ASSESSMENT REPORT

HAT Claims, B.C.

16 December, 1996

ASSESSMENT REPORT

on the

HAT Claims, British Columbia

comprising the

HAT LAKE and HAT LAKE 2-4 Claims

For

Birch Mountain Resources Ltd.

By

Daniel A. Beauchamp, P.Geol.

Simon X. Fan

Brett G. Johnson

OWNER AND OPERATOR:	Birch Mountain Resources Ltd.
N.T.S.:	93K/16W and 93K/9W
PROVINCE:	British Columbia
LATITUDE:	54°46.5' N
LONGITUDE:	124°22.0' W
MINING DIVISION:	Omineca
DATE:	December 16, 1996

EXECUTIVE SUMMARY

A five-person crew of geologists and assistants conducted geological mapping, prospecting and reconnaissance geochemical surveys over the HAT LAKE claims and surrounding areas located about 50 km north of Fort St. James, B.C. for three weeks in June 1996.

The area can be reached by a four-season gravel road, and the many logging roads throughout the area provide good access to most parts of the project area.

The project area is underlain by units of the Takla Group, an Upper Triassic to Lower Jurassic volcano-sedimentary assemblage of island-arc origin. Generally, small intrusions of granite, syenite and gabbro have intruded the Takla Group during the late Cretaceous or early Tertiary. Eocene and Oligocene volcanic and sedimentary rocks were emplaced and Quaternary basalt was extruded east of the project area. Thick Quaternary glacial overburden covers the area to a depth of up to 200m and outcrops are rare.

The regional geochemical sampling program consisted of taking soil samples at 500m intervals along the traverses. The streams were sampled when they were crossed. All samples were analyzed for gold and 15 other elements consisting of copper, nickel, lead, zinc, cobalt, cadmium, molybdenum, silver, tungsten, arsenic, antimony, bismuth, selenium, tellurium and mercury. The results of this survey identified seven soil anomalies and high values for gold and copper in the project area.

A follow-up detailed geochemical program in August 1996 focused on resampling the anomalous areas with 3x3 or 5x5 mini-grids at 25m intervals. These sites were sampled and prospected in greater detail. None of the initial anomalous values were reproduced.

No further work is recommended on these claims.

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1. INTRODUCTION

The purpose of this report is to describe the field activities conducted by Birch Mountain Resources Ltd. on the HAT claims in north-central British Columbia during the 1996 summer field season (Fig. 1.1). The project area comprises the HAT LAKE and HAT LAKE 2-4 claims in the Omineca District of British Columbia.

The recorded exploration history in the area can be traced back to the early 1960's, and several companies were involved in this work, including the N.B.C. Syndicate, J.C. Stephen Exploration Ltd., Selco Inc., Goldcap Inc., Black Swan Gold Mines Ltd., United Pacific Gold, City Resources (Canada) Ltd., Rio Algom Exploration Inc. and Noranda Exploration Company Ltd. The principal target of the exploration programs has been porphyry copper-gold mineralization.

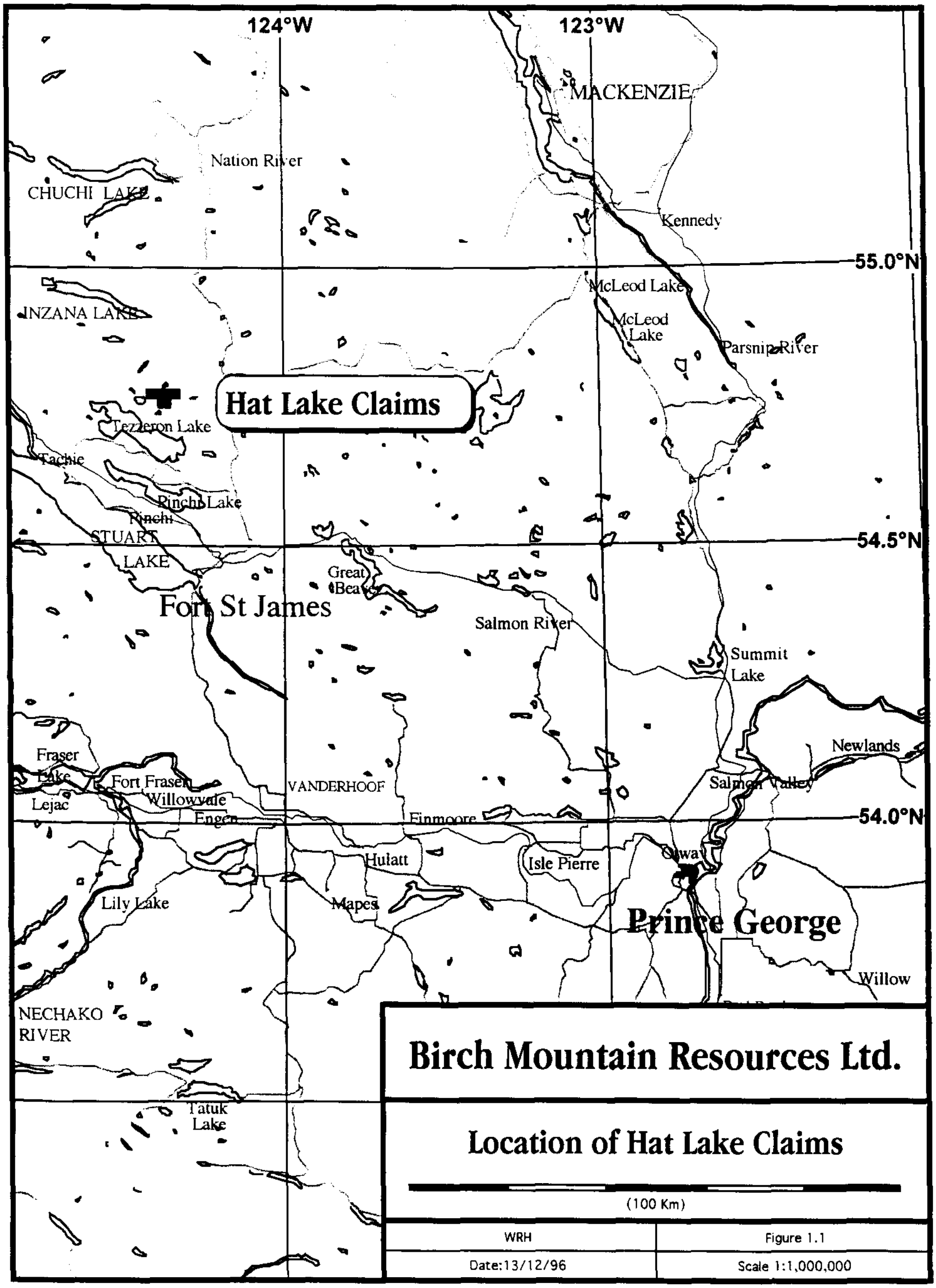
In 1996, Birch Mountain Resources Ltd. entered into an agreement to further explore the area. The company carried out a program of prospecting and geochemical surveying on the claims during the 1996 summer field season.

The 1996 field crew consisted of five geologists and assistants including D.A. Beauchamp, S.X. Fan, B.G. Johnson, S. Reimond and E. Washburn. Dennis Jacobson, cook, and Gary Lee, camp manager, provided support services in the field.

The field program consisted of geological mapping, prospecting and geochemical sampling at about 500m spacing along the traverses over a period of three weeks from June 10 to June 30, 1996. From August 6 to August 21, a two-person crew was dispatched to resample the geochemical anomalies that had been identified in the first part of the program.

2. PROPERTY DESCRIPTION

The location of the HAT LAKE claims is shown in Fig. 2.1 and the particulars of the claims are listed in Table 2.1. The HAT LAKE 2-4 claims lapsed in 1996 and were re-staked in late July and August 1996, shortly after the field work was completed.



Birch Mountain Resources Ltd.

Location of Hat Lake Claims

(100 Km)

WRH	Figure 1.1
Date:13/12/96	Scale 1:1,000,000

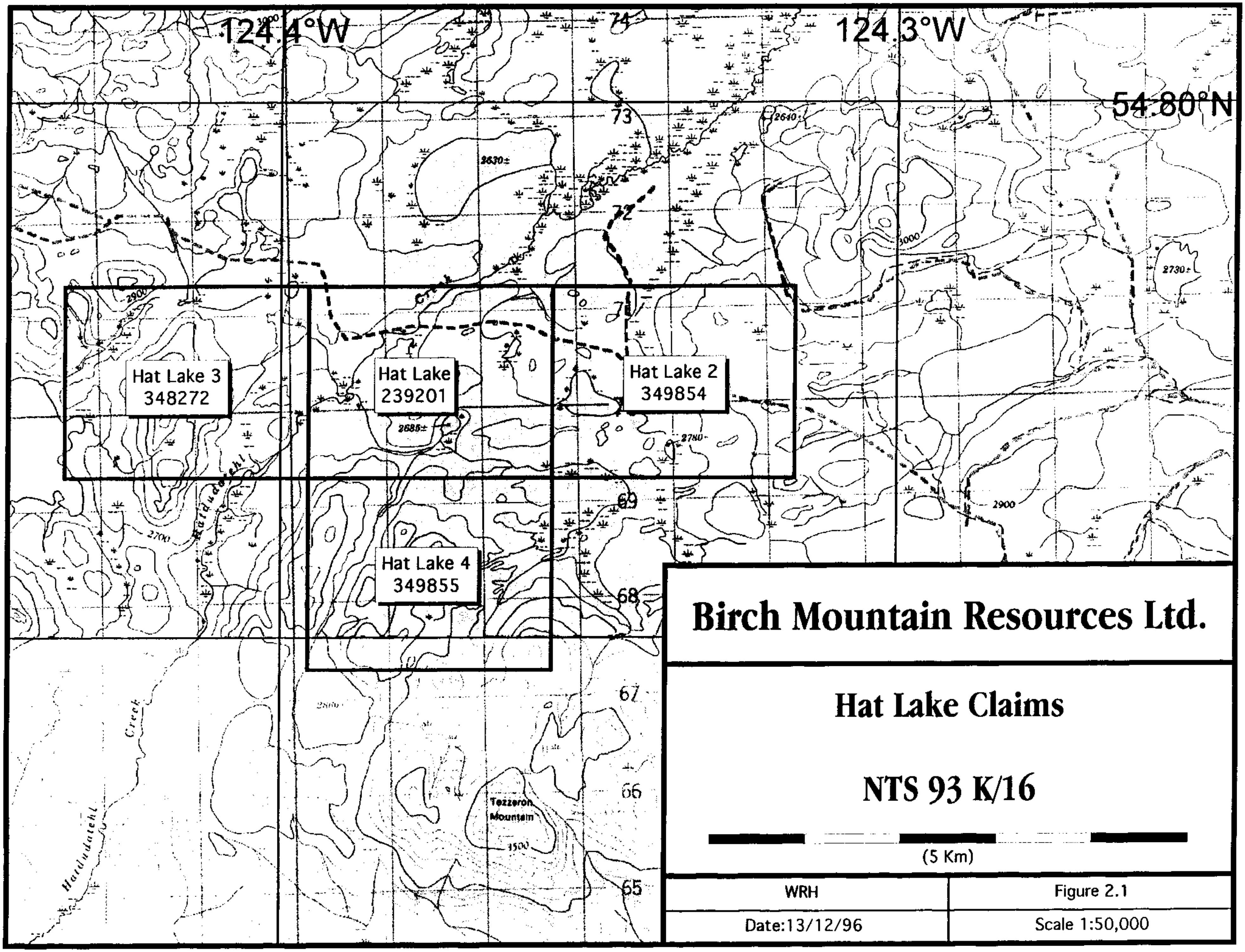

124.4°W
124.3°W
54.80°N
74
73
72
71
69
68
67
66
65
2630±
2640
3000
2730±
2900
2700
2685±
2780
Hat Lake 3
348272
Hat Lake
239201
Hat Lake 2
349854
Hat Lake 4
349855
Creek
Tezzeron
Mountain
Birch Mountain Resources Ltd.
Hat Lake Claims
NTS 93 K/16
(5 Km)
WRH
Figure 2.1
Date:13/12/96
Scale 1:50,000

TABLE 2.1: CLAIM STATUS

CLAIM NAME	No. UNITS	RECORD No.	EXPIRY DATE	OWNER
HAT LAKE	20	239201	7 July 1997	Uwe Schmidt
HAT LAKE 2	20	349854	20 Aug 1997	Birch Mountain Res.
HAT LAKE 3	20	348272	18 July 1997	Birch Mountain Res.
HAT LAKE 4	20	349855	20 Aug 1997	Birch Mountain Res.

3. LOCATION

The claims are located about 50 km north of Fort St. James and about 150 km northwest of Prince George, British Columbia in the province's Omineca Mining Division.

The geographic coordinates of the HAT LAKE claims are 54°46.5' N, 124°22.0' W on NTS map sheet 93K/16W, extending slightly into 93K/9W.

4. ACCESS

Access to the area is by road, rail or airline to Prince George. From there, a two-hour drive west is required to get to Fort St. James which offers many basic services such as food stores, fuel and lumber supplies, and small float-equipped aircraft charter companies.

The project area is located about one hour by road, north of Fort St. James, along the Germansen Road which provides four-season vehicle access to the area. Secondary logging roads extend east and west from the Germansen Road to the various claim groups and give good access from Spring to early Fall. Subsidiary logging trails branching from these roads also provide access to some of the surrounding terrain.

The two four-wheel-drive trucks that were used provided good flexibility and easy access to most areas of the claims.

5. PHYSIOGRAPHY AND CLIMATE

The project area is located near the northern boundary of the Fraser Basin, a subdivision of the Interior Plateau, which is characterized by low-lying swamps and forested areas with occasional low ridges of resistant rock. The forest cover is dominated by spruce, fir and pine, while the underbrush is sparse and consists mainly of blueberry bushes and Labrador tea, as well as Devil's Club near swampy areas. Very few outcrops occur in this area which is covered by thick layers of drift and glacial till and is traversed by occasional eskers.

The overburden is fairly thick, as evidenced by road fill which has been removed from one pit to a depth of more than 45m east of the project area. Nelson et al. (1991a) indicate that glacial drift can exceed 200m in some areas. Glacial ice direction was northeasterly in the project area and outcrops are usually found on the southwestern slopes or near the top of the hills.

The topography of the project area is flat to gently rolling, consisting of ridges trending roughly east-west, generally parallel to the drainage pattern. Several deep northeast-trending depressions meander across the property. These post-glacial drainage features are now characterized by swamps and streams (Schmidt, 1989). Elevations in the project area range from 870m to about 950m above sea level.

The field season lasts from early June to the latter part of October. The weather is usually warm during the day but cool at night. According to the local residents, in 1996 the weather was unusually cold and wet. The winters are crisp and snow accumulations are considerable.

6. PREVIOUS EXPLORATION

The earliest recorded staking on this part of the project area was by the N.B.C. Syndicate on the HAT LAKE claims which then covered the current BOB-BIO claims in 1968. The 40 claims covered outcrops of basic intrusive rock hosting pyrite and chalcopyrite mineralization which were discovered by prospecting areas which showed up as magnetic highs identified by an airborne survey. The N.B.C. Syndicate carried out a horizontal loop EM and ground magnetometer surveys on the claims in 1968, and drilled two holes on an EM conductor in 1969 (Bacon, 1969).

One drill hole was completed to its target depth of 92m, while the other was abandoned at a depth of 27m because of drilling difficulties. The first hole intersected argillaceous sedimentary rocks of the Takla Group and ended in hornblende diorite. The diorite was thought to be responsible for the magnetic anomaly, and the EM conductor was interpreted to be caused by veinlets and disseminations of pyrite. Extensive epidote alteration was observed both in drill core and in surface exposures.

In 1981 Selco Inc. conducted airborne EM and magnetometer surveys, which led to staking of the SASK claims north of Hat Lake, now also partly covered by BIO, and conducted ground HLEM and magnetometer surveys. In 1982, one hole was drilled west of BIO 2 (formerly part of SASK 9-12) and abandoned at 68.6m. The drill hole intersected argillite, alkaline intrusive and volcaniclastic rocks before ending in "black graphitic sand" that yielded 130 ppb Au and 3.5 ppm Ag over 2m.

In the same year, one diamond drill hole tested a moderate to poor conductor on part of BIO 2 (formerly part of SASK 13-18) and ended at a depth of 91.3m. The hole encountered shale, basalt, argillite, carbonate and sulphide-bearing chert. The conductivity was attributed to chert containing 5% pyrite and pyrrhotite. Assay results of the core did not return any significant values for gold, silver or copper.

The construction of the new Inzana Lake forest road in 1982 revealed the presence of scattered copper mineralization near the present Freegold Zone on the TAS claims to the north. The TAS property was then staked, allowed to lapse, and re-staked by A.D. Halleran in 1984. Subsequent prospecting found visible gold in quartz veins. It consists of a shear zone near an intrusive contact which contains visible gold and yields assays of up to 55 g/t Au.

A geochemical soil survey in this area led to the discovery of the Ridge Zone, where a soil survey identified many gold anomalies over a large area north of the Freegold Zone. Subsequent trenching and drilling on the Ridge Zone outlined three shear zones containing sulphide mineralization: the West Zone, the Mid Zone and the East Zone. In 1987, Noranda continued the exploration program with more than 1524m of diamond and percussion drilling.

7. WORK CONDUCTED IN 1996

In 1996, Birch Mountain Resources Ltd. optioned the group of claims and carried out a field program of prospecting and geochemical sampling in the summer of that year.

The exploration program consisted of geological mapping and prospecting. Rock, stream sediment and soil samples were taken along the traverses at about 500m spacing over the HAT LAKE claim groups, from June 10 to June 30. In total, 5 rock samples, 4 stream samples and 128 soil samples were collected, all of which were submitted for analysis for gold and a 15-element package to the Saskatchewan Research Council in Saskatoon.

From August 6-21, a two-person crew returned to the project area to resample the seven gold and copper anomalies that had been identified in the first part of the program. The work consisted of taking additional samples at 25m intervals in a 5x5 or 3x3 grid pattern, depending on the value of the anomaly. This part of the program yielded an additional 63 soil samples which were also submitted for analysis.

8. REGIONAL GEOLOGY

8.1 Regional Geological Setting

The project area is tectonically located within the Quesnel Trough, which is a large northwest-trending regional structure bounded on both sides by major strike-slip faults. The Quesnel Trough is a subdivision of the Intermontane Tectonic Belt, which is a sequence of sedimentary and volcanic rocks that can be traced southward to the United States.

To the west, the edge of the trough is delineated by the Pinchi Fault. To the east, the boundary is marked by a major shear zone, and large scale tectonic imbrication and mylonitization are found on both sides of this shear zone. The Quesnel Trough is separated from the older, uplifted rocks of the Late Paleozoic Wolverine Complex by a complex series of faults (Nelson et al., 1991a; Garnett, 1978).

To the west, the Takla Group is separated from the uplifted Cache Creek Group of Upper Paleozoic age by the Pinchi Fault. The Pinchi Lake Mine, a mercury mine operated by Cominco during World War II is located along this fault. Because Triassic blueschists are found along the Pinchi Fault, a subduction zone has been postulated west of the Takla Arc (Nelson et al., 1991a).

The region is cut by numerous fault structures which strike parallel to sub-parallel to the large northwest-trending boundary faults. Folding is restricted to the eastern margin of the belt near its structural boundary with the Omineca Crystalline Belt (Schmidt, 1989).

8.2 Stratigraphy

The project area is underlain by the Takla Group, of Upper Triassic to Lower Jurassic age. The Takla Group was deposited in an island-arc setting and is composed of intermediate to mafic flows, tuffs and volcaniclastic rocks interbedded with conglomerate, greywacke, shale and limestone.

From bottom to top, Nelson et al. (1991b) divided the Takla Group into the Rainbow Creek Formation, the Inzana Lake Formation, the Witch Lake Formation and the Chuchi Lake Formation. Their Table of Formations forms the basis of Table 8.2.

The Rainbow Creek Formation (uTrRC) consists of a basinal package of dark grey slate, thinly-bedded siltstone and minor volcaniclastic sediment.

The Inzana Lake Formation (uTrIL) consists of abundant grey, green and black siliceous argillite, green to grey volcanic sandstone and siltstone, green augite-bearing crystal tuff and lapilli tuff, sedimentary breccia, heterolithic volcanic agglomerate, and rare, small limestone pods.

The Witch Lake Formation (uTrWL) is subdivided into three units: the lower unit consists of plagioclase porphyry latite flows and agglomerate; the middle unit consists of trachyte flows and tuff-breccia; and the upper unit consists of augite porphyry agglomerate, volcanic breccia, lapilli tuff and epiclastic sediments.

The Chuchi Lake Formation (uTrCL), which overlies the Witch Lake Formation, is also subdivided into three units: the lower unit consists of mainly intervolcanic sediment; the middle unit consists of plagioclase porphyry trachyte flows and breccia; and the upper unit consists of green and maroon heterolithic agglomerate.

8.3 Intrusive Rocks

During the time period from Upper Triassic to Lower Cretaceous, the Takla Group was intruded by felsic to ultramafic stocks and batholiths. The intrusive rocks are mostly granite, granodiorite, quartz diorite, diorite, syenite, gabbro and pyroxenite. The relative age of these intrusions has not been determined accurately.

About 50 km to the west of the TAS claims, the Hogem Batholith is the largest intrusive body within the Quesnel Trough. It is considered to be an intrusive equivalent to at least part of the Takla Group (Garnett, 1978).

The Hogem Batholith is separated into three distinct phases:

- Phase I, subdivided into the Hogem basic suite and the Hogem granodiorite, is dated at 176 to 212 Ma and represents the main intrusive event;
- Phase II, comprising Duckling Creek and Chuchi syenite bodies, is dated at 162 to 182 Ma and, although there is some age overlap, is interpreted as distinctly younger than Phase I on the basis of field observations; and
- Phase III granite, is dated at 108 to 126 Ma, and occurs as relatively small isolated bodies.

Table 8.2: Table of Formations

Quaternary		
Qal	Glacial deposits	Unconsolidated gravel and till
Qb	Basalt	Basalt
Eocene-Oligocene		
Esb	Sedimentary rocks	Volcanic wacke, volcanic ash and basalt
Late Cretaceous - Early Tertiary? (not necessarily in time-stratigraphic order)		
5	Gabbro/Monzogabbro Suite	Gabbro and monzogabbro
4	Diorite/Monzodiorite Suite	Diorite, monzodiorite and andesite
3	Monzonite Suite	Monzonite and porphyritic latite
2	Syenite Suite	Syenite
1	Granite Suite	Granite and rhyodacite-dacite
Upper Triassic - Jurassic		
	Takla Group	
uTrCL	Chuchi Lake Formation	Heterolithic agglomerate, trachyte flows and breccia and intervolcanic sedimentary rocks
uTrWL	Witch Lake Formation	Porphyry agglomerate, lapilli tuff, trachyte flows and tuff-breccia and minor amygdaloidal trachyte flows
uTrIL	Inzana Lake Formation	Volcanic sandstone, siltstone, mudstone, argillite, lapilli tuff and sedimentary breccia
uTrRC	Rainbow Creek Formation	Slate, siltstone and minor volcanic sediment

9. LOCAL GEOLOGY

In the project area, the Takla Group of metasedimentary and volcanic rocks has been intruded, fractured and, in some cases, intensely hornfelsed by a series of intrusions, ranging in composition from felsic porphyry to diorite.

In these areas, the Takla Group consists of a sequence of intermediate to mafic flows and tuff, and of sandstone and siltstone derived from the volcanic units and from late-stage dykes. The sequence is interbedded with minor amounts of argillite and limestone.

10. MINERALIZATION

The most common exploration target in the Quesnel Trough has been copper-gold mineralization associated with alkalic porphyritic intrusions. The most significant discovery in the region is the Mount Milligan porphyry copper-gold deposit, located about 30 km north-northeast of the project area. It has an estimated 400 million tonnes of ore grading 0.48 g/t Au and 0.2% Cu, including high-grade gold veins within shear zones which are peripheral to the porphyry copper-gold deposit (Nelson, 1991a).

To the north, the TAS property shows characteristics similar to the Mount Milligan deposit, since the copper mineralization is associated with an alkalic porphyritic intrusion which shows up as a magnetic high on airborne surveys. Other reported discoveries in the Quesnel Trough include the QR deposit, an alkalic gold-copper showing near Quesnel and the ultramafic-associated X-Cal gold property near Fort St. James. The Manson Creek and Germansen Landing areas, located north of TAS, are both areas of gold placer mining.

Few outcrops were found during our field investigation. The local faults and fractures are generally parallel or subparallel to regional boundary faults, striking northwesterly. All rocks encountered are of the Takla Group, principally fine-grained volcanic sandstone and siltstone.

11. GEOCHEMICAL SURVEYS

11.1 Introduction

Stream sediment, soil and rock sampling programs were conducted in conjunction with the geological mapping and prospecting activities. All sample locations were marked in the field with sample numbers on flagging tape.

The soil samples were taken at approximately 500m intervals along the foot traverses. The B horizon was sampled. The A horizon is located immediately above the B horizon and is characterized by organic material in various stages of decomposition at surface.

The B horizon is generally brown or dark orange, which is a reflection of its higher content of iron and manganese oxides, and moderate content of organic material. Since these oxides have a higher capacity to adsorb elements from surficial water and the decaying material of the A horizon above, the B horizon makes a good sampling medium in mineral exploration.

The stream sediments were collected when streams were encountered along the traverses. In the project area, swamps were much more common than streams, and it was often difficult to determine whether the water was flowing or not.

Some soil and stream sediment sample locations had only fairly coarse material and consequently the gold analyses could not be performed because not enough material was present after processing and sieving. These samples are identified as "i.s.", for insufficient sample.

Several rock samples were taken at the few outcrops which were encountered during the program. A selected sample from each of these outcrops was submitted for analysis.

The samples were sent to the Saskatchewan Research Council in Saskatoon, SK, where analyses were performed for gold and a 15-element package consisting of copper, nickel, lead, zinc, cobalt, cadmium, molybdenum, silver, tungsten, arsenic, antimony, bismuth, selenium, tellurium and mercury. The techniques used in the determination of the elements are described in Appendix 3.

Because of the presence of thick overburden throughout most of the project area, the geochemical value will most often reflect transported material and will vary depending on the thickness of the overburden, the nature of the material and its proximity to outcrop.

11.2 HAT LAKE Claims

11.2.1 Reconnaissance Geochemical Survey

Five rock samples from the HAT LAKE claims area were submitted for analysis (Fig. 11.2.1 and Appendix 4). These returned background values of 2-10 ppb Au (Fig. 11.2.2) and 92.3-125.2 ppm Cu (Fig. 11.2.3).

Four stream sediment samples were sent for analysis. One had insufficient sample for gold analysis and the others gave 1-11 ppb Au. Values for copper were 25.8-51.8 ppm Cu. The other elements were of background level except for stream sediment sample T8 which contains 125.0 ppm Zn.

Of the 128 soil samples, five had insufficient sample for gold analysis, but the others contained only 1-26 ppb Au. Although the values for copper were not particularly high, the seven samples with the highest values were chosen for detailed sampling to further evaluate the HAT LAKE claims area. These samples are well distributed over the area and contain 75.2-

108.6 ppm Cu. Most of the samples are accompanied by anomalous values of zinc and by occasional high values for silver, arsenic and cobalt (Table 11.2.1).

The threshold for anomalies is calculated for each element as the mean plus two standard deviations for the entire geochemical database collected in the area in 1996.

Other samples include slightly anomalous values as detailed below:

- 10.5 and 8.3 ppm Mo (SM130 and S137) over a regional threshold of 3.4 ppm;
- 3.6 and 2.4 ppm W (S1102 and S1101) with a threshold of 1.0 ppm;
- 20.8 ppm As (S1135), threshold of 11.0 ppm;
- 72.5 ppm Ni (S1132), threshold of 43.6 ppm Ni; 267.6 ppm Zn, threshold 153.9 ppm Zn; and 34.2 ppm Co, threshold 17.7 ppm Co.

Table 11.2.1: Anomalous Samples: HAT LAKE Claims Area

Sample No.	Figure No.	Copper $\bar{x}$ 25.8 ppm	Gold $\bar{x}$ 4.9 ppb	Silver $\bar{x}$ 0.2 ppm	Arsenic $\bar{x}$ 6.2 ppm	Zinc $\bar{x}$ 88.8 ppm	Cobalt $\bar{x}$ 9.8 ppm
SM111	A.5.1	103.1	20	**1.0**	**13.1**	**180.1**	**20.8**
SM130	A.5.2	96.8	6	0.4	8.2	**192.4**	**26.2**
SM142	A.5.3	108.6	i.s.	0.8	**13.5**	109.0	12.6
SM1116	A.5.4	81.2	8	**1.6**	7.2	**262.7**	15.2
SM1117	A.5.5	84.6	4	**1.2**	**12.1**	**167.9**	**18.0**
SM1134	A.5.6	77.3	1	0.2	**18.3**	83.5	**25.8**
SM1166	A.5.7	75.2	12	0.5	6.7	125.8	14.8

11.2.2 Detailed Geochemical Surveys

Sample SM111 (103.1 ppm Cu) was sampled in a 3x3 grid and all the samples gave low copper values of 14.5-39.1 ppm Cu (Fig. A.5.1). The samples also returned 2-20 ppb Au except one sample which contained insufficient material for the analysis of gold. SM111 also contains 62.3 ppm Ni over the regional threshold of 43.6 ppm Ni. The value was not repeated at the initial sample site but sample S2084 to the northwest contains 53.9 ppm Ni.

Sample SM130, with an initial value of 96.8 ppm Cu, was sampled in a 3x3 grid but did not repeat the initial value (Fig. A.5.2). Sample S2057 to the southwest gave 310.7 ppm Cu. All the gold values were 1-8 ppb Au. Sample S2054 contains 181.7 ppm Zn and

20.3 ppm Co, while sample S2055 has 312.7 ppm Zn, 26.7 ppm Co and 12.9 ppm Mo, which are all values greater than the regional threshold.

Sample SM142 (108.6 ppm Cu) also returned background values of 7.7-62.1 ppm Cu and 2-20 ppb Au (Fig. A.5.3). Its original anomalous value of 75.3 ppm Ni was not repeated. Sample S2060 gave values of 145.6 ppm Zn and 10.6 ppm Co but the others were of background level.

At sample SM1116, the initial value of 81.2 ppm Cu returned 7.7-62.1 ppm Cu on a 3x3 grid (Fig. A.5.4). Similarly, background values of 2-20 ppb Au were obtained. None of the anomalous values of 4.2 ppm Cd, 52.1 ppm Ni or 1.6 ppm Ag in S1116 were repeated in the resampling.

The initial 84.6 ppm Cu and 64.2 ppm Ni of SM1117 were not duplicated but S2306 to the northeast returned 87.3 ppm Cu and 55.3 ppm Ni (Fig. A.5.5). The 1.6 ppm Ag of SM1117 was not repeated but S2208 to the northwest gave 2.8 ppm Ag. Gold values remain low at 1-10 ppb Au.

Sample SM1134 (77.3 ppm Cu) also failed to show increased copper or gold values in the area. Values were 7.4-42.1 ppm Cu and 1-14 ppb Au (Fig. A.5.6). One sample had insufficient material for the analysis of gold. Sample SM1134's initial value of 103.3 ppm Ni gave only 12.8-40.0 ppm Ni. The initial value of 18.3 ppm As (SM1134) returned values of 5.1-9.6 ppm As except for samples S2076 and S2070 which gave 12.3 and 19.3 ppm As, respectively.

The last sample, SM1166, had 75.2 ppm Cu and 12 ppb Au. The resampling gave values of 17.0-54.0 ppm Cu and 4-20 ppb Au (Fig. A.5.7). Sample SM1166's value of 47.3 ppm Ni returned 36.7 ppm Ni but the three samples at the north end of the grid gave values of 44.5-47.8 ppm Ni (S2087, S2092 and S2093). All other elements gave background values.

12. CONCLUSIONS AND RECOMMENDATIONS

The exploration program conducted in the HAT LAKE project area has shown that very few outcrops exist. All of the outcrops outside this area consist of Takla Group siltstone and sandy siltstone which has been fractured and sheared along the main north and northeasterly regional fracture pattern. The geochemical results for the rock samples submitted for analysis reveal that only background concentrations of copper and gold are present in these rocks and consequently little epigenetic mineralization has been introduced in these rocks.

The regional sampling program identified several copper and gold anomalies and seven regional sites were resampled along 3x3 mini-grids at 25m sampling intervals in the latter part of the 1996 field season.

For the majority of the detailed sampling sites, the resampled values were much lower for both copper and gold, although slightly anomalous values of silver, nickel, cadmium and zinc were identified in a few locations. Since the value for some elements other than gold are often significantly affected by the pH of the soil, care must be taken in their interpretation.

Because of the disappointing results, no further work is recommended on the HAT LAKE Claims.

13. REFERENCES

Bacon, W.R.
1969: Geophysical Report on the Hat 1 claim group Hat 1-40, Omineca Mining Division, B.C., for N.B.C. Syndicate; unpublished report.

Garnett, J.A.
1978: Geology and Mineral Occurrences of the Southern Hogem Batholith, B. C. Ministry of Energy, Mines and Petroleum Resources, Bulletin 70, 75p.

Nelson, J., K. Bellefontaine, K. Green, and M. MacLean
1991a: Regional Geological Mapping Near the Mount Milligan Copper-Gold Deposit (93K/16, 93N/1) *in* Geological Fieldwork 1990, B.C. Ministry of Energy, Mines and Petroleum Resources, Paper 1991-1, pp. 89-110.

1991b: Geology and Mineral Potential of Wittsichica Creek and Tezzeron Creek Map Areas, NTS 93N/1, 93K/16, scale 1:50,000; B.C Ministry of Energy, Mines and Petroleum Resources, Open File 1993-1.

Schmidt, U.
1989: Report on Grid Soil Geochemistry of the Tas East Property, Omineca Mining Division, B.C. for Fraser Exploration Ltd.; unpublished report.

Appendix 1

Statements of Qualifications

Statement of Qualifications

I, Daniel A. Beauchamp, undersigned, certify that:

1. I am a graduate of the University of Ottawa, Ontario and of the University of Calgary, Alberta;

2. I hold degrees of B.Sc. (Honours Geology) and of M.B.A.;

3. I am a member in good standing of The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) since 1980 and am registered with them as a Professional Geologist;

4. The work presented in this report is a fair and honest reflection of the geology of the areas described, and of their immediate surroundings;

5. The data on which opinions expressed in this report are made derive from field work on these properties and from the interpretation of field and laboratory data;

6. I have no interest, direct or indirect, in these properties, in Birch Mountain Resources Ltd. or in any of its subsidiaries.

Dated at Calgary, Alberta on this 16th day of December, 1996.

PROFESSIONAL GEOLOGIST ALBERTA DANIEL A. BEAUCHAMP

Daniel A. Beauchamp, P. Geol.

Statement of Qualifications

I, Simon X. (Ximo) Fan, hereby certify that:

1. I am a graduate of McMaster University, Canada, the Chinese Academy of Sciences, China and Beijing University, China.

2. I hold the degrees of:
   Ph.D. in Structural Geology (McMaster, 1995)
   M.Sc. in Regional Tectonics (The Chinese Academy of Sciences, 1986)
   B.Sc. in Geomechanics (Beijing, 1983)

3. I have practiced my profession as a geologist continuously since my graduation from Beijing University (1983) in mineral and petroleum exploration and geological research for the Institute of Geology and the Institute of Remote Sensing, The Chinese Academy of Sciences, McMaster University, and Imperial Oil Ltd.

4. I personally took part in the exploration work on the property and supervised the field operations.

5. This report is based on information and data collected from field work and laboratory analyses.

6. I currently do not hold stock in Birch Mountain Resources Ltd.

Dated at Calgary, Alberta on this 16th day of December, 1996.

Simon X. Fan

Statement of Qualifications

I, Brett G. Johnson, residing at 7-1934 12th Avenue S.W., Calgary, Alberta, T3C 0R8 hereby certify that:

1. I am a mineral exploration geologist currently working for Birch Mountain Resources Ltd. of Calgary, Alberta.

2. I am a graduate of the University of North Dakota (1996), Grand Forks, North Dakota, having received a B.Sc. degree in Environmental Geology and Technology.

3. I have personally worked on this property in the field and the office.

4. I currently do not hold stock in Birch Mountain Resources Ltd.

Dated at Calgary, Alberta on this 16th day of December, 1996.

Brett G. Johnson

Appendix 2

Statement of Expenditures

Statement of Expenditures

Wages			
S. Fan			
June 10-30	6.50 days @ $350	$2,275.00	
E. Washburn			
June 10-30, Aug 6-21	9.75 days @ $175	$1,706.25	
B. Johnson			
June 10-30	6.75 days @ $150	$1,012.50	
S. Reimond			
June 10-30, Aug 6-21	9.50 days @ $125	$1,187.50	
D. Beauchamp			
June 10-19	3.00 days @ $400	$1,200.00	
Sub-total Wages			$7,381.25
Room & Board	35.50 days @ $40		$1,420.00
Trucks	1 @ 3.0 days @ $50	$150.00	
	2 @ 6.5 days @ $50	$650.00	
			$800.00
Geochemical Analyses			
Soils	191 @ $19.91	$3,802.81	
Stream Sediments	4 @ $19.91	$79.64	
Rocks	5 @ $22.84	$114.20	
Sub-total Geochemical Analyses			$3,996.65
Report-writing			
S. Fan	2 days @ $300	$600.00	
D. Beauchamp	2 days @ $400	$800.00	
Drafting	2 days @ $175	$350.00	
Sub-total Report-writing			$1,750.00
Total cost			$15,347.90

Appendix 3

Analytical Procedures

SRC
technology is our business

Saskatchewan Research Council
15 Innovation Blvd.
Saskatoon, SK Canada S7N 2X8
Ph: 306-933-5400 Fax: 306-933-7896
Internet: http://www.src.sk.ca

FEED FAX THIS END

FAX

To: D. BEAUCHAMP
Dept.:
Fax No.:
No. of Pages: 1
From: AL HOLSTEN
Date: Oct 25
Company: SRC
Fax No.:
Comments:

OCTOBER 25, 1996

TO: DON BEAUCHAMP
BIRCH MOUNTAIN RESOURCES

FROM: AL HOLSTEN
MANAGER, GEOCHEM LAB
SASK. RESEARCH COUNCIL
PH.: (306) 933-5426
FAX: (306) 933-5656

RE: Methods used on Birch Mountain soils and rocks

Soil Method

1. Soils were dried at 100° C overnight.
2. Dried soils were screened at ±180 microns.
3. A 1.00 gram subsample of the fines was digested in HNO3/HCl at 100°C for one hour.
4. The resulting solution was analyzed by axial ICP using a Perkin Elmer Optima 3000 DV. (See item 7 under ICP analysis in our fee schedule).
5. A 10.00 gram subsample of the fines was fire assayed using standard fire assaying procedures with an atomic absorption finish.

Rock Method

1. Rocks were dried at 100°C overnight.
2. Rocks were initially crushed to approximately -1mm in a jaw crusher.
3. A 100 gram subsample of the crushed rock was obtained by splitting the sample using a ¼" riffler.
4. The 100 gram subsample was ground to approximately -200 mesh in a chrome steel grinding mill.
5. A 1.00 gram subsample of the rock pulp was digested in HNO3/HCl at 100°C for one hour.
6. The resulting solution was analyzed by axial ICP using a Perkin Elmer Optima 3000 DV. (See item 7 under ICP analysis in our fee schedule).
7. A 10.00 gram subsample of the fines was fire assayed using standard fire assaying procedures with an atomic absorption finish.

Please refer to the enclosed fee schedule for detection limits.

ICP ANALYSIS

ICP Gold Trace Exploration Package Aqua regia digestion
- all 15 elements: $10.00 per sample (digestion included)
- GeoChem Au Fire Assay 10 g. subsample: $7.50 extra

Detection Limit Table

AQUA REGIA PARTIAL DIGESTION

As	0.2 ppm	Pb	0.1 ppm
Sb	0.2 ppm	Zn	0.1 ppm
Bi	0.2 ppm	Co	0.1 ppm
Se	0.2 ppm	Cd	0.1 ppm
Te	0.2 ppm	Mo	0.1 ppm
Hg	0.03 ppm	Ag	0.1 ppm
Cu	0.1 ppm	W	0.2 ppm
Ni	0.1 ppm		

PRECIOUS METALS ANALYSIS

Geochem Fire Assay 15 g. subsample, Axial ICP finish
- Au: $7.50 per sample

Detection Limit

Au	0.5 ppb

Appendix 4

Geochemical Results

HAT LAKE	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
Rock Sample																
R 13	97.2	15.1	3.6	76.6	15.2	0.1	1.5	0.1	0.2	5.9	0.6	0.4	0.2	0.2	0.03	3
R 1021	125.2	14.8	4.6	76.6	13.8	0.1	1.3	0.1	0.2	2.7	0.5	0.2	0.2	0.2	0.03	10
R 1026	92.3	19.9	6.5	80.7	10.5	0.4	1.0	0.2	0.2	2.1	0.5	0.2	0.2	0.2	0.03	8
R 1028	107.0	13.3	4.6	73.4	12.8	0.1	1.6	0.2	0.2	1.9	0.4	0.2	0.2	0.2	0.03	2
R 1029	106.9	12.5	3.4	74.5	14.9	0.1	1.4	0.1	0.2	3.1	0.2	0.2	1.1	0.2	0.03	9
Soil Samples																
S 105	11.6	20.2	4.8	60.0	7.0	0.1	1.0	0.1	0.2	2.9	0.4	0.3	0.5	0.4	0.03	1
S 106	3.9	7.5	4.7	38.6	4.0	0.3	1.0	0.1	0.2	1.3	0.3	0.2	0.3	0.5	0.03	2
S 107	32.3	14.0	9.4	291.4	23.7	0.6	1.6	0.3	0.2	4.3	2.0	0.2	0.4	0.7	0.03	3
S 108	27.9	19.2	5.4	96.9	17.5	0.1	1.1	0.1	0.2	3.2	1.5	0.2	0.2	0.2	0.04	1
S 109	41.1	32.9	6.3	81.8	12.1	0.4	1.7	0.3	0.2	8.1	0.4	0.2	0.2	0.4	0.03	8
S 110	10.0	19.1	6.2	73.2	5.8	0.3	1.0	0.1	0.2	3.7	0.5	0.2	0.2	0.5	0.03	2
SM 111	103.1	62.3	10.5	180.1	20.8	1.4	2.6	1.0	0.2	13.1	1.7	0.3	0.2	0.2	0.03	20
S 112	15.4	22.5	5.8	89.3	8.3	0.4	1.4	0.2	0.2	7.2	0.9	0.2	0.4	0.4	0.03	7
S 113	35.3	35.1	8.3	108.3	12.1	1.1	2.1	0.6	0.2	8.8	1.1	0.5	0.3	0.2	0.03	24
S 114	17.3	18.8	7.6	73.9	6.9	0.3	1.3	0.2	0.2	4.8	1.0	0.2	0.2	0.4	0.03	4
S 115	49.1	40.8	11.2	126.9	12.4	1.0	1.8	0.4	0.2	14.9	0.9	0.2	0.6	0.3	0.04	6
S 116	35.2	36.8	8.4	105.2	17.3	1.5	2.5	0.6	0.2	11.7	1.4	0.3	0.2	0.4	0.03	4
S 117	16.0	20.1	5.2	95.1	9.9	0.7	1.2	0.2	0.2	4.7	0.7	0.2	0.2	0.5	0.03	10
S 118	23.9	26.6	4.9	78.3	9.8	0.9	1.6	0.3	0.2	5.7	0.5	0.3	0.3	0.4	0.03	2
S 119	9.5	17.6	5.1	80.1	7.9	0.6	0.9	0.1	0.2	4.0	0.7	0.2	0.2	0.5	0.03	3
S 120	13.1	20.4	4.5	49.7	8.2	0.4	1.1	0.1	0.2	3.4	0.5	0.2	0.2	0.5	0.03	4
S 121	10.5	14.2	4.1	44.9	5.2	0.3	0.9	0.1	0.2	2.0	0.5	0.2	0.2	0.2	0.03	15
S 122	4.7	7.5	4.1	29.7	2.3	0.2	0.6	0.1	0.2	1.6	0.5	0.2	0.2	0.4	0.03	6
S 123	16.1	6.7	6.7	95.2	3.7	0.9	2.3	0.2	0.2	3.5	0.4	0.5	0.2	0.5	0.03	6
S 124	39.1	33.1	6.5	110.2	11.4	0.9	1.4	0.3	0.2	7.6	0.9	0.4	0.2	0.3	0.03	2
S 125	18.9	20.1	5.0	59.1	7.9	0.3	1.4	0.1	0.2	3.9	0.5	0.2	0.2	0.5	0.03	1
S 126	7.6	14.5	4.0	83.0	5.8	0.2	1.1	0.1	0.2	5.1	0.7	0.2	0.2	0.4	0.03	3
S 127	8.2	13.0	5.5	65.6	5.7	0.3	1.2	0.1	0.5	4.2	0.9	0.3	0.2	0.4	0.07	4
S 128	24.6	23.3	6.6	78.9	8.0	0.4	1.6	0.2	0.2	8.0	1.1	0.3	0.5	0.2	0.03	8
S 129	9.1	14.1	4.5	97.9	8.8	0.5	1.3	0.3	0.2	3.0	0.5	0.3	0.2	0.2	0.03	3
SM 130	96.8	41.0	5.7	192.4	26.2	1.6	10.5	0.4	0.2	8.2	2.1	0.2	0.9	0.2	0.03	6
S 131	29.7	34.8	6.7	182.6	16.6	0.8	3.2	0.4	0.2	6.0	1.2	0.2	0.4	0.2	0.03	6
S 132	17.6	27.1	4.2	76.0	7.4	0.2	1.5	0.1	0.2	6.2	0.4	0.2	0.4	0.2	0.03	26
S 133	6.0	10.5	4.9	59.7	3.6	0.4	0.9	0.1	0.2	1.9	0.3	0.2	0.2	0.3	0.03	2
S 134	19.5	14.8	2.4	17.3	1.0	0.9	4.2	0.3	0.2	1.7	0.2	2.2	1.7	0.2	0.03	*
S 135	10.9	20.5	3.8	47.7	6.1	0.2	1.4	0.1	0.2	4.9	0.7	0.2	0.2	0.2	0.03	1
S 136	19.8	25.8	6.9	159.3	15.5	1.1	2.6	0.3	0.2	9.4	1.6	0.4	0.2	0.2	0.03	12
S 137	18.2	21.1	6.6	127.1	10.0	1.6	8.3	0.4	0.2	6.8	1.5	0.5	0.2	0.4	0.03	8
S 138	9.1	16.4	4.2	59.8	5.4	0.3	1.4	0.1	0.2	4.4	0.7	0.2	0.2	0.5	0.03	6
S 139	17.1	26.9	7.7	60.5	7.8	0.3	1.4	0.1	0.2	5.8	1.4	0.3	0.3	0.5	0.03	10
S 140	28.4	27.4	8.2	60.3	8.6	0.4	2.1	0.1	0.2	6.7	1.4	0.2	0.2	0.4	0.03	5
S 141	10.2	15.5	7.1	80.4	8.8	0.7	1.2	0.1	0.2	4.0	1.3	0.3	0.5	0.5	0.03	8
SM 142	108.6	75.3	6.7	109.0	12.6	1.7	3.4	0.8	0.2	11.5	3.4	1.2	1.3	0.2	0.03	*
S 143	16.0	18.2	5.7	84.9	7.2	0.2	1.4	0.2	0.2	7.2	1.1	0.2	0.2	0.2	0.03	2
S 144	30.7	21.6	7.2	101.1	11.8	0.3	1.5	0.2	0.2	16.2	1.4	0.2	0.2	0.2	0.03	5
S 145	21.1	30.4	7.3	90.4	9.3	0.4	1.8	0.1	0.2	10.5	1.4	0.5	0.2	0.3	0.03	4
S 146	40.3	33.2	9.1	94.1	9.3	0.8	2.8	0.4	0.2	10.4	0.3	0.9	0.8	0.8	0.04	4

HAT LAKE	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
S 147	17.5	25.2	6.8	169.8	8.1	0.5	1.8	0.2	0.2	8.5	1.3	0.3	0.2	0.6	0.04	6
S 148	18.3	26.0	6.9	110.9	7.2	1.3	1.4	0.3	0.2	6.6	1.2	0.3	0.7	0.8	0.03	1
S 149	25.5	12.2	11.0	147.9	12.1	2.8	2.5	0.5	0.2	8.6	0.7	0.6	0.2	1.1	0.03	*
S 150	23.4	21.3	5.5	80.9	6.3	0.5	1.3	0.4	0.2	6.7	0.2	0.3	0.2	0.6	0.03	1
S 179	37.1	28.8	6.5	67.6	12.9	0.2	1.5	0.2	0.2	6.8	0.6	0.2	0.2	0.2	0.03	5
S 180	17.9	19.8	3.8	53.1	6.6	0.1	0.9	0.1	0.2	2.2	0.6	0.2	0.2	0.2	0.03	3
S 181	11.8	15.7	3.1	59.2	5.7	0.3	0.7	0.1	0.2	1.9	0.3	0.2	0.3	0.2	0.03	4
S 182	11.3	16.7	2.7	54.6	5.8	0.2	0.9	0.1	0.2	2.0	0.4	0.2	0.2	0.2	0.03	3
S 183	15.8	19.0	3.6	61.6	8.0	0.1	1.0	0.1	0.2	2.7	0.4	0.2	0.2	0.2	0.03	7
S 184	11.9	13.9	3.0	58.9	4.9	0.2	0.8	0.1	0.2	1.5	0.3	0.2	0.4	0.2	0.03	3
S 185	16.1	18.1	3.5	63.8	6.1	0.3	0.8	0.1	0.2	9.2	0.8	0.7	0.6	0.8	0.03	*
S 186	8.6	12.6	3.6	59.3	5.7	0.3	0.8	0.1	0.2	2.2	0.3	0.2	0.2	0.2	0.03	6
S 187	20.5	23.0	4.9	77.1	8.8	0.2	1.2	0.2	0.2	1.4	0.4	0.2	0.2	0.2	0.03	5
S 188	47.1	32.5	6.3	87.1	14.2	0.3	1.6	0.2	0.2	4.9	0.4	0.2	0.2	0.2	0.03	1
S 189	33.4	23.9	5.2	71.3	11.6	0.4	1.6	0.3	0.2	8.5	0.4	0.3	0.2	0.2	0.03	9
S 190	49.1	23.3	6.7	54.4	10.5	0.1	1.4	0.2	0.2	6.3	0.2	0.2	0.2	0.2	0.03	10
S 191	31.3	23.5	5.1	66.4	10.5	0.2	1.4	0.2	0.2	6.9	0.2	0.2	0.2	0.2	0.03	12
S 192	63.4	32.7	6.0	85.5	13.9	0.4	2.5	0.2	0.2	6.1	0.2	0.2	0.8	0.2	0.03	8
S 193	21.2	23.1	4.6	56.1	7.7	0.2	1.2	0.1	0.2	9.0	0.3	0.2	0.3	0.2	0.03	9
S 194	25.3	23.1	5.7	70.6	8.1	0.1	1.0	0.2	0.2	6.4	0.4	0.2	0.2	0.2	0.03	7
S 195	39.1	32.5	8.7	82.3	13.0	0.2	1.6	0.2	0.2	4.6	0.5	0.4	0.2	0.2	0.03	3
S 196	29.9	29.0	5.8	76.5	10.5	0.2	1.2	0.1	0.2	9.3	0.7	0.3	0.3	0.2	0.03	5
S 1090	14.4	21.0	5.8	93.0	8.4	1.0	1.7	0.2	0.2	7.9	0.7	0.4	0.4	0.5	0.03	2
S 1091	24.8	23.3	4.7	75.4	5.4	0.3	1.4	0.2	0.2	11.3	1.3	0.2	0.2	0.7	0.03	4
S 1092	14.1	15.9	7.0	87.3	7.0	0.7	1.5	0.2	0.2	10.5	0.4	0.4	0.2	0.7	0.03	6
S 1093	17.4	18.8	7.9	72.0	10.5	0.6	1.6	0.2	0.2	8.3	0.9	0.4	0.2	0.7	0.03	1
S 1094	9.2	15.1	4.5	59.7	6.0	0.3	0.9	0.1	0.2	4.5	0.9	0.5	0.2	0.4	0.03	2
S 1095	6.6	8.4	4.2	36.9	3.2	0.2	0.8	0.1	0.2	2.7	0.4	0.4	0.2	0.5	0.03	1
S 1096	5.6	7.8	4.5	36.3	3.2	0.4	0.9	0.1	0.2	2.4	0.3	0.2	0.2	0.5	0.03	1
S 1097	46.5	40.2	9.5	87.8	14.6	0.5	1.3	0.4	0.2	10.3	0.8	0.7	0.5	0.7	0.03	2
S 1098	19.2	23.7	5.5	83.8	11.3	0.3	1.2	0.4	0.2	5.9	0.5	0.7	0.2	0.7	0.03	2
S 1099	15.2	24.4	4.9	56.5	9.7	0.3	1.3	0.2	0.2	6.9	0.8	0.3	0.2	0.8	0.03	3
S 1100	22.8	28.0	7.2	81.9	8.7	0.2	1.5	0.2	0.2	7.5	0.9	0.3	0.2	0.5	0.03	3
S 1101	18.7	24.7	8.1	78.9	12.5	0.4	1.7	0.4	2.4	9.5	1.1	0.4	0.2	0.7	0.09	5
S 1102	17.5	24.7	4.6	65.8	11.0	0.5	1.6	0.3	1.2	5.9	0.7	0.8	0.9	1.0	0.03	3
S 1103	12.3	21.3	3.2	70.6	6.5	0.2	0.9	0.1	0.2	3.1	1.0	0.4	0.2	0.4	0.03	2
S 1104	11.3	20.2	3.9	55.9	5.9	0.2	0.9	0.1	0.2	1.6	1.1	0.3	0.3	0.4	0.03	1
S 1105	9.2	16.0	2.8	30.8	4.0	0.1	0.5	0.1	0.2	2.3	0.4	0.2	0.2	0.9	0.03	1
S 1106	16.7	25.8	3.9	68.8	8.1	0.3	1.1	0.1	0.2	4.6	0.7	0.2	0.2	0.9	0.03	6
S 1107	12.0	19.4	3.6	57.1	5.4	0.3	1.1	0.1	0.2	3.3	0.8	0.3	0.4	0.8	0.03	2
S 1108	13.5	22.6	3.9	68.4	7.9	0.4	1.3	0.1	0.2	4.0	0.7	0.5	0.2	0.9	0.03	1
S 1109	15.4	24.6	3.6	51.8	7.8	0.3	1.8	0.3	0.2	4.4	0.3	0.8	1.8	0.8	0.03	1
S 1110	12.8	21.3	4.2	57.6	6.9	0.2	1.0	0.1	0.2	3.7	0.6	0.4	0.4	0.9	0.03	13
S 1111	19.4	28.4	5.9	65.5	12.4	0.2	1.3	0.1	0.2	11.1	1.0	0.4	0.5	1.0	0.03	4
S 1112	16.5	22.8	3.9	48.6	8.0	0.1	1.2	0.1	0.2	7.0	1.0	0.2	0.3	0.9	0.03	6
S 1113	27.7	23.4	3.8	78.3	11.4	0.3	1.4	0.2	0.2	6.4	0.5	0.2	0.2	1.0	0.03	8
S 1114	20.8	23.0	4.7	81.0	9.2	0.5	1.3	0.2	0.2	4.7	0.9	0.4	0.4	0.6	0.03	1
S 1115	17.0	24.0	5.0	52.5	8.6	0.2	1.5	0.2	0.2	4.9	0.6	0.4	0.6	0.7	0.03	1
SM 1116	81.2	52.1	7.0	262.7	15.2	4.2	2.3	1.6	0.2	7.2	1.0	1.2	1.5	1.1	0.03	8
SM 1117	84.6	64.2	8.0	167.9	18.0	1.6	2.5	1.2	0.2	12.1	1.8	1.0	0.6	0.6	0.03	4
S 1118	23.5	24.5	3.9	73.9	8.1	0.3	1.3	0.2	0.2	5.7	0.7	0.4	0.2	0.7	0.03	4
S 1119	26.7	25.8	5.2	72.2	9.6	0.5	1.5	0.2	0.2	8.0	0.7	0.5	0.2	0.8	0.03	3
S 1120	9.9	16.5	5.3	86.7	10.4	0.7	1.9	0.1	3.6	4.4	0.7	0.4	0.3	1.1	0.10	2
S 1121	10.2	24.2	6.8	218.7	12.7	1.4	1.3	0.5	0.2	2.5	0.6	0.6	0.7	1.2	0.03	1

HAT LAKE	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
S 1122	45.8	34.5	5.7	237.8	14.1	0.6	1.7	0.3	0.2	6.9	1.1	0.7	0.3	0.8	0.07	1
S 1123	39.6	29.7	4.8	71.2	11.9	0.1	2.6	0.1	0.2	10.4	1.4	0.2	0.2	1.1	0.04	1
S 1124	33.2	33.3	5.1	112.0	12.0	0.4	1.4	0.2	0.2	8.2	0.6	0.5	0.7	0.6	0.03	1
S 1125	8.3	18.5	4.3	91.8	8.0	0.6	1.0	0.1	0.2	4.0	0.2	0.2	0.2	0.9	0.03	1
S 1126	15.8	27.1	3.8	53.5	9.2	0.2	1.1	0.1	0.2	5.1	0.7	0.2	0.2	1.0	0.03	1
S 1127	7.6	16.4	5.0	53.5	8.5	0.6	1.3	0.1	0.2	2.1	0.3	0.3	0.2	0.9	0.03	1
S 1128	13.4	26.1	4.4	114.5	6.5	0.2	1.1	0.3	0.2	2.6	0.9	0.3	0.3	0.8	0.03	4
S 1129	6.5	14.8	4.5	53.6	5.0	0.1	1.0	0.1	0.2	2.2	0.3	0.2	0.2	0.7	0.03	1
S 1130	4.5	8.6	12.1	94.4	3.6	0.4	1.0	0.1	0.2	3.4	0.3	0.4	0.2	1.0	0.03	2
S 1131	12.1	20.0	8.1	192.3	8.7	1.7	1.1	0.3	0.2	5.7	0.6	0.5	0.3	1.0	0.04	1
S 1132	48.0	72.5	10.1	267.6	34.2	1.8	2.9	0.4	0.2	8.4	1.7	0.6	0.3	2.0	0.03	1
S 1133	18.7	22.2	7.3	97.8	10.0	1.1	1.7	0.2	0.2	8.0	0.8	0.6	0.2	1.0	0.03	1
SM 1134	77.3	103.3	3.4	83.5	25.8	0.1	2.0	0.2	0.2	18.3	2.0	1.4	0.2	0.8	0.03	1
S 1135	38.5	42.2	10.3	90.5	14.9	0.3	2.0	0.3	0.2	20.8	1.7	0.7	0.6	1.2	0.03	14
S 1163	12.3	20.8	4.1	63.2	6.2	0.2	1.0	0.4	0.2	3.3	0.5	0.4	0.2	0.2	0.03	7
S 1164	59.0	37.7	9.8	152.0	23.8	0.3	2.0	0.2	0.2	9.0	1.0	0.8	0.4	0.2	0.03	4
S 1165	23.5	25.6	4.7	67.8	9.0	0.4	1.3	0.2	0.2	6.1	0.2	0.3	0.3	0.2	0.03	1
SM 1166	75.2	47.3	6.4	125.8	14.8	1.5	2.0	0.5	0.2	6.7	0.6	0.7	0.3	0.2	0.03	12
S 1167	18.3	21.2	3.7	99.6	8.1	0.3	1.2	0.1	0.2	4.0	0.6	0.3	0.2	0.2	0.03	3
S 1168	43.4	41.5	5.0	112.0	9.8	1.9	1.5	0.5	0.2	5.8	0.4	1.2	0.8	0.2	0.03	8
S 1169	34.0	27.6	5.0	61.8	10.7	0.1	1.3	0.2	0.2	5.8	0.4	0.4	0.2	0.2	0.03	7
S 1170	54.8	39.5	7.2	88.5	13.4	0.2	1.4	0.1	0.2	8.7	0.5	0.6	0.2	0.3	0.03	24
S 1171	19.6	18.6	5.0	79.5	9.3	0.4	1.3	0.4	0.2	3.9	0.3	0.3	0.3	0.2	0.03	8
S 1172	22.8	23.7	4.3	55.9	7.8	0.1	1.2	0.1	0.2	5.4	0.3	0.2	0.3	0.2	0.03	4
S 1173	20.9	24.3	4.5	66.9	6.8	0.1	1.5	0.2	0.2	9.1	0.9	0.8	1.0	0.8	0.03	
S 1174	14.0	16.6	3.6	53.1	5.9	0.2	1.1	0.1	0.2	6.0	0.8	0.3	0.2	0.2	0.03	2
S 1175	15.5	15.8	6.2	82.3	7.4	0.5	1.7	0.3	0.2	4.0	0.4	0.2	0.2	0.2	0.03	3
S 1176	15.3	15.8	4.6	117.6	10.3	1.0	1.3	0.4	0.2	4.7	0.2	0.2	0.2	0.2	0.03	6
S 1177	49.6	30.8	4.6	91.4	12.8	0.2	1.7	0.4	0.2	3.8	0.7	0.3	0.3	0.4	0.03	1
S 1178	33.5	23.0	4.7	65.5	11.5	0.4	1.3	0.2	0.2	6.9	0.9	0.3	0.2	0.2	0.03	3
S 1179	17.5	17.3	4.6	75.7	8.0	0.4	1.4	0.2	0.2	5.9	0.4	0.2	0.2	0.2	0.03	9
S 1180	65.9	23.0	6.4	104.2	16.5	0.3	1.5	0.3	0.2	3.7	0.5	0.2	0.2	0.2	0.03	4
S 2051	22.7	15.9	4.1	78.7	7.4	0.5	2.6	0.2	0.2	2.9	0.2	0.2	0.5	0.2	0.03	1
S 2052	14.4	24.9	3.6	55.6	7.5	0.3	2.0	0.1	0.2	3.5	0.2	0.2	0.2	0.3	0.03	4
S 2053	40.4	29.3	4.8	77.4	10.6	0.5	1.8	0.3	0.2	6.0	0.2	0.4	0.2	0.2	0.03	1
S 2054	39.4	34.4	5.8	181.7	20.3	0.7	1.9	0.4	0.2	4.0	0.5	0.4	0.2	0.2	0.03	2
S 2055	26.7	30.1	6.2	312.4	26.7	2.6	12.9	0.4	0.2	4.5	0.5	0.2	0.2	0.2	0.04	1
S 2056	29.8	23.8	5.4	123.7	12.9	0.8	3.9	0.2	0.2	5.1	0.9	0.2	0.2	0.2	0.03	1
S 2057	310.7	43.6	4.6	102.7	9.0	1.5	3.7	0.4	0.2	4.6	0.2	0.2	1.2	0.2	0.03	1
S 2058	2.6	3.5	2.4	24.1	1.5	0.3	0.5	0.1	1.6	0.9	0.2	0.2	0.2	0.2	0.04	8
S 2059	6.6	17.7	3.9	75.3	6.5	0.2	0.9	0.1	0.2	2.6	0.2	0.2	0.2	0.2	0.03	2
S 2060	14.3	15.1	4.3	145.6	10.6	3.3	1.9	0.5	0.2	2.6	0.2	0.2	0.2	0.3	0.03	4
S 2061	8.8	16.8	3.8	62.6	5.7	0.7	1.3	0.2	0.2	4.4	0.2	0.3	0.2	0.2	0.03	4
S 2062	26.7	23.2	5.1	57.0	5.8	0.4	3.4	0.2	0.2	8.4	0.2	0.5	0.2	0.2	0.03	10
S 2063	7.7	16.1	3.5	68.6	5.0	0.3	1.1	0.1	0.2	2.6	0.2	0.2	0.2	0.4	0.03	6
S 2064	8.6	15.4	3.8	68.4	7.8	0.6	1.0	0.2	0.2	2.1	0.2	0.3	0.2	0.2	0.03	2
S 2065	62.1	45.3	2.7	50.1	3.7	1.0	1.6	0.5	0.2	5.2	1.2	1.2	4.0	0.2	0.03	12
S 2066	35.7	19.0	1.1	6.6	1.3	0.7	2.0	0.2	0.2	2.2	0.7	1.6	4.7	0.5	0.03	8
S 2067	30.1	24.6	1.5	17.2	2.6	0.6	2.6	0.4	0.2	3.7	1.8	1.7	4.1	0.2	0.03	20
S 2068	7.8	14.9	3.5	92.3	6.6	0.7	1.0	0.1	0.2	2.5	0.2	0.2	0.2	0.3	0.03	4
S 2069	7.9	15.0	7.2	110.0	7.9	0.9	1.3	0.3	0.2	5.1	0.2	0.4	0.2	0.4	0.03	14
S 2070	42.1	40.0	10.4	95.3	12.4	0.5	1.7	0.3	0.2	19.2	0.3	0.4	0.2	0.2	0.03	6
S 2071	11.4	19.3	7.8	159.2	10.3	1.5	1.2	0.3	0.2	7.5	0.2	0.2	0.2	0.4	0.03	4
S 2072	25.3	28.5	6.8	104.0	9.0	1.1	0.9	0.3	0.2	6.7	0.2	0.3	0.2	0.2	0.03	1

HAT LAKE	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
S 2073	16.1	19.6	7.7	167.3	10.3	3.6	1.4	0.6	0.2	7.3	0.2	0.2	1.1	0.2	0.03	1
S 2074	19.9	21.1	7.3	104.3	8.7	1.0	1.8	0.3	0.2	9.6	0.2	0.5	0.2	0.2	0.03	4
S 2075	29.1	23.2	3.0	32.8	3.7	0.4	1.2	0.5	0.2	7.4	0.6	1.2	1.9	0.2	0.03	*
S 2076	17.4	23.2	7.7	98.8	7.3	0.6	2.3	0.2	0.2	12.3	1.9	0.4	0.2	0.5	0.03	4
S 2077	7.4	12.8	5.5	74.0	6.0	0.4	1.3	0.1	0.2	4.5	0.2	0.3	0.2	0.4	0.03	2
S 2078	17.5	21.7	4.7	97.6	9.1	0.6	1.6	0.2	0.2	7.1	0.7	0.4	0.2	0.4	0.03	4
S 2079	20.5	23.8	4.6	100.8	10.8	0.6	1.5	0.3	0.2	6.2	0.4	0.3	0.2	0.3	0.03	8
S 2080	17.2	21.8	3.7	67.9	6.2	0.3	1.4	0.1	0.2	7.3	0.4	0.4	0.2	0.6	0.03	6
S 2081	14.5	17.8	3.7	66.0	7.8	0.3	1.2	0.2	0.2	5.1	0.5	0.2	0.2	0.4	0.03	10
S 2082	39.1	36.2	4.6	103.7	13.2	0.7	1.8	0.2	0.2	7.6	0.2	0.4	0.2	0.2	0.03	20
S 2083	72.3	53.9	7.4	140.0	16.6	1.3	2.1	1.0	0.2	11.4	0.3	1.1	0.7	0.2	0.03	*
S 2084	35.6	33.2	6.1	85.8	13.3	0.4	1.9	0.1	0.2	11.1	0.4	0.2	0.2	0.5	0.03	9
S 2085	14.5	16.3	4.5	59.7	5.0	0.4	1.4	0.2	0.2	5.9	0.2	0.2	0.2	0.4	0.03	2
S 2086	23.2	26.3	3.5	88.6	8.1	0.3	1.1	0.2	0.2	6.9	0.2	0.2	0.2	0.3	0.03	9
S 2087	50.4	44.5	6.2	133.4	10.5	1.6	1.5	0.5	0.2	5.8	0.2	0.5	0.7	0.2	0.03	14
S 2088	32.7	36.7	5.0	92.4	10.5	0.6	1.2	0.3	0.2	6.5	0.2	0.5	0.2	0.4	0.03	6
S 2089	17.0	19.4	3.9	79.2	8.0	0.8	0.9	0.1	0.2	2.5	0.2	0.2	0.2	0.3	0.03	4
S 2090	39.6	37.0	4.8	100.5	10.4	0.8	1.5	0.3	0.2	6.6	0.2	0.2	0.2	0.2	0.03	8
S 2091	41.1	39.1	5.0	99.6	9.0	1.1	1.5	0.4	0.2	7.0	0.2	0.4	0.2	0.2	0.03	20
S 2092	54.0	47.2	5.4	95.6	11.6	0.5	1.2	0.3	0.2	8.4	0.2	0.5	0.2	0.2	0.03	12
S 2093	53.4	47.8	5.7	138.8	11.7	1.4	2.1	0.7	0.2	7.6	0.2	0.6	0.2	0.2	0.03	16
S 2094	17.5	21.0	4.1	96.6	8.2	1.1	1.2	0.2	0.2	3.1	0.2	0.2	0.2	0.2	0.05	12
S 2095	18.6	19.8	3.6	63.1	5.4	0.6	1.1	0.2	0.2	3.8	0.6	0.2	0.2	0.2	0.03	8
S 2291	18.4	22.6	5.0	57.2	8.0	0.5	1.8	0.1	0.2	7.6	0.3	0.2	0.2	0.2	0.03	10
S 2292	16.5	21.7	5.2	130.0	11.2	0.7	1.5	0.3	0.2	6.0	0.3	0.4	0.2	0.2	0.03	3
S 2293	23.4	26.5	5.6	77.1	9.6	0.3	1.8	0.1	1.1	8.0	0.6	0.2	0.2	0.3	0.03	4
S 2294	21.4	29.6	7.8	94.1	13.4	0.3	1.6	0.3	0.2	8.9	0.3	0.2	0.2	0.2	0.03	11
S 2295	7.5	13.5	4.6	63.6	6.3	0.2	1.2	0.1	0.2	3.6	0.2	0.2	0.2	0.2	0.03	1
S 2296	23.9	17.7	9.1	192.3	12.8	0.8	1.7	0.4	0.2	3.9	0.2	0.2	0.2	0.5	0.03	4
S 2297	18.5	20.9	5.3	60.4	8.7	0.3	1.4	0.2	0.2	5.2	0.2	0.2	0.2	0.2	0.03	9
S 2298	24.3	15.8	8.6	169.3	11.2	2.4	4.3	0.7	0.2	3.5	0.2	0.2	0.2	0.2	0.03	3
S 2299	6.3	10.4	5.1	55.0	5.1	0.4	1.2	0.1	0.2	2.5	0.2	0.2	0.2	0.3	0.03	2
S 2300	20.8	22.9	5.0	60.0	8.2	0.4	1.9	0.1	0.2	9.0	0.2	0.2	0.2	0.5	0.03	8
S 2301	22.5	24.4	5.9	70.3	8.9	0.2	1.5	0.4	0.2	7.3	0.2	0.2	0.2	0.2	0.03	7
S 2302	21.2	23.8	5.4	72.9	9.8	0.4	1.4	0.1	0.2	7.8	0.2	0.2	0.2	0.4	0.03	4
S 2303	26.6	25.7	7.4	89.5	11.8	1.4	1.9	0.3	0.2	7.2	0.2	0.2	0.2	0.2	0.03	4
S 2304	26.6	28.0	5.2	91.6	11.3	0.6	1.7	0.2	0.2	7.2	0.3	0.2	0.2	0.6	0.03	4
S 2305	43.6	37.3	7.1	120.8	14.4	0.8	1.8	0.4	0.2	9.2	0.2	0.2	0.2	0.2	0.03	4
S 2306	87.3	55.3	8.1	150.2	17.9	1.8	2.1	0.9	0.2	8.8	0.2	0.2	0.2	0.3	0.03	1
S 2307	28.6	27.5	6.5	78.6	11.2	0.4	1.7	0.2	0.2	8.8	0.2	0.2	0.2	0.5	0.03	10
S 2308	28.8	27.5	6.1	78.4	11.1	0.4	1.8	2.8	0.2	8.4	0.2	0.2	0.2	0.3	0.03	10

HAT LAKE	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
Statistics:																
No. Samples	191	191	191	191	191	191	191	191	191	191	191	191	191	191	191	184
Mean	27.3	25.5	5.6	90.8	9.7	0.6	1.7	0.3	0.2	6.2	0.6	0.4	0.4	0.4	0.03	5.4
s.d.	28.0	12.6	1.9	46.9	4.7	0.6	1.3	0.3	0.3	3.3	0.5	0.3	0.6	0.3	0.01	4.8
Maximum	310.7	103.3	12.1	312.4	34.2	4.2	12.9	2.8	3.6	20.8	3.4	2.2	4.7	2.0	0.10	26
Minimum	2.6	3.5	1.1	6.6	1.0	0.1	0.5	0.1	0.2	0.9	0.2	0.2	0.2	0.2	0.03	1
Mean + 2 s.d.	83.3	50.6	9.4	184.6	19.1	1.9	4.3	0.8	0.9	12.7	1.6	1.0	1.5	1.0	0.05	15.1

Symbols

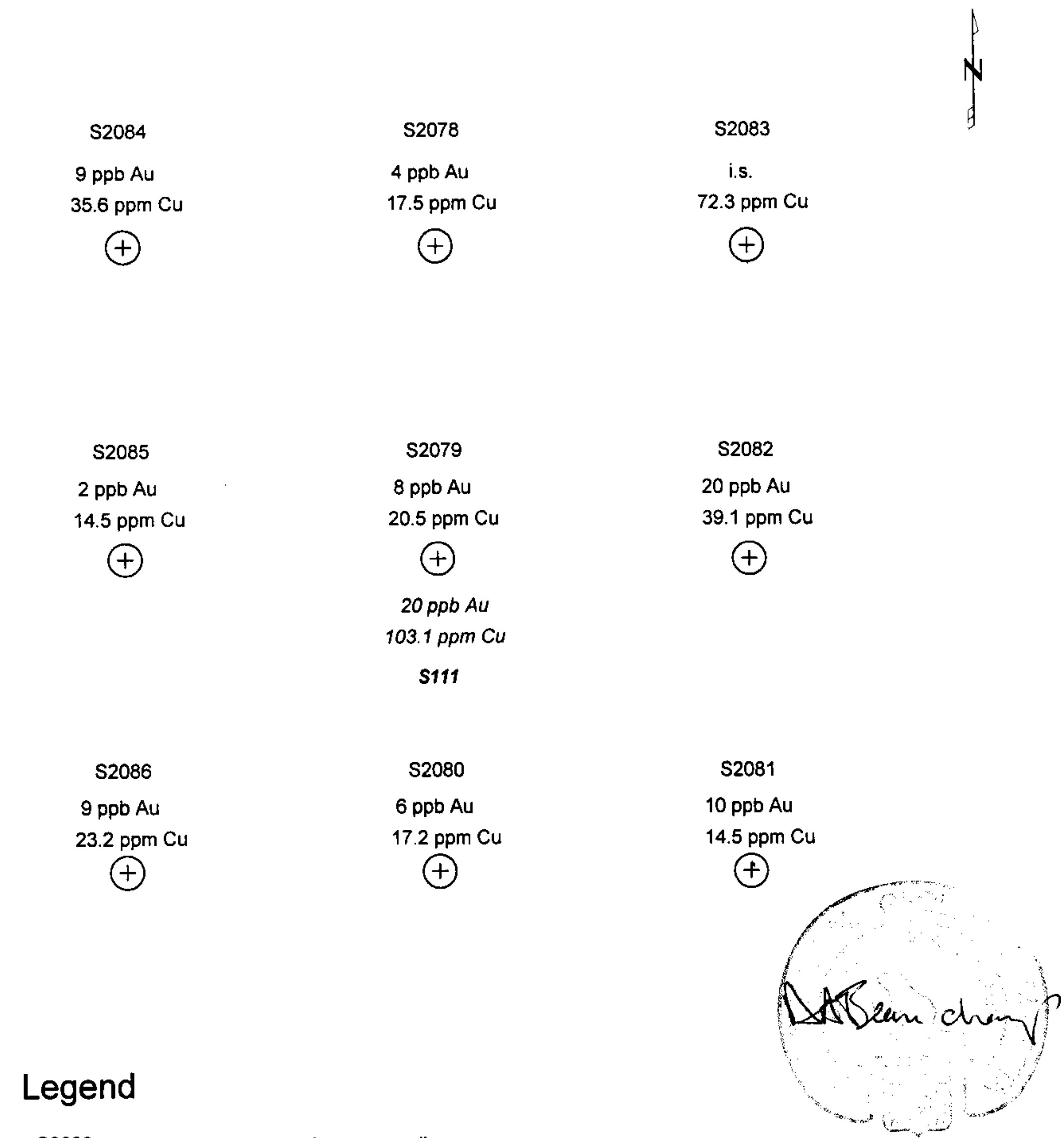
*	insufficient sample for gold analysis
**	insufficient sample for double check analysis of gold
s.d.	standard deviation
	all values are in ppm unless otherwise indicated

Sample Prefix

R	rock samples
S	soil samples
SM	soil samples subjected to additional sampling on mini-grid

Appendix 5

Geochemistry Program: Resampling Figures



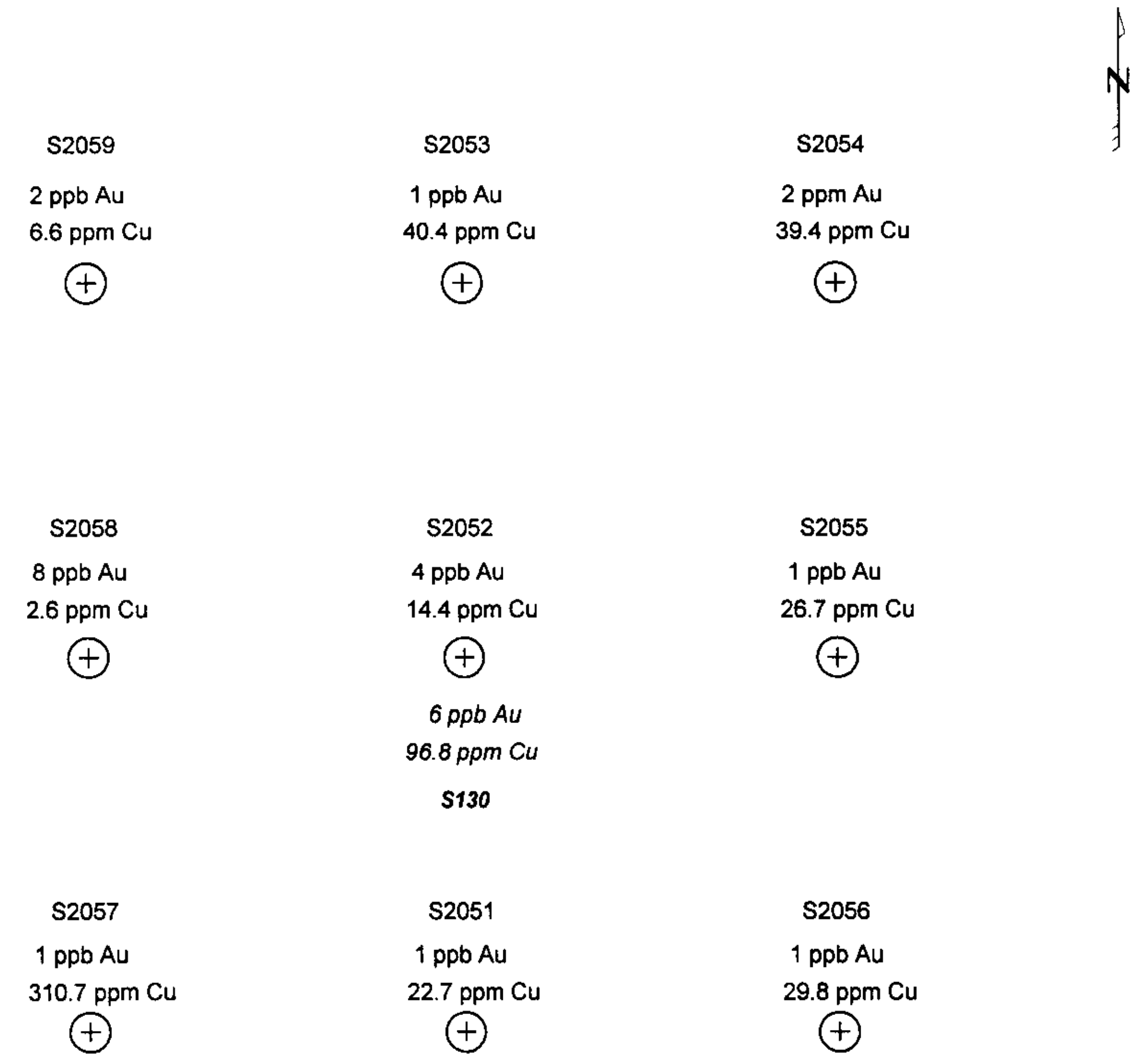
Legend

S2082	Sample number, re-sampling program
9 ppb Au	Geochemical result,re-sampling program
i.s.	Insufficient sample for analysis of gold
⊕	Sample location
20 ppb Au	Geochemical result, initial sampling
S111	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM111 HAT LAKE Claims, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.1



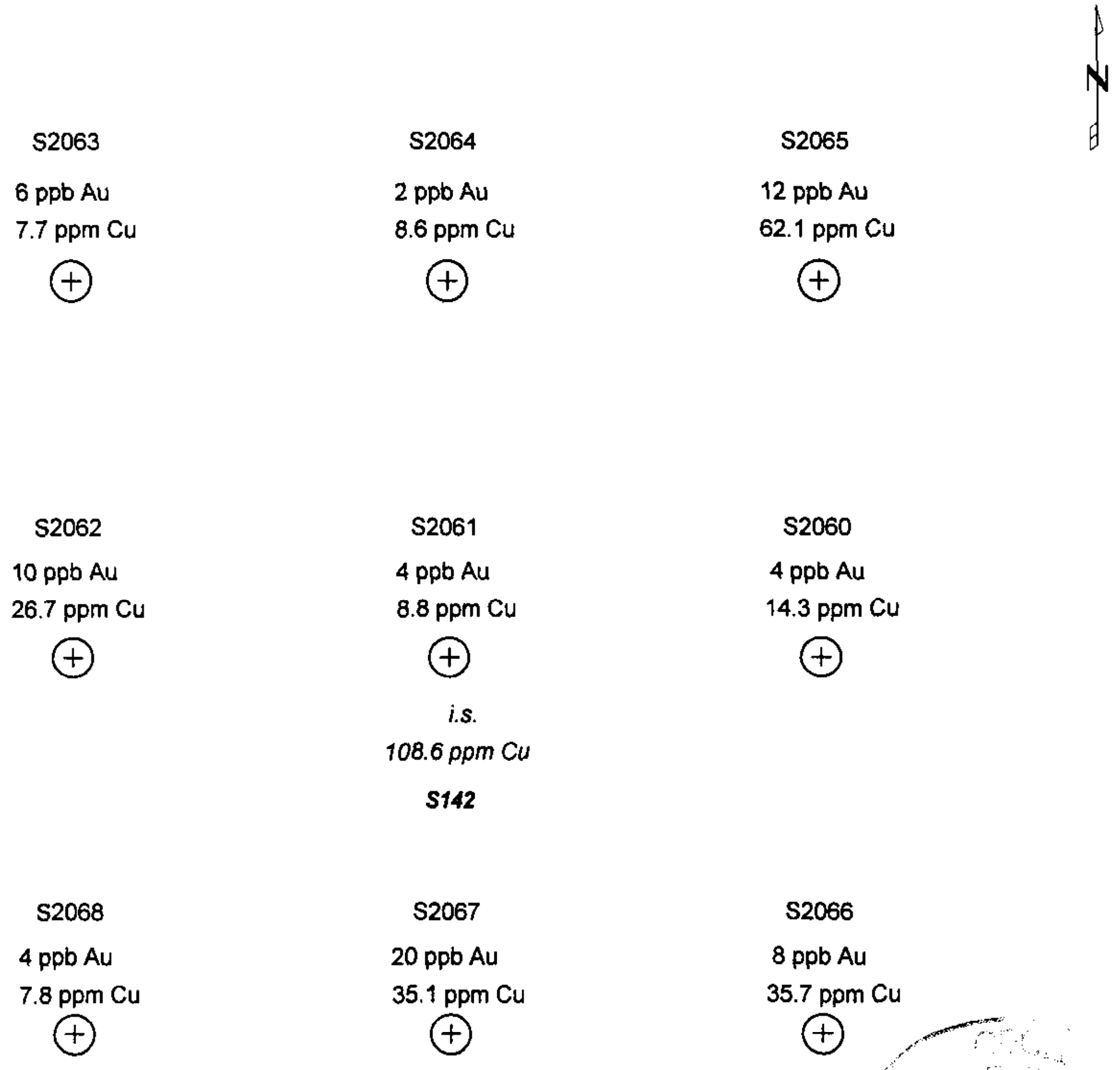
Legend

S2065	Sample number, re-sampling program
6 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
6 ppb Au	Geochemical result, initial sampling
S130	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM130 HAT LAKE Claims, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.2



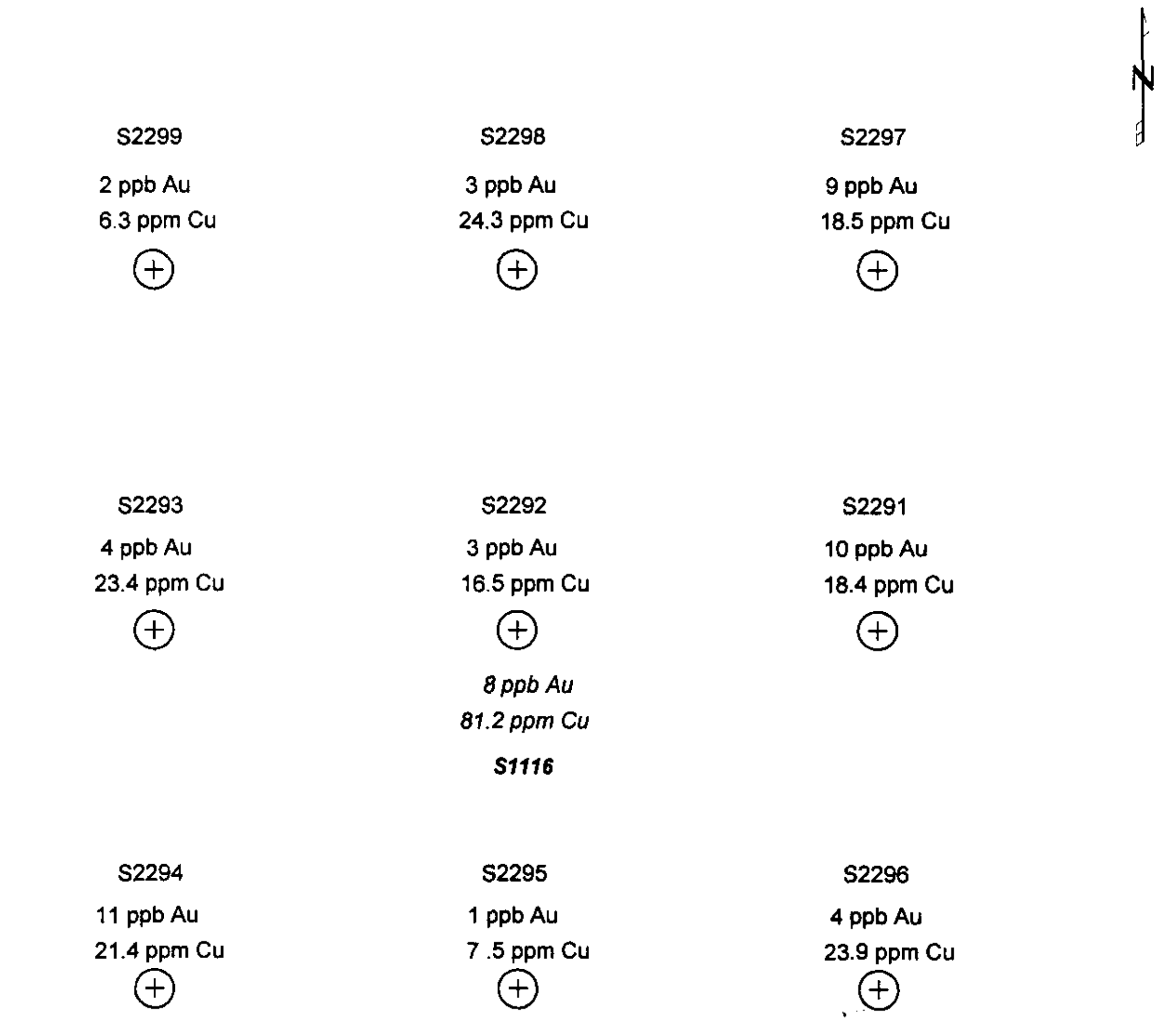
Legend

S2065	Sample number, re-sampling program
6 ppb Au	Geochemical result,re-sampling program
i.s.	Insufficient sample for analysis of gold
⊕	Sample location
108.6 ppm Cu	Geochemical result, initial sampling
S142	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM142 HAT LAKE Claims, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.3



Legend

S2295	Sample number, re-sampling program
4 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
8 ppb Au	Geochemical result, initial sampling
S1116	Sample number

Scale

0 10 20 m

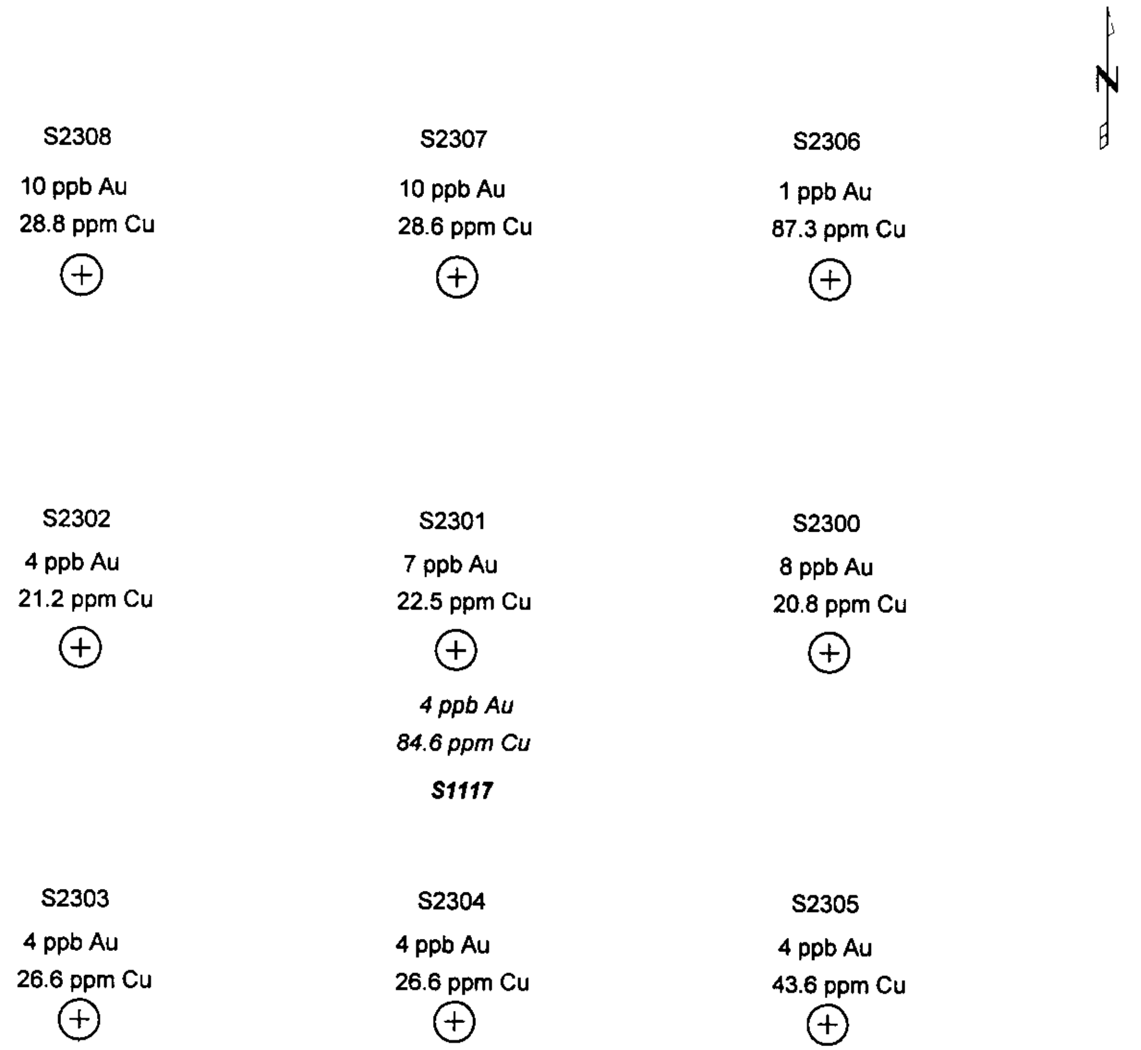
Birch Mountain Resources Ltd.

Geochemistry Program

Mini-grid SM1116

HAT LAKE Claims, B.C.

Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.4



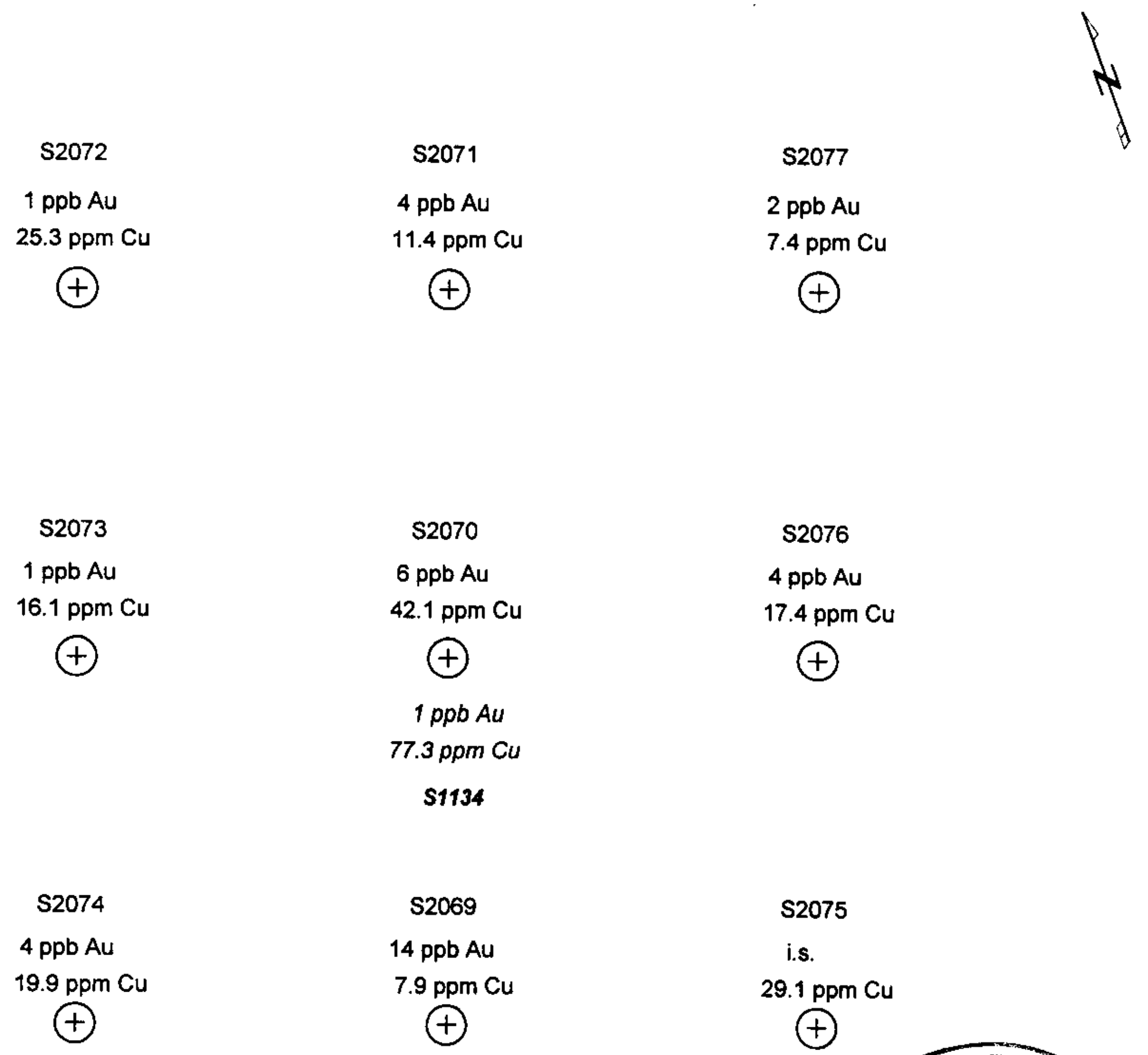
Legend

S2306	Sample number, re-sampling program
4 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
4 ppb Au	Geochemical result, initial sampling
S1117	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program		
Mini-grid SM1117		
HAT LAKE Claims, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.5



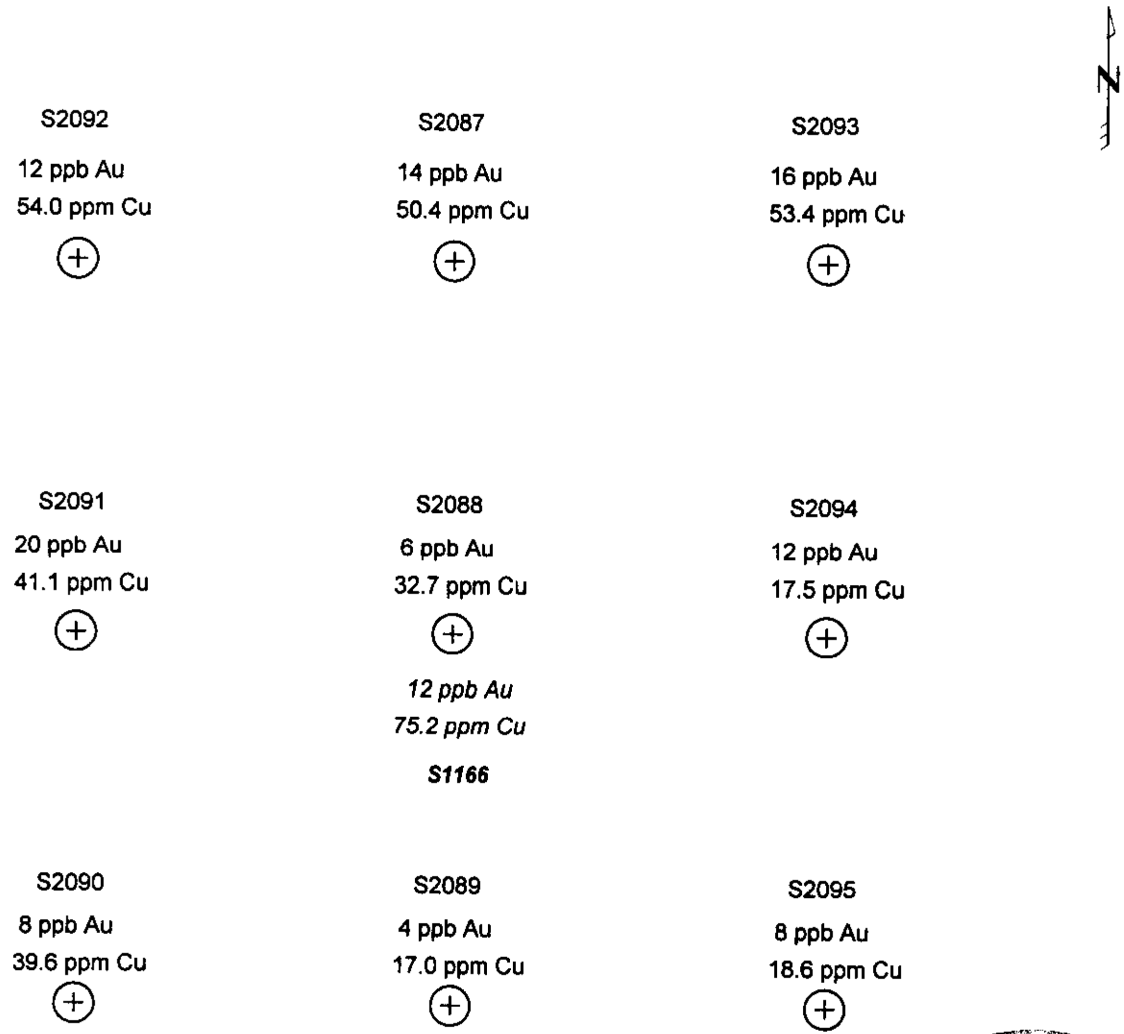
Legend

S2073	Sample number, re-sampling program
4 ppb Au	Geochemical result,re-sampling program
i.s.	Insufficient sample for analysis of gold
⊕	Sample location
1 ppb Au	Geochemical result, initial sampling
S1134	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM1134 HAT LAKE Claims, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.6



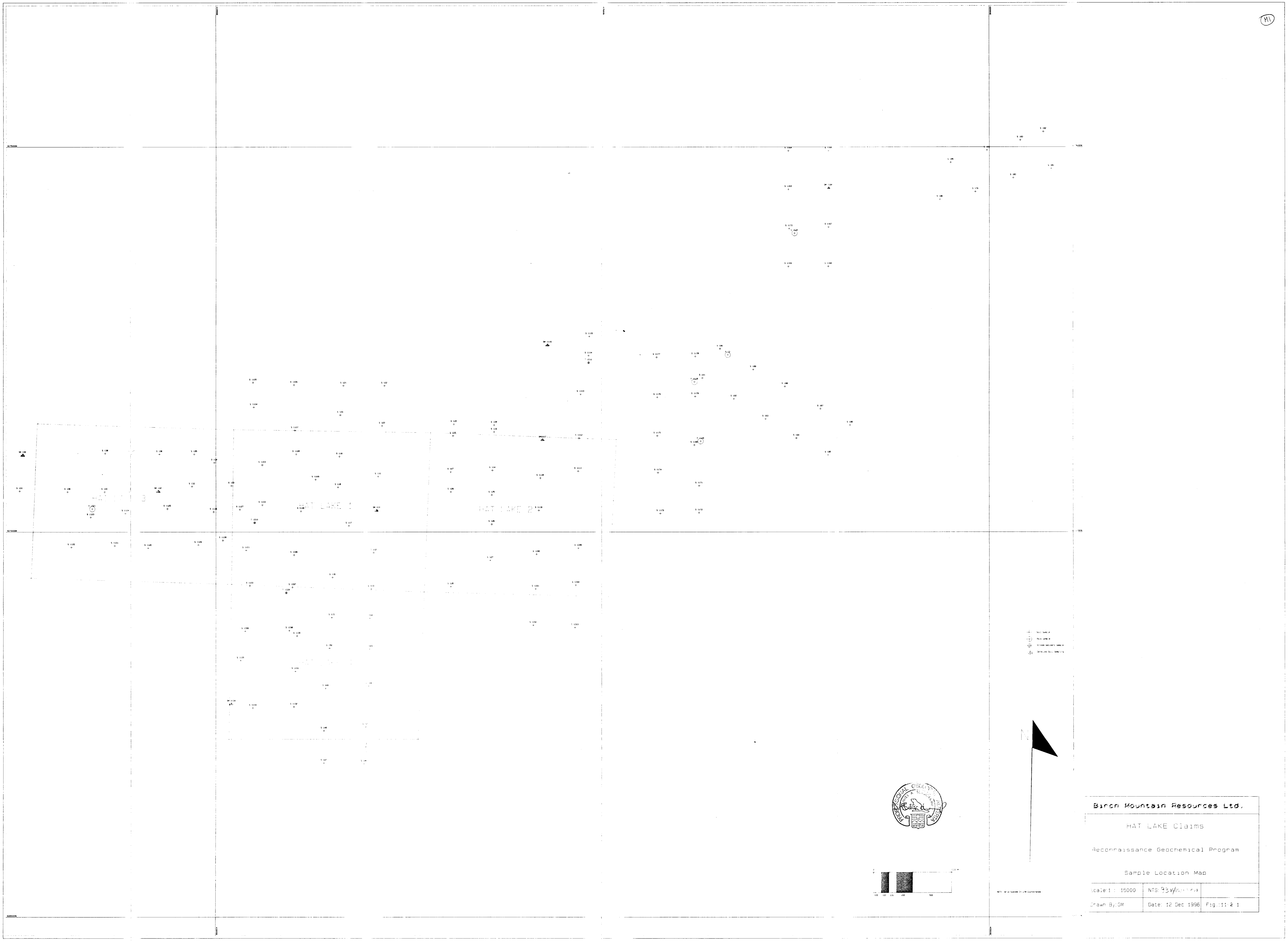
Legend

S2088	Sample number, re-sampling program
4 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
12 ppb Au	Geochemical result, initial sampling
S1166	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM1166 HAT LAKE Claims, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.7


HAT LAKE 1
HAT LAKE 2
N
Birch Mountain Resources Ltd.
HAT LAKE Claims
Reconnaissance Geochemical Program
Sample Location Map
Scale:1 : 15000
NTS: 93 K/
Drawn By:GM
Date: 12 Dec 1996
Fig.:11-2 1

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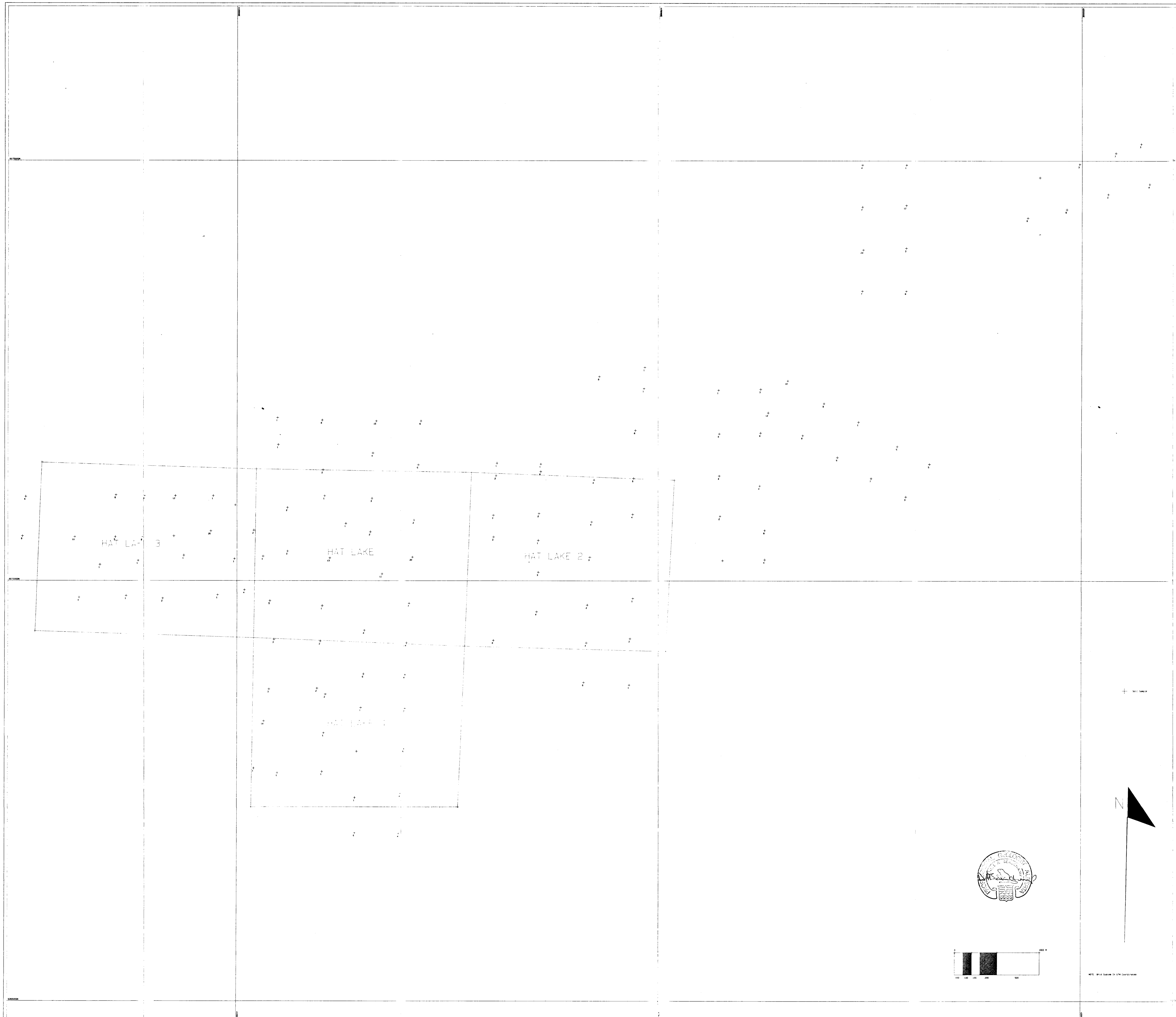


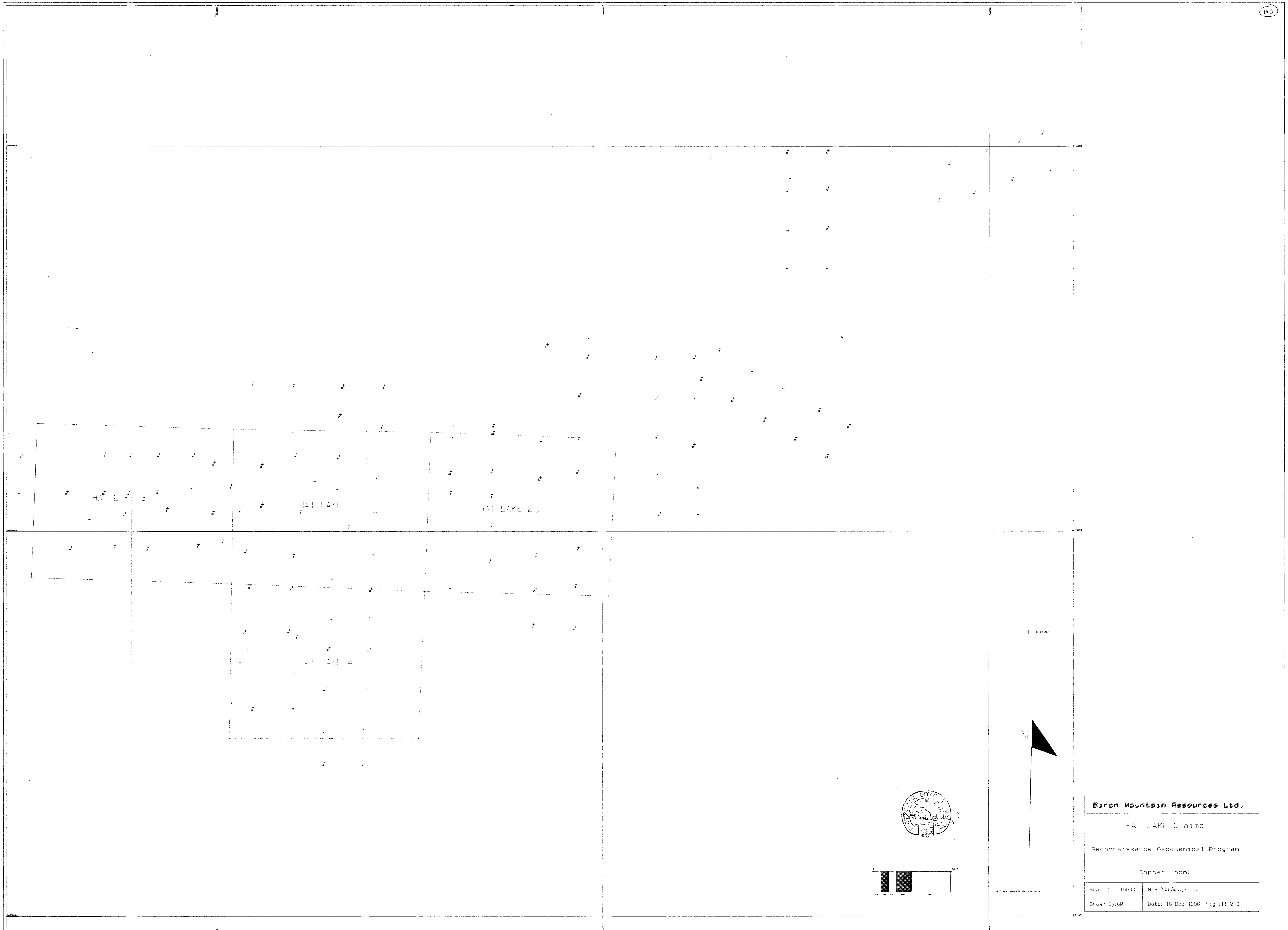
Birch Mountain Resources Ltd.

HAT LAKE Claims

Reconnaissance Geochemical Program

Gold (ppb)

Scale:1 : 15000	NTS: 93 K/[illegible]	
Drawn By:GM	Date: 16 Dec 1996	Fig.:11-2-2



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