ASSESSMENT REPORT

TAS-VAL Claims, B.C.

16 December, 1996

ASSESSMENT REPORT

on the

TAS and VAL Claims, British Columbia

Comprising the TAS 1,2,4,6 and VAL 1-5 Claims

For

Birch Mountain Resources Ltd.

By

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Simon X. Fan

Brett G. Johnson

OWNER AND OPERATOR:	Birch Mountain Res. Ltd.
N.T.S.:	93K/16W
PROVINCE:	British Columbia
LATITUDE:	54°52' N
LONGITUDE:	124°16' 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 TAS and VAL 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 and 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 15 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. Most of the initial values were not reproduced, but one area in the TAS claims area and another four areas located in the VAL claims area merit additional sampling and surficial geological mapping.

In the TAS claims, sample SM1033 had initially returned 260 ppb Au. The new sampling did not repeated the value, but another nearby sample gave 130 ppb Au. Follow-up of this new anomaly is warranted.

In the VAL claims area, two adjoining samples show values of 287.1 and 767.2 ppm Cu near the SM27 site. These anomalies may be caused by hydromorphic concentrations of copper but deserve additional work.

Three gold anomalies in the VAL claims area deserve additional work. They include 64, 240 and 570 ppb Au anomalies taken over a 45 ppb Au anomaly at site SM60; a 42 ppb Au anomaly at the western edge of the SM68 mini-grid; and 32, 150 and 470 ppb Au anomalies partially trending southeast on the SM78 mini-grid.

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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 TAS and VAL claims during the 1996 summer field season (Fig. 1.1).

The project area comprises nine claims comprising the TAS 1,2,4,6 and VAL 1-5 claims, located north of Fort St. James in north-central 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.

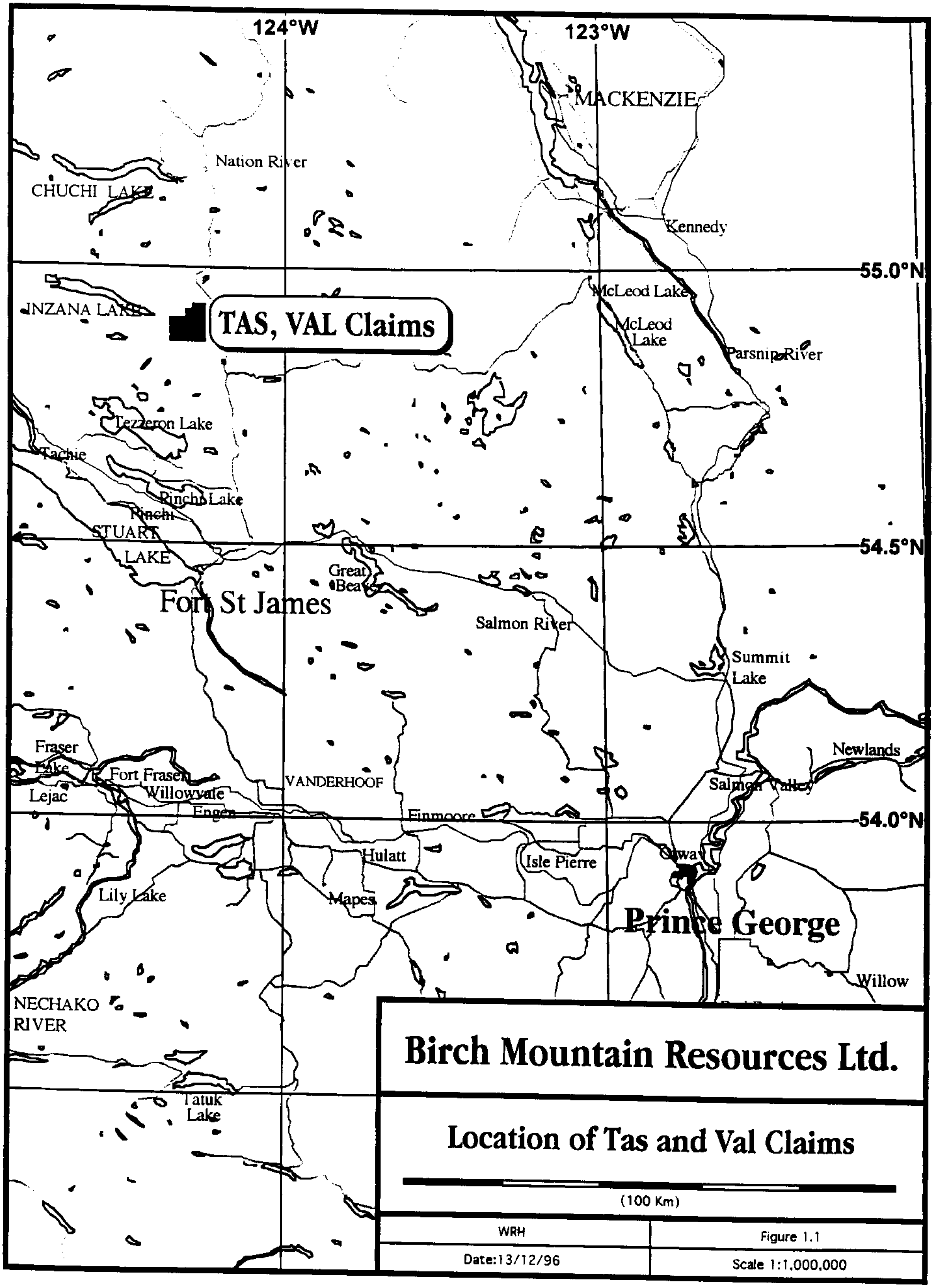
In 1996, Birch Mountain Resources Ltd. entered into an agreement to further explore the area. The company restaked some parts of the area and carried out a program of prospecting and geochemical surveying on the claims during the 1996 summer field season.

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

This report covers work conducted on several claim groups. The locations are shown in Fig. 2.1 and the particulars of the claims are listed in Table 2.1. The BOB, BIO 1 and BIO 2 claims lapsed and are to be restaked in early January, 1997.


124°W
123°W
MACKENZIE
Nation River
CHUCHI LAKE
Kennedy
55.0°N
McLeod Lake
INZANA LAKE
TAS, VAL Claims
McLeod Lake
Parsnip River
Tezzeron Lake
Tachie
Pinchi Lake
Pinchi
STUART LAKE
54.5°N
Great
Fort St James
Salmon River
Summit Lake
Fraser Lake
Fort Fraser
Willowvale
Lejac
Engen
VANDERHOOF
Newlands
Salmon Valley
Finmoore
54.0°N
Hulatt
Isle Pierre
Lily Lake
Mapes
Prince George
Willow
NECHAKO RIVER
Tatuk Lake
Birch Mountain Resources Ltd.
Location of Tas and Val Claims
(100 Km)
WRH
Figure 1.1
Date:13/12/96
Scale 1:1,000,000

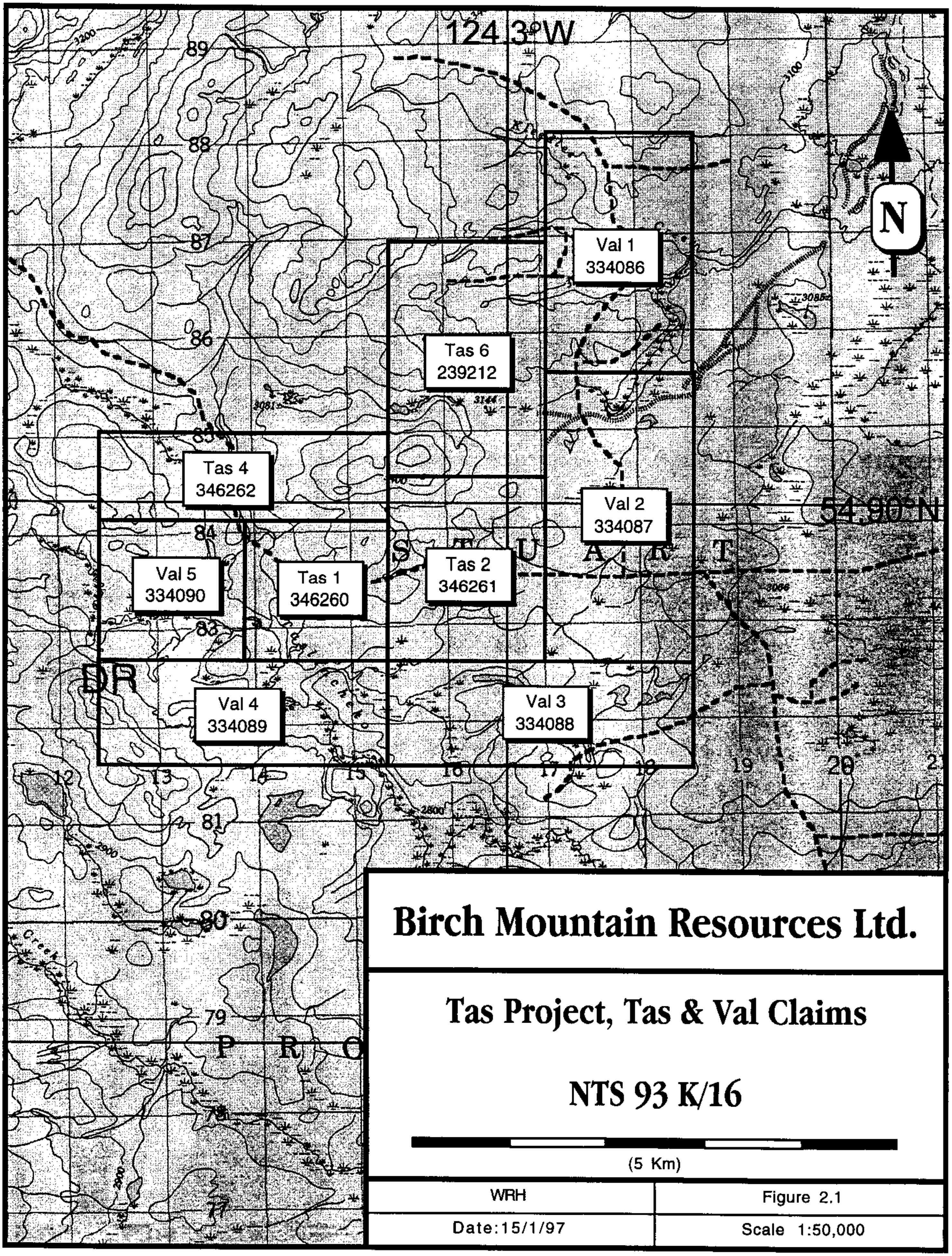

124.3°W
54.90°N
N
Val 1
334086
Tas 6
239212
Tas 4
346262
Val 2
334087
Val 5
334090
Tas 1
346260
Tas 2
346261
Val 4
334089
Val 3
334088
S T U A R T
P R O
Birch Mountain Resources Ltd.
Tas Project, Tas & Val Claims
NTS 93 K/16
(5 Km)
WRH
Figure 2.1
Date:15/1/97
Scale 1:50,000

TABLE 2.1: CLAIM STATUS

CLAIM NAME	No. UNITS	RECORD No.	EXPIRY DATE	OWNER
TAS 1	9	346260	29 May 1997	Birch Mountain Res.
TAS 2	12	346261	29 May 1997	Birch Mountain Res.
TAS 4	12	346262	29 May 1997	Birch Mountain Res.
TAS 6	15	239212	24 June 1997	A. Derry Halleran
VAL 1	15	334086	23 Feb 1997	Birch Mountain Res.
VAL 2	18	334087	24 Feb 1997	Birch Mountain Res.
VAL 3	12	334088	25 Feb 1997	Birch Mountain Res.
VAL 4	12	334089	28 Feb 1997	Birch Mountain Res.
VAL 5	9	334090	27 Feb 1997	Birch Mountain Res.

3. LOCATION

The project area is 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 TAS and VAL properties are 54° 52' N, 124°16' W on NTS map sheet 93K/16W and the BOB-BIO claims are about 4 km to the southeast.

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 almost everywhere on the claims. The only exception was within the BOB-BIO claims where fewer roads made access to these areas more difficult.

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 920m 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 in area was in 1968 by the N.B.C. Syndicate on the HAT LAKE claims which then covered the current BOB-BIO claims. 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. 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.

Noranda optioned the TAS property in 1985 and explored the area. In 1985 and 1986, Noranda conducted geological mapping, soil sampling, I.P. and magnetometer surveys, and outlined several promising zones of gold mineralization. The most significant discovery in the area was the Freegold Zone which is 10m wide. 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.

Late in 1987, Noranda signed an agreement with a junior public company, Goldcap Inc., and set up a joint venture to further fund the exploration on the TAS claims. Under the terms of the agreement, Goldcap could earn a 50% working interest in the property by spending $1M over a period of 4 years. In 1988, after 17 holes had been drilled, Noranda continued as operator and Goldcap funded a program which included 40 km of I.P. survey and five diamond drill holes. From intersections in holes 88-19 and 88-21, this program indicated two possible new zones between the Mid and the West Zones .

In the fall of 1988, Goldcap Inc. entered into an agreement with Black Swan Gold Mines Ltd. that would allow Black Swan to acquire a controlling interest in the TAS property and operatorship of the joint venture. In return, Black Swan would fund Goldcap's exploration commitment to Noranda. As operator, Black Swan carried out a detailed drilling program on TAS in October and November of 1988, and a total of 1252m of diamond drilling were completed in 21 holes. In 1989, Black Swan continued its exploration program with line cutting, geochemical and geophysical surveys, trenching, and diamond drilling of 1186m in 18 holes.

To the end of 1989, there have been 4356m of drilling completed in 61 holes on the TAS project area (Boronowski, 1989).

7. WORK CONDUCTED IN 1996

In 1996, Birch Mountain Resources Ltd. optioned the group of claims, staked the VAL 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 TAS, VAL and BOB-BIO claims, from June 10 to June 30. In total, 4 rock samples, 17 stream samples and 247 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 15 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 247 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.

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

About 50 km to the west of the TAS and VAL 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, dated at 108 to 126 Ma, and occurs as relatively small isolated bodies.

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 this area, 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 20 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).

The TAS-VAL 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.

At the TAS showing, the Takla Group has been fractured and invaded by a swarm of felsic dykes and sills. The fracturing allowed thermal fluids to penetrate the volcano-sedimentary units which were hornfelsed and metasomatized. A later intrusion of augite/hornblende and feldspar porphyry dykes may have been responsible for injecting the mineralization. Pyrite, pyrrhotite and chalcopyrite, accompanied by gold, were introduced into the brecciated shear zones replacing wallrock and were deposited in open fractures (Boronowski and Somerville, 1989).

The gold-copper mineralization is generally found within sulphide-rich zones of hornfelsed and altered intermediate tuff, flows and siltstone. The alteration is chlorite, epidote, carbonate and potassic.

Boronowski and Somerville (1989) suggest that a buried stock of diorite or feldspar porphyritic monzonite fractured the overlying Takla Group units and injected intrusive dykes and sills. Hydrothermal fluids were subsequently forced into the host rock causing hydraulic fracturing, hornfelsing and metasomatising of the calcareous sedimentary rocks and tuff, and alteration of the sills and dykes. The event was followed by the emplacement of feldspar porphyry and augite porphyry dykes that may be related to the buried monzonite stock. Sulphides were then formed as replacement deposits in open fractures.

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 3.1.

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 TAS Claims

11.2.1 Reconnaissance Geochemical Survey

Three stream sediment samples were collected over the TAS claims and all show normal background concentrations for all elements. The sample locations and numbers are shown on Fig. 11.2.1 and the results are listed in Appendix 3.2.

A total of 69 soil samples were taken from the TAS claims in the reconnaissance phase of the program. One of these samples was insufficient for gold analysis.

The results of the analyses of soil samples show that several anomalies are present on the claims as listed in Table 11.2.1. The table shows the mean for the initial sampling of the elements indicated. Values in bold exceed the mean plus two standard deviations for the samples in this project area. The anomalous samples on which mini-grids were established are prefixed by SM.

For gold analyses, three samples contain 48, 68 and 260 ppb Au (SM1048, SM1041 and SM1033) over a background value of 1-32 ppb Au (Fig. 11.2.2). Sample SM1048 also contains 239.8 ppm Cu and 15.9 ppm As, and SM1041 returned values of 114.9 ppm Cu and 19.9 ppm As.

Four additional samples returned anomalous values of 162.8 to 270.1 ppm Cu (Fig. 11.2.3). Sample SM173 contains 270.1 ppm Cu, 189.1 ppm Zn and 11.5 ppm Co; sample SM1044 contains 162.8 ppm Cu, 1.9 ppm Ag, and 14.8 ppm As; sample SM1153 has 270.1 ppm Cu, 189.1 ppm Zn and 11.5 ppm Co; and sample SM1157 returned values of 178.1 ppm Cu, 1.8 ppm Ag, 133.7 ppm Zn and 15.9 ppm Co. All of these samples and one more, SM174, were resampled in the detailed geochemical sampling program.

Table 11.2.1: Anomalous Samples: TAS Claims Area

Sample No.	Figure No.	Copper $\bar{x}$ 48.5 ppm	Gold $\bar{x}$ 13.1 ppb	Silver $\bar{x}$ 0.4 ppm	Arsenic $\bar{x}$ 6.2 ppm	Zinc $\bar{x}$ 74.6 ppm	Cobalt $\bar{x}$ 10.0 ppm
SM173	A.5.1	**250.6**	7	**1.8**	9.9	**140.5**	**23.7**
SM174	A.5.2	78.3	24	0.2	4.7	55.6	12.3
SM1033	A.5.3	12.6	**260**	0.3	7.9	100.1	6.1
SM1041	A.5.4	**114.9**	**68**	0.2	**19.9**	48.8	**17.7**
SM1044	A.5.5	**162.8**	10	**1.9**	**14.8**	112.6	**15.7**
SM1048	A.5.6	**239.8**	**48**	0.2	**15.9**	42.0	**17.8**
SM1153	A.5.7	**270.1**	7	0.8	1.5	**189.1**	**11.5**
SM1157	A.5.8	**178.1**	9	**1.8**	7.8	**133.7**	**15.9**

11.2.2 Detailed Geochemical Surveys

A 5x5 grid was centred on sample site SM173 at 25m intervals (Fig. A.5.1). The values returned range from 28.0 to 148.9 ppm Cu and from 1 to 30 ppb Au. The initial highly anomalous value of 250.6 ppm Cu was not repeated, but five slightly anomalous samples extending to the east were identified, containing 111.8-148.9 ppm Cu.

A 3x3 mini-grid was established over sample SM174 (Fig.A.5.2). All values were lower than the initial 78.3 ppm Cu and values of 1-5 ppb were returned for gold. The other elements showed background concentrations.

Sample SM1033 contains 260 ppb Au (Fig. A.5.3) and, when resampled, gave values of 1-24 ppb Au except for one sample to the southwest which returned 130 ppb Au (S2044).

Sample S2033, located east of the initial sample, gave a value 285.5 ppm Cu and 67.0 ppm Ni, but surrounding values were low. The other elements are of background level.

At sample site SM1041, a 3x3 grid was set up (Fig. A.5.4). Sample SM1041, with 68 ppb Au, is from the main zone of mineralization at TAS which has been drilled and trenched extensively. The high gold values in the new samples extend north of the initial sample, where values of 130-840 ppb Au (S2207A, S2208A, and S2209-S2212) were returned in six samples. Values of 119.2-258.5 ppm Cu were obtained from four samples in comparison with the initial value of 114.9 ppm Cu. Arsenic and bismuth were also anomalous in three samples that were high in gold (S2210-S2212). Other elements were of background concentrations.

Sample SM1044 gave values of 4.7-81.4 ppm Cu instead of the initial 162.8 ppm Cu (Fig. A.5.5). Background values of 1-26 ppb Au were also returned over the initial 10 ppb Au. The other elements also returned low values.

On a 5x5 grid, sample SM1048's initial value of 48 ppb Au was not repeated and all samples gave 1-18 ppb Au, except for the five which had insufficient sample (Fig. A.5.6). The 25 new samples returned background values of 12.0-70.9 ppm Cu and the initial value of 239.8 ppm Cu was not repeated. Other elements were similarly at background levels.

Sample SM1153 has an initial value of 270.1 ppm Cu. However, all the new samples in the 5x5 grid returned 14.0-121.9 ppm Cu, except for one sample which gave 419.4 ppm Cu (S2189). All samples gave 1-16 ppb Au except for the two that had insufficient sample for gold analysis (Fig. A.5.7).

Sample SM1157 which had initially recorded 178.1 ppm Cu returned 151.5 ppm Cu when resampled. All of the others on the grid gave 40.2-116.3 ppm Cu. Values of 2-7 ppb Au and one anomalous value of 145.5 ppm Zn (S2148) were accompanied by background readings of the other elements (Fig. A.5.8).

11.3 VAL Claims

11.3.1 Reconnaissance Geochemical Survey

Fourteen stream sediment samples were collected over the VAL claims. All show normal background concentrations for all elements except for sample T5 which shows a value of 227.5 ppm Cu but no other anomalous element (Appendix 3.3).

Initially, 102 soil samples were collected over this claim group and adjoining areas (Fig. 11.3.1). Five of these soil samples can be classified as anomalous in gold (Fig. 11.3.2) and two samples have anomalous copper (Fig. 11.3.3), one of which (SM4) also has anomalous values of silver and arsenic (Table 11.3.1). All other samples at VAL show background values of 1-22 ppb Au and 4.5-70 ppm Cu.

Table 11.3.1: Anomalous Samples: VAL Claims Area

Sample No.	Figure No.	Copper $\bar{x}$ 29.6 ppm	Gold $\bar{x}$ 11.4 ppb	Silver $\bar{x}$ 0.3 ppm	Arsenic $\bar{x}$ 4.8 ppm	Zinc $\bar{x}$ 61.2 ppm	Cobalt $\bar{x}$ 8.1 ppm
SM4	A.5.9	**234.9**	8	**1.7**	**9.8**	106.6	14.2
SM26	A.5.10	13.9	**36**	0.3	7.0	79.9	5.9
SM27	A.5.11	28.1	**380**	0.2	5.5	102.4	10.9
S56		26.5	**44**	0.3	3.7	42.4	5.6
SM60	A.5.12	52.4	**45**	0.5	8.6	58.3	11.4
SM68	A.5.13	**94.9**	10	0.6	5.9	86.8	12.4
SM78	A.5.14	44.0	**84**	0.3	7.4	68.5	10.5

Six of these samples were more fully evaluated by resampling in mini-grids. Sample S56 was not sampled due to lack of time at the end of the season.

11.3.2 Detailed Geochemical Surveys

Sample SM4 (234.9 ppm Cu) was resampled in a 5x5 grid pattern and returned values of 7.4-54.9 ppm Cu and 1-12 ppb Au; samples S2221 and S2222 each returned slightly anomalous values of 1.3 ppm Ag and the other elements were of background level (Fig. A.5.9).

Sample SM26 returned background readings of 1-20 ppb Au over an initial value of 36 ppb Au (Fig. A.5.10). All other elements also gave background values.

Soil sample SM27 gave background values of 1-34 ppb Au on a 5x5 grid which was set on a reconnaissance result of 380 ppb Au (Fig. A.5.11). Five samples were not analysed for gold because of insufficient sample size. On the western edge of the mini-grid, samples S2020 and S2021 gave values of 287.1 and 767.2 ppm Cu, respectively. These sample areas warrant additional examination to follow the western extension of the copper anomaly.

Sample SM60 was resampled because of a 45 ppb Au anomaly (Fig. A.5.12). Six new samples gave 1-22 ppb Au but the three others gave 64, 240 and 570 ppb Au (S2176, S2179, and S2175). Although none of the other elements in these samples is anomalous, S2177 contains slightly anomalous values of arsenic (10.3 ppm As) and cobalt (20.6 ppm Co). This area, located south of an esker and east of the main zone of mineralization at TAS, warrants additional work to follow up on the anomalous gold in the soil.

Sample SM68 (94.9 ppm Cu) was resampled and background values of 19.3-40.9 ppm Cu were returned (Fig. A.5.13). The gold values of 1-24 ppb Au were low but sample S2096 at the western edge of the grid gave 42 ppb Au. Sample S2096 should be resampled. The other elements are of background level.

The SM78 mini-grid is centred over an 84 ppb Au anomaly (Fig. A.5.14). The 5x5 grid returned mostly values of 1-20 ppb Au but three samples gave 32, 150 and 470 ppb Au (S2261, S2253 and S2259), and the samples may form a southeast trend. All other elements of these samples are of background value, except for sample S2255 which gave a value of 20.8 ppm Co.

11.4 BOB-BIO Claims

11.4.1 Reconnaissance Geochemical Survey

Three rock samples were collected from outcrops in the BOB-BIO area (Fig. 11.4.1; Appendix 3.4). They returned values of 1-8 ppb Au (Fig. 11.4.2) and 65.6-96.3 ppm Cu (Fig. 11.4.3). Rock sample R1007 which contains 96.3 ppm Cu also has 20.5 ppm Mo. Stream sediments were not taken in the BOB-BIO area because of there was much too much swamp.

Of the 76 initial soil samples taken in the area, none returned values of more than 75.1 ppm Cu and only one (SM86, 56 ppb Au) gave a value of more than 20 ppb Au (Table 11.4.1). Sample SM84, containing 75.1 ppm Cu, also reports 201.8 ppm Zn. Although no other element is anomalous, two other samples in the area also have high zinc values: SM1076 (279.2 ppm Zn) and SM1078 (255.3 ppm Zn). Even though the values for cobalt for these samples are greater than the mean for the BOB-BIO area, they are not considered anomalous on a regional basis.

11.4.2 Detailed Geochemical Survey

A 3x3 grid was set over sample SM86 (56 ppb Au). All the grid samples returned values of 1-16 ppb Au (Fig. A.5.15). Sample S2164 reported 120.5 ppm Cu, 184.6 ppm Zn and 18.8 ppm Co, all high or slightly anomalous values on a regional basis, but not repeated in nearby samples.

Table 11.4.1: Anomalous Samples: BOB-BIO Claims Area

Sample No.	Figure No.	Copper x̄ 49.5 ppm	Gold x̄ 20.2 ppb	Silver x̄ 0.7 ppm	Arsenic x̄ 7.5 ppm	Zinc x̄ 159.9 ppm	Cobalt x̄ 13.3 ppm
SM84		75.1	4	0.9	4.8	**201.8**	**15.3**
SM86	A.5.15	14.0	**56**	1.0	2.4	65.7	4.2
SM1076		15.3	6	0.7	4.0	**279.2**	**15.3**
SM1078		31.0	3	0.8	9.2	255.3	**15.3**

12. CONCLUSIONS AND RECOMMENDATIONS

The exploration program conducted in the TAS and VAL project area has shown that very few outcrops exist other than at the main mineralized zone at the TAS claims. 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 15 sites were resampled along 3x3 or 5x5 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.

Additional resampling and exploration are warranted in several cases where anomalous values for gold and copper were obtained and have not been completely explained. They include five areas:

- Sample S2044 contains 130 ppb Au, a strongly anomalous value. This sample was obtained on the grid which was established on SM1033 in the TAS claims area. Although other nearby samples show no high reading for gold and the other elements are of background value, the area should be followed up with additional sampling.
- Samples S2020 and S2021 show values of 287.1 and 767.2 ppm Cu, respectively, near the original SM27 site in the VAL claims area. Although values for gold are low, the area warrants re-examination.
- Samples S2176, S2179 and S2175 contain 64, 240 and 570 ppb Au over an initial value of 45 ppb Au on sample site SM60 in the VAL claims area. Because of the presence of three adjoining gold anomalies, the area should be sampled in detail over a slightly larger area to substantiate the values.
- Sample S2096 gave 42 ppb Au at the western edge of the SM68 grid in the VAL claims area. Because it may extend to the west, additional work is warranted.

- Mini-grid samples S2261, S2253 and S2259 contain 32, 150 and 470 ppb Au, respectively, in a zone partly oriented to the southeast on the SM78 mini-grid in the VAL claims area. Although the other elements of these samples are at background level, the gold anomalies require more work.

Because of the sparse outcrop and thick overburden, it may be difficult to determine completely the source of these anomalies. However, only additional detailed geochemical sampling and surficial geological mapping can establish the validity of these anomalous samples.

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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.

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	14.50 days @ $350	$5,075.00	
E. Washburn			
June 10-30, Aug 6-21	26.25 days @ $175	$4,593.75	
B. Johnson			
June 10-30	14.25 days @ $150	$2,137.50	
S. Reimond			
June 10-30, Aug 6-21	26.50 days @ $125	$3,312.50	
D. Beauchamp			
June 10-19	7.00 days @ $400	$2,800.00	
Sub-total Wages			$17,918.75
Room & Board	88.5 days @ $40		$3,540.00
Trucks	1 @ 12.0 days @ $50	$600.00	
	2 @ 14.5 days @ $50	$1,450.00	
			$2,050.00
Geochemical Analyses			
Soils	494 @ $19.91	$9,835.54	
Stream Sediments	4 @ $19.91	$79.64	
Rocks	5 @ $22.84	$114.20	
Sub-total Geochemical Analyses			$10,029.38
Report-writing			
S. Fan	4 days @ $300	$1,200.00	
D. Beauchamp	4 days @ $400	$1,600.00	
Drafting	4 days @ $175	$700.00	
Sub-total Report-writing			$3,500.00
Total cost			$37,038.13

Appendix 3

Results of Geochemical Analyses

Appendix 3.1

Analytical Procedures

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 3.2

TAS Claims

TAS	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
Soil Samples																
S 13	21.7	20.2	4.0	47.1	8.4	0.3	0.9	0.2	0.2	7.2	0.7	0.2	0.6	1.1	0.03	6
S 14	22.0	18.1	4.2	44.5	6.0	0.1	1.2	0.1	0.2	6.2	1.0	0.2	1.3	2.0	0.03	2
S 21	19.1	19.6	3.6	41.5	5.7	0.3	1.6	0.1	0.7	6.5	1.3	0.7	1.0	0.2	0.03	2
S 22	57.8	12.8	4.3	46.1	12.2	0.3	1.7	0.4	0.2	2.7	0.7	0.2	0.5	0.2	0.03	1
S 23	16.6	12.5	3.2	33.3	5.1	0.2	1.7	0.1	0.2	2.6	0.7	0.2	1.0	0.2	0.03	1
S 31	25.4	16.9	4.8	54.9	8.3	0.4	1.9	0.1	0.2	6.1	1.1	0.2	0.2	0.2	0.05	3
S 32	22.7	21.2	4.3	66.2	11.0	0.3	1.5	0.2	0.2	5.1	1.1	0.7	0.2	0.6	0.04	4
S 33	14.9	6.5	2.8	64.8	5.9	0.2	0.9	0.2	0.2	1.3	0.8	0.2	0.3	0.2	0.03	4
S 41	40.9	15.8	3.5	88.1	10.6	0.4	1.7	0.4	0.2	4.9	2.0	1.5	2.9	0.2	0.03	28
S 42	38.5	21.9	4.5	86.1	11.5	0.7	3.2	0.6	0.2	9.1	0.6	1.0	2.5	0.4	0.05	
S 43	48.5	17.5	4.7	50.9	10.5	0.3	1.9	0.2	0.2	7.9	1.7	0.2	0.2	0.6	0.03	2
S 44	23.6	10.8	4.0	34.2	5.7	0.1	0.9	0.2	0.2	3.8	1.1	0.2	1.7	1.1	0.07	5
S 45	60.5	21.9	3.0	41.0	9.4	0.4	1.1	0.4	0.2	4.4	1.5	0.2	1.2	0.2	0.03	7
S 151	20.3	14.5	4.1	46.4	5.0	0.1	1.9	0.1	0.2	4.0	0.9	0.2	0.2	0.2	0.09	6
S 152	31.0	24.9	3.7	51.7	8.8	0.2	1.2	0.2	0.2	5.7	0.6	0.2	0.6	0.2	0.04	7
S 153	20.3	9.6	4.6	32.0	4.9	0.6	1.3	0.2	0.2	2.4	0.4	0.3	0.2	0.3	0.03	5
S 154	36.9	17.3	4.2	59.1	9.6	0.3	1.1	0.4	0.2	4.1	1.0	0.3	0.6	0.3	0.03	11
S 155	12.8	11.3	3.8	56.4	4.5	0.4	1.3	0.3	0.2	2.9	0.8	0.3	0.2	0.2	0.03	1
S 166	25.6	21.8	3.9	52.2	8.6	0.1	1.3	0.1	0.2	5.3	0.4	0.2	0.2	0.2	0.05	9
S 167	24.8	17.3	6.3	58.5	7.4	0.3	1.1	0.1	0.2	3.7	0.3	0.2	0.3	0.2	0.03	7
S 168	36.0	23.1	4.0	53.0	9.3	0.2	1.1	0.2	0.2	5.2	0.4	0.2	0.3	0.2	0.03	7
S 169	32.0	18.3	5.0	53.7	8.4	0.5	1.7	0.3	0.2	5.5	0.4	0.2	0.2	0.2	0.03	6
S 170	74.8	33.6	6.1	71.0	15.4	0.3	1.5	0.2	0.2	7.8	0.5	0.2	0.4	0.2	0.03	10
S 171	73.0	27.0	6.7	76.2	14.4	0.5	1.8	0.3	0.2	6.4	0.7	0.2	0.2	0.2	0.03	6
S 172	36.4	17.7	7.2	91.7	10.8	0.4	1.4	0.5	0.2	3.8	0.4	0.2	0.4	0.2	0.03	8
S 173	250.6	53.8	10.1	140.5	23.7	0.8	2.6	1.8	0.2	9.9	1.4	0.4	0.7	0.2	0.03	7
S 174	78.3	24.2	4.5	55.6	12.3	0.1	1.5	0.2	0.2	4.7	0.8	0.2	1.0	0.2	0.03	24
S 175	41.3	21.7	4.3	67.8	8.8	0.3	1.2	0.3	0.2	4.3	0.7	0.2	0.2	0.2	0.03	4
S 176	57.2	23.7	4.5	51.0	11.7	0.2	1.0	0.2	0.2	5.5	0.5	0.2	0.2	0.2	0.03	11
S 177	30.4	15.2	6.5	114.1	11.3	0.8	2.3	0.4	0.2	6.2	0.7	0.7	0.6	0.2	0.03	4
S 178	11.6	11.7	3.4	63.5	4.2	0.3	1.0	0.1	0.2	2.6	0.7	0.2	0.2	0.2	0.03	7
S 1016	23.9	17.6	3.1	33.1	5.7	0.1	0.9	0.1	0.2	5.5	1.4	0.4	2.7	0.2	0.03	10
S 1017	6.8	7.7	4.1	38.2	3.7	0.4	0.5	0.1	0.2	1.0	0.4	0.2	0.2	0.2	0.03	4
S 1022	29.5	22.9	3.7	81.2	10.4	0.2	1.4	0.2	0.2	3.8	1.0	0.2	0.2	0.6	0.03	4
S 1033	12.6	11.7	5.4	100.1	6.1	0.6	1.6	0.3	0.2	7.9	0.2	0.4	0.2	0.7	0.03	260
S 1034	21.4	19.2	5.0	76.0	8.7	0.4	1.3	0.3	0.2	7.7	1.2	0.7	0.6	0.2	0.07	8
S 1035	39.8	22.6	4.9	90.7	9.7	0.7	1.7	0.5	0.2	6.5	0.4	1.3	0.2	1.4	0.03	5
S 1036	25.6	14.6	4.7	44.5	5.5	0.5	2.4	0.3	0.2	6.5	0.8	0.4	0.8	0.8	0.06	8
S 1037	56.6	27.9	4.9	95.6	13.5	0.2	1.9	0.4	0.2	8.8	1.5	0.2	0.6	0.5	0.03	7
S 1038	71.7	31.7	6.4	96.9	16.4	1.1	2.0	0.7	0.2	8.0	1.3	0.6	1.1	0.9	0.03	6
S 1039	59.2	24.3	10.1	144.9	18.2	0.6	2.4	0.4	0.2	10.6	1.7	1.3	0.2	0.4	0.08	7
S 1040	41.0	13.6	5.8	92.6	11.2	0.6	2.9	0.4	0.2	20.6	1.7	0.6	0.2	1.6	0.17	32
S 1041	114.9	36.8	3.7	48.8	17.7	0.2	2.0	0.2	0.2	19.9	2.0	0.2	0.2	1.3	0.03	68
S 1042	38.2	18.1	3.0	74.3	9.8	0.3	2.3	0.7	0.2	10.4	1.7	0.3	0.2	1.4	0.07	9
S 1043	17.1	19.0	3.2	39.9	8.7	0.2	0.8	0.1	0.2	7.6	1.2	0.2	0.2	1.1	0.09	4
S 1044	162.8	69.0	6.1	112.6	15.7	2.6	3.8	1.9	0.2	14.8	1.0	1.5	0.3	1.7	0.03	10
S 1045	22.8	11.9	3.2	43.4	5.7	0.2	1.3	0.2	0.2	3.7	0.5	0.5	0.2	1.3	0.09	18
S 1046	27.0	25.9	3.8	121.3	9.8	0.3	1.8	0.3	0.2	10.6	2.3	1.1	1.3	0.5	0.10	20
S 1047	15.7	15.1	3.4	57.0	7.4	0.2	1.0	0.1	0.2	5.8	0.9	0.2	0.6	0.3	0.03	6
S 1048	239.8	27.1	2.1	42.0	17.8	0.3	1.7	0.2	0.2	15.9	2.4	0.2	0.2	1.7	0.03	48
S 1049	19.9	16.4	2.9	85.5	7.4	0.3	1.4	0.4	0.2	4.8	1.8	0.2	0.2	0.5	0.11	6
S 1050	35.0	19.8	5.1	78.7	11.9	0.7	2.2	0.3	0.2	9.6	0.6	0.2	0.2	1.1	0.03	8

TAS	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb	
S 1136	34.8	20.0	3.9	80.5	8.6	0.3	1.8	0.3	0.2	7.9	1.0	0.3	0.2	0.2	0.03	10	
S 1137	46.3	22.7	4.7	69.3	9.1	0.3	1.6	0.2	0.2	5.7	1.2	0.3	0.2	0.2	0.03	9	
S 1138	53.6	22.5	4.2	74.6	12.7	0.3	1.9	0.3	0.2	6.7	1.4	0.4	0.7	0.3	0.03	11	
S 1139	18.5	15.6	5.6	110.6	9.6	0.7	1.8	0.4	0.2	3.8	1.1	0.5	0.2	0.8	0.03	8	
S 1140	15.4	10.7	13.6	63.8	5.3	0.5	1.0	0.2	0.2	1.5	0.5	0.2	0.3	0.6	0.04	4	
S 1141	39.1	23.4	4.1	88.9	9.1	0.5	1.4	0.3	0.2	5.4	0.6	0.2	0.2	0.4	0.07	11	
S 1152	12.6	9.5	5.1	90.2	9.2	0.7	1.4	0.4	0.2	3.9	0.2	0.2	0.2	0.2	0.03	11	
S 1153	270.1	51.0	5.7	189.1	11.5	2.0	2.9	0.8	0.2	1.5	0.4	0.2	0.2	0.3	0.03	7	
S 1154	26.0	14.0	3.5	64.4	6.4	0.3	1.1	0.3	0.2	3.1	0.5	0.3	0.2	0.2	0.03	5	
S 1155	45.5	21.2	4.7	85.5	10.8	0.4	1.4	0.4	0.2	4.9	0.6	0.3	0.2	0.2	0.03	7	
S 1156	63.7	27.2	7.5	108.5	15.3	0.5	1.6	0.9	0.2	5.4	0.7	0.3	0.6	0.2	0.03	8	
S 1157	178.1	33.1	6.9	133.7	15.9	2.3	2.7	1.8	0.2	7.8	0.2	0.5	1.0	0.2	0.03	9	
S 1158	25.0	14.1	12.1	121.1	14.5	0.4	1.5	0.5	0.2	2.9	0.2	0.3	0.2	0.3	0.03	4	
S 1159	15.1	15.5	6.9	188.6	16.5	0.9	1.6	0.8	0.2	1.6	0.3	0.4	0.7	0.2	0.03	2	
S 1160	29.3	20.4	3.6	61.4	7.4	0.4	1.2	0.2	0.2	4.5	0.7	0.2	0.6	0.2	0.03	16	
S 1161	45.5	18.7	5.9	57.0	6.0	0.5	1.9	0.6	0.2	6.0	0.3	0.2	0.2	0.2	0.03	10	
S 1162	44.4	21.6	5.2	67.9	9.2	0.3	1.4	0.2	0.2	5.1	0.5	0.3	0.2	0.2	0.03	9	
S 2026	20.5	10.7	3.6	37.6	4.0	0.2	1.5	0.1	0.2	5.3	0.4	0.2	0.2	0.5	0.03	10	
S 2027	46.6	14.0	4.9	49.2	5.7	0.3	2.3	0.2	0.2	7.2	0.2	0.2	0.5	0.6	0.03	28	
S 2028	8.9	4.3	5.7	20.6	1.8	0.4	1.0	0.1	0.2	1.7	0.2	0.2	0.2	0.2	0.03	6	
S 2029	8.0	4.9	3.8	29.8	2.6	0.6	1.0	0.2	0.2	1.4	0.2	0.2	0.2	0.5	0.03	5	
S 2030	23.3	11.2	5.9	74.9	4.9	0.5	1.8	0.5	0.2	6.0	0.2	0.2	0.4	0.2	0.03	12	
S 2031	20.5	13.1	4.8	59.3	4.9	0.2	1.6	0.2	0.2	5.8	0.4	0.2	0.7	0.2	0.03	23	
S 2032	25.7	13.0	6.4	99.8	8.9	0.5	1.9	0.5	0.2	4.9	0.2	0.4	0.2	0.2	0.03	2	
S 2033	285.5	67.0	5.9	77.4	13.3	1.9	4.0	4.8	0.2	7.5	0.7	0.7	4.8	0.2	0.03	8	
S 2034	22.1	7.9	4.8	41.7	3.1	0.7	1.4	0.3	0.2	3.2	0.2	0.2	0.2	0.2	0.03		*
S 2035	31.5	23.0	5.8	87.8	13.4	0.4	1.5	0.7	0.2	7.8	0.3	0.4	0.2	0.2	0.03	4	
S 2036	29.1	14.1	4.1	66.3	9.4	0.5	1.5	0.4	0.2	4.8	0.2	0.4	0.2	0.2	0.03	15	
S 2037	19.6	11.9	5.0	64.2	7.3	0.8	1.4	0.3	0.2	5.4	0.4	0.3	0.2	0.2	0.03	20	
S 2038	29.9	14.0	9.5	63.5	5.9	1.0	2.3	0.2	0.2	9.3	0.3	0.2	0.2	0.2	0.03	1	
S 2039	25.2	12.4	5.7	97.3	7.5	0.6	1.7	0.4	0.2	2.7	0.5	0.3	0.2	0.2	0.03	12	
S 2040	4.3	3.9	3.8	18.6	1.4	0.2	0.4	0.1	0.2	1.8	0.2	0.2	0.2	0.4	0.03	1	
S 2041	13.3	6.9	4.9	33.5	2.8	0.2	1.0	0.4	0.2	3.6	0.2	0.2	0.2	0.3	0.03	4	
S 2042	17.5	8.9	4.5	75.0	5.6	0.3	1.6	0.3	0.2	2.3	0.2	0.3	0.2	0.2	0.03	1	
S 2043	16.7	7.7	5.4	49.7	3.5	0.4	1.4	0.3	0.2	2.4	0.2	0.2	0.2	0.2	0.04	10	
S 2044	28.0	18.2	4.5	97.3	12.1	1.2	1.7	0.3	0.2	5.7	0.2	0.3	0.2	0.2	0.06	130	**
S 2045	28.1	12.2	5.2	55.9	6.6	0.8	1.7	0.7	0.2	4.4	0.5	0.2	0.2	0.2	0.03	8	
S 2046	68.2	31.5	4.4	70.6	13.5	0.7	2.7	0.2	0.2	9.4	0.5	0.2	0.4	0.2	0.03	24	
S 2047	10.6	8.7	4.8	47.1	5.0	0.5	0.9	0.2	0.2	2.4	0.4	0.2	0.4	0.4	0.03	6	
S 2048	8.2	6.4	4.3	50.5	4.0	0.6	0.9	0.1	0.2	0.9	0.2	0.2	0.2	0.3	0.03	4	
S 2049	36.3	13.3	6.6	83.2	7.9	0.4	1.5	0.4	0.2	4.1	0.3	0.4	0.4	0.2	0.03	10	
S 2050	12.8	9.3	5.6	47.9	3.7	0.3	1.2	0.2	0.2	3.1	0.2	0.2	0.2	0.2	0.03	6	
S 2105	4.7	3.2	2.9	14.4	1.0	0.1	0.5	0.1	0.2	1.0	0.2	0.2	0.2	0.3	0.03	16	
S 2106	39.1	29.5	3.6	62.9	9.8	0.2	1.6	0.2	0.2	5.8	0.3	0.2	0.2	0.2	0.03	6	
S 2107	66.4	32.3	3.9	56.3	12.3	0.2	1.3	0.1	0.2	7.6	0.2	0.2	0.2	0.6	0.03	22	
S 2108	81.4	34.5	4.3	69.0	13.0	0.3	1.7	0.2	0.2	8.3	0.2	0.2	0.2	0.2	0.03	26	
S 2109	79.1	36.9	4.3	65.6	12.9	0.3	1.5	0.2	0.2	7.9	0.2	0.2	0.2	0.4	0.03	12	
S 2110	20.0	18.8	3.5	65.3	5.8	0.2	1.6	0.2	0.2	4.0	0.3	0.2	0.2	0.3	0.04	7	
S 2111	13.2	11.6	3.5	39.1	3.8	0.2	1.4	0.2	0.2	3.6	0.2	0.2	0.2	0.2	0.03	9	
S 2112	30.4	22.3	4.8	61.2	8.3	0.4	2.5	0.3	0.2	6.4	0.3	0.2	0.2	0.2	0.03	1	
S 2113	68.3	32.9	4.8	65.2	13.1	0.8	3.0	0.7	0.2	6.3	0.2	0.9	0.7	0.2	0.10	8	
S 2114	138.1	38.3	6.7	110.1	20.3	0.4	1.6	0.5	0.2	7.1	0.2	0.2	0.2	0.2	0.03	10	
S 2115	148.9	32.7	6.7	88.0	23.0	0.2	1.4	0.4	0.2	8.1	0.4	0.2	0.2	0.2	0.03	16	
S 2116	120.2	31.4	6.5	106.8	18.8	0.3	1.7	0.4	0.2	7.5	0.4	0.2	0.2	0.2	0.03	16	

TAS	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
S 2117	59.0	20.8	6.8	144.0	19.5	0.5	2.1	0.4	0.2	7.2	0.4	0.2	0.2	0.3	0.03	19
S 2118	74.2	22.0	7.3	149.1	18.8	0.4	1.8	0.5	0.2	4.6	0.2	0.2	0.2	0.2	0.03	6
S 2119	28.2	12.7	5.7	114.3	10.3	0.4	1.4	0.4	0.2	2.2	0.4	0.5	0.2	0.2	0.03	1
S 2120	40.4	16.1	6.5	83.6	15.2	0.3	2.8	0.6	0.2	3.2	0.2	0.2	0.2	0.4	0.03	8
S 2121	40.0	13.0	4.5	56.7	11.2	0.4	2.3	0.3	0.2	3.4	0.2	0.2	0.2	0.4	0.03	12
S 2122	28.0	14.4	5.3	138.5	14.3	0.5	1.4	0.3	0.2	3.3	0.2	0.2	0.2	0.6	0.03	30
S 2123	111.8	25.7	7.1	88.2	15.8	0.4	2.0	0.7	0.2	6.0	0.2	0.2	0.8	0.2	0.03	16
S 2124	76.1	19.7	5.7	88.9	14.3	0.3	2.1	0.3	0.2	5.9	0.2	0.2	0.2	0.3	0.03	8
S 2125	78.6	24.0	5.5	140.6	16.7	0.5	1.7	0.4	0.2	4.8	0.3	0.3	0.2	0.2	0.03	7
S 2126	55.4	22.3	6.2	120.6	17.9	0.4	1.7	0.4	0.2	3.4	0.4	0.3	0.2	0.4	0.03	1
S 2127	75.0	24.9	6.5	117.9	16.2	0.4	1.6	0.4	0.2	4.4	0.7	0.4	0.2	0.2	0.03	1
S 2128	61.7	22.0	4.9	129.2	13.8	0.4	1.5	0.4	0.2	4.0	0.2	0.3	0.2	0.2	0.03	2
S 2129	64.7	30.6	5.5	95.0	12.8	0.3	1.6	0.4	0.2	6.9	0.2	0.2	0.2	0.2	0.03	1
S 2130	92.2	32.0	5.8	88.2	17.0	0.4	1.4	0.4	0.2	8.4	0.2	0.2	0.2	0.2	0.03	6
S 2131	85.6	26.6	5.6	87.3	15.9	0.3	1.7	0.4	0.2	5.0	0.2	0.2	0.2	0.3	0.03	2
S 2132	137.3	35.7	6.6	114.7	21.7	0.2	1.6	0.4	0.2	5.2	0.2	0.2	0.2	0.2	0.03	6
S 2133	75.7	25.0	5.4	95.7	12.8	0.7	1.8	0.6	0.2	4.1	0.2	0.2	0.2	0.2	0.06	1
S 2134	104.5	37.9	5.6	91.8	13.7	2.6	2.0	1.2	0.2	6.4	0.2	0.7	0.7	0.2	0.05	1
S 2135	83.3	35.7	5.7	95.1	14.8	0.8	2.2	0.5	0.2	6.2	0.3	0.5	0.2	0.2	0.03	4
S 2136	30.0	13.9	5.0	137.2	8.4	0.5	1.3	0.4	0.2	2.2	0.2	0.4	0.2	0.3	0.03	1
S 2137	45.9	23.2	5.4	133.2	11.1	0.4	1.7	0.4	0.2	3.2	0.4	0.3	0.2	0.2	0.03	4
S 2138	121.4	32.8	6.9	96.7	19.6	0.3	1.7	0.4	0.2	7.1	0.2	0.2	0.7	0.3	0.03	12
S 2139	44.3	25.2	3.9	79.6	10.9	0.4	1.1	0.3	0.2	4.7	0.2	0.2	0.2	0.2	0.03	5
S 2140	41.6	24.2	5.8	95.0	13.3	0.9	2.0	0.5	0.2	3.8	0.2	0.4	0.2	0.2	0.03	1
S 2141	57.3	27.8	5.0	91.1	10.8	0.8	2.4	0.6	0.2	4.4	0.2	0.3	0.6	0.2	0.03	1
S 2142	21.9	15.7	3.9	101.8	7.6	0.5	1.5	0.6	0.2	3.7	0.2	0.4	0.2	0.5	0.06	2
S 2143	39.9	30.4	4.4	70.0	10.7	0.3	1.2	0.1	0.2	5.0	0.2	0.2	0.2	0.6	0.03	1
S 2144	13.2	11.2	4.2	76.6	6.4	0.5	1.0	0.3	0.2	1.4	0.2	0.2	0.2	0.2	0.03	2
S 2145	47.9	32.1	4.0	64.2	9.8	0.3	1.8	0.3	4.7	6.1	0.4	0.2	0.2	0.7	0.23	4
S 2146	42.4	26.5	4.6	78.3	11.0	0.7	1.7	0.6	0.2	4.6	0.5	0.3	0.2	0.2	0.03	1
S 2147	53.8	25.9	4.0	87.5	9.2	0.6	1.2	0.3	0.2	4.7	0.4	0.3	0.5	0.2	0.03	4
S 2148	110.4	44.8	7.1	145.5	16.4	1.5	2.0	1.3	0.2	6.3	0.2	0.6	0.5	0.2	0.03	2
S 2149	151.5	33.7	6.3	76.1	15.6	0.6	2.0	0.9	0.2	7.5	0.2	0.2	0.2	0.2	0.04	3
S 2150	56.8	30.8	5.9	81.3	13.4	0.3	1.5	0.3	0.2	6.2	0.2	0.2	0.2	0.2	0.03	5
S 2151	84.8	35.8	6.2	91.7	15.2	0.7	2.1	0.5	0.2	7.9	0.2	0.4	0.2	0.2	0.03	2
S 2152	116.3	31.0	5.9	81.3	16.0	0.5	1.7	0.6	0.2	7.0	0.2	0.2	0.2	0.2	0.03	7
S 2153	114.8	36.0	5.9	79.3	15.9	0.3	2.3	0.4	0.2	9.9	0.2	0.2	0.2	0.3	0.05	4
S 2154	40.2	21.0	5.4	80.9	12.6	0.5	1.5	0.4	0.2	4.9	0.2	0.2	0.2	0.2	0.03	5
S 2155	66.6	26.3	5.5	95.3	12.3	0.5	1.6	0.5	0.2	5.3	0.2	0.2	0.2	0.2	0.03	3
S 2156	45.5	27.9	4.7	78.0	11.2	0.4	1.7	0.3	0.2	6.6	0.3	0.2	0.2	0.2	0.03	2
S 2184	45.8	22.7	6.2	86.2	10.3	0.6	1.2	0.5	0.2	5.8	0.2	0.3	0.2	0.2	0.08	4
S 2185	112.2	24.8	6.0	88.9	12.7	0.9	1.4	1.1	0.2	6.5	0.2	0.3	0.2	0.2	0.07	12
S 2186	26.7	11.4	5.7	88.4	6.5	1.0	1.5	0.6	0.2	3.5	0.2	0.2	0.2	0.2	0.08	1
S 2187	11.4	6.4	5.2	43.3	3.1	0.5	0.9	0.4	0.2	1.9	0.2	0.2	0.2	0.2	0.09	1
S 2188	23.1	20.0	3.9	85.6	7.2	0.5	1.3	0.4	0.2	6.7	0.2	0.3	0.2	0.2	0.05	3
S 2189	419.4	34.8	5.7	95.6	11.1	1.6	1.9	1.6	0.2	8.4	0.2	0.4	1.1	0.2	0.08	12
S 2190	120.1	33.7	8.8	78.3	10.8	1.8	2.8	2.0	0.2	8.3	0.2	0.5	2.6	0.2	0.03	6
S 2191	60.8	18.2	5.4	72.2	5.3	0.5	1.9	0.4	0.2	6.6	0.2	0.2	0.2	0.2	0.03	4
S 2192	71.2	9.2	2.1	31.1	3.2	1.2	1.4	0.6	0.2	2.6	0.2	1.5	2.3	0.2	0.03	16
S 2193	48.5	33.7	5.9	59.8	14.0	0.2	1.4	0.2	0.2	6.3	0.2	0.3	0.2	0.2	0.04	11
S 2194	121.9	44.5	6.5	90.7	14.5	0.6	2.2	0.6	0.2	7.3	0.4	0.2	0.7	0.2	0.03	12
S 2195	77.9	15.4	2.9	22.4	2.7	1.2	1.4	0.5	0.2	3.8	0.2	1.5	4.0	0.2	0.03	
S 2196	114.8	35.9	10.7	138.4	16.5	1.2	2.9	1.4	0.2	11.0	0.2	0.3	0.2	0.2	0.03	8
S 2197	63.5	25.3	5.4	83.1	10.0	0.7	2.1	0.7	0.2	5.9	0.6	0.2	0.2	0.2	0.03	8

TAS	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb	
S 2198	64.3	18.7	5.4	43.3	6.1	0.9	1.8	0.6	0.2	4.5	0.2	0.2	0.2	0.2	0.03		*
S 2199	14.0	11.8	4.1	73.5	5.5	0.3	1.3	0.4	0.2	3.0	0.2	0.2	0.2	0.2	0.11	5	
S 2200	14.4	8.8	4.3	49.0	6.5	0.4	1.3	0.3	0.2	2.3	0.2	0.2	0.2	0.2	0.04	6	
S 2201	18.3	11.6	4.9	68.5	6.2	0.3	1.2	0.2	0.2	2.5	0.2	0.2	0.2	0.2	0.03	8	
S 2202	109.9	22.3	6.0	96.1	14.0	0.9	1.9	1.1	0.2	6.4	0.2	0.2	0.2	0.2	0.09	4	
S 2203	20.0	9.5	5.8	73.1	5.9	0.4	1.3	0.3	0.2	2.2	0.2	0.3	1.1	0.2	0.04	6	
S 2204	40.2	24.9	4.7	71.7	9.2	0.2	1.4	0.5	0.2	5.9	0.2	0.2	0.2	0.2	0.03	2	
S 2205	31.9	21.4	4.7	74.4	7.9	0.4	1.9	0.5	0.2	8.0	0.4	0.2	0.2	0.2	0.03	4	
S 2206	28.8	13.4	4.4	71.3	8.1	0.3	1.2	0.2	0.2	3.4	0.6	0.2	0.2	0.2	0.03	9	
S 2207A	258.5	19.4	6.4	101.4	17.0	0.3	6.1	0.2	0.2	17.3	0.2	1.8	0.2	1.3	0.03	760	
S 2207	68.4	19.6	6.7	119.7	15.2	0.5	1.6	0.6	0.2	6.6	0.2	0.3	0.2	0.2	0.03	5	
S 2208A	161.5	30.0	5.1	63.4	18.4	0.3	4.1	0.3	0.2	15.2	0.2	0.6	0.2	0.3	0.04	440	
S 2208	28.3	18.1	4.6	63.9	7.6	0.4	1.4	0.4	0.2	5.4	0.2	0.2	0.2	0.2	0.03	6	
S 2209	217.8	25.4	4.3	53.6	17.1	0.1	3.7	0.2	0.2	10.1	0.2	0.2	0.2	0.2	0.03	350	**
S 2210	54.9	13.3	4.7	61.4	12.8	0.2	2.2	0.2	0.2	6.2	0.2	1.0	0.2	0.2	0.03	130	
S 2211	119.2	12.7	5.7	62.0	10.2	0.4	4.4	0.3	0.2	13.9	0.2	1.9	0.2	1.4	0.03	810	**
S 2212	88.6	11.9	5.5	62.9	10.4	0.3	4.6	0.4	0.2	11.0	0.2	1.7	0.2	1.5	0.03	840	**
S 2213	16.8	13.2	4.2	92.5	12.1	0.2	1.2	0.1	0.2	2.3	0.2	0.2	0.2	0.3	0.03	61	
S 2214	53.3	18.2	4.0	84.3	12.2	0.3	2.0	0.2	0.2	4.4	0.2	0.2	0.2	0.2	0.03	39	
S 2215	28.0	16.0	3.9	72.0	10.0	0.6	1.4	0.3	0.2	2.9	0.2	0.2	0.2	0.3	0.03	11	
S 2266	63.9	32.5	5.3	54.5	12.6	1.3	1.6	0.6	0.2	5.8	0.2	0.4	1.2	0.2	0.03	4	
S 2267	40.0	19.1	1.3	10.2	1.6	0.7	3.0	0.4	0.2	2.2	0.2	1.5	6.7	1.3	0.03		*
S 2268	91.4	36.8	5.0	74.9	11.2	0.8	1.7	0.6	0.2	5.5	0.2	0.2	0.3	0.2	0.03	2	
S 2269	20.4	21.7	4.2	95.3	10.1	0.4	1.1	0.2	0.2	3.7	0.2	0.3	0.2	0.2	0.03	3	
S 2270	20.5	18.5	3.9	56.4	7.4	0.4	1.4	0.2	0.2	4.0	0.3	0.2	0.2	0.2	0.03	14	
S 2271	18.0	17.0	3.7	81.6	8.0	0.3	1.5	0.2	0.2	3.2	0.7	0.2	0.2	0.2	0.03	4	
S 2272	33.1	26.0	3.4	75.3	9.1	0.2	1.1	0.2	0.2	5.5	0.2	0.2	0.2	0.2	0.03	4	
S 2273	30.8	24.9	3.7	58.5	8.2	0.5	1.7	0.3	0.2	3.5	0.2	0.2	0.5	0.2	0.03	6	
S 2274	32.9	20.5	4.3	80.4	10.1	1.0	1.4	0.4	0.2	4.3	0.2	0.2	0.2	0.2	0.03	1	
S 2275	16.3	14.5	4.3	98.4	8.2	1.0	1.2	0.2	0.2	2.8	0.2	0.2	0.2	0.2	0.03	4	
S 2276	68.2	39.6	5.4	65.5	15.9	0.2	2.2	0.3	0.2	10.0	0.2	0.2	0.2	0.2	0.03	6	
S 2277	35.7	25.3	4.4	92.7	10.3	0.5	1.4	0.3	0.2	4.5	0.2	0.2	0.2	0.2	0.03	18	
S 2278	12.0	11.6	3.5	60.4	4.8	0.4	0.9	0.1	0.2	2.8	0.2	0.2	0.2	0.2	0.03	1	
S 2279	37.9	25.5	4.1	89.0	9.7	0.5	1.4	0.4	0.2	5.4	0.2	0.2	0.4	0.2	0.03	7	
S 2280	33.4	28.8	3.7	75.0	8.7	0.3	1.4	0.5	0.2	5.8	0.2	0.2	0.2	0.2	0.03	1	
S 2281	38.8	23.5	3.9	56.7	8.8	0.4	1.4	0.1	0.2	3.9	0.2	0.2	0.2	0.2	0.03	3	
S 2282	38.7	20.6	4.1	67.3	9.4	0.5	1.4	0.2	0.2	5.0	0.2	0.2	0.2	0.2	0.03	4	
S 2283	16.5	5.4	1.2	14.7	0.7	1.5	1.4	0.2	0.4	2.4	0.2	0.9	3.9	0.3	0.03		*
S 2284	41.8	19.8	3.5	39.9	6.9	1.2	1.6	0.3	0.2	3.8	0.2	0.5	2.0	0.2	0.03	1	
S 2285	59.3	35.4	4.4	68.6	10.4	1.3	1.5	0.8	0.2	4.3	0.2	0.4	1.1	0.2	0.03	6	
S 2286	39.4	24.0	4.5	75.8	9.7	0.6	1.5	0.3	0.2	5.4	0.2	0.2	0.2	0.2	0.03	3	
S 2287	70.9	38.6	5.9	127.4	14.3	2.7	2.2	0.8	0.2	6.8	0.2	0.3	1.6	0.2	0.03	2	
S 2288	52.8	27.7	4.8	66.4	9.8	1.2	1.6	0.5	0.2	4.9	0.2	0.2	0.5	0.2	0.03		*
S 2289	50.4	26.0	2.2	29.9	5.1	2.5	1.9	0.6	0.2	4.2	0.2	1.6	7.8	0.2	0.03		*
S 2290	20.2	10.0	0.9	8.4	1.1	0.5	1.9	0.2	0.2	2.2	0.2	1.4	8.1	0.5	0.03		*

TAS	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
Statistics for Soil Samples:																
No. Samples	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	196
Mean	55.9	21.5	5.0	75.9	10.2	0.6	1.7	0.4	0.2	5.6	0.5	0.4	0.6	0.4	0.04	27.0
s.d.	55.1	10.3	1.6	30.4	4.6	0.5	0.7	0.4	0.3	3.1	0.4	0.3	1.1	0.3	0.02	107.0
Maximum	419.4	69.0	13.6	189.1	23.7	2.7	6.1	4.8	4.7	20.6	2.4	1.9	8.1	2.0	0.23	840
Minimum	4.3	3.2	0.9	8.4	0.7	0.1	0.4	0.1	0.2	0.9	0.2	0.2	0.2	0.2	0.03	1
Mean + 2 s.d.	166.0	42.2	8.2	136.7	19.3	1.5	3.1	1.3	0.9	11.8	1.4	1.0	2.7	1.0	0.08	240.9
Stream Sediment Samples																
T 1007	43.1	9.7	2.2	35.4	5.3	0.3	6.9	0.5	0.2	3.7	0.9	1.4	2.0	0.6	0.09	1
T 1008	55.4	26.9	4.6	83.7	13.4	0.5	2.3	0.4	0.2	5.4	0.8	0.6	0.9	0.6	0.03	2
T 1013	28.8	15.8	4.6	60.8	10.2	0.3	2.2	0.8	0.2	5.1	0.4	0.5	2.4	0.2	0.03	6

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

S	soil samples
SM	soil samples subjected to additional sampling on mini-grid
T	stream sediment samples

Appendix 3.3

VAL Claims

VAL	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
Rock Sample																
R 3001	123.5	14.9	5.0	68.8	13.8	0.1	3.1	0.2	0.2	3.4	1.0	0.2	0.3	1.2	0.03	9
Soil Samples																
S 1	24.8	23.7	3.7	47.4	8.6	0.3	1.6	0.2	2.3	4.6	1.0	0.2	0.7	1.5	0.03	7
S 2	40.0	36.5	4.3	59.4	9.0	0.2	1.8	0.2	0.2	8.0	1.4	0.2	1.2	0.4	0.03	7
S 3	17.5	21.2	3.6	107.2	8.3	0.5	1.8	0.3	0.2	3.6	1.6	0.2	0.2	0.4	0.03	7
SM 4	234.9	87.3	6.6	106.6	14.2	5.7	3.1	1.7	0.2	9.8	3.0	0.2	2.7	0.2	0.03	8
S 5	13.5	9.4	6.9	106.6	9.9	0.8	1.7	0.4	0.2	1.5	0.7	0.2	0.8	0.8	0.03	3
S 6	49.3	22.6	8.4	144.9	13.5	0.6	3.4	0.4	0.2	5.1	2.2	0.2	0.2	1.1	0.03	12
S 7	47.7	24.6	5.3	115.7	16.7	0.5	2.0	0.4	0.2	6.3	1.5	0.2	0.2	1.1	0.03	4
S 8	39.3	34.7	5.3	111.1	11.4	1.5	1.2	0.4	0.2	5.3	1.5	0.2	0.2	1.3	0.03	1
S 9	19.8	16.7	2.9	68.5	7.4	0.5	1.7	0.2	0.2	3.9	0.5	0.2	0.2	0.3	0.03	2
S 10	25.2	21.1	4.0	52.7	6.4	0.3	1.3	0.2	0.2	7.0	1.4	0.2	1.1	1.2	0.03	5
S 11	25.9	21.5	4.2	53.6	6.4	0.3	1.2	0.2	0.2	6.6	1.8	0.2	0.2	1.4	0.03	1
S 12	6.1	6.9	4.0	26.0	2.4	0.2	1.0	0.1	0.2	3.5	1.3	0.2	0.2	1.0	0.03	5
S 15	16.6	14.8	3.2	33.5	4.2	0.2	1.2	0.1	0.2	3.8	1.4	0.2	1.1	0.4	0.03	6
S 16	14.2	16.6	3.5	34.3	6.3	0.1	1.6	0.1	0.2	4.8	2.0	0.2	2.2	0.3	0.03	6
S 17	17.4	16.2	3.3	49.0	7.7	0.2	1.2	0.3	0.2	4.0	1.8	0.2	1.3	0.5	0.03	2
S 18	20.9	26.7	3.3	47.8	9.2	0.1	1.3	0.1	0.2	6.2	2.3	0.2	0.6	0.2	0.03	5
S 19	6.2	15.3	2.0	63.3	6.4	0.2	1.5	0.2	0.2	3.9	1.7	0.2	0.9	0.7	0.03	1
S 20	20.8	17.8	2.8	40.9	6.9	0.3	1.4	0.1	2.9	6.7	2.1	0.2	0.2	1.0	0.03	3
S 24	16.3	15.6	2.8	49.9	5.1	0.3	1.5	0.1	0.2	5.1	1.6	0.7	0.3	0.2	0.03	8
S 25	13.8	11.0	4.1	49.5	5.7	0.4	1.8	0.2	0.2	1.5	1.3	0.3	0.3	0.3	0.04	8
SM 26	13.9	9.0	5.7	79.9	5.9	0.8	1.9	0.3	0.2	7.0	0.7	0.7	0.2	0.9	0.03	36
SM 27	28.1	17.6	7.0	102.4	10.9	0.6	1.9	0.2	0.2	5.5	1.9	1.5	0.5	0.2	0.03	380
S 28	27.6	16.6	4.9	85.3	13.4	0.5	1.9	0.4	0.2	3.4	1.4	0.4	0.7	0.2	0.04	2
S 29	15.6	17.0	3.1	50.2	6.1	0.2	0.9	0.1	0.2	3.3	1.3	0.3	0.2	0.2	0.03	4
S 30	33.3	22.9	3.8	56.9	6.9	0.3	1.5	0.3	0.2	3.9	1.2	0.3	0.6	0.2	0.04	1
S 34	35.3	13.9	2.5	48.1	8.0	0.1	1.6	0.1	0.2	2.4	1.6	0.4	2.1	0.2	0.03	9
S 35	53.6	18.3	3.2	43.8	10.9	0.1	1.5	0.2	0.2	5.3	1.1	0.2	0.2	0.2	0.03	12
S 36	21.7	10.7	3.6	32.2	4.8	0.3	1.7	0.1	0.2	2.9	1.4	0.2	0.2	0.2	0.04	6
S 37	25.9	11.4	4.0	53.6	6.6	0.3	1.3	0.3	0.2	3.7	1.9	0.2	0.2	0.2	0.03	6
S 38	36.9	17.1	2.5	49.0	8.2	0.2	0.9	0.1	0.2	3.7	1.3	0.5	0.2	0.2	0.03	6
S 39	43.5	12.9	4.6	81.7	9.9	0.5	3.2	0.7	1.9	8.0	1.9	0.8	1.4	0.2	0.04	1
S 40	15.1	10.0	3.1	38.0	3.8	0.3	0.9	0.1	1.5	1.8	1.2	0.2	2.0	0.2	0.11	5
S 46	47.3	17.0	5.0	52.3	7.5	0.3	2.0	0.6	0.2	4.5	2.6	0.2	0.2	0.3	0.03	7
S 47	28.8	18.5	4.8	132.7	9.5	0.7	1.9	0.4	0.2	6.8	2.3	0.9	0.5	0.4	0.03	11
S 48	31.9	14.6	5.2	49.1	8.8	0.3	2.0	0.3	0.2	4.9	2.0	0.3	0.2	0.2	0.03	12
S 49	13.9	7.9	5.5	29.9	2.8	0.1	1.4	0.2	0.2	3.4	1.6	0.2	1.6	0.2	0.03	4
S 50	43.1	25.0	4.1	67.3	10.8	0.3	1.6	0.4	0.2	6.0	2.6	0.2	0.7	0.2	0.03	3
S 51	52.3	25.2	5.2	56.4	14.3	0.4	1.8	0.2	0.2	9.0	1.7	0.2	1.7	0.9	0.05	7
S 52	32.4	11.9	3.6	28.1	2.9	0.7	1.8	0.6	0.2	3.8	0.2	1.8	0.2	0.2	0.07	
S 53	44.9	18.3	3.4	66.9	7.4	0.5	1.9	0.3	0.2	7.1	2.5	0.2	1.2	0.2	0.03	7
S 54	52.8	24.9	3.4	74.2	9.4	0.3	1.6	0.4	0.2	6.9	1.9	0.2	0.2	0.2	0.03	7
S 55	32.4	20.6	3.3	64.8	9.2	0.3	2.0	0.4	0.2	4.5	1.7	0.5	1.1	0.2	0.03	10
S 56	26.5	14.4	2.8	42.4	5.6	0.2	1.0	0.3	0.2	3.7	1.4	0.2	0.9	0.2	0.03	44
S 57	29.7	15.9	2.6	68.5	7.4	0.1	1.7	0.4	0.2	3.9	1.4	0.2	0.8	0.2	0.03	9
S 58	21.2	10.0	3.5	31.0	4.2	0.2	2.0	0.4	1.8	4.7	1.4	0.2	1.2	1.1	0.03	22
S 59	51.4	27.0	2.7	58.1	11.2	0.1	1.7	0.2	0.2	8.2	1.9	0.3	0.5	1.0	0.04	15

VAL	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
SM 60	52.4	18.1	3.1	58.3	11.4	0.5	2.4	0.5	0.2	8.6	1.5	0.2	2.1	0.9	0.03	45
S 61	32.8	19.6	2.5	58.0	8.0	0.3	1.3	0.4	0.2	4.7	1.5	0.3	0.7	0.6	0.03	7
S 62	23.5	17.2	4.0	35.6	8.3	0.3	2.3	0.2	0.2	4.7	1.9	0.2	1.0	1.0	0.03	8
S 63	16.2	19.4	2.5	70.0	8.2	0.3	1.6	0.3	0.2	5.8	1.5	0.2	1.1	0.5	0.03	4
S 64	32.6	26.1	2.9	66.6	10.5	0.2	2.6	0.3	0.2	5.8	2.1	0.2	0.2	0.2	0.03	4
S 65	4.9	4.2	3.1	18.4	1.5	0.2	0.8	0.1	0.2	1.8	1.4	0.2	0.2	0.3	0.03	4
S 66	4.5	4.1	4.4	51.0	2.0	0.2	1.1	0.3	0.2	2.1	0.7	0.2	0.8	0.5	0.03	8
S 67	26.1	20.6	2.5	68.0	7.0	0.1	1.4	0.2	0.2	6.3	1.9	0.2	2.3	0.9	0.03	9
SM 68	94.9	30.0	3.7	86.8	12.4	0.8	2.7	0.6	0.2	5.9	2.6	0.2	1.1	0.9	0.03	10
S 69	14.8	20.7	2.2	37.2	6.9	0.1	0.5	0.1	0.2	2.4	0.8	0.2	0.4	1.0	0.03	5
S 72	24.0	15.3	5.1	60.6	7.4	0.3	1.6	0.2	0.2	5.0	0.5	0.3	0.2	0.8	0.03	3
S 73	8.5	9.6	4.8	50.8	5.8	0.2	0.9	0.2	0.2	2.2	0.6	0.2	0.2	0.4	0.03	1
S 74	48.9	26.9	4.9	63.5	10.6	0.3	1.6	0.2	0.2	6.9	0.8	0.2	0.2	0.6	0.04	6
S 75	11.2	13.8	5.7	100.3	7.8	0.2	1.0	0.1	0.2	1.5	0.4	0.4	0.2	0.5	0.03	16
S 76	6.5	6.4	5.0	26.0	1.9	0.3	0.9	0.1	0.2	2.0	0.3	0.2	0.2	0.4	0.03	3
S 77	11.4	9.1	6.4	59.9	6.2	0.3	1.2	0.3	0.2	2.4	0.2	0.4	0.6	0.8	0.03	1
SM 78	44.0	27.1	5.8	68.5	10.5	0.3	1.5	0.3	0.2	7.4	1.3	0.2	0.3	0.4	0.03	84 **
S 156	30.7	20.3	4.5	37.7	9.2	0.1	1.1	0.1	0.2	5.6	0.9	0.2	0.6	0.4	0.03	14
S 157	6.5	4.7	4.4	15.1	1.4	0.2	0.6	0.1	0.2	1.3	0.5	0.2	0.2	0.2	0.03	7
S 158	18.3	12.7	4.3	40.0	4.3	0.1	1.0	0.1	0.2	2.1	1.1	0.2	0.2	0.2	0.03	3
S 159	29.2	20.4	4.2	65.8	6.9	0.1	1.5	0.4	0.2	3.4	0.8	0.2	0.6	0.2	0.03	3
S 160	24.9	28.3	3.6	60.3	7.8	0.2	1.4	0.1	0.2	5.4	1.5	0.2	0.2	0.2	0.04	3
S 161	32.0	24.0	4.6	53.1	8.6	0.1	1.2	0.1	0.2	5.4	1.0	0.2	0.3	0.2	0.03	5
S 162	15.6	11.6	4.6	73.7	5.9	0.4	1.3	0.2	0.2	3.1	0.6	0.4	0.2	0.2	0.03	12
S 163	34.2	16.7	6.6	72.8	11.7	0.3	1.4	0.6	0.2	5.5	0.8	0.4	0.4	0.3	0.03	*
S 164	17.1	9.1	6.0	33.6	5.3	0.1	2.8	0.2	0.2	4.7	1.1	0.2	0.2	0.4	0.03	4
S 165	10.8	14.6	4.1	89.8	5.8	0.4	1.2	0.2	0.2	3.6	0.8	0.4	0.3	0.2	0.03	8
S 1001	29.6	21.7	5.0	69.8	8.9	0.5	1.7	0.2	1.5	8.8	0.7	0.2	1.5	0.6	0.07	5
S 1002	10.7	17.8	3.6	68.2	8.0	0.2	1.2	0.3	0.2	4.3	1.4	0.2	0.3	0.8	0.03	6
S 1003	8.5	10.3	3.8	47.2	4.8	0.3	1.2	0.1	0.2	3.1	0.5	0.2	1.1	0.4	0.03	7
S 1004	16.8	17.5	5.2	71.2	12.1	0.3	1.1	0.5	0.2	4.6	0.7	0.2	0.4	0.8	0.03	3
S 1005	21.0	23.7	2.9	42.1	8.0	0.1	0.8	0.1	0.2	6.1	1.0	0.4	0.8	0.5	0.03	6
S 1006	27.1	23.4	4.4	59.4	10.0	0.5	1.8	0.2	0.2	6.7	1.5	0.2	1.2	1.5	0.03	2
S 1007	46.3	23.8	3.7	62.4	8.5	0.1	0.8	0.1	0.2	6.0	1.7	0.4	1.4	1.0	0.03	6
S 1008	9.5	10.4	3.8	43.8	3.7	0.2	0.7	0.2	0.2	1.4	0.7	0.2	0.6	0.2	0.03	3
S 1009	16.6	14.8	3.3	54.2	6.2	0.2	0.8	0.2	0.2	2.6	1.2	1.0	1.8	0.3	0.03	1
S 1010	20.9	16.1	4.7	109.9	9.7	0.6	1.7	0.4	0.2	3.1	1.1	0.2	1.6	1.4	0.04	3
S 1011	9.9	10.8	3.6	76.3	8.6	0.5	1.5	0.3	0.2	1.9	0.3	0.2	0.3	0.2	0.03	4
S 1012	48.9	28.6	5.1	82.7	10.0	0.4	3.2	0.3	0.2	11.1	2.4	0.2	0.2	0.2	0.03	6
S 1013	29.4	23.3	5.1	103.7	11.6	0.3	1.9	0.4	0.2	7.4	1.3	0.2	0.3	1.1	0.04	1
S 1014	27.2	19.4	5.0	97.4	10.7	0.5	1.5	0.2	0.2	5.0	1.0	0.3	0.4	0.9	0.03	2
S 1015	70.0	38.4	4.2	73.9	17.7	0.5	1.8	0.3	0.2	9.1	2.0	0.2	0.3	0.3	0.03	4
S 1018	56.1	46.1	7.8	76.6	15.7	0.4	1.2	0.3	0.2	12.0	2.1	0.2	0.2	1.2	0.12	1
S 1019	35.2	24.9	3.3	45.8	9.5	0.2	1.6	0.1	0.2	6.0	1.1	0.3	2.0	0.6	0.03	4
S 1020	20.7	24.1	3.7	57.1	10.8	0.3	1.7	0.2	2.3	6.1	0.6	0.2	0.2	1.3	0.03	7
S 1021	4.8	8.6	3.5	41.1	3.1	0.2	0.7	0.1	1.3	1.7	0.3	0.2	0.2	0.7	0.03	5
S 1023	36.7	22.6	3.6	44.6	9.7	0.1	1.5	0.2	0.2	6.7	0.8	0.2	0.8	0.7	0.03	5
S 1024	36.6	19.6	5.7	46.6	7.1	0.2	1.3	0.3	0.2	1.0	0.6	0.2	0.3	0.2	0.03	14
S 1025	34.4	24.1	3.8	49.9	6.4	0.1	1.3	0.3	0.2	4.1	1.6	0.2	0.5	0.2	0.04	12
S 1032	45.4	23.7	3.1	49.3	8.7	0.1	1.5	0.4	0.2	4.4	2.0	0.2	0.2	0.5	0.03	4
S 1087	5.9	8.9	3.4	43.0	4.0	0.2	0.6	0.1	0.2	1.4	0.3	0.2	0.2	0.6	0.03	1
S 1088	20.4	23.2	2.8	35.9	7.0	0.1	0.8	0.1	0.2	4.4	0.6	0.2	0.2	0.5	0.03	3
S 1089	9.0	14.9	3.7	52.1	6.6	0.3	1.0	0.1	0.2	2.1	0.9	0.2	0.2	0.5	0.03	1
S 1142	34.1	16.6	4.2	60.2	9.3	0.1	1.2	0.2	0.2	3.8	1.1	0.2	0.2	0.5	0.03	5

VAL	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
S 1143	35.0	12.5	9.0	87.7	15.8	0.4	1.7	1.0	0.2	5.0	1.2	0.2	0.2	0.7	0.03	*
S 1144	43.4	18.9	4.2	63.2	8.6	0.3	1.5	0.5	0.2	3.7	1.2	0.2	0.6	0.7	0.03	8
S 2001	10.4	11.7	4.5	30.6	4.9	0.3	1.4	0.4	1.0	1.9	0.4	0.2	0.2	0.5	0.03	6
S 2002	10.6	5.0	2.6	9.6	0.7	0.6	5.6	0.3	1.2	2.1	0.2	1.2	5.2	1.0	0.03	*
S 2003	14.6	12.9	4.4	40.2	6.1	0.3	2.6	0.1	0.2	3.6	0.2	0.2	0.2	0.7	0.03	6
S 2004	13.5	11.1	4.6	69.1	5.4	0.3	1.4	0.3	0.2	3.8	0.7	0.4	0.2	0.6	0.03	10
S 2005	26.3	15.3	5.3	167.5	13.6	1.8	1.2	0.8	0.2	2.6	0.2	0.3	0.6	0.5	0.03	34
S 2006	18.1	12.8	4.0	75.9	6.2	0.4	1.2	0.1	0.2	3.2	0.2	0.2	0.2	0.7	0.03	12
S 2007	18.0	11.9	4.9	59.6	6.6	0.4	2.1	0.3	0.2	4.4	0.3	0.3	0.2	0.7	0.03	8
S 2008	65.8	14.5	3.8	17.9	3.9	0.5	1.5	0.7	0.2	2.4	0.2	0.9	1.4	0.9	0.03	*
S 2009	15.5	11.5	3.8	30.9	3.8	0.2	1.6	0.2	0.2	3.5	0.2	0.2	0.2	0.8	0.03	2
S 2010	9.7	12.4	3.7	29.9	4.1	0.3	1.5	0.1	0.2	3.3	0.2	0.2	0.2	0.9	0.03	6
S 2011	12.4	11.6	4.4	110.1	6.0	0.5	1.4	0.3	0.2	2.4	0.2	0.3	0.2	0.8	0.03	28
S 2012	22.6	16.2	5.4	124.7	11.3	1.3	1.3	0.5	0.2	3.7	0.4	0.2	0.2	0.8	0.03	8
S 2013	51.9	26.5	5.8	72.8	11.7	0.7	1.9	0.8	0.2	5.7	0.2	0.5	0.2	0.8	0.03	1
S 2014	11.3	9.5	3.9	65.3	5.7	0.4	0.9	0.2	0.2	1.8	0.2	0.2	0.2	1.1	0.03	2
S 2015	28.4	19.5	5.2	91.8	13.7	0.8	1.2	0.4	0.2	3.4	0.2	0.3	0.2	0.6	0.03	1
S 2016	44.8	14.2	7.3	211.2	16.5	2.3	1.3	0.6	0.2	2.5	0.4	0.2	0.2	1.1	0.03	12
S 2017	21.0	11.5	5.9	143.7	10.7	1.5	1.3	0.3	0.2	2.4	0.5	0.2	0.2	0.9	0.03	*
S 2018	14.6	9.8	4.5	121.8	6.2	0.8	1.3	0.3	0.2	1.9	0.2	0.4	0.2	1.0	0.03	24
S 2019	105.6	20.0	7.9	61.3	17.5	0.9	6.0	1.0	0.2	7.8	0.2	0.3	0.2	0.6	0.03	16
S 2020	287.1	33.2	2.4	11.4	4.4	0.8	3.4	2.2	0.9	4.2	0.2	0.5	4.4	0.2	0.03	*
S 2021	767.2	79.9	2.3	21.5	4.1	0.9	3.2	1.6	0.2	5.9	2.0	0.2	6.7	0.2	0.10	*
S 2022	17.1	12.2	5.1	111.6	9.2	0.5	1.5	0.3	0.2	3.2	0.3	0.6	0.3	0.2	0.03	10
S 2023	16.3	12.6	4.6	134.3	8.9	0.8	1.4	0.5	0.2	2.7	0.5	0.5	0.2	0.2	0.03	10
S 2024	11.9	9.1	4.3	79.9	5.9	0.4	1.3	0.3	0.2	2.3	0.2	0.4	0.2	0.2	0.03	2
S 2025	12.9	9.9	4.3	104.8	6.5	0.5	1.2	0.3	0.2	1.8	0.4	0.3	0.2	0.2	0.03	1
S 2096	35.9	29.2	4.3	71.7	13.0	0.3	2.0	0.3	0.2	7.7	0.5	0.4	0.2	0.2	0.05	42
S 2097	22.4	18.8	4.4	81.3	10.3	0.3	1.8	0.4	0.2	4.2	0.2	0.4	0.2	0.2	0.03	11
S 2098	26.3	30.1	3.7	61.8	10.5	0.2	1.4	0.2	0.2	6.7	0.6	0.4	0.2	0.2	0.03	24
S 2099	34.4	23.6	3.8	51.5	9.2	0.3	1.7	0.7	0.2	4.8	0.2	0.2	0.2	0.2	0.03	2
S 2100	19.3	21.4	3.3	47.0	7.3	0.1	1.0	0.1	0.2	4.4	0.3	0.2	0.2	0.2	0.03	9
S 2101	40.9	30.0	3.6	59.4	12.5	0.2	1.5	0.2	0.2	6.1	0.3	0.2	0.2	0.2	0.03	8
S 2102	22.0	20.9	4.3	53.1	7.8	0.2	1.4	0.2	0.2	4.4	0.6	0.2	0.2	0.2	0.03	18
S 2103	20.9	18.4	4.0	56.6	6.3	0.2	1.3	0.1	0.2	5.0	0.6	0.4	0.2	0.3	0.03	1
S 2104	31.7	21.0	3.5	71.0	9.0	0.2	1.5	0.5	0.2	5.5	0.7	0.2	0.2	0.2	0.04	5
S 2166	61.3	10.5	3.9	82.9	7.2	0.3	1.2	0.2	0.2	3.3	0.4	0.2	0.2	0.2	0.03	4
S 2167	10.2	8.0	4.8	74.6	4.5	0.2	1.0	0.1	0.2	1.3	0.2	0.3	0.8	0.2	0.06	8
S 2168	14.8	10.2	4.3	92.0	5.4	0.2	1.3	0.2	0.2	3.4	0.3	0.3	0.2	0.2	0.03	5
S 2169	10.3	7.4	3.9	66.4	4.4	0.2	0.8	0.2	0.2	1.4	0.2	0.2	0.4	0.2	0.03	4
S 2170	13.1	10.6	3.6	108.1	6.0	0.3	1.4	0.3	0.2	1.5	0.6	0.4	0.2	0.2	0.03	1
S 2171	11.9	9.6	4.2	100.6	6.0	0.4	0.9	0.1	0.2	2.3	0.2	0.3	0.2	0.3	0.03	2
S 2172	4.0	4.5	3.5	40.8	3.8	0.3	0.6	0.1	0.2	0.7	0.2	0.2	0.2	0.2	0.03	20
S 2173	6.3	5.4	4.3	43.7	3.1	0.2	0.6	0.1	0.2	1.2	0.3	0.2	0.2	0.2	0.03	14
S 2174	10.6	8.8	3.8	86.2	5.4	0.2	1.0	0.2	0.2	1.0	0.2	0.2	0.2	0.2	0.03	6
S 2175	35.1	15.8	5.2	80.9	12.1	0.4	1.9	0.4	0.2	4.1	0.2	0.3	0.2	0.2	0.03	570 **
S 2176	57.5	20.4	4.5	73.8	12.3	0.2	1.8	0.2	0.2	5.2	0.4	0.2	0.2	0.2	0.03	64
S 2177	83.5	27.1	5.6	87.6	20.6	0.9	2.4	0.4	0.2	10.3	0.3	0.2	0.2	0.2	0.04	1
S 2178	87.6	26.2	3.7	61.4	10.3	0.2	1.8	0.4	0.2	7.5	0.5	0.2	0.2	0.2	0.03	10
S 2179	29.1	13.1	4.9	60.9	6.9	0.3	2.0	0.1	0.2	6.7	0.4	0.6	0.2	0.2	0.03	240
S 2180	30.6	19.0	5.1	84.3	7.9	0.4	2.0	0.3	0.2	8.3	0.2	0.5	0.2	0.2	0.03	22
S 2181	26.7	20.5	3.4	48.6	6.5	0.1	1.4	0.1	0.2	4.4	0.4	0.2	0.2	0.2	0.05	14
S 2182	35.6	21.3	3.6	84.7	10.7	0.2	1.5	0.2	0.2	4.3	0.4	0.4	0.2	0.2	0.03	13
S 2183	20.9	14.1	4.1	89.5	8.5	0.3	1.1	0.2	0.2	2.6	0.4	0.5	0.2	0.2	0.03	7

VAL	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
S 2216	18.7	22.8	4.1	52.3	6.5	0.3	1.4	0.3	0.2	4.6	0.4	0.2	0.2	0.2	0.09	6
S 2217	7.4	9.5	3.4	32.9	5.0	0.2	0.7	0.2	0.2	1.6	0.2	0.2	0.2	0.2	0.08	13
S 2218	10.9	15.0	4.1	54.3	5.9	0.3	0.9	0.3	0.2	2.7	0.2	0.2	0.2	0.2	0.03	5
S 2219	13.8	20.1	3.9	119.3	6.7	0.4	1.2	0.3	0.2	3.8	0.2	0.2	0.2	0.2	0.06	2
S 2220	16.1	18.6	4.4	60.7	5.3	0.3	1.4	0.2	0.2	4.3	0.2	0.2	0.2	0.2	0.03	6
S 2221	52.3	38.1	4.8	104.7	14.3	1.8	1.9	1.3	0.2	3.7	0.2	0.2	0.2	0.2	0.09	2
S 2222	54.9	38.4	5.7	114.6	13.9	1.1	1.9	1.3	0.2	6.0	0.2	0.2	0.2	0.2	0.11	10
S 2223	31.7	29.8	3.6	66.9	7.9	0.2	1.6	0.1	0.2	8.3	0.6	0.2	0.2	0.2	0.03	6
S 2224	22.3	21.9	3.8	45.0	6.6	0.2	1.5	0.1	0.2	7.0	0.2	0.2	0.2	0.2	0.03	2
S 2225	21.8	24.9	3.4	42.4	6.7	0.2	1.3	0.1	0.2	5.8	0.2	0.2	0.2	0.2	0.05	4
S 2226	18.2	19.4	4.1	59.7	5.5	0.3	1.5	0.2	0.2	7.4	0.2	0.2	0.2	0.2	0.03	10
S 2227	21.0	17.4	4.5	65.9	5.9	0.4	1.5	0.2	0.2	6.4	0.2	0.2	0.2	0.2	0.03	8
S 2228	18.9	16.1	3.9	39.1	5.6	0.2	1.4	0.1	0.2	5.0	0.2	0.2	0.2	0.2	0.03	4
S 2229	23.0	21.8	3.8	71.4	7.3	0.4	1.1	0.2	0.2	3.6	0.2	0.2	0.2	0.2	0.03	1
S 2230	14.3	20.2	3.7	106.0	6.9	0.5	1.3	0.2	0.2	3.8	0.2	0.2	0.2	0.2	0.03	1
S 2231	15.9	15.3	4.5	62.6	8.4	0.4	1.1	0.3	0.2	1.7	0.2	0.4	0.2	0.2	0.07	3
S 2232	16.2	20.7	3.5	61.5	5.9	0.2	1.0	0.2	0.2	3.1	0.5	0.2	0.2	0.2	0.03	3
S 2233	7.6	10.8	3.9	49.0	4.2	0.3	0.7	0.1	0.2	2.6	0.2	0.2	0.2	0.2	0.03	1
S 2234	11.7	13.5	3.6	48.5	4.9	0.2	0.9	0.3	0.2	2.8	0.2	0.2	0.2	0.2	0.03	6
S 2235	10.0	14.8	3.7	69.2	5.5	0.3	1.1	0.2	0.2	2.3	0.2	0.2	0.2	0.2	0.03	4
S 2236	11.5	13.9	3.9	48.5	4.6	0.2	1.0	0.1	0.2	2.6	0.2	0.2	0.2	0.2	0.03	2
S 2237	10.2	14.3	3.6	52.5	5.6	0.1	0.9	0.1	0.2	1.4	0.2	0.2	0.2	0.2	0.03	10
S 2238	18.6	23.0	3.5	82.7	7.7	0.3	1.1	0.4	0.2	2.2	0.3	0.2	0.2	0.2	0.03	1
S 2239	15.1	18.0	3.7	52.5	8.1	0.3	1.1	0.4	0.2	2.6	0.2	0.2	0.2	0.2	0.03	1
S 2240	19.9	21.6	4.1	62.5	5.1	0.3	1.3	0.2	0.2	4.5	0.2	0.2	0.2	0.2	0.03	12
S 2241	9.4	6.9	4.8	70.8	4.2	0.6	1.0	0.4	0.2	1.2	0.2	0.2	0.2	0.2	0.03	12
S 2242	9.8	10.5	4.6	78.0	6.0	0.3	1.5	0.2	0.2	2.9	0.2	0.2	0.2	0.2	0.05	12
S 2243	10.1	9.4	4.1	90.6	5.1	0.3	1.1	0.3	0.2	1.5	0.2	0.2	0.2	0.2	0.03	12
S 2244	10.0	8.3	5.0	53.0	3.3	0.3	0.9	0.2	0.2	2.3	0.2	0.2	0.2	0.2	0.03	7
S 2245	25.9	15.7	4.1	38.3	7.7	0.7	1.1	0.2	0.2	4.7	0.2	0.2	0.2	0.2	0.03	20
S 2246	51.2	28.7	4.7	85.7	12.2	0.4	1.8	0.6	0.2	6.2	0.2	0.2	0.2	0.2	0.03	1
S 2247	5.0	5.5	4.2	32.9	2.2	0.3	0.7	0.2	0.2	1.5	0.2	0.3	0.2	0.5	0.03	22
S 2248	14.3	10.3	3.7	75.8	5.1	0.4	1.2	0.2	0.2	2.1	0.2	0.2	0.2	0.4	0.03	6
S 2249	7.4	9.4	4.8	69.0	3.9	0.3	1.1	0.1	0.2	2.1	0.3	0.2	0.2	0.2	0.03	5
S 2250	10.7	11.5	4.8	113.2	6.0	0.6	1.6	0.3	0.2	2.5	0.2	0.3	0.2	0.2	0.04	2
S 2251	21.1	18.4	6.2	127.8	8.5	0.7	2.1	0.7	0.2	4.4	0.2	0.2	0.2	0.2	0.03	8
S 2252	13.9	11.5	3.9	104.2	5.3	0.4	1.1	0.2	0.2	2.8	0.2	0.2	0.2	0.2	0.03	6
S 2253	10.2	9.7	4.6	98.5	6.0	0.3	1.3	0.3	0.2	2.0	0.2	0.2	0.4	0.2	0.03	150 **
S 2254	11.9	10.3	4.3	61.7	4.6	0.2	1.2	0.2	0.2	2.6	0.3	0.2	0.2	0.2	0.03	5
S 2255	102.9	32.4	7.4	69.2	20.8	0.3	2.7	0.7	0.2	7.7	0.3	0.2	0.2	0.2	0.03	8
S 2256	96.6	45.8	5.7	87.7	15.1	0.7	2.4	1.0	0.2	6.5	0.3	0.2	0.9	0.2	0.03	12
S 2257	57.4	39.4	5.0	102.8	12.1	0.4	2.0	0.5	0.2	7.0	0.7	0.2	0.2	0.2	0.03	8
S 2258	4.7	4.3	3.8	27.3	2.0	0.2	0.5	0.1	0.2	0.7	0.2	0.2	0.4	0.2	0.03	4
S 2259	29.5	13.0	4.9	73.6	7.4	0.3	1.4	0.3	0.2	4.2	0.2	0.2	0.4	0.2	0.03	470 **
S 2260	13.9	9.8	4.5	68.2	4.6	0.4	0.8	0.2	0.2	1.6	0.2	0.2	0.2	0.2	0.03	8
S 2261	9.0	9.8	4.5	74.6	4.8	0.3	1.1	0.2	0.2	3.0	0.2	0.2	0.4	0.2	0.03	32
S 2262	33.8	19.5	5.3	81.2	11.1	0.2	1.8	0.4	0.2	5.9	0.2	0.2	0.2	0.2	0.03	12
S 2263	8.8	6.6	3.9	38.1	2.7	0.2	0.7	0.1	0.2	2.0	0.2	0.2	0.2	0.2	0.03	8
S 2264	13.4	11.3	5.0	64.8	4.3	0.3	0.9	0.2	0.2	4.1	0.2	0.2	0.2	0.2	0.03	6
S 2265	17.3	13.4	4.6	94.0	8.7	0.3	1.1	0.4	0.2	3.8	0.2	0.2	0.2	0.2	0.03	18

VAL	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
Statistics for Soil Samples:																
Count	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	196
Mean	32.0	18.0	4.3	67.0	7.8	0.4	1.5	0.3	0.3	4.3	0.8	0.3	0.5	0.4	0.03	17.5
s.d.	59.6	10.2	1.1	29.0	3.5	0.5	0.7	0.3	0.4	2.2	0.7	0.2	0.8	0.3	0.01	61.6
Maximum	767.2	87.3	9.0	211.2	20.8	5.7	6.0	2.2	2.9	12.0	3.0	1.8	6.7	1.5	0.12	570
Minimum	4.0	4.1	2.0	9.6	0.7	0.1	0.5	0.1	0.2	0.7	0.2	0.2	0.2	0.2	0.03	1
Mean + 2 s.d.	151.1	38.4	6.5	125.0	14.9	1.4	2.9	0.9	1.0	8.6	2.2	0.7	2.1	1.1	0.06	140.7

Stream Sediment Samples

	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
T 1	57.1	23.6	4.7	78.1	10.6	0.4	1.5	0.5	0.2	4.2	1.9	0.7	3.6	0.8	0.03	17
T 2	86.7	22.2	5.6	96.5	25.6	0.7	3.4	1.2	0.2	9.4	2.0	0.5	1.4	0.6	0.03	15
T 3	36.3	22.4	2.4	81.6	9.9	0.2	1.3	0.3	0.2	4.6	2.1	0.2	2.8	0.7	0.03	16
T 4	29.1	21.0	2.3	70.5	10.1	0.4	1.8	0.3	0.2	7.3	0.8	0.2	0.8	0.5	0.03	7
T 5	227.5	33.6	5.6	53.4	22.9	0.7	4.7	1.2	0.2	11.2	2.1	1.7	3.3	2.2	0.03	20
T 6	50.2	25.4	3.2	65.3	12.7	0.4	2.3	0.5	0.2	4.1	1.4	0.7	3.3	0.2	0.03	10
T 7	34.8	21.2	3.2	72.3	11.3	0.4	2.1	0.3	0.2	5.2	1.4	0.6	1.5	0.6	0.03	12
T 1001	18.3	20.2	5.2	39.3	27.5	0.9	3.9	0.6	0.2	26.7	0.8	2.5	1.0	1.7	0.03	8
T 1002	26.0	18.7	4.4	51.6	13.4	0.4	3.2	0.3	0.2	8.0	2.0	0.6	1.9	0.7	0.03	6
T 1003	32.3	18.1	3.3	54.2	8.6	0.2	1.4	0.2	0.2	2.2	0.4	0.2	1.1	0.2	0.03	24
T 1004	36.1	19.8	3.8	60.9	10.0	0.2	0.5	0.3	0.2	4.0	0.2	0.2	0.2	0.2	0.08	8
T 1005	40.8	20.9	3.4	68.2	10.3	0.2	1.3	0.3	0.2	2.4	1.6	0.6	0.7	0.7	0.03	6
T 1006	46.8	32.1	5.6	67.7	13.0	0.4	2.8	0.7	0.2	8.3	1.6	0.6	0.9	0.2	0.03	4
T 1012	79.1	24.5	4.4	92.0	13.1	1.2	2.1	0.9	0.2	8.5	0.5	0.2	0.2	0.2	0.03	8

	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
Statistics for Stream Sediment Samples:																
No. Samples	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Mean	57.2	23.1	4.1	68.0	14.2	0.5	2.3	0.5	0.2	7.6	1.3	0.7	1.6	0.7	0.03	11.5
s.d.	50.8	4.4	1.1	15.2	6.0	0.3	1.1	0.3	0.0	5.9	0.7	0.6	1.1	0.6	0.01	5.8
Maximum	227.5	33.6	5.6	96.5	27.5	1.2	4.7	1.2	0.2	26.7	2.1	2.5	3.6	2.2	0.08	24
Minimum	18.3	18.1	2.3	39.3	8.6	0.2	0.5	0.2	0.2	2.2	0.2	0.2	0.2	0.2	0.03	4
Mean + 2 s.d.	158.7	32.0	6.3	98.5	26.3	1.1	4.6	1.2	0.2	19.4	2.6	1.9	3.9	1.8	0.06	23.1

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
T	stream sediment samples

Appendix 3.4

BOB-BIO Claims

BOB-BIO	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
Rock Samples																
R 1007	96.3	25.7	3.5	76.6	13.1	0.2	20.5	0.3	0.2	7.9	0.3	0.2	1.3	0.9	0.03	1
R 1009	65.6	24.3	13.1	58.2	8.0	0.5	10.3	0.8	0.2	10.4	0.9	0.2	3.0	1.1	0.03	1
R 1010	78.4	15.6	8.8	107.6	10.9	0.3	0.9	0.6	0.2	7.3	0.5	0.4	0.4	0.5	0.03	8
Soil Samples																
S 70	19.0	13.3	8.7	84.0	8.0	0.5	1.3	0.3	0.2	3.1	0.7	0.2	0.8	0.5	0.03	4
S 71	12.2	11.0	4.6	53.6	5.6	0.3	1.0	0.2	0.2	3.1	0.4	0.2	0.2	0.7	0.03	6
S 79	44.7	21.7	5.4	75.9	11.1	0.3	1.2	0.5	0.2	6.5	0.5	0.6	0.6	0.6	0.03	7
S 80	34.9	24.0	5.3	64.7	7.5	0.2	1.3	0.4	0.2	5.9	0.8	0.2	0.6	0.6	0.03	4
S 81	33.8	25.7	5.4	85.5	8.9	0.2	1.5	0.4	0.2	3.8	1.1	0.6	0.4	0.3	0.03	2
S 82	12.4	17.0	5.6	54.6	6.5	0.2	1.6	0.1	0.2	2.5	0.6	0.3	0.2	0.6	0.03	11
S 83	17.1	15.4	6.2	66.8	7.0	0.3	1.3	0.3	0.2	2.0	0.5	0.2	0.4	0.6	0.03	4
SM 84	75.1	49.0	6.3	201.8	15.3	0.9	2.3	0.9	0.2	4.8	1.7	0.8	0.9	0.2	0.03	4
S 85	9.9	14.5	5.6	96.5	4.9	1.2	2.0	0.7	0.2	3.6	0.5	0.4	0.2	0.9	0.03	1
SM 86	14.0	6.3	5.0	65.7	4.2	3.0	2.0	1.0	0.2	2.4	0.4	0.2	0.2	0.5	0.03	56
S 87	50.9	24.4	4.3	123.7	12.3	0.7	1.6	0.3	0.2	3.9	0.9	0.3	0.6	0.7	0.03	5
S 88	15.8	12.5	5.4	89.9	4.9	0.5	2.7	0.2	0.2	4.2	0.3	0.2	0.3	0.7	0.03	3
S 89	5.1	5.7	5.0	25.4	2.0	0.3	1.0	0.1	1.3	1.3	0.3	0.2	0.2	0.4	0.04	4
S 90	59.1	49.8	10.3	148.1	18.5	0.4	2.6	0.7	0.2	6.2	2.4	1.3	1.0	0.2	0.03	1
S 91	18.5	16.3	6.2	178.0	10.7	0.5	1.8	0.3	0.2	4.4	1.3	0.7	0.4	0.8	0.03	8
S 92	9.0	7.7	5.6	44.5	3.6	0.2	1.0	0.1	0.2	1.0	0.4	0.2	0.3	0.5	0.03	20
S 93	14.2	11.2	7.0	80.8	7.4	0.2	1.6	0.3	0.2	3.0	0.7	0.7	0.3	0.6	0.03	8
S 94	44.5	27.5	5.6	74.1	10.4	0.3	1.6	0.4	0.2	5.2	1.1	0.6	0.4	0.5	0.03	7
S 95	8.4	8.3	5.0	60.0	5.8	0.2	0.8	0.1	0.2	2.0	1.0	0.5	0.5	0.5	0.03	1
S 96	12.1	12.0	5.9	65.8	5.4	0.3	1.1	0.1	0.2	1.9	0.3	0.4	0.4	0.4	0.03	1
S 97	19.0	21.2	4.1	70.4	6.8	0.3	1.9	0.2	0.2	5.6	0.9	0.2	1.0	0.5	0.03	2
S 98	10.6	12.4	4.5	52.7	6.3	0.1	1.0	0.1	0.2	3.2	0.4	0.5	0.9	0.5	0.03	2
S 99	6.5	11.5	4.3	52.0	6.6	0.2	1.0	0.2	0.2	1.9	0.5	0.4	0.4	0.5	0.03	1
S 100	15.2	16.5	4.0	62.8	8.9	0.2	1.2	0.2	0.2	2.8	0.7	0.4	0.7	0.5	0.03	4
S 101	22.9	16.8	4.3	50.3	7.3	0.2	0.8	0.2	0.2	3.8	0.9	0.2	1.4	0.3	0.03	6
S 102	14.2	11.4	6.7	98.3	7.0	0.4	1.4	0.8	0.2	2.3	1.0	0.6	0.2	0.7	0.03	10
S 103	41.4	26.8	4.7	67.5	10.5	0.2	1.3	0.2	0.2	5.3	0.6	0.2	0.4	0.4	0.03	14
S 104	27.1	17.0	5.6	80.4	14.5	0.3	1.6	0.4	0.2	3.6	1.0	0.6	0.7	0.6	0.03	2
S 1026	38.6	18.5	2.9	50.5	6.8	0.1	1.4	0.1	0.2	3.2	0.7	0.2	0.2	0.2	0.06	17
S 1027	27.1	19.3	3.3	56.0	8.4	0.3	1.4	0.3	0.2	6.9	0.2	0.2	0.9	0.4	0.03	5
S 1028	26.9	19.7	2.7	38.2	5.7	0.1	1.0	0.1	0.2	2.4	0.2	0.2	1.3	0.3	0.03	5
S 1029	19.5	16.8	2.8	54.7	6.7	0.2	0.7	0.2	0.2	2.2	0.2	0.2	0.2	0.2	0.03	2
S 1030	17.3	13.2	3.8	43.3	4.6	0.1	0.7	0.1	0.2	1.1	0.8	0.5	0.2	0.6	0.03	8
S 1031	25.5	16.8	3.4	54.2	6.4	0.2	1.6	0.2	0.2	3.3	0.7	0.2	1.3	0.5	0.03	8
S 1051	19.1	22.1	2.8	74.1	8.1	0.1	1.1	0.2	0.2	4.2	1.1	0.2	0.2	0.2	0.08	7
S 1052	24.4	21.9	3.2	83.9	10.3	0.1	1.1	0.2	0.2	6.7	1.4	0.2	0.2	0.4	0.03	10
S 1053	25.0	19.2	4.1	49.7	7.5	0.1	0.7	0.1	0.2	4.2	1.7	0.2	0.2	1.0	0.03	3
S 1054	15.3	16.5	2.9	53.9	7.3	0.2	0.9	0.2	0.2	3.8	1.6	0.2	0.2	0.3	0.09	4
S 1055	24.6	31.6	3.6	97.0	9.7	0.2	1.5	0.3	0.2	5.5	2.0	0.4	0.2	0.6	0.03	4
S 1056	6.3	6.4	3.5	19.3	2.6	0.1	0.1	0.1	0.2	2.3	1.0	0.2	0.2	0.4	0.04	5
S 1057	19.0	18.1	3.6	50.0	7.0	0.1	0.9	0.1	0.2	4.7	0.8	0.2	0.2	0.2	0.03	12
S 1058	4.9	7.8	3.9	21.9	2.8	0.2	1.7	0.1	5.1	2.4	1.0	0.2	0.2	0.2	0.04	11
S 1059	10.5	10.0	3.9	36.6	4.3	0.1	1.4	0.1	1.7	2.2	0.6	0.2	0.2	0.2	0.08	6
S 1060	14.8	16.5	4.3	50.6	6.5	0.1	1.0	0.1	0.4	2.7	0.6	0.2	0.2	0.8	0.05	1

BOB-BIO	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
S 1061	15.4	17.7	3.7	74.7	7.2	0.3	1.2	0.1	0.2	4.1	0.6	0.4	0.2	0.5	0.03	1
S 1062	18.8	21.2	3.0	50.1	6.8	0.2	1.0	0.1	0.2	4.2	0.9	0.3	0.2	0.7	0.03	1
S 1063	43.1	26.6	3.5	53.0	10.8	0.2	1.1	0.1	0.2	7.9	0.4	0.3	0.2	1.0	0.03	9
S 1064	24.4	24.0	3.5	70.1	7.4	0.2	0.9	0.1	0.2	4.4	0.3	0.7	0.2	0.8	0.03	5
S 1065	16.2	15.5	2.5	48.5	6.4	0.1	0.8	0.1	0.2	2.3	0.8	0.2	0.2	0.4	0.03	5
S 1066	30.7	26.5	3.8	44.4	6.5	0.1	0.9	0.1	0.2	4.9	0.5	0.4	0.2	0.7	0.03	4
S 1067	20.9	18.4	3.0	50.6	6.1	0.1	1.0	0.1	0.2	3.5	0.4	0.2	0.2	0.5	0.03	1
S 1069	15.5	22.5	3.8	113.9	7.9	0.3	1.1	0.2	0.2	3.3	0.6	0.4	0.2	0.3	0.03	1
S 1070	11.7	12.1	3.7	69.0	4.8	0.2	0.8	0.1	0.2	2.1	0.7	0.2	0.2	0.3	0.03	2
S 1071	10.1	8.6	4.4	55.5	4.6	0.5	1.5	0.2	0.2	2.9	0.5	0.2	0.3	1.0	0.03	3
S 1072	32.1	17.6	4.3	66.9	6.5	0.4	2.6	0.1	0.2	7.9	0.5	0.5	0.2	0.7	0.03	6
S 1073	35.8	18.6	4.6	113.3	7.1	0.5	2.6	0.4	0.2	7.4	0.9	0.2	0.2	0.7	0.03	12
S 1074	40.9	25.5	5.5	68.8	10.0	0.2	1.7	0.1	0.2	7.7	0.9	0.6	0.2	0.8	0.03	10
S 1075	35.0	19.0	3.9	52.5	6.6	0.2	2.0	0.1	0.2	6.8	0.8	0.3	0.2	0.6	0.03	12
SM 1076	15.3	12.6	5.4	279.2	10.1	1.2	1.5	0.7	0.2	4.0	0.5	0.5	0.3	0.6	0.03	6
S 1077	35.7	25.7	3.6	48.2	10.7	0.3	1.3	0.1	0.2	6.5	0.3	0.2	0.4	0.8	0.03	6
SM 1078	31.0	21.2	6.4	255.3	15.3	1.0	1.5	0.8	0.2	9.2	0.9	0.7	0.3	0.7	0.03	3
S 1079	3.4	3.7	4.4	36.7	4.8	0.5	0.8	0.2	0.2	0.5	0.4	0.2	0.2	0.6	0.03	10
S 1080	18.7	14.1	4.5	62.9	6.7	0.4	1.8	0.1	0.2	4.4	1.1	0.4	0.2	1.1	0.03	4
S 1081	21.7	15.9	4.2	43.5	7.2	0.1	1.2	0.1	0.2	3.6	0.5	0.2	0.2	0.9	0.03	4
S 1082	12.9	14.7	4.0	70.0	8.1	0.7	1.2	0.2	0.2	2.6	0.7	0.3	0.2	0.7	0.03	1
S 1083	27.1	20.0	3.4	44.6	7.2	0.1	1.0	0.2	0.2	2.1	0.7	0.2	0.3	0.2	0.03	1
S 1084	10.8	11.7	3.9	35.3	3.6	0.2	0.9	0.1	0.2	3.1	0.7	0.2	0.2	0.6	0.03	4
S 1085	29.5	21.1	3.5	48.4	9.7	0.2	1.1	0.1	0.2	4.6	0.7	0.2	0.2	0.8	0.03	8
S 1086	7.2	8.3	4.2	69.4	3.8	0.4	1.3	0.2	0.2	2.5	0.8	0.6	0.4	0.6	0.03	3
S 1145	25.9	14.6	4.2	43.7	6.2	0.1	1.1	0.2	0.2	2.5	0.5	0.2	0.2	0.2	0.04	15
S 1146	38.0	16.0	2.7	58.1	7.7	0.2	1.1	0.4	0.2	5.9	0.8	0.5	0.4	0.4	0.03	4
S 1147	20.7	15.8	3.9	57.8	6.6	0.3	1.4	0.2	0.2	3.9	0.7	0.2	0.2	0.7	0.03	7
S 1148	25.3	17.3	5.3	81.4	8.6	0.4	1.8	0.3	0.2	4.0	0.9	0.5	0.5	0.8	0.03	1
S 1149	45.1	16.8	4.0	82.1	7.1	0.9	1.6	0.8	0.2	1.9	0.3	1.4	0.8	0.4	0.03	1
S 1150	9.9	13.0	3.6	56.9	6.1	0.2	0.8	0.1	0.2	1.9	0.6	0.2	0.2	0.3	0.03	6
S 1151	23.6	20.9	3.9	56.8	7.2	0.2	0.9	0.2	0.2	3.0	0.4	0.2	0.2	0.6	0.03	7
S 2157	36.9	24.8	4.7	59.4	7.9	0.1	1.6	0.1	0.2	5.9	0.2	0.2	0.2	0.2	0.03	6
S 2158	76.7	37.0	4.4	147.1	13.7	0.8	1.5	0.5	0.2	4.3	0.2	0.6	0.2	0.2	0.03	10
S 2159	49.3	21.6	4.0	79.5	11.3	0.6	1.3	0.1	0.2	5.3	0.2	0.2	0.2	0.2	0.03	2
S 2160	54.9	20.4	3.3	68.6	9.5	0.3	1.5	0.2	0.2	4.6	0.2	0.2	0.2	0.2	0.03	3
S 2161	32.6	15.3	2.8	69.3	6.4	0.3	0.9	0.1	0.2	2.6	0.2	0.2	0.2	0.2	0.03	4
S 2162	55.0	26.8	4.2	69.0	9.3	0.2	1.4	0.1	0.2	5.7	0.2	0.3	0.2	0.2	0.03	4
S 2163	87.5	32.6	4.3	111.3	14.0	0.7	1.2	0.3	0.2	4.7	0.2	0.2	0.2	0.3	0.03	16
S 2164	120.5	45.9	5.5	186.4	18.8	1.1	1.4	0.8	0.2	5.7	0.2	0.3	0.2	0.2	0.03	1
S 2165	47.4	22.6	3.8	103.6	11.6	0.5	1.1	0.4	0.2	2.6	0.3	0.3	0.2	0.2	0.03	4

BOB-BIO	Cu	Ni	Pb	Zn	Co	Cd	Mo	Ag	W	As	Sb	Bi	Se	Te	Hg	Au, ppb
Statistics:																
No. Samples	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Mean	27.1	18.7	4.4	74.9	7.9	0.4	1.3	0.3	0.3	3.9	0.7	0.4	0.4	0.5	0.03	6.1
s.d.	19.5	8.5	1.3	44.4	3.2	0.4	0.5	0.2	0.6	1.8	0.4	0.2	0.3	0.2	0.01	6.8
Maximum	120.5	49.8	10.3	279.2	18.8	3.0	2.7	1.0	5.1	9.2	2.4	1.4	1.4	1.1	0.09	56
Minimum	3.4	3.7	2.5	19.3	2.0	0.1	0.1	0.1	0.2	0.5	0.2	0.2	0.2	0.2	0.03	1
Mean + 2 s.d.	66.0	35.6	7.0	163.7	14.3	1.1	2.3	0.7	1.4	7.5	1.5	0.8	0.9	1.0	0.05	19.7

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 4

Summary of Previous Exploration in the Project Area

Appendix 4

MAP/REPORT NAME	CONTRACTOR/ AUTHOR	CLAIM	TYPE OF SURVEY	DESCRIPTION
MAX Property Diamond Drilling, 1992	William S. Donaldson Rio Algom Exploration Inc.	MAX 1-27 MAX 29 GRIF 1-2 GR 1-8, SINT 1 FRI 1	Drilling	Drilling results of gold and copper are uniformly low. Five samples have slightly higher levels. The highest is 50 ppb Au, 22 ppm Mo, and 433 ppm Cu.
MAX Property Geology and Geochemistry - Central Grid area 1991	W. Donaldson Rio Algom Exploration Inc.	MAX 1-29 GRIF 1-2 GR 3-8	Geological Geochemical	Analyses from the soil geochemistry in this area show only one widespread copper anomaly.The values in the anomaly range from 213 to 635ppm Cu, with one very peak value of 1464 ppm Cu. But, "the anomalous numbers do not extend into the surrounding rock". Aside from this, only isolated point anomalies of 205-792 ppm Cu occur. Anomalous gold values occurs only in isolated points as well, none of which is higher than 99 ppb.
MAX Property Induced Polarization Survey 1991	J.A. McClintock Rio Algom Exploration Inc	MAX 1-29 GRIF 1-2 GR1-8,FRI1 SINT 1	Geophysical	The induced polarization survey has more precisely defined two large zones of high chargeability on the MAX property. The results of the I.P. method in this area located six separate, smaller zones, less than 300m wide, of high chargeability. "None of the anomalies on the LYNX grid have the dimensions to indicate a large body of sulphide-bearing rock."
MAX Property Geology, Geochemistry, and Geophysics 1990	J.A. McClintok Rio Algom Exploration Inc.	Max 1-27 Max 29 Grif 1-2 GR 1-8 SINT 1 FRI 1	Geological Geochemical Geophysical	Geochemical data based on 4500 soil samples collected from the B-horizon shows that the results vary from area to area. The Lynx grid has four anomalies, NW grid has 4, the NE grid has none. Induced polarization was used and identified 3 chargeability anomalies. "Two priority targets for porphyry copper-gold mineralization were identified."

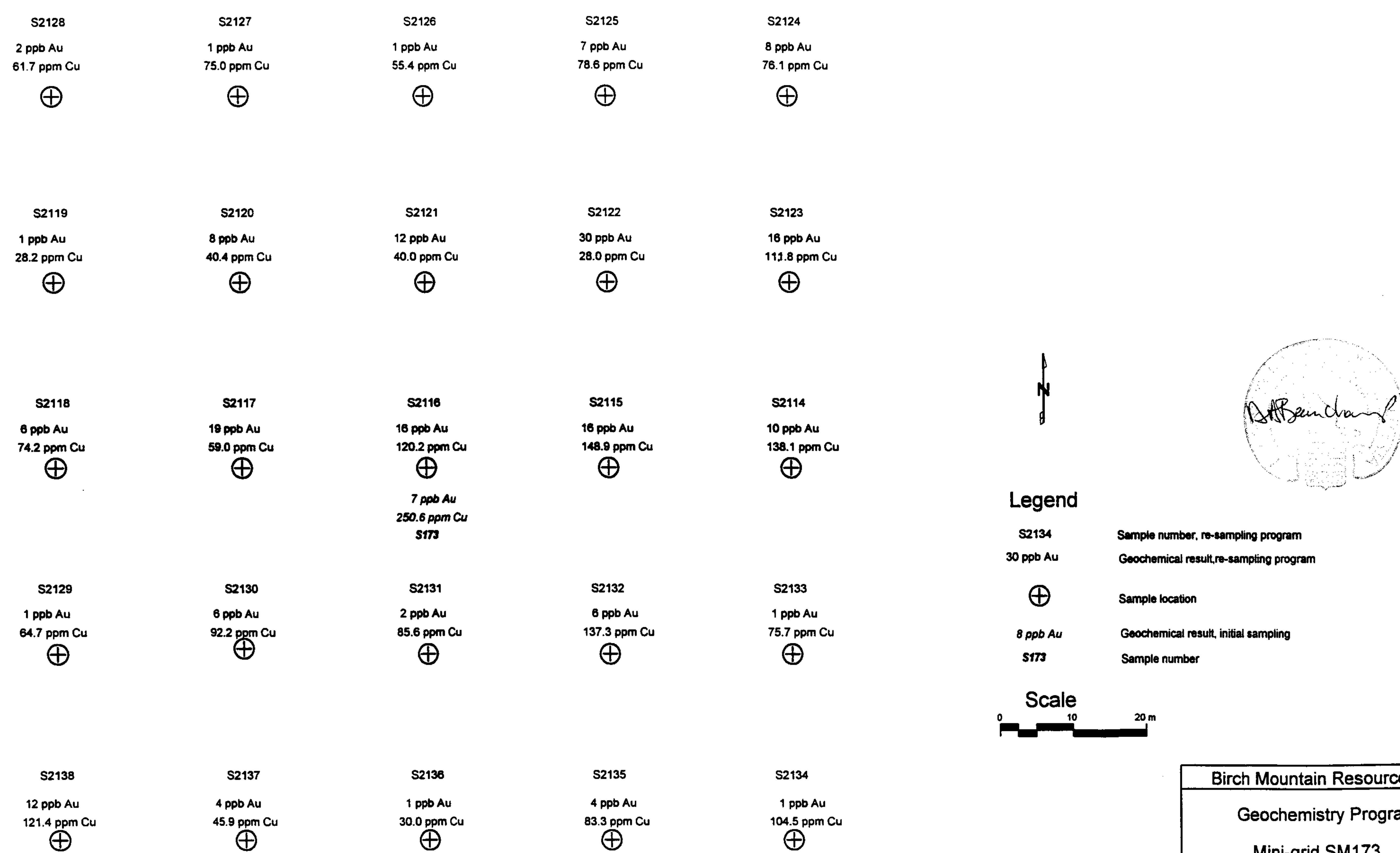
MAX Property Geology, Geochemistry, and Geophysics 1990	J.A. McClintok Rio Algom Exploration Inc.	MAX 1-27 MAX 29 GRIF 1-2 GR 3-8	Geological Geochemical Geophysical	Airborne magnetometer, soil sampling, and VLF-EM surveys were conducted. Geochemistry resulted in locating 5 separate multi-element anomalies. The total field magnetic results show two circular, magnetic high features trending northwest, and no promising data was collected from the VLF-EM survey.
Reconnaissance Ground Magnetic and VLF-EM Survey of the MAX Property 1989	M.P. Twyman D. Cukor United Pacific Gold Limited	MAX 1-21 GRIF 1,2 FIRE 1	Geophysical	Ground magnetics and VLF-EM surveys were conducted on the MAX property. There were conductors found in the following grids: Rainbow - 4; Cripple - 3; Lynx - 6. Conductors in the Lynx grid correlate with previous reconnaissance geochemical exploration.
Geochemistry and Geology of the MAX 16 and 18 claims, MAX Property	Uwe Schmidt United Pacific Gold Limited 1989	MAX 16 & 18	Geological Geochemical	306 soil samples were collected in order to substantiate the presence of a large gold anomaly. Analyses range up to 295 ppb Au and cluster in groups of 3 or 4 sample sites. Isolated analyses of up to 380 ppb Au occur to the southwest of the anomaly trend. Resampling of anomalous sites indicates that an extreme nugget or particulate effect is evident in the gold data.
Induced Polarization, Magnetic and Mise-a-la-Masse Surveys on the TAS Project 1989	E. Trent Pezzot Frontier Geosciences Inc. for Black Swan Gold Mines Ltd.	TAS 1-12 ZANA 2-5 BBR 1,3,4 HA1	Geophysical	Induced polarization, mise-a-la-masse, total field magnetics and gradient magnetics surveys were conducted. Gold and sulphide mineralization appear to be present in a complex fracture system. Two holes were drilled 750m south of the I.P. anomaly at the West Pit Zone. Both holes "missed intersecting the extremely high, central core of the anomalous trend".

Diamond Drlling and Trenching Program 1989	A. Boronowski & R. Somerville for Black Swan Gold Mines Ltd.	Tas 1-12 Zana 2-5 Ha 1	Geophysical Geochemical Trenching Drilling	Geophysical anomalies in Ridge Zone indicate the possible presence of up to eleven additional mineralized zones. Trenching involved 39 trenches in 9 separate zones. Eighteen holes were drilled in 5 different areas. Excellent I.P., resistivity, and geochemical anomalies coupled with drilling and trenching have "clearly indicated zones of porphyry-style pyrite/chalcopyrite fracture filling mineralization".
Geochemical Report on the TAS 1 & 4 Claims of the Tas Property. 1989	A.J. Boronowski for Noranda Exploration and Goldcap Inc. Black Swan Gold Mines Ltd.	TAS 1 and 4	Geochemical	Geochemistry was conducted in the NE portion of TAS 1 and the SE portion of TAS 4. Twenty-two of the samples taken were above 12 ppb Au, and 32 were above 215 ppm Cu. Earlier, airborne magnetic and reconnaissaince I.P. anomalies were found. Geochemistry results indicate "coincident values trending northeast".
Geophysical report on a Total Field Magnetic Survey 1989	R. Somerville for Noranda Exploration Goldcap Inc. Black Swan Gold Mines Ltd.	ZANA 2-5	Geophysical	Total field magnetics located one "relatively high anomalous feature. It appears to lie in a zone trending about 350, possibly bounded by faults. This zone may be a mineralized fault/sulphide zone similar to those discovered on the TAS property."
Grid Soil Geochemistry of the TAS East Property 1989	Uwe Schmidt Fraser Explorations	H&H 1,2 SEP 1 MACH 1-3 TEZ 3,4	Prospecting Geochemical	Geochemistry was used to outline gold exploration targets in overburden covered areas. Only Mach 1, H&H 1, 2, and SEP 1 claims were sampled. Eight anomalous gold trends were recognized by the data. Most of these are defined by groupings of erratic gold concentrations, "suggesting a particulate distribution of gold in the soil".

Geochemical Report on the ZANA claims 1988	Gordon Maxwell Noranda Exploration	ZANA 2,3,4	Geochemical	Grub hoe geochemistry was used to collect 630 samples from the 75 unit area. Only one weak gold anomaly was outlined on the entire grid. But one sample analyzed contained anomalous values of copper, lead and silver.
Gelogical & Geochemical Report on the HA 1 claim 1987	Gordon Maxwell Noranda Exploration	HA 1	Geological Geochemical	A total of 290 samples were collected using a grub hoe. These samples were analyzed and no significant anomalies were outlined. Quartz/carbonate and silicified zones were found, and "may be significant in the location of gold mineralizations".
TAS Geophysics 1986	L. Bradish	TAS claims	Geophysical	Magnetic and induced polarization surveys were used. There were six individual I.P. anomalies identified. "For the most part it (I.P. survey) mapped two primary geological units."

Appendix 5

Geochemistry Program: Resampling Figures



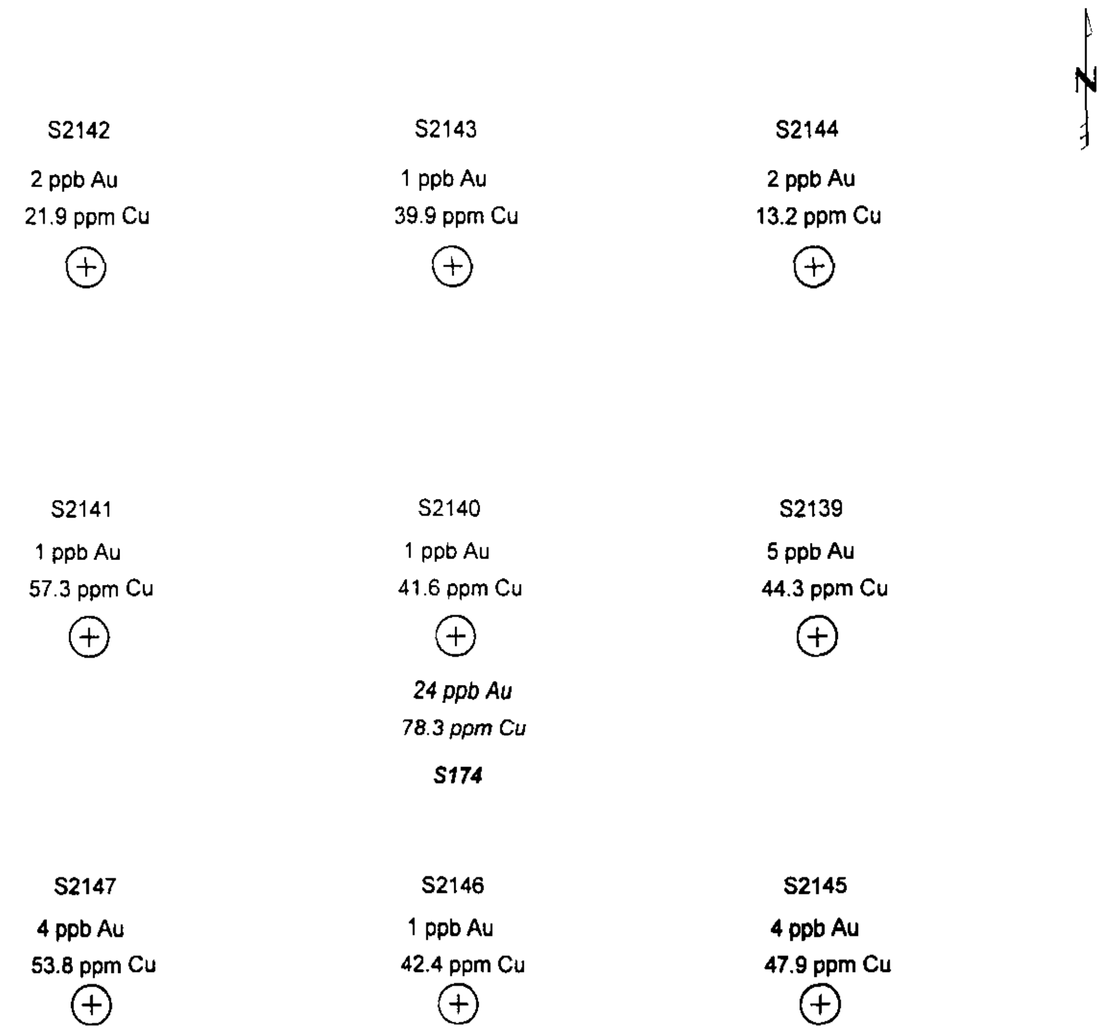
Birch Mountain Resources Ltd.

Geochemistry Program

Mini-grid SM173

TAS Project, B.C.

Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996 10 24	Fig. A.5.1



Legend

S2146	Sample number, re-sampling program
6 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
24 ppb Au	Geochemical result, initial sampling
S174	Sample number

Scale

0 10 20 m

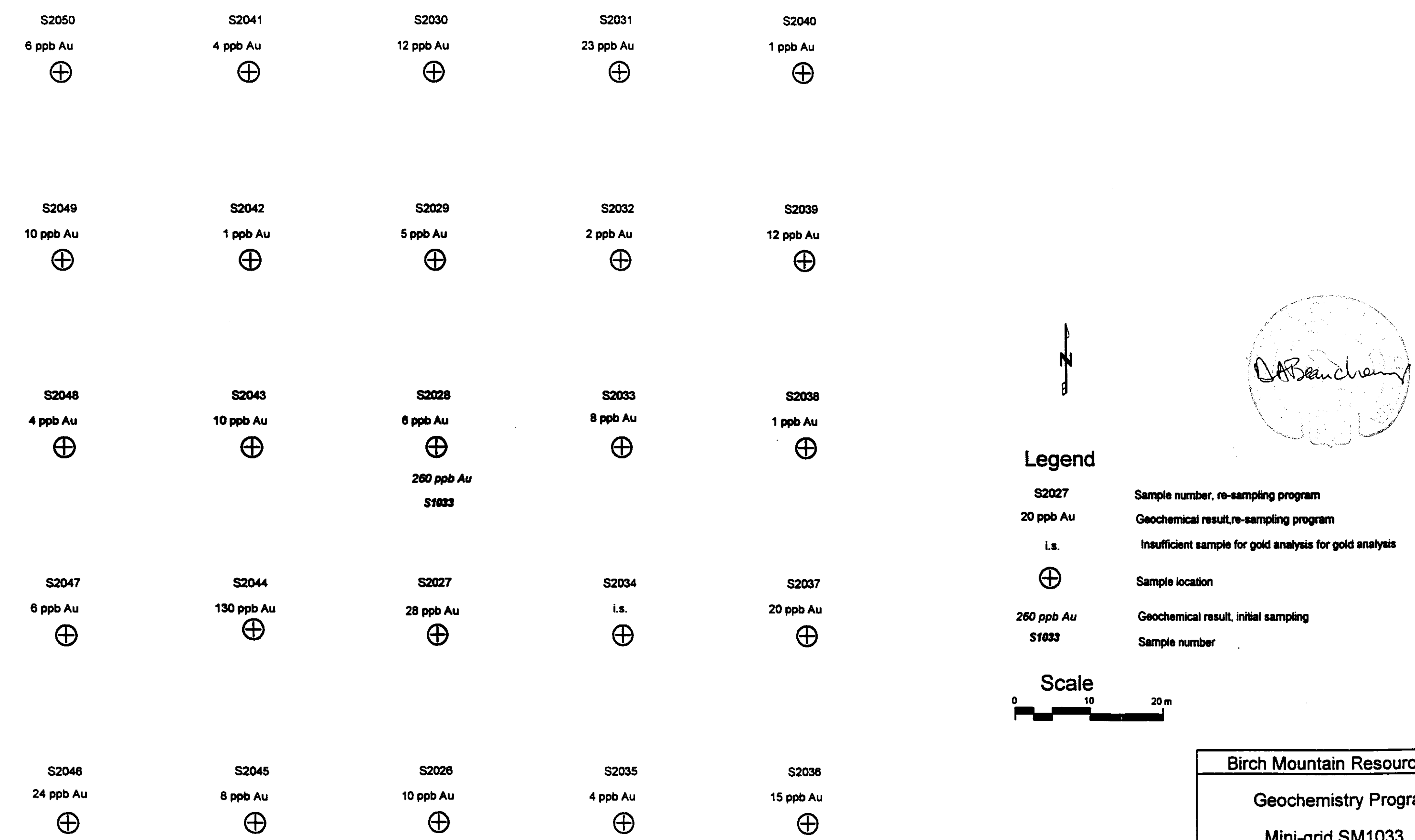
Birch Mountain Resources Ltd.

Geochemistry Program

Mini-grid SM174

TAS Project, B.C.

Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.2



Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM1033 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.3

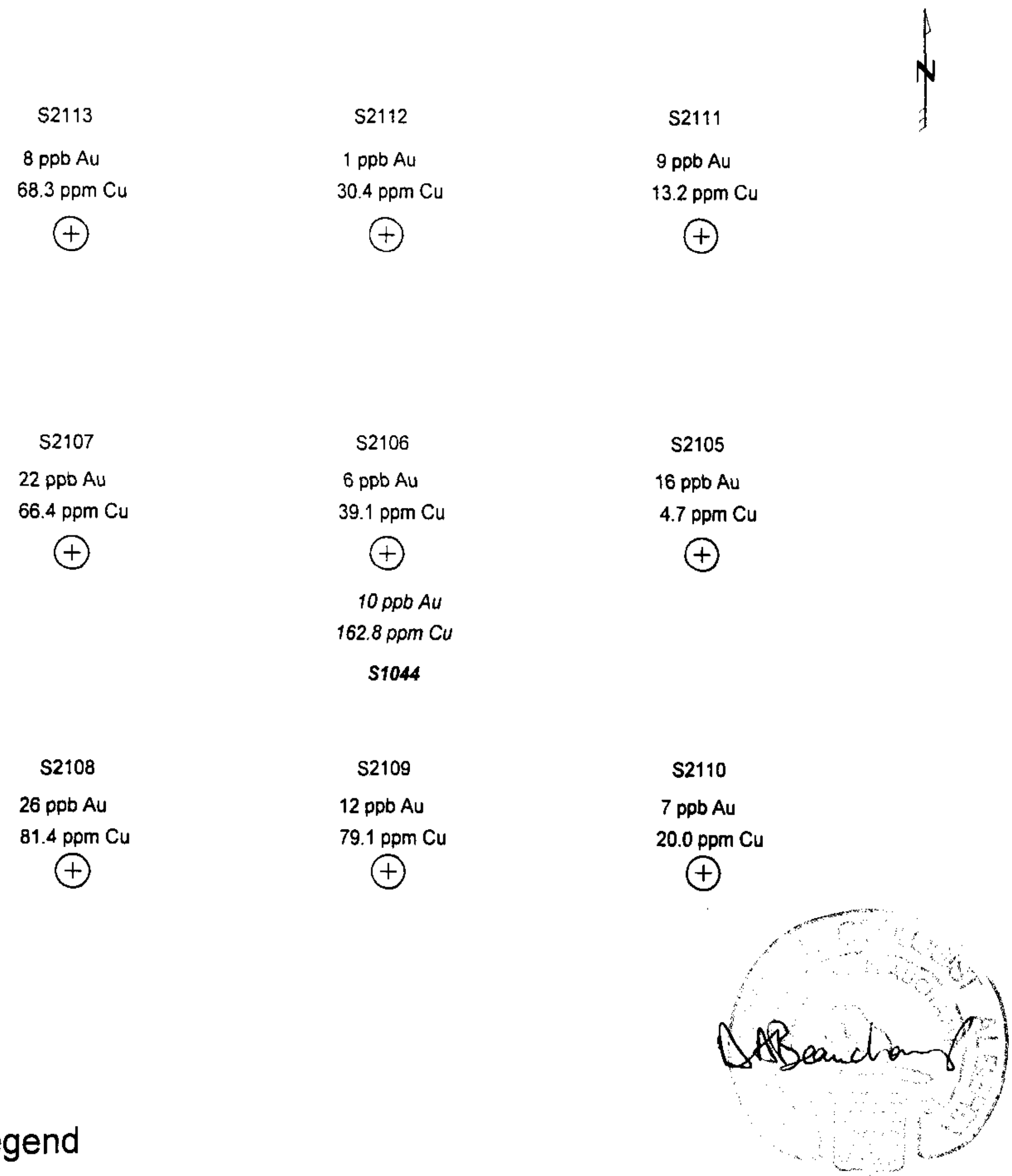
Legend

S2214	Sample number, re-sampling program
6 ppb Au	Geochemical result, re-sampling program
⊕	Sample location
68 ppb Au	Geochemical result, initial sampling
S1041	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM1041 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.4



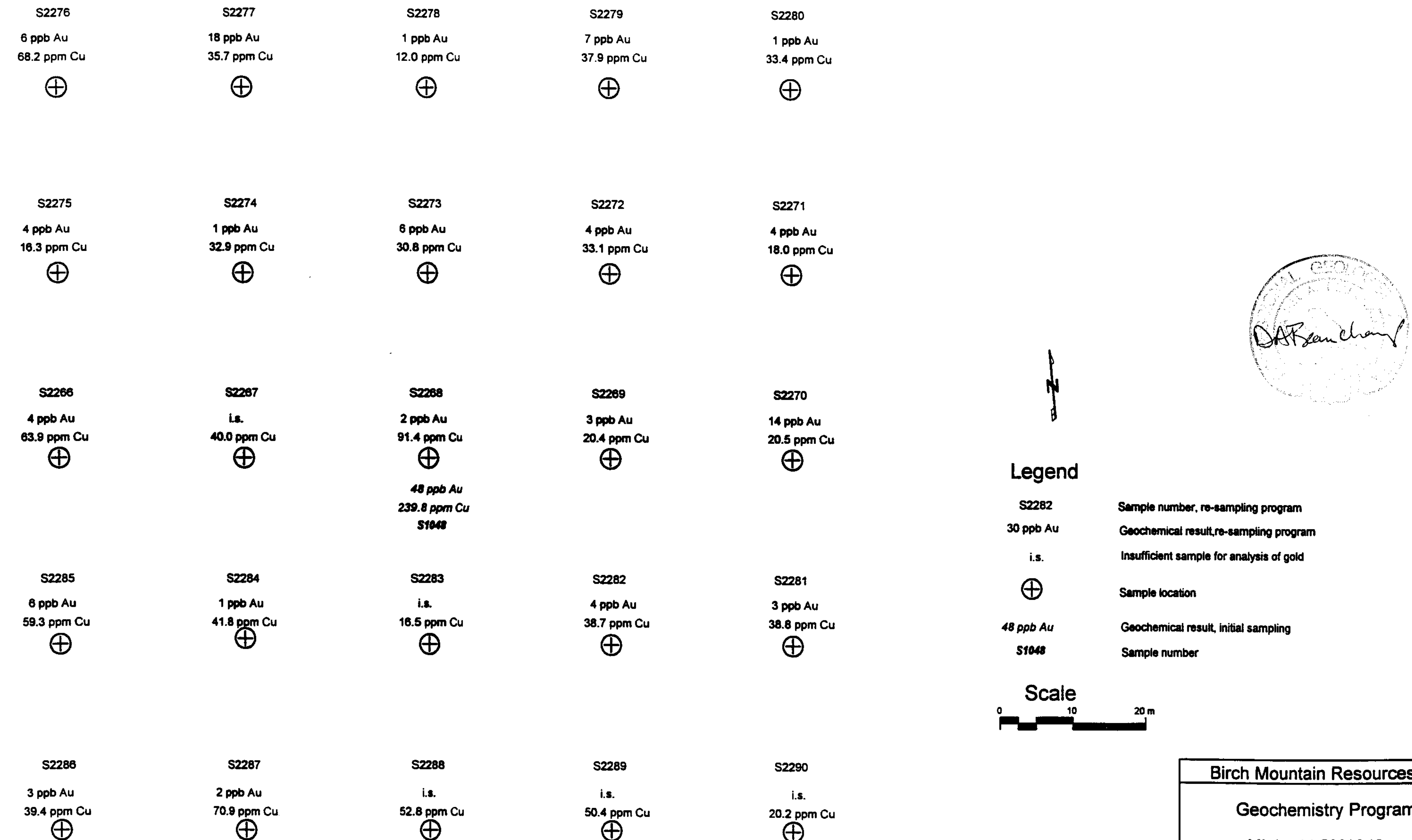
Legend

S2106	Sample number, re-sampling program
6 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
10 ppb Au	Geochemical result, initial sampling
S1044	Sample number

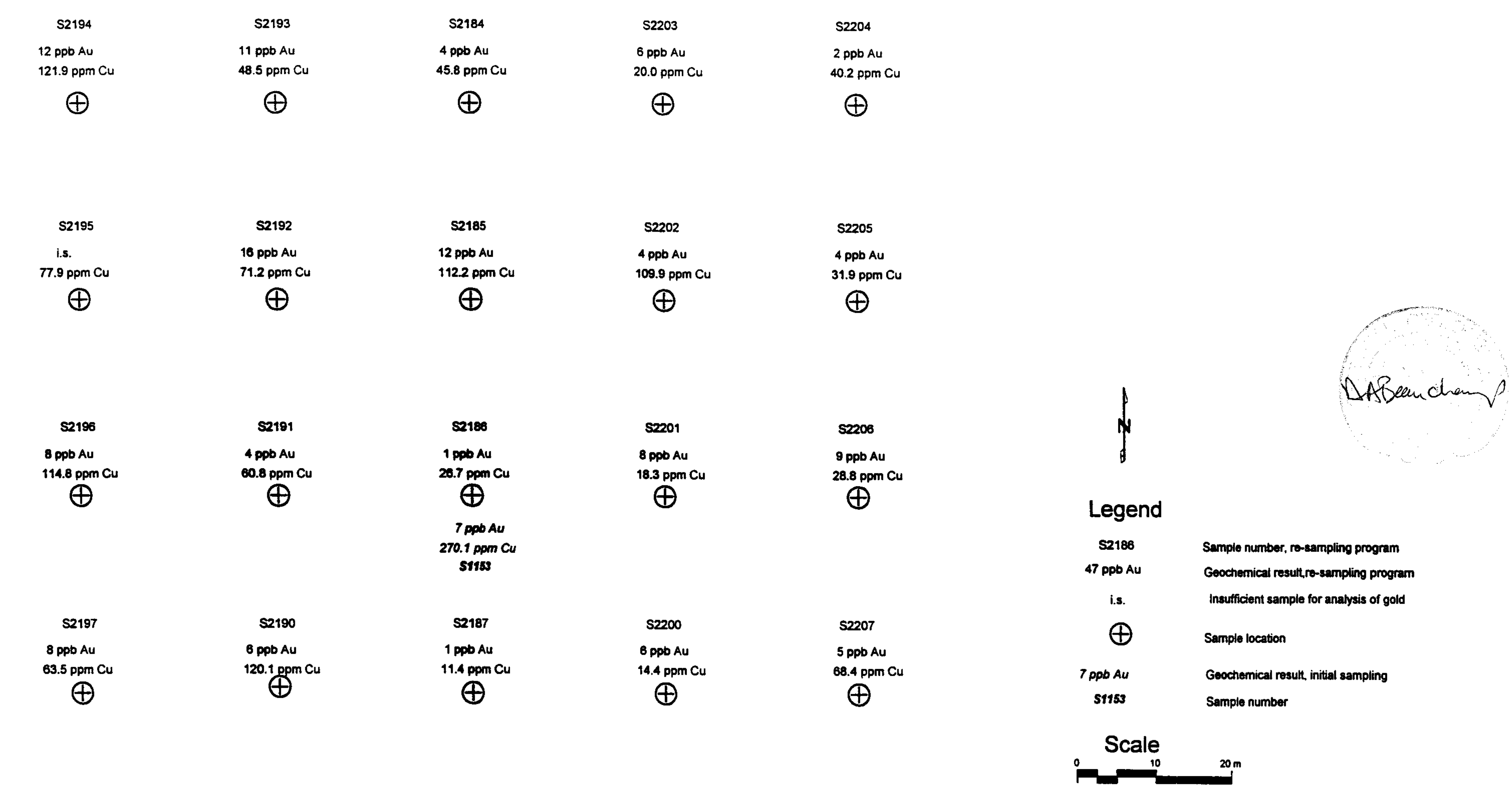
Scale

0 10 20 m

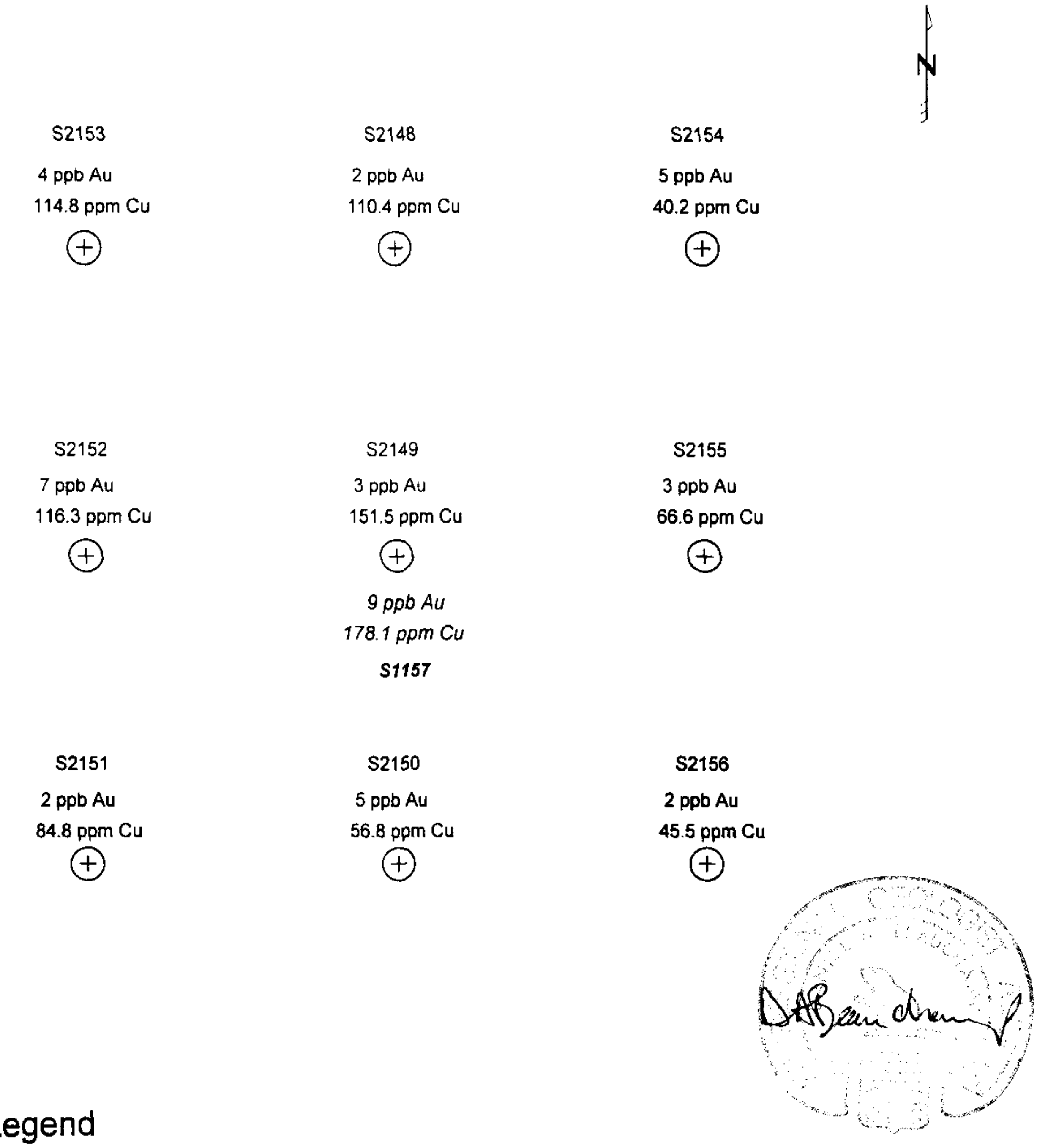
Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM1044 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.5



Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM1048 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996 10 24	Fig. A.5.6



Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM1153 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.7



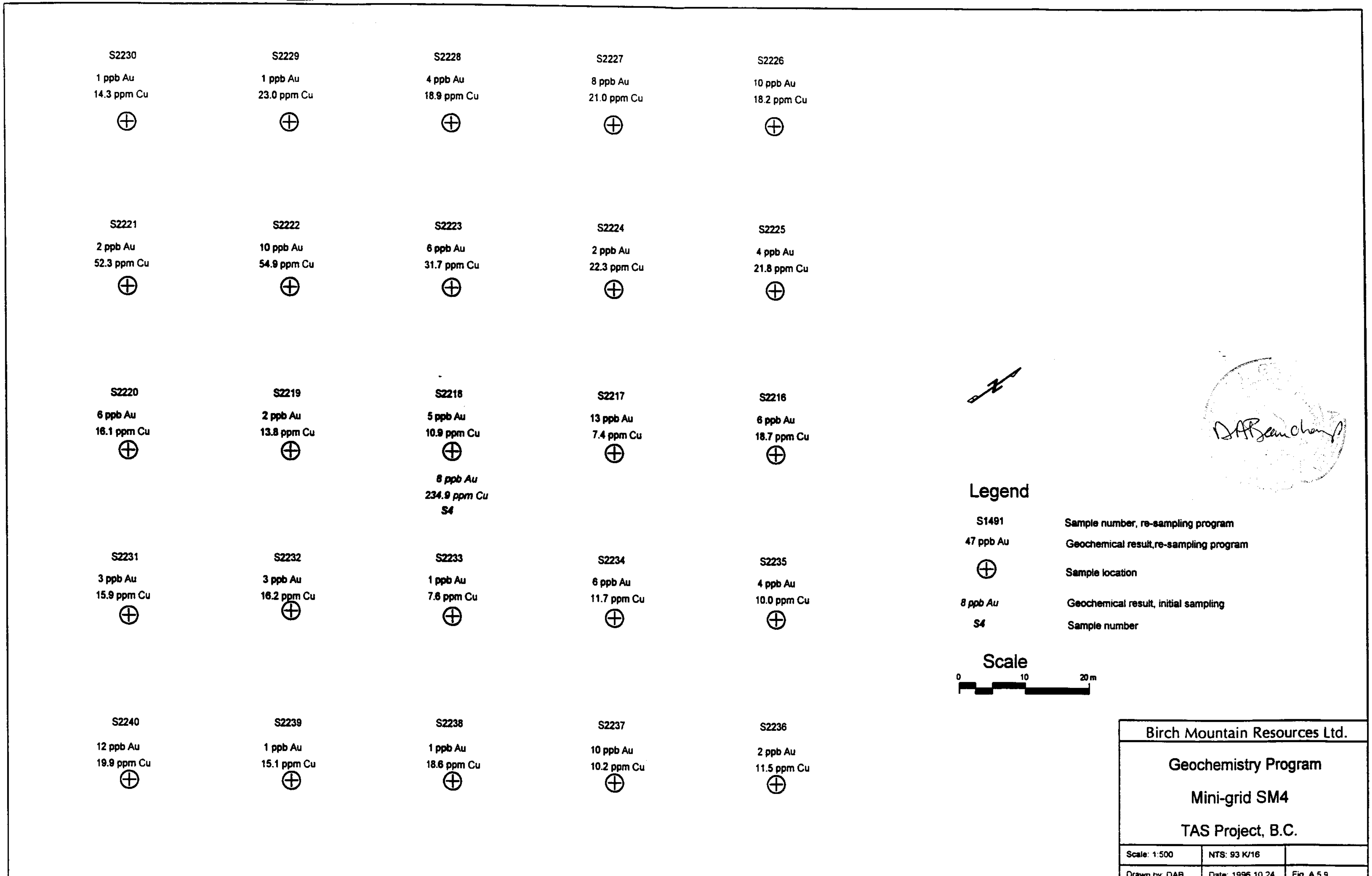
Legend

S2149	Sample number, re-sampling program
4 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
9 ppb Au	Geochemical result, initial sampling
S1157	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM1157 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.8



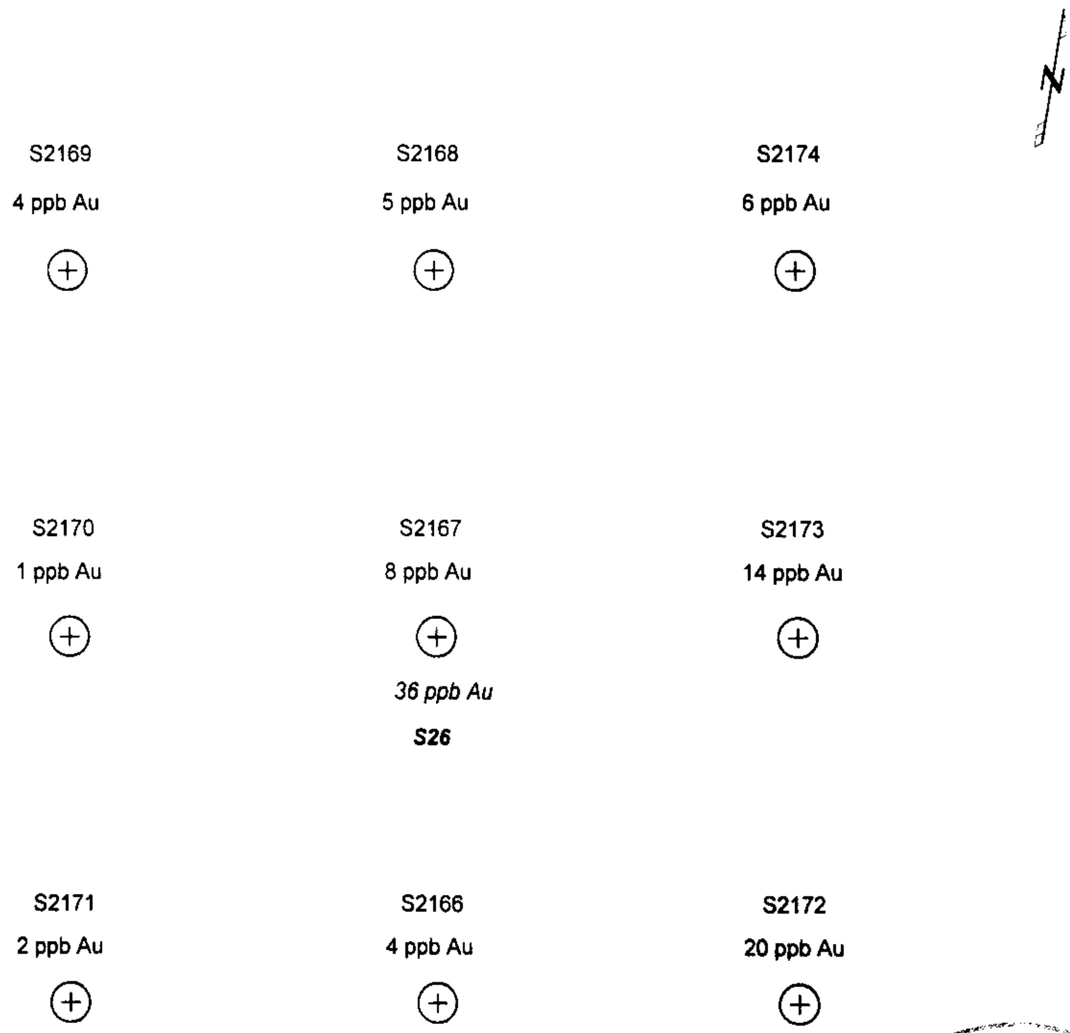
Birch Mountain Resources Ltd.

Geochemistry Program

Mini-grid SM4

TAS Project, B.C.

Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996 10 24	Fig. A.5.9



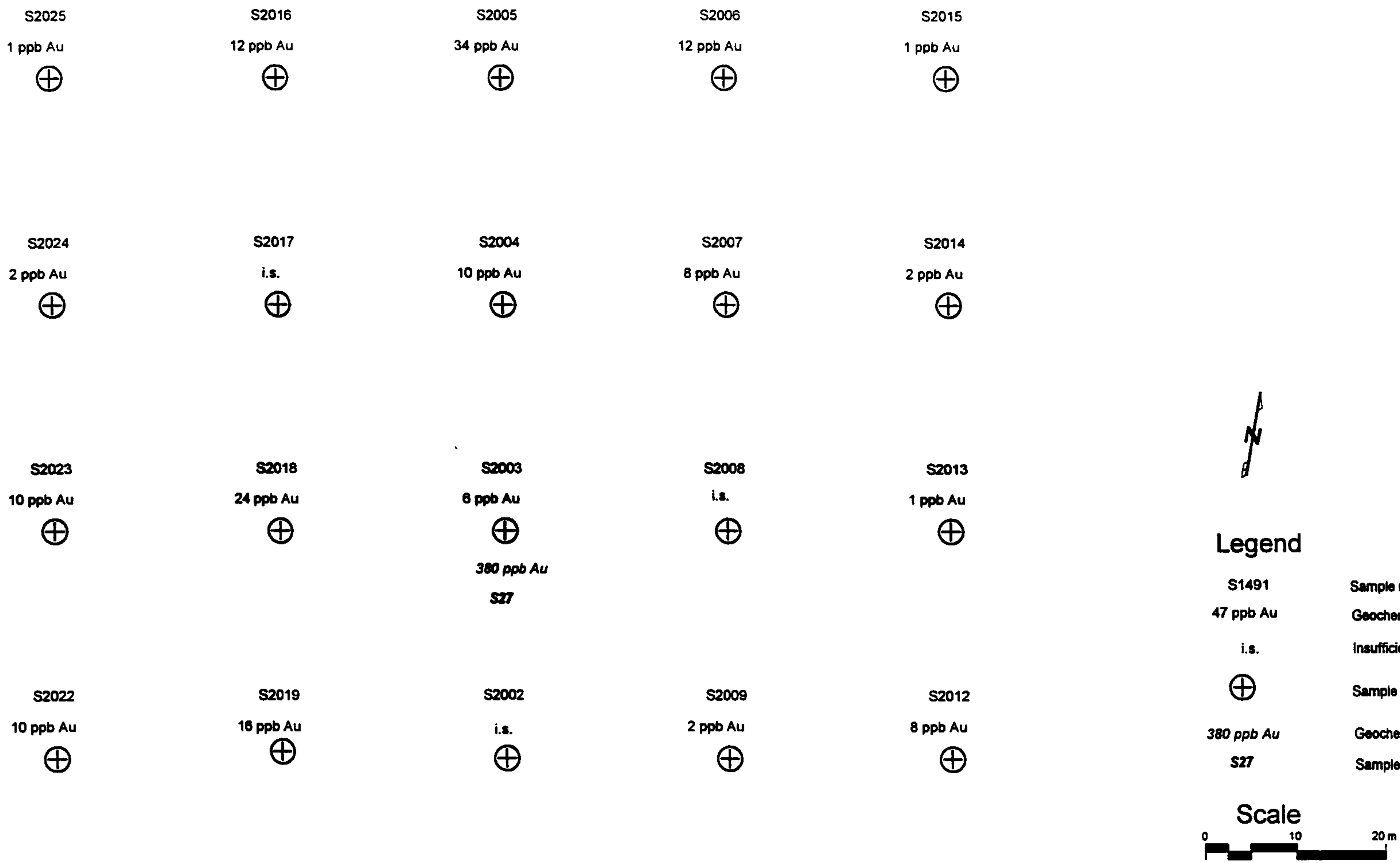
Legend

S1491	Sample number, re-sampling program
47 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
36 ppb Au	Geochemical result, initial sampling
S4	Sample number

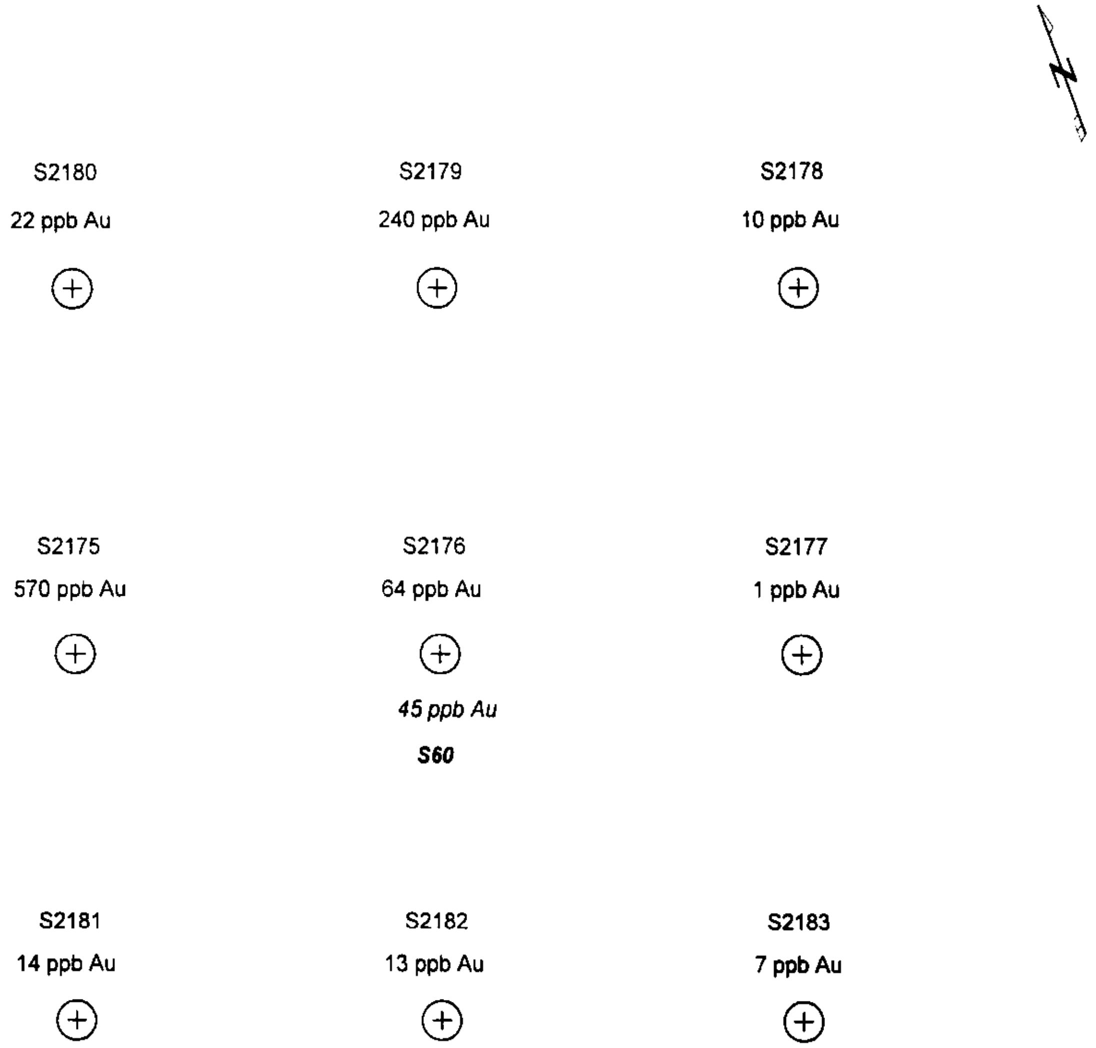
Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM26 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.10



Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM27 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996 10 24	Fig. A.5.11



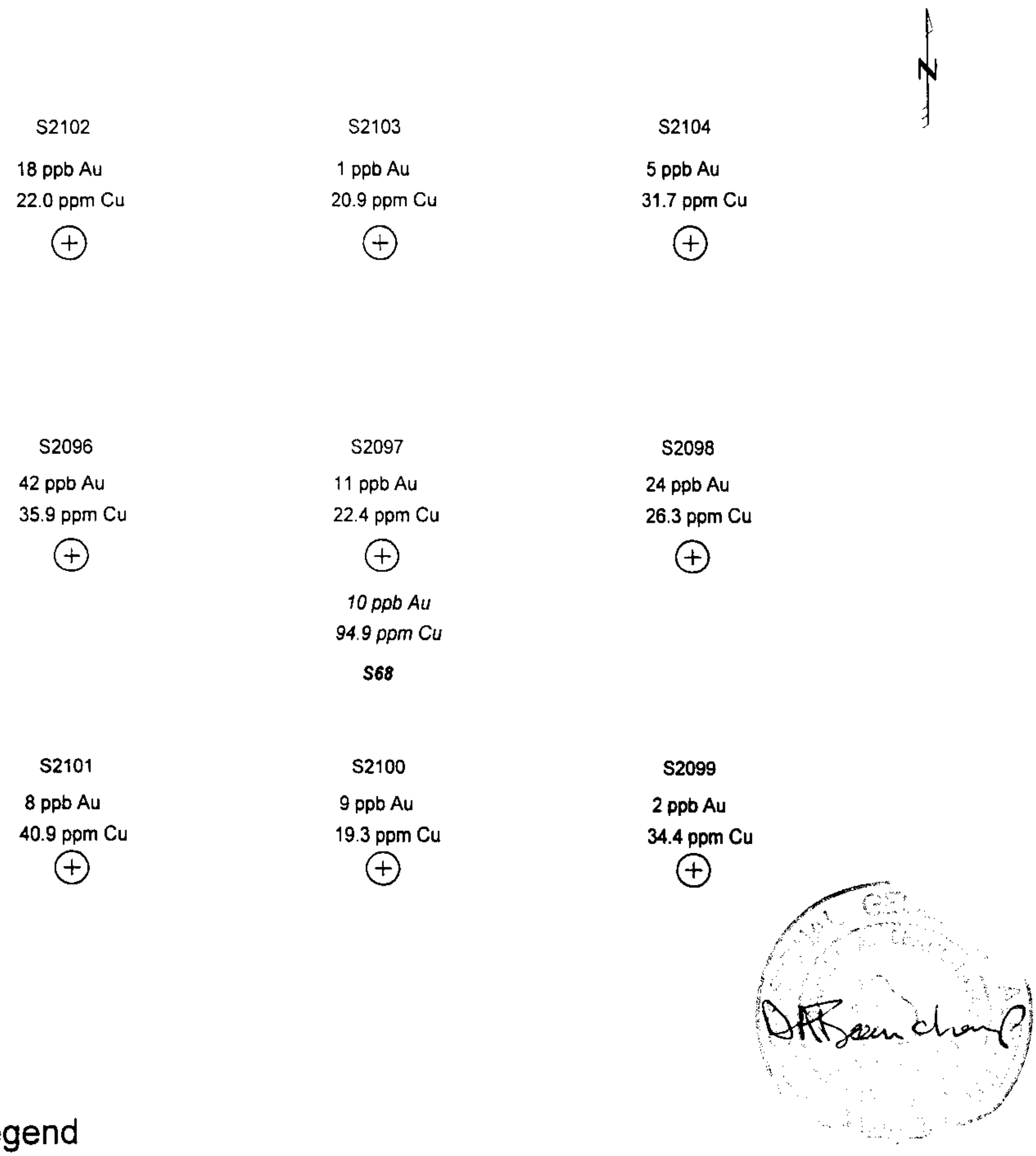
Legend

S1491	Sample number, re-sampling program
47 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
45 ppb Au	Geochemical result, initial sampling
S60	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM60 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.12



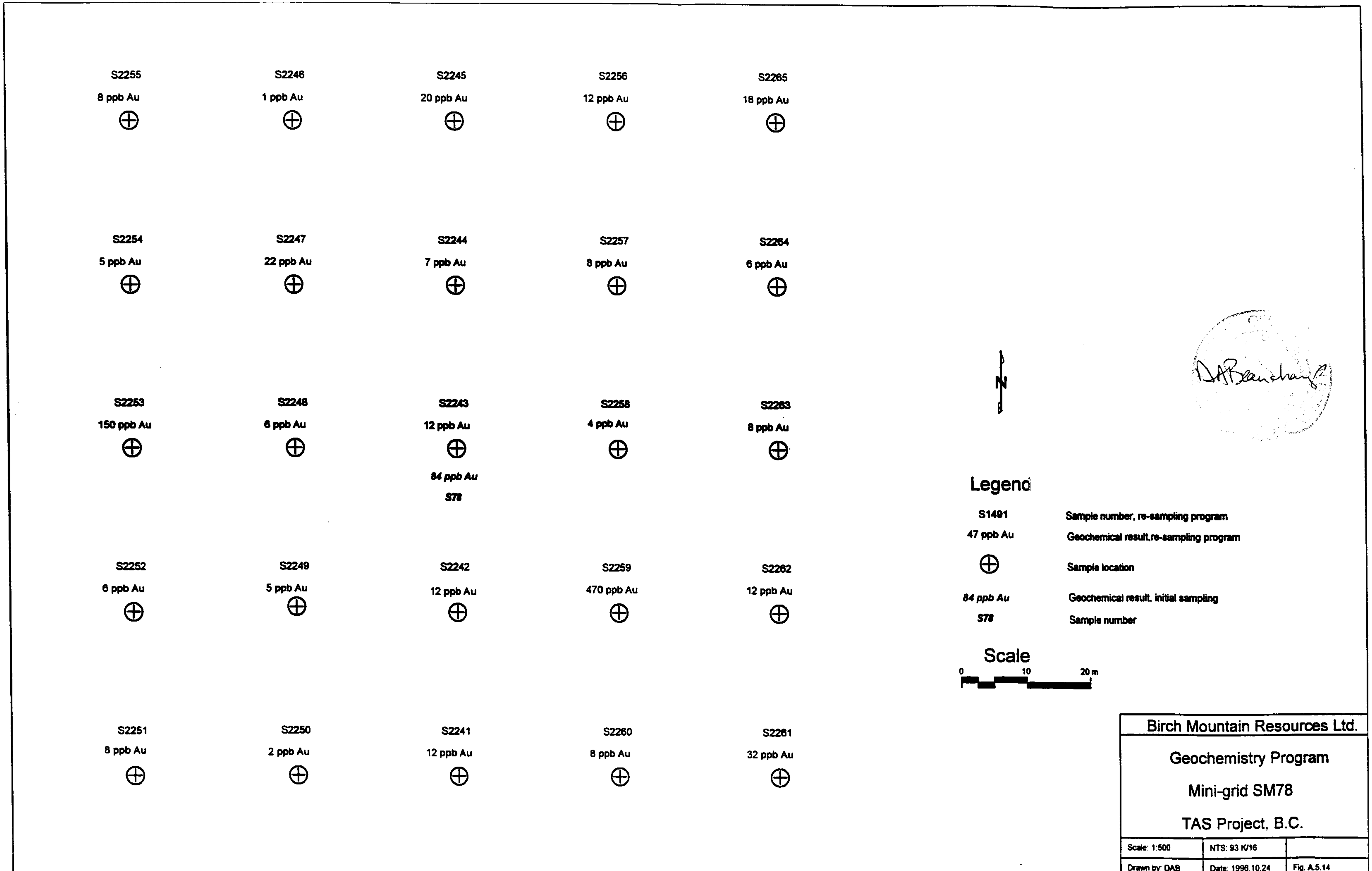
Legend

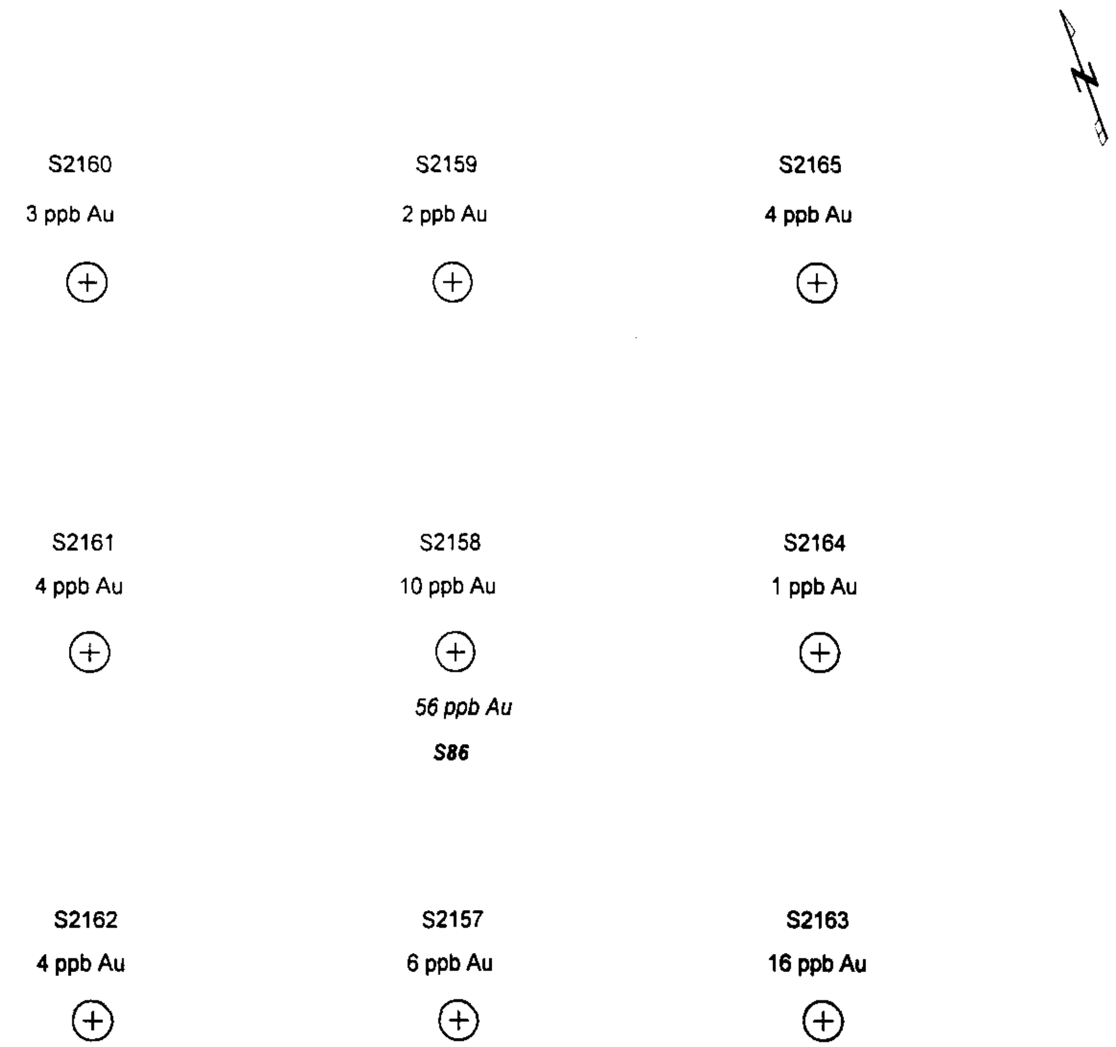
S1491	Sample number, re-sampling program
47 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
10 ppb Au	Geochemical result, initial sampling
S68	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM68 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.13


S2255
8 ppb Au
S2246
1 ppb Au
S2245
20 ppb Au
S2256
12 ppb Au
S2265
18 ppb Au
S2254
5 ppb Au
S2247
22 ppb Au
S2244
7 ppb Au
S2257
8 ppb Au
S2264
6 ppb Au
S2253
150 ppb Au
S2248
6 ppb Au
S2243
12 ppb Au
84 ppb Au
S78
S2258
4 ppb Au
S2263
8 ppb Au
S2252
6 ppb Au
S2249
5 ppb Au
S2242
12 ppb Au
S2259
470 ppb Au
S2262
12 ppb Au
S2251
8 ppb Au
S2250
2 ppb Au
S2241
12 ppb Au
S2260
8 ppb Au
S2261
32 ppb Au
N
Legend
S1491 Sample number, re-sampling program
47 ppb Au Geochemical result,re-sampling program
Sample location
84 ppb Au Geochemical result, initial sampling
S78 Sample number
Scale
0 10 20 m
Birch Mountain Resources Ltd.
Geochemistry Program
Mini-grid SM78
TAS Project, B.C.
Scale: 1:500
NTS: 93 K/16
Drawn by: DAB
Date: 1996.10.24
Fig. A.5.14



Legend

S2157	Sample number, re-sampling program
10 ppb Au	Geochemical result,re-sampling program
⊕	Sample location
56 ppb Au	Geochemical result, initial sampling
S86	Sample number

Scale

0 10 20 m

Birch Mountain Resources Ltd.		
Geochemistry Program Mini-grid SM86 TAS Project, B.C.		
Scale: 1:500	NTS: 93 K/16	
Drawn by: DAB	Date: 1996.10.24	Fig. A.5.15