the southwest and by steep cliffs on the northeast. Outcrops of volcanic rocks in the area of upper China Creek lie on strike of this zone and here most of the rocks are pyritized and argillized.

Bedding in Tuff

Sedimentary bedding is well developed in some tuff layers. At a point 305 meters south of China Creek, bedding in tuff strikes northwesterly and dips about 25 degrees southwesterly. Rock fragments in the tuff vary in size, from coarse lapilli tuff to dust size particles.

Bedding is well developed in coarse, clastic rocks 810 meters south of China Creek. A highway cut exposes beds which strike N.70°E. and dip 20°S.

Rhylolitic tuff beds are exposed in a highway cut about 185 meters north of Porphyry Creek. A small syncline occurs in tuff beds which strike east-west and dip north and south at 10 degrees.

Rock Alteration

Argillic Alteration

Volcanic rocks which display argillic alteration are exposed in outcrops in highway and railway cuts and along the banks of China Creek, 1000 to 2000 meters west of Bulkley River.

An area which lies 1100 to 1140 meters south of China Creek displays intense hydrothermal alteration (See Figure 3 and Appendix II, Specimen 139-3). The zone occurs in lapilli tuff-breccia. The most intense alteration occurs over a width of 39 meters and is fault controlled. Strong alteration envelops the central zone and continues for about 200 meters to the north and about 500 meters to the south.

In the central zone, alteration is pervasive and complete. Rock fragments in the lapilli tuff are replaced by quartz. Calcite pervades the entire zone, forming networks around the altered fragments and narrow calcite veinlets transect the rocks. Hematite, pyrite and traces of other sulfides are associated with the quartz and carbonate alteration.

Carbon (graphite or amorphous carbon) occurs in volumes up to several percent. Carbon (graphite?) forms flakes up to 0.005 mm diameter between mineral grains and in altered fragments. The rocks commonly have a gray to a nearly black color due to the high carbon content.

The carbon was probably derived from carbonaceous sedimentary rocks of the Bowser assemblage, which lie at some depth beneath the volcanic rocks, and was transported to its' present site by hydrothermal solutions. Hausen and Kerr (1968, p.930) in their study of gold occurrences at Carlin, Nevada, show that carbon in the gold ore was remobilized from carbonaceous limestone and, "redistributed during and after the introduction of gold and hydrothermal silica".

Along China Creek, 250-300 meters above the railway, lapilli tuff is argillized, silicified and pyritized. At elevation 582 meters, white to gray tuff is strongly argillized and has boxworks from oxidized pyrite. Tiny masses of black vitreous carbon occur throughout the rock up to a volume of less than 1/2 percent.

Other areas of argillic alteration occur in the canyon of Bulkley River. In the area which lies between 335 meters north and 400 meters south of Porphyry Creek, rock exposures in canyon walls, and in highway and railway cuts display argillic alteration of rhyolite and rhyolitic tuff. These rocks contain up to 10 percent fine grained pyrite, and are limonite stained as a result of oxidation of some of the pyrite. The rocks are whitish to light buff color on fresh surfaces. Phenocrysts and clasts appear (megascopically) to be replaced by sericite. Quartz veins occur throughout the rocks and quartz replaces other minerals. Pyrite occurs in small veinlets and as disseminated, anhedral to subhedral crystals. Some boxworks occur where pyrite is oxidized.

There may exist an overprint of supergene alteration on the otherwise altered rhyolite, as a result of the action of sulfurous acid which developed from the oxidation of pyrite.

Low pH Assemblage

Buchanan (1981) described wall rock alteration which is genetically related to precious metal deposition in epithermal ore deposits. Buchanan (op.cit.) and Berger and Eimon (1982, p.1) show that at the top of the epithermal system, rock alteration consists of silicification underlain by a zone of clay alteration. Alteration changes at depth (at about 200 meters) to quartz-sericite-pyrite-calcite-adularia alteration and may include barite, chlorite and fluorite.

It is shown above that at 1100 to 1140 meters south of China Creek a strong zone of silicification, pyritization and argillization occurs in lapilli tuff. The altered zone is along the fault contact of andesite-breccia and lapilli tuff (Figure 3). This zone of alteration is characteristic of wall rock alteration which was described by Buchanan (1981) and which occurs with precious metal deposits. This zone of low pH alteration is an excellent target and should be tested for gold and silver ore shoots.

Chloritic Alteration

Most andesite breccia and porphyritic dacite display chloritic alteration. Rock specimens 113 to 117 and 122 to 124 are typical of chloritic alteration and are dark grayish-green or dark green. Alteration consists of extremely fine grained greenish clay mixed with chlorite. Some calcite occurs in matrix and in plagioclase crystals.

ROCK GEOCHEMICAL SAMPLING

Analytic Procedure

Rock samples were cut from outcrops in areas of most intense hydrothermal alteration. All samples were analyzed for gold, silver, arsenic and antimony by Chemex Labs Ltd., North Vancouver, B.C.

Analytical procedures are as follows:

Au; 5 gram sample, ashed, digested in aqua regia, dried. Taken up with 25 percent solution H Cl. Bromide complex extracted. MIBK - AA, routine finish.

Ag; 1 gram sample, digested in perchloric and nitric acid. Routine AA analysis. Background corrected.

As; 1 gram sample, digested in perchloric and nitric acid. Aliquot reduced, analyzed flameless AA. Borohydride reduction.

Sb; H Cl - K Cl digestion. TOPO - MIBK extraction. AA finish.

Description of Sample Sites and Rock Analyses

Outcrops of lapilli tuff which lie about 790 meters south of China Creek (Figure 3) and above the railway, are seritized and limonite-stained. A continuous chip sample was cut from the outcrops over a length of 20 meters. Analysis of the sample is as follows;

Sample Number	Au-AA (ppb)	Ag (ppm)	As (ppm)	Sb (ppm)
55535	20	0.1	22	2.0

A railway cut 1400 meters south of China Creek exposes andesite breccia with a prominent limonite stain. The andesite breccia is chloritized and pyritized (See Appendix II, specimen 113 - 5). Five samples were cut from the outcrop along a N. 20 E. direction. Sample interval is 3 meters.

Sample Number	Au-AA (ppb)	Ag (ppm)	As (ppm)	Sb (ppm)
55536	-10	0.1	55	11.0
55537	-10	0.1	48	12.5
55538	-10	0.1	41	9.4
55539	-10	0.1	27	8.6
55540	-10	0.1	27	10.2

(Note: the symbol, "-" means "less than")

A rock cut in the highway south of China Creek exposes a low pH assemblage in lapilli tuff (noted above, 1100 - 1140 meters south of China Creek). The rock alteration is described in the petrographic report shown in Appendix II, specimen 139-3.

Thirteen continous chip samples were cut across the zone, each sample being 3 meters in width.

Sample Number	Au-AA (ppb)	Ag (ppm)	As (ppm)	Sb (ppm)
55541	-10	0.2	22	6.6
42	-10	0.1	12	4.7
43	-10	0.1	11	5.4
44	-10	0.2	7	4.3
55545	-10	0.2	9	2.8
46	-10	0.1	9	3.6
47	-10	0.2	10	4.0
48	-10	0.2	15	3.5
49	-10	2.7	30	3.2
55550	-10	2.2	57	6.0
51	-10	0.8	57	7.3
52	-10	0.9	57	2.6
55553	-10	0.7	61	2.4

Porphyritic dacite breccia is strongly altered along a northwest striking fault about 1890 meters south of China Creek

(Figure 3). Quartz, calcite, sericite and pyrite alteration form a vein which is about 1 meter wide. The rock is described in Appendix II, specimen 221-2.

One sample was cut across the strike of the vein.

Sample Number	Au-AA (ppb)	Ag (ppm)	As (ppm)	Sb (ppm)
55554	-10	0.2	25	4.1

CONCLUSIONS

Volcanic rocks which lie 800 to 1600 meters south of China Creek are extensively altered by hydrothermal activity. A zone about 40 meters wide is identified in this area which has a low pH assemblage (see Buchanan, 1981) and has anomalous geochemical values for silver, arsenic and antimony. This zone is exposed in a highway excavation and strikes about east and west. It is covered by overburden away from the highway cut. This low pH assemblage is of great importance in that it reflects structural controls and hydrothermal activity which may have emplaced gold and silver.

Other rocks in the area of hydrothermal alteration are strongly chloritized, sericitized and locally are pyritized and also contain anomalous values for silver, arsenic and antimony.

A large zone of low relief transects part of the area from southeast to northwest and is up to 1800 meters wide and is about 7000 meters long. These rocks are argillized and pyritized and it is believed that they provide evidence for the existance of a long period of hydrothermal activity, characteristic of hydrothermal events during which precious metals may be deposited.

RECOMMENDATIONS

It is shown above (p.8) that broad geochemical soil surveys are not appropriate in this area due to the nature and distribution of the overburden.

Lithogeochemical prospecting methods however may be utilized to identify leakage halos, up dip from blind, gold and silver-bearing ore bodies. Therefore, it is recommended that a detailed lithogeochemical survey be conducted over the property. The geochemical data when plotted, and integrated with observable geological data may be employed in identifying targets for drilling.

It has been shown (Boyle, 1979) that gold, silver, arsenic and antimony may be used as tracer elements in the search for halos of precious metal deposits. Copper, mercury and boron also may be useful. In this proposal, analysis is for gold, silver, aresenic and antimony at a cost of $16.50 per sample.

Very low frequency electromagnetic (VLF-EM) surveys will be useful in identifying buried conductors, such as metallic bodies and faults with wet clay gouge, as are common in epithermal ore deposits.

An estimate of the cost of exploration utilizing the techniques which are outlined above is as follows:

Line cutting, 20 km @ $400 per km	$ 8,000
Geophysical surveys	14,000
Lithogeochemical survey, supplies	1,500
, sampling	7,500
, assays	8,250
Management, geology	22,500
Legal fees	3,000
Administration, secretarial, drafting	5,500
Truck rental, air fares, helicopter, freight	8,800
Telephone	600
Base maps	350
Total	$80,000

It is recommended that this exploration program be conducted during the period from June to August, 1985

Respectfully submitted,

Willard D. Tompson
November 2, 1984

REFERENCES CITED

Berger, Byron R., and Eimon, Paul I., 1982; Comparative models of epitermal silver-gold deposits: Society of Mining Engineers of AIME, preprint 82-13

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Carter, N.C. and Kirkham, R.V., 1969; Geological compilation map of the Smithers, Hazelton, and Terrace areas: B.C. Dept. Mines and Petrol. Res. Map 69-1.

Hausen, Donald M. and Kerr, Paul F., 1968; Fine gold occurrence at Carlin, Nevada: Ore Deposits of the United States, 1933-1967, the Graton-Sales volume, V.I, pp. 909-940.

CERTIFICATE

I, Willard D. Tompson, of Smithers, British Columbia do hereby certify:

1. That I am a consulting geologist, residing at Van Gaalen Road, Smithers, British Columbia
2. That I hold a Master of Science Degree (Geology) from Montana State University
3. That I am a Fellow of the Geological Association of Canada
4. That I have practiced my profession for more than 25 years
4. That I am a member of the Skeena Syndicate, identified on page 1 of this report
5. That, Gail M. Tompson, owner of the claims which are the subject of this report, is my wife.

Dated at Smithers, British Columbia, this 6th day of November, 1984.

Willard D. Tompson,
Consulting Geologist

Appendix I

Assay Reports

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1
Telephone: (604) 984-0221
Telex: 043-52597

CERTIFICATE OF ANALYSIS

TO : TOMPSON, WILLARD D.

P.O. BOX 395
SMITHERS, B.C.
V0J 1N0

** CERT. # : A8414339-001-A
INVOICE # : I8414339
DATE : 8-AUG-84
P.O. # : NONE
ELDEN 1560

Sample description	Prep code	Ag ppm	AS ppm	AU-AA ppb	Sb ppm		
55534	205	0.1	9	<10	1.6	--	--
55535	205	0.1	22	20	2.0	--	--
55536	205	0.1	55	<10	11.0	--	--
55537	205	0.1	48	<10	12.5	--	--
55538	205	0.1	41	<10	9.4	--	--
55539	205	0.1	27	<10	8.6	--	--
55540	205	0.1	27	<10	10.2	--	--
55541	205	0.2	22	<10	6.6	--	--
55542	205	0.1	12	<10	4.7	--	--
55543	205	0.1	11	<10	5.4	--	--
55544	205	0.2	7	<10	4.3	--	--
55545	205	0.2	9	<10	2.8	--	--
55546	205	0.1	9	<10	3.6	--	--
55547	205	0.2	10	<10	4.0	--	--
55548	205	0.2	15	<10	3.5	--	--
55549	205	2.7	30	<10	3.2	--	--
55550	205	2.2	57	<10	6.0	--	--
55551	205	0.8	57	<10	7.3	--	--
55552	205	0.9	57	<10	2.6	--	--
55553	205	0.7	61	<10	2.4	--	--
55554	205	0.2	25	<10	4.1	--	--

CTA

Certified by .... Hart Bichler

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave.
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Canada V7J 2C1
Telephone: (604) 984-0221
Telex: 043-52597

CERTIFICATE OF ANALYSIS

TO : TOMPSON, W.D.

BOX 395
SMITHERS, B.C.
V0J 2H0

** CERT. # : A8414843-001-A
INVOICE # : I8414843
DATE : 20-AUG-84
P.O. # : NONE
ELDEN 1574

Sample description	Prep code	Ag ppm	AS ppm	AU-AA ppb	Sb ppm		
55555	205	0.4	16	<10	0.6	--	--
55556	205	0.2	6	<10	0.2	--	--
55557	205	0.1	5	<10	0.2	--	--

CTA

Certified by .... HartBichler

Appendix II

Petrographic report on rocks from area.

Vancouver Petrographics Ltd.

JAMES VINNELL, Manager
JOHN G. PAYNE, Ph. D. Geologist

P.O. BOX 39
8887 NASH STREET
FORT LANGLEY, B.C.
V0X 1J0

PHONE (604) 888-1323

Invoice 4674

Report for: Willard D. Tompson,
P.O.Box 395,
Smithers, B.C.,
V0J 2N0

August 7, 1984

Samples: 113-5, 115-2, 127, 129-1, 134, 139-3, 221-2.

Summary:

1) PORPHYRITIC DACITE: 127 and 134.

These are volcanic (subvolcanic??) rocks consisting of plagioclase phenocrysts within a fine grained plagioclase-quartz groundmass. Moderate pervasive sericite alteration occurs within the groundmass. Fairly intense calcite alteration occurs in the phenocrysts and in small patches in the groundmass; some phenocrysts are completely replaced. The carbonate patches are stained brown with limonite around their margins, suggesting that it is an Fe-rich calcite. Sericite is associated with the carbonate in the phenocrysts. Minor quartz is associated with carbonate in the groundmass of sample 134 which is the more altered of the two samples. There is a dendritic pyrite-calcite vein cutting sample 134.

2) PORPHYRITIC DACITE BRECCIA: 221-2.

This sample consists of large fragments of porphyritic dacite similar to samples in group 1 above which are crowded within a very fine grained plagioclase-rich matrix. The dacite fragments (phenocrysts and groundmass) are quite highly altered with sericite, calcite and minor quartz. The breccia matrix is moderately altered. Graphite(??) is associated with the quartz.

3) LAPILLI TUFF-BRECCIA: 129-1 and 139-3.

These are volcaniclastic rocks consisting of volcanic lithic and crystal fragments crowded in a fine grained cryptocrystalline plagioclase matrix. They could well have been welded. Fragments range in size from 0.2 to 5.0mm and consist of plagioclase, quartz, andesite, dacite and ash tuff.

(continued)

Summary (cont.)

Sample 129-1 is moderately altered. Plagioclase fragments are highly sericitic. Calcite (stained with limonite) occurs in patches in the matrix and in the lithic and crystal fragments.

Sample 139-3 is highly altered. Almost all the fragments, apart from a few relatively large tuffaceous and andesitic fragmemts, have been replaced by aggregates of quartz. The matrix has been replaced by calcite mixed with fine hematite, graphite and sericite. Graphite, calcite, sulphides (mainly pyrite) also occur intergrown with the quartz in the altered fragments.

4) ANDESITE BRECCIA: 113-5 and 115-2.

These are eruptive breccias consisting of fragments of andesite crowded in a fine plagioclase-rich matrix. The andesite in sample 115-2 is coarsely porphyritic and many plagioclase phenocrysts have been incorporated within the matrix which has penetrated into and broken up the fragments.

Alteration in 115-2 consists mainly of the development of an extremely fine greenish clay (montmorillonite??) mixed with some chlorite which has replaced much of the matrix and also occurs within the groundmass of the andesite fragments. A few phenocrysts are also replaced by this material. Small amounts of calcite occur in patches within the plagioclase phenocrysts and in fragments of non-porphyritic andesite.

Alteration in 113-5 and consists mainly of the development of sericite and calcite within the small phenocrysts and the groundmass of the andesite fragments. The sericite is intergrown with fine chlorite in the groundmass of the andesites and chlorite development is more intense in the matrix of the breccia. Calcite patches occur in the matrix and these are associated with pyrite which is disseminated about the rock and concentrated near a vein of calcite.

A. L. Littlejohn, M.Sc.

113-5: ANDESITE BRECCIA.

This sample consists of subrounded fragments of andesite crowded within a very fine grained plagioclase - chlorite matrix. The andesite contains small phenocrysts of plagioclase and these are scattered about the matrix from the breakdown of some fragments. Fragments range in size from 0.3 to 3.0mm; there is one about 1cm in size. Pervasive chlorite alteration has occured in the groundmass of the fragments and the matrix of the breccia; it is more intense in the breccia matrix. Calcite has partly replaced many of the plagioclase phenocrysts and also occurs in patches within the matrix. A calcite veinlet is associated with pyrite mineralization. Composition is:

andesite fragments	40%	(70% altered to sericite, chlorite, calcite)
plagioclase fragments	26	(85% altered to calcite,sericite)
plagioclase matrix	4	
chlorite	10	
calcite	7	(not including that in fragments)
pyrite	5	
sericite	3	
clay (montmorillonite??)	2	
Fe-Ti oxide	3	
quartz	trace	
chalcopyrite	trace	

The fragments are all of the same type of andesite which consisted of euhedral phenocrysts 0.2 to 1.0mm scattered within a fine grained groundmass originaly consisting of shapeless plagioclase grains less than 0.05mm in size. Phenocrysts make up about 20% of the andesite. The groundmass has been altered by an extremely fine grained mixture of sericite (dominant) and a pale green chlorite. The phenocrysts are moderately sericitic and quite highly altered by calcite. Some are almost completely replaced by calcite. The plagioclase fragments appear to have been derived from the breakdown of the lithic fragments and are quite highly altered by calcite (dominant) and sericite).

The matrix of the breccia consisted of a mass of extremely fine cryptocrystalline plagioclase grains and this has been highly altered with very fine pale green chlorite. Fine sericite flakes are disseminated throughout. In places there are small patches of a very fine brownish, almost isotropic clay within the mass of chlorite and remnant plagioclase. Some occurs in a fine network within the plagioclase fragments. Fe-Ti oxide forms ragged grains less than 0.02mm in size which are disseminated throughout the matrix and concentrated in a thin zone around the lithic fragments.

Calcite forms fine grains occuring in ragged rounded or irregularly shaped patches up to 2mm in size; most are less than 0.5mm. Much of the calcite in the rock occurs replacing the plagioclase laths. In the larger patches there are aggregates of fine chlorite flakes. Small amounts of quartz are also intergrown with the calcite.

(continued)

113-5 (cont.)

There is a calcite veinlet about 1mm wide and limonite stain has occured in the rock adjacent to this. The larger calcite patches occur near the veinlet and one of these is intergrown with a network of fine pyrite stringers. Thin vein-like patches of pyrite occur adjacenmt to the calcite vein. Much of the pyrite is disseminated throughout the rock and it forms ragged rounded to cubic grains 0.02 to 0.2mm in size. These tend to occur in clusters with the smaller grains occuring around small aggregates of the larger ones. Very thin discontinuous pyrite stringers occur throughout the rock also. There are traces of fine chalcopyrite associated with a few of the pyrite clusters.

115-2: ANDESITE BRECCIA.

This sample is a volcaniclastic breccia consisting mainly of porphyritic andesite fragments which have been broken up and penetrated by the fine plagioclase matrix so that fragment boundaries are indistinct. Many of the plagioclase phenocrysts have been incorporated within the matrix and distinction between the breccia matrix and the groundmass of the andesite fragments is not always clear. The dominant alteration is a clay-chlorite alteration which has formed extremely fine greenish material within the andesite groundmass and the breccia matrix; a few plagioclase laths have also been replaced by this. Some calcite alteration has also occured. The original rock consisted of:

porphyritic andesite	65%
andesite	20
matrix	15

Superimposed on this is the alteration which mainly affects the porphyritic andesite and the matrix. Proportions of the alteration minerals are:

clay (montmorillonite??)	20
chlorite	5
calcite	3
opaques (hematite,pyrite?)	5
quartz	2
sericite	minor

The porphyritic andesite consists of euhedral laths of plagioclase 0.5 to 3.0mm in size and comprises about 30% of the rock. Aggregates of a few phenocrysts occur. The groundmass consists of a mass of thin plagioclase laths 0.05 to 0.2mm in length with scattered laths about 0.5mm in size. These have a weak flow orientation, sometimes wrapping around the phenocrysts. The groundmass laths make up about 50% of the porphyritic andesite; minor apatite grains about 0.2mm in size occur within the groundmass and the rest consists of a mass of extremely fine greenish, almost isotropic clay within which the groundmass laths are crowded. The clay grades into small patches consisting of brighter green chlorite flakes mostly less than 0.05mm in size.

The non-porphyritic andesite consists of subrounded interlocking plagioclase grains 0.05 to 0.2mm in size with a small proportion of squat euhedral laths up to 0.8mm in size. These fragments are relatively unaltered.

The matrix of the breccia consists of a mass of fine feathery to shapeless plagioclase grains less than 0.05mm in size. It is crowded with small and large plagioclase fragments. Pervasive fine clay alteration occurs within the matrix.

(continued)

As well as the pervasive clay-chlorite alteration this material has affected the plagioclase phenocrysts in the porphyritic andesites, occuring in small ragged patches; in a few places the plagioclase has been completely replaced by it. Ragged grains of hematite (some pyrite??) less than 0.05mm in size are disseminated throughout the rock within the breccia matrix and the fine grained groundmass of the porphyritic andesite. These grains commonly occur in clusters and aggregates up to 0.4mm in size. Calcite occurs in ragged patches up to 1mm in size within the plagioclase phenocrysts and in the non-porphyritic andesite. It is often associated with fine sericite. Quartz forms very fine grains occuring in cherty looking patches in the breccia matrix and it sometimes replaces the edges of plagioclase laths.

127: PORPHYRITIC DACITE.

This sample is a medium to fine grained, massive, inequigranular volcanic rock. Plagioclase phenoccysts occur within a fine plagioclase-quartz matrix. It is probably a flow or perhaps a subvolcanic intrusive. Pervasive sericite alteration occurs within the groundmass and phenocrysts. Carbonate (calcite) alteration occurs in patches thoughout and is asssociated with limonite. Minerals are:

plagioclase phenocrysts	30%
plagioclase groundmass	26
calcite	18
limonite (+ hematite)	12
quartz	8
sericite	6
apatite	minor
opaque (Fe-sulphide?)	trace

Plagioclase phenocrysts form euhedral laths 0.5 to 2.5mm in size, averaging about 1.0mm. The phenocrysts are quite crowded within a groundmass consisting mainly of irregularly shaped interlocking plagioclase grains less than 0.05mm in size. There are also a few places where the groundmass plagioclase forms thin, ill-formed laths up to 0.2mm in length. Quartz forms subrounded grains about 0.05mm in size which occur in small aggregates intergrown with the groundmass plagioclase. A few prismatic apatite grains 0.05 to 0.2mm in size are scattered about the groundmass.

Pervasive sericite alteration occurs within the groundmass and the phenocrysts. In the groundmass the sericite forms very fine flakes which are disseminated between the plagioclase grains and has been such that the plagioclase grain margins are blurred. Clusters of fine sericite flakes are intergrown with the quartz. Sericite alteration is much less intense in the phenocrysts and the sericite occurs in scattered patches up to 0.2mm in size.

Carbonate alteration is quite intense in both the groundmass and the phenocrysts. The calcite forms ragged rounded patches 0.2 to 2.0mm in size, consisting of one or two grains, which occur throughout the rock. Some of the phenocrysts have been almost completely replaced by calcite. Small patches of sericite often occur within the carbonate patches. The calcite is associated with limonite which forms a thin zone around the carbonate patches. Smaller patches may be dominantly limonite. There are also ragged patches less than 0.2mm in size which consist entirely of limonite. Extremely fine hematite grains occur within the limonite in places. The carbonate is associated with rounded to cubic opaque grains 0.05 to 0.2mm in size which occur in small clusters within some of the calcite patches.

129-1: LAPILLI TUFF-BRECCIA.

This sample is a volcanicalstic rock consisting of volcanic lithic and crystal fragments crowded within a fine plagioclase matrix. In places the fragments are welded. There is an indistinct streaky layer about 1mm in width in which there is few fragments. The lithic fragments are mostly less than 1mm in size but there are a few larger ones up to 5mm in size. They consist of andesites, dacite and ash tuffs. Crystal fragments are quartz and plagioclase. Minor sericite occurs in the groundmass but the plagioclase fragments are quite highly sericitic. Moderate carbonate alteration occurs both in the groundmass and the fragments. Composition is:

plagioclase fragments	32%	(85% altered to sericite)
quartz fragments	10	
andesite fragments	10	
dacite fragments	10	
tuff fragments	3	
plagioclase matrix	15	
calcite (+ limonite)	20	
quartz	minor	
sericite	minor	
opaque (Fe-sulphide)	trace	
epidote	trace	
zeolite	trace	

Plagioclase fragments are rounded to lath-like, sometimes broken, and range in size from 0.1 to 1.0mm. They have been altered to a mass of extremely fine sericite. Many also contain small patches of fine calcite. Quartz fragments are angular to subrounded and vary in size from 0.1 to 0.3mm. A few are aggregates of several shapeless grains.

Lithic fragments are mainly dacite and andesite of various types. Most of the andesitic fragments consist of a mass of irregularly shaped plagioclase grains less than 0.05mm in size. Some contain ill-formed laths of plagioclase and one or two consist of a mass of fine laths. Extremely fine Fe-Ti oxides are disseminated in some of them. The dacite fragments are generally larger than the andesites and consist of a mass of subrounded plagioclase grains 0.1 to 0.3mm in size which are intergrown with some similarly sized quartz grains. The smaller fragments of this type may not contain any quartz. There are a few tuffaceous fragments one of which is dark grey and about 3mm in size. This consists of a mass of very fine cryptocrystalline material intimately mixed with fine Fe-Ti oxides; quartz and feldspar fragments less than 0.02mm in size are scattered about the rock. There is a vague fine layering.

The matrix consists of a streaky mass of fine feathery plagioclase grains less than 0.02mm in size with incipient sericite within it. Extremely fine cherty quartz occurs mixed with the plagioclase and often replaces the edges of fragments.

(continued)

129-1 (cont.)

Alteration in the matrix consists of the development of ragged patches of fine calcite less than 0.2mm in size. They are stained brown with limonite. Calcite also replaces many of the fragments. There are small amounts of ragged opaque grains (Fe-sulphide) within some of the carbonate patches. Calcite also occurs in a few veinlets up to 0.4mm wide. In these it is unstained except at the vein margins. Fine epidote is intergrown with calcite in a small vein-like patch. There are several feathery splays of acicular zeolite grains about 0.6mm in length. Small carbonate patches occur within them.

134: PORPHYRITIC DACITE.

This sample is a fine to medium grained, inequigranular, massive volcanic rock which is probably a flow or perhaps a subvolcanic intrusive. It consists of plagioclase phenoccrysts scattered within a fine plagioclase-quartz groundmass. Minor sericite occurs pervasively within the groundmass and is more intense in the phenocrysts. Calcite (with limonite) alteration has been intense and replaces many of the phenocrysts; large patches occur in the groundmass. Pyrite (from hand specimen) occurs in a thin dendritic vein and is intergrown with the calcite, and also minor quartz. Minerals are:

plagioclase phenocrysts	10	(98% altered to calcite, minor sericite)
plagioclase groundmass	20	
quartz	10	(approx. 20% of this has been introduced)
calcite	50	(stained with limonite)
sericite	4	
opaque (mainly pyrite)	5	
Fe-Ti oxide	1	
zircon	trace	

Plagioclase phenocrysts form euhedral laths 0.5 to 1.5mm in size, averaging about 0.8mm. They are scattered within a groundmass consisting of subrounded interlocking plagioclase grains less than 0.05mm in size. There are also a few indistinct aggregates in which the grain size is up to 0.1mm in size and some of these have a lath-like shape. The plagioclase is intergrown with shapeless to subrounded quartz grains 0.05 to 0.2mm in size. It often occurs in small aggregates. A few rounded zircon grains about 0.05mm in size are scattered about the groundmass.

Pervasive fine sericite alteration occurs throughout the groundmass but much of the sericite is concentrated in the phenocrysts where it occurs in patches intergrown with calcite. Calcite alteration has been intense and it occurs as very fine grains in ragged, partly interconnected patches 0.1 to 1.0mm in size. In the larger patches there may be aggregates of grains up to 0.3mm in size. Many of the plagioclase phenocrysts have been completely replaced by calcite. The calcite has been stained brown with limonite and this tends to be concentrated around the edges of the patches. Extremely fine Fe-Ti oxides occur in ragged aggregates less than 0.05mm in size disseminated throughout the groundmass.

Quartz is sometimes intergrown with the calcite patches and forms subhedral grains 0.1 to 0.3mm in size occuring in aggregates of a few grains. In these intergrowths there are also irregularly shaped to subcubic grains of an opaque mineral (pyrite) 0.05 to 0.3mm in size. These also occur in carbonate patches without the subidiomorphic quartz grains. The pyrite is concentrated in a vein about 0.2mm wide but which has a dendritic structure. In this the pyrite forms a fine network around carbonate grains. There are also a few subidiomorphic grains of quartz within the calcite-pyrite intergrowth. The carbonate is intensely stained with limonite. Small sericitic plagioclase patches occur within the network of pyrite and calcite.

139-3: ALTERED LAPILLI TUFF-BRECCIA.

This sample is a highly altered volcaniclastic rock originally consisting of rounded to tabular lithic and crystal fragments 0.2 to 2.0mm in size which are crowded together (welded?) in a fine grained matrix. Alteration has been pervasive and complete. The fragments have been replaced by quartz and calcite (with limonite) pervades the whole rock, forming a network around the altered fragments. There are also a few thin calcite veinlets. Graphite, hematite, pyrite (and traces of other sulphides) are associated with the quartz and carbonate alteration. Minerals are:

remnants	10%	(andesite, tuff)
quartz	40	
calcite	35	(with limonite stain)
sericite	5	
hematite	4	
graphite	4	
pyrite	2	
chalcopyrite	minor	
sphalerite	trace	
galena	trace	
chlorite	trace	

Remnant fragments are subrounded and between 0.2 and 2.0mm in size. Tuff fragments are dominant and tend to be larger. They consist of a finely layered cryptocrystalline material mixed with a high proportion of extremely fine hematite; extremely small quartzitic fragments are scattered within this. The andesites consist of a mass of shapeless plagioclase grains less than 0.05mm in size. There are several tabular fragments which were probably plagioclase. These are mostly altered to calcite and sericite.

Most of the fragments have been completely replaced by quartz. It forms irregularly shaped grains 0.05 to 0.1mm in size. Some calcite occurs between the quartz grains. In places it forms up to a half of the fragment. Some sericite also occurs between the quartz grains and in a few fragments chlorite is intergrown with it and the calcite.

About 15% of the quartz occurs within the matrix where it forms diffuse patches of very fine cherty appearing quartz; these sometimes grade into irregularly shaped patches up to 1mm in size consisting of quartz of highly variable size and shape. In these the quartz is often a dirty grey colour due to the presence of extremely fine graphite. Graphite forms flakes up to 0.05mm in size which occur between the quartz grains in the altered fragments. The graphite is also mixed in with the carbonate and is concentrated in fairly large indistinct dark patches.

(continued)

The carbonate alteration appears to have occured after the silicification but is probably part of the same event. It forms very fine grains forming a fine network around the silicified fragments. The edges of the silicified fragments are being replaced by carbonate. It is stained a dark brown with limonite and ragged hematite (and Fe-Ti oxide) grains less than 0.05mm in size are disseminated thoughout it. These are often concentrated around the edges of the fragments and in places the fragments themselves are highly hematitic. Some sericite occurs mixed with the carbonate and this is concentrated where calcite, rather than quartz, has replaced plagioclase laths. The carbonate in these is usually clear of limonite stain. There is a vein of calcite about 1mm wide cutting through the rock, including the fragments. This calcite is also clear of limonite and forms subrounded grains 0.2 to 0.8mm in size.

Sulphides are associated with the quartzitic parts of the rock. The dominant sulphide is pyrite and it forms cubic grains 0.01 to 0.1mm in size; most are less than 0.05mm. They occur in clusters within the altered fragments or within silicous parts of the matrix. Zonal growth is evident in many of the larger grains. Chalcopyrite forms irregularly shaped grains less than 0.1mm in size which occur in clusters intergrown with quartz in the altered fragments and is often associated with calcite. Galena also forms grains of this type but only occurs sporadically. Sphalerite forms rounded grains 0.1 to 0.3mm in size which occur in the core of the silicified fragments, often with calcite.

221-2: PORPHYRITIC DACITE BRECCIA.

This sample consists of a mass of porphyritic dacite fragments up to 1cm in size which are crowded within a fine plagioclase-rich matrix. It is an extrusive breccia and has been quite intensely altered with sericite and calcite (mainly in the fragments. The fragments are similar to samples 127 and 134. Opaque minerals appear to be pyrite and graphite (inferred by comparison with sample 139-3; this sample was not polished). The matrix makes up about 20% of the sample. Minerals are:

Fragments		Matrix	
plagioclase	20%	plagioclase	75%
sericite	34	sericite	5
calcite	30	calcite	12
quartz	8	Fe-Ti oxide	8
opaque	8	quartz	minor
apatite	minor		
zircon	trace		

The original rock consisted of about 25% euhedral plagioclase phenocrysts 0.5 to 1.5mm in size which occured within a groundmass consisting of irregularly shaped plagioclase grains about 0.05mm in size. Subprismatic apatite grains 0.05 to 0.2mm in size and rounded zircons about 0.05mm in size are scattered about the groundmass.

Both the groundmass and the phenocrysts have been thouroughly altered. Only remnant groundmass plagioclase remains and this is intimately intergrown with very fine sericite. The phenocrysts have been completely sericitised and many have also been partly altered to calcite. Some are completely replaced by calcite. The calcite forms very fine grains which occur in ragged rounded patches 0.1 to 0.5mm in size. Limonitic stain is common, particularly around the edges of the patches.

Some quartz may have been intergrown with the original groundmass plagioclase but most appears to have been introduced along with the calcite. It occurs in thin (less than 0.05mm) discontinuous veinlets which also contain the carbonate. Vein-like patches consist of irregulalrly shaped quartz grains 0.05 to 0.2mm in size. Grains of this type sometimes occur in small ovoid aggregates which appear to be small silicified phenocrysts. The quartz often occurs intergrown with calcite and is also intergrown with small ragged, subcubic opaque grains less than 0.1mm in size. These are presumably pyrite. Some of the quartz is cloudy with a extremely fine mineral which could be graphite. Whispy stringers of opaque material form a network cutting through the rock. This appears to be a mixture of hematite and graphite(?). Fine ragged grains of hematite (and Fe-Ti oxide) are disseminated throughout the rock. It is often concentrated in tabular to rounded patches up to 0.5mm in size; some of these are altered plagioclase phenocrysts. Opaques also occur within the outer zone of the carbonate patches.

(continued)

221-2 (cont.)

The matrix of the breccia consists of a mass of cryptocrystalline plagioclase grains less than 0.01mm in size. Extremely fine sericite is disseminated within the mass of plagioclase. Fe-Ti oxides are also disseminated and tend to occur in ragged aggregates up to 0.05mm in size. Extremely fine calcite is also disseminated throughout the matrix material and also occurs in scattered ragged rounded patches 0.1 to 0.5mm in size. Quartz only occurs in very thin discontinuous veinelts.

BEAMENT PROJECT

Cost Apportionment Calculation

Geological		
Wages and fees,	$6,525.00	
Field, lab, office	1,549.67	
		$ 8,074.67
Geochemical		
Wages and fees,	2,610.00	
Field, lab, office	619.87	
		3,229.87
Related technical, petrographic		
Wages and fees,	1,305.00	
Field, lab, office	309.93	
		1,614.93
Prospecting		
Wages and fees,	1,957.50	
Field, lab, office	464.90	
		2,422.40
Preparatory, photogrammetric		
Wages and fees,	652.50	
Field, lab, office	154.97	
		807.47
Total		$16,149.34

Drue.

BEAMENT PROJECT

Summary of Expenditures Which May be Used for Assessment Credits

China Creek Group		
Wages and fees	$10,440.00	
Field, Lab and Office	2,479.47	
Total		$12,919.47
Ram M.C.		
Wages and fees	2,610.00	
Field, Lab and Office	619.87	
Sub Total		$ 3,229.87
Total		$16,149.34

Total Wages and fees	$13,050.00
Total field,lab & office	3,099.34
Total	$16,149.34

JMT

BEAMENT PROJECT

Summary of Field and Office Days Worked

Field Workers, 1984

Geological Surveys and Sampling

Name	Job	Dates	No. of Days	Pay Rate	Amount Chargeable
W. D. Tompson	Mapping, prospecting, and sampling	July 2,4,5, 6,11,16,18, 19-21,24,26, 31,Aug.8,10, Oct. 11	16	$300	$ 4,800
W. D. Tompson	Office, lithologic work, interp. and report preparation	July 15,23, 27, Aug.7,9, Oct.12,13,15, 26,27,29,30, 31. Nov.1-3, 5-9	21	$300	6,300
	Half days	July 10,17, Aug.4,11, Oct.1,10,14	3½	$300	1,050
Gail Tompson	Geol.Assist. & Sampling	July 4, 31	2	$150	300
Ed DeWitt	Geol.Assist.	July 5,6,11	3	$150	450
Jack Hemelspeck	Geol.Assist.	Aug. 8	1	$150	150
			36½		$13,050

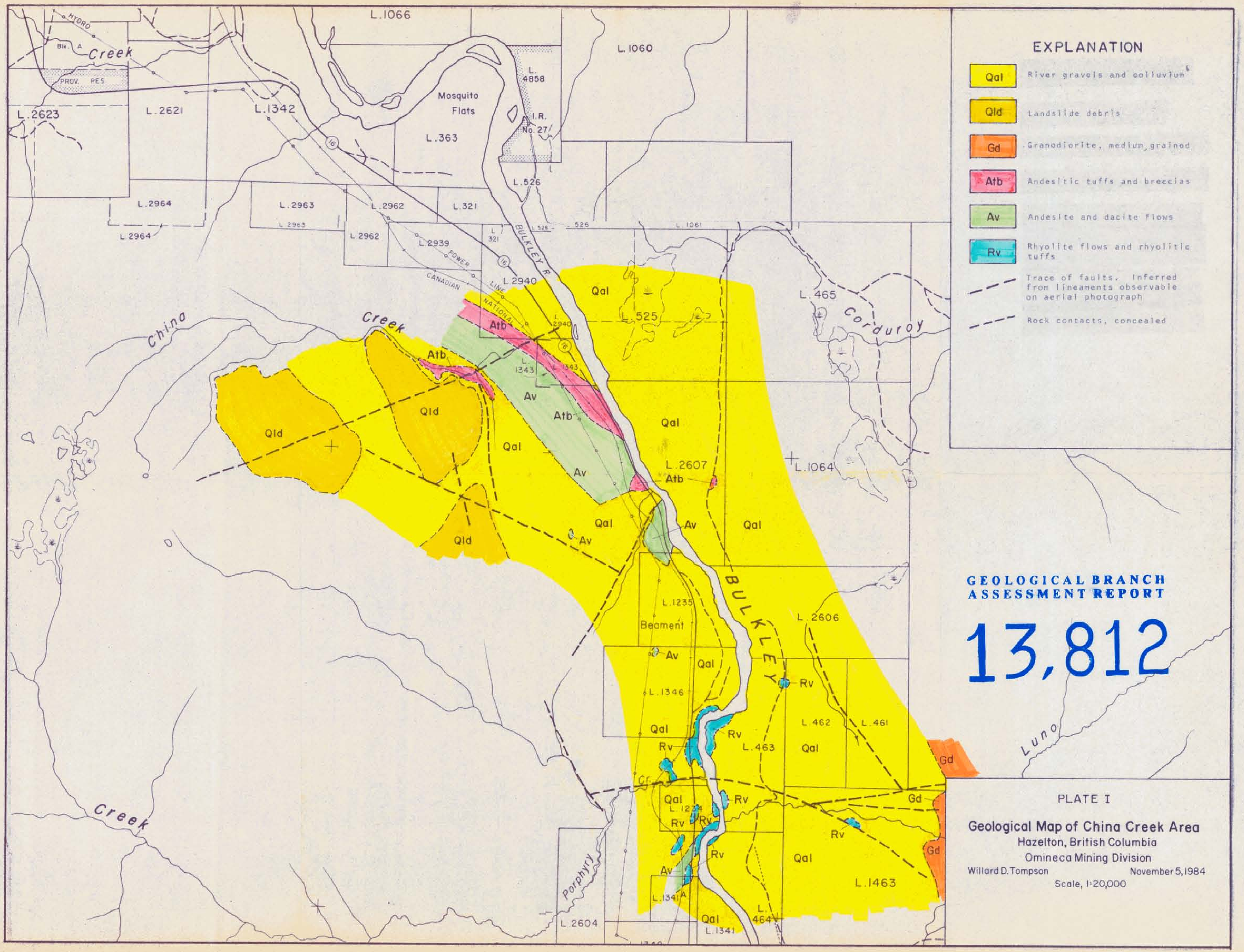
WDT.

Beament Project July - November, 1984

Field Expenses Which May be Claimed for Assessment Credit

Description of Cost Item	Cost
Copies of report	$ 23.12
Copies of maps, B.C.D.M.	4.00
Typing, final report	244.25
Drafting supplies	22.00
Assays, Invoice #1841843, Chemex	49.50
Copies of maps, Western Repro	19.13
Copies	3.50
Petrographic work, Vancouver Petrographics. Contract.	408.25
Field Supplies	126.42
Ship samples to assay office	40.70
Maps	33.70
Hip chain	126.42
Air photos	20.25
Transportation.Vehicle rental @$1000 / month + (2480 mi.x 12¢) + (450 l x 52¢)	1,631.60
Assays. Invoice #18414339, Chemex	346.50
Total	$3.099.34

Done


EXPLANATION
Qal River gravels and colluvium
Qld Landslide debris
Gd Granodiorite, medium grained
Atb Andesitic tuffs and breccias
Av Andesite and dacite flows
Rv Rhyolite flows and rhyolitic tuffs
Trace of faults. Inferred from lineaments observable on aerial photograph
Rock contacts, concealed
GEOLOGICAL BRANCH
ASSESSMENT REPORT
13,812
PLATE I
Geological Map of China Creek Area
Hazelton, British Columbia
Omineca Mining Division
Willard D. Tompson
November 5, 1984
Scale, 1:20,000
China Creek
Mosquito Flats
BULKLEY R.
BULKLEY
Corduroy
Luno
Porphyry
Creek
Beament
CANADIAN NATIONAL POWER LINE
PROV. RES.
I.R. No. 27
L.1066
L.1060
L.4858
L.2623
L.2621
L.1342
L.363
L.526
L.2964
L.2963
L.2962
L.321
L.2939
L.2940
L.525
L.465
L.1343
L.2607
L.1064
L.1061
L.1235
L.2606
L.1346
L.462
L.461
L.463
L.1463
L.1341
L.464
L.2604