Assessment Report

GEOLOGICAL AND GEOCHEMICAL SURVEYS

on the FIRE CLAIMS

Omineca Mining Division, British Columbia

NTS 93E/14

Latitude 53°53.4'N Longitude 127°15.5'W

UTM 5972500N 614500E

Owner/Operator: Placer Dome Inc.
P.O. Box 49330
Bentall Postal Station
1600-1055 Dunsmuir Street
Vancouver, British Columbia
V7X 1P1

Author: Gwendolen May Ditson
Geologist, Placer Dome Inc.

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SUMMARY

The Fire claims were staked by Placer Dome Inc. in 1989 to explore the possibility of gold mineralization peripheral to the old CS-NS-Smoke Mtn. porphyry showing. A short geological and stream geochemical program was carried out during the 1989 field season, and one old drill hole was re-sampled.

Lithologies present on the property are lower Jurassic to Upper Cretaceous volcanic and lesser sedimentary rocks of the Hazelton, Bowser Lake, Skeena and Kasalka Groups. Tuffs of the lower Jurassic Telkwa Formation of the Hazelton Group are the most common rock type, varying from finely laminated tuffs to coarse agglomerates.

Stratigraphic units are intruded by two Late Cretaceous stocks of Bulkley and Kasalka affinities. Exposed porphyry-type alteration and mineralization is associated with the Kasalka intrusion. Thermal alteration of sedimentary rocks occurs at the contact of the Kasalka intrusion, but elsewhere stratigraphic rocks exhibit a regional epidote-carbonate-chlorite-quartz assemblage.

Bulk stream sediment and silt samples were taken every 500 m along the creeks which drain the Fire claims. Only two moss wash samples were taken. Analyses indicate that the porphyry system is geochemically anomalous for both Cu and Au, but the best Au appears to be north of the previously drilled area. A few samples outside the influence of the porphyry system show elevated to high Au results, but no other elements are elevated. The abundance of glacio-fluvial material, and the lack of any observed surface mineralization lead to the conclusion that those samples do not warrant follow-up.

Re-sampling and analysis of drill hole 74-5 yielded only two narrow intervals of interesting Cu and some Mo values, but no interesting Au results. This hole intersected a weakly altered intrusive rock whose relationship to exposed mineralization is unknown.

Completion of mapping and prospecting around the porphyry system has been recommended, along with the examination and at least partial sampling of the remaining seven drill holes.

1.0 INTRODUCTION

The Fire claims were staked early in 1989 in response to the release of GSC Open File 1360A, the Supplementary Gold Release of the National Geochemical Reconnaissance Survey for the Whitesail Lake map sheet, 93E. Anomalous gold values in both creek sediment and rock samples suggested that there may be as yet unrecognized mineralization peripheral to exposed porphyry-type showings.

During the 1989 field season, Placer Dome Inc. conducted a program of geological mapping, stream sediment sampling and drill core sampling. The seven day program was conducted over the period of August 18th through September 10th. Four days were spent in a two-person fly-camp, and three days were mobilized by helicopter out of Smithers. All work was conducted or supervised by G. Ditson.

1.1 Location and Access

The property is 100 km due south of Smithers, B.C., on the southern slopes of Smoke Mountain, in NTS map sheet 93E/14 (Figure 1). The geographic centre of the claims is at UTM coordinates 5972500N and 614500E.

Access to the property is by helicopter only. Logging in the vicinity of Nadina Lake gives road access for mobilization purposes as far south as Hill Tout Lake, 15 km east of the claims.

1.2 Topography and Vegetation

Smoke Mountain is an approximately circular topographic high located on the western edge of the Nechako Plateau near the Coast Mountains. The claims largely cover the rolling upland area of the mountain, but include portions of the steep eastern and southern slopes. The southerly flowing creek that begins in swamps and meadows on the Fire 3 Claim steepens to the south through the Fire 5 Claim where it runs through steep to vertical rock cliffs. Elevations range from 1310 to 1676 metres above sea level.

Timber on the property is a mixture of fir, spruce and pine. An old forest fire which covered a considerable portion of the upland area has left much deadfall amongst the new growth, but unburned areas are characterized by fairly open forest. A large meadow occurs adjacent to the lake on the Fire 5 Claim, and the alpine areas on the Fire 1 and 2 claims are dotted with many small lakes.

PLACER DOME INC.

FIRE PROPERTY

DRAWN: GMD	LOCATION MAP
DATE: MAY 1/90	
SCALE:	
Figure 1	FILE No. 031752 93E/14

Outcrops are abundant above 1525 m (5,000 ft.) elevation, but below that are restricted mainly to creeks. Abundant glacio-fluvial debris up to 15 m thick covers a large portion of the area below 1525 m.

1.3 Work History

The area of the Fire claims was examined by Noranda in 1973 and 1974. Exploration of their claims (CS,NS) is recorded as Minfile occurrence 093E090. Work done by Noranda includes geology, induced polarization, magnetometer, soils, and eight diamond drill holes totalling 738 m. Kerr Addison staked the Ootsa Claim over the old porphyry in 1988, but there is no record of work done.

Placer Dome Inc. staked the Fire 1-4 claims in February, 1989. The Fire 5 claim was staked over the porphyry in September just after the Ootsa Claim lapsed.

1.4 Summary of Work Done

The 1989 exploration program included the collection of 16 bulk sediment samples, 17 silt samples and two moss mat samples from the creeks, 15 rock outcrop and float samples, geological mapping at a scale of 1:10,000, and 25 drill core samples.

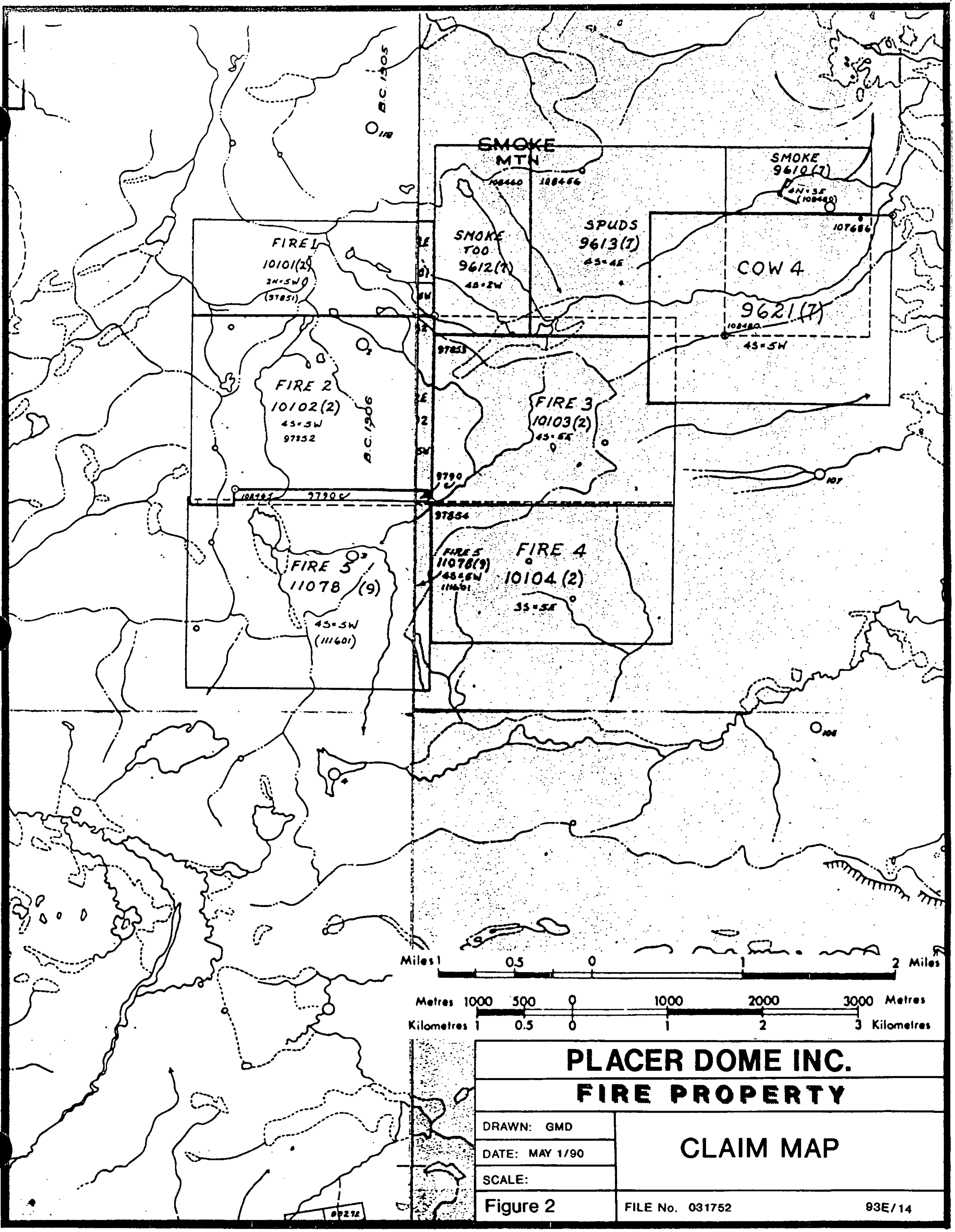
1.5 Claim Status

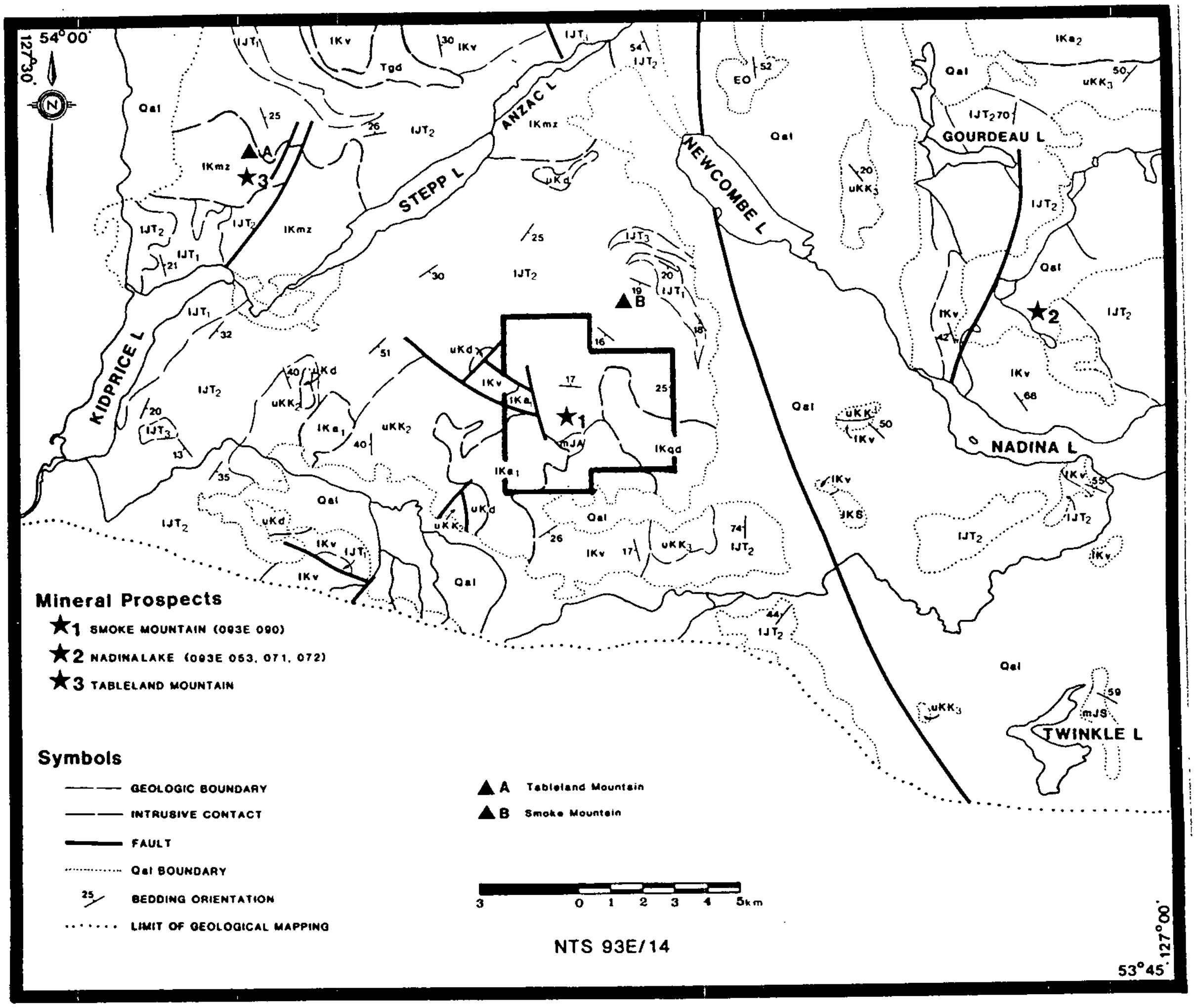
The Fire claims (Figure 2) are wholly owned by Placer Dome Inc. of Vancouver, British Columbia. Details are as follows:

Claim Name	Units	Record No.	Date of Record
Fire 1	10	10101	Feb. 19, 1989
Fire 2	20	10102	Feb. 19, 1989
Fire 3	20	10103	Feb. 19, 1989
Fire 4	15	10104	Feb. 19, 1989
Fire 5	20	11078	Sept. 11, 1989

2.0 REGIONAL GEOLOGY (Figure 3)

The Fire claims are located within Stikinia, an accreted tectonic terrane consisting largely of Triassic and Early Jurassic arc volcanics, volcaniclastics, chert and arc-derived clastics which are intruded by comagmatic plutonic rocks. Within the boundaries of Stikinia, the property sits along the southern edge of the Skeena Arch, a broad, northeasterly-trending uplifted belt of volcanic rocks which form the southern limit of the Bowser Basin.


SMOKE MTN
B.C. 1905
FIRE 1
10101(2)
2N=5W
(97851)
SMOKE TOO
9612(7)
4S=2W
SPUDS
9613(7)
4S=4E
SMOKE
9610(7)
4N=3E
(108489)
107686
COW 4
9621(7)
4S=5W
FIRE 2
10102(2)
4S=5W
97752
B.C. 1906
97853
FIRE 3
10103(2)
4S=5E
9790
97854
FIRE 4
10104 (2)
3S=5E
FIRE 5
11078(9)
4S=5W
(111601)
Miles 1 0.5 0 1 2 Miles
Metres 1000 500 0 1000 2000 3000 Metres
Kilometres 1 0.5 0 1 2 3 Kilometres
PLACER DOME INC.
FIRE PROPERTY
DRAWN: GMD
DATE: MAY 1/90
SCALE:
CLAIM MAP
FILE No. 031752
93E/14
Figure 2



LEGEND

QUATERNARY

- **Qal** — *Alluvium and glacial till*

TERTIARY

- **EO** — Ootsa Lake Group
  - (1) *Polymictic conglomerate.*
  - (2) *Light pink to grey rhyolite flows.*

UPPER CRETACEOUS

- **uKK** — Kasalka Group
  - (1) *Intraformational conglomerate; cobbles of lKa1 and granite*
  - (2) *Dark grey basalt flows; flow laminated, locally vitreous.*
  - (3) *Grey andesite flows; crowded plagioclase, hornblende.*

LOWER CRETACEOUS

- **lKS** — Skeena Group
  - *Siltstone, argillite, micaceous sandstone.*
- **lKv** — *Green andesite flows; platy plagioclase, common pyroxene, amygdaloidal*

MIDDLE JURASSIC

- **mJA** — Bowser Lake Group
  - Ashman Formation
  - *Argillite, siltstone, minor sandstone.*

MIDDLE AND LOWER JURASSIC

- **mJS** — Hazelton Group
  - Smithers Formation
  - *Siltstone, arkosic sandstone, granule pebble conglomerate; abundant macrofossils.*
- **lJT** — Telkwa Formation
  - (1) *Dark green andesitic flows; amygdaloidal with plagioclase or flow laminated with sparse pyroxene*
  - (2) *Green and maroon lapilli tuff and ash tuff; rhyolitic fragments locally common, minor rhyolite flows.*
  - (3) *Grey to mauve rhyolite flows; coarsely spherulitic, strongly flow layered*

INTRUSIONS

TERTIARY

- **Tgd** — *Biotite granodiorite sill; equigranular, columnar jointed.*

LATE CRETACEOUS OR TERTIARY

- **uK** — *Diorite; felty, mottled texture, probable feeders to uKK2.*

LATE CRETACEOUS

- **lKmz** — *Monzonite, quartz monzonite; fresh hornblende.*
- **lKqd** — *Quartz diorite, diorite, granodiorite; equigranular, fresh hornblende and biotite.*
- **lKa** — (1) *Porphyritic hornblende-plagioclase andesite stocks and dykes, equivalent to Kasalka intrusions.* (2) *Porphyritic hornblende-plagioclase-biotite dykes and plugs; coarse grained, similar to uKK3 flows and lKa1.*

Taken from Diakow & Drobe (1989a): Geology and Mineral Occurrences in North Newcombe Lake Map Sheet

PLACER DOME INC.	
FIRE PROPERTY	
DRAWN:	REGIONAL GEOLOGY
DATE: MAY 1/90	
SCALE:	
Figure 3	FILE No. 031752 93E/14

According to Diakow and Drobe (1989a), "The Early Jurassic Telkwa Formation of the Hazelton Group is the oldest volcanic succession exposed in the map area. Younger volcanic rocks, tentatively assigned to the Cretaceous Skeena and Kasalka groups, appear to rest unconformably on the Telkwa Formation. . . . Stocks of diorite, granodiorite and monzonite cut and locally alter the oldest stratified rocks at . . . Smoke Mountain."

3.0 PROPERTY GEOLOGY (Figure 4)

Diakow and Drobe (1989a) show that volcanic rocks on the Fire claims belong to three stratigraphic units, the lower Jurassic Telkwa Formation of the Hazelton Group, the lower Cretaceous Skeena Group, and the upper Cretaceous Kasalka Group. A small area of sedimentary rocks tentatively assigned to the Middle Jurassic Ashman Formation of the Bowser Lake Group is also present. These stratigraphic units are intruded by two Late Cretaceous stocks of dominantly quartz dioritic composition.

Outcrops are not abundant on the lower levels of the property, and mapping is still incomplete. Areas of abundant glacio-fluvial debris are marked as "Qal" on the geology map, but its full extent has not been delineated. Several of the contacts and faults shown on Figure 4 have been taken from Diakow and Drobe (1989b).

3.1 Volcanic and Sedimentary Rocks

The most common stratigraphic unit observed on the claims is the lower Jurassic Telkwa Formation, composed of variably textured tuffs. Abundant outcrops occur on ridges southwest and southeast of Smoke Mountain. Dark green and purple lapilli tuffs are most abundant, with lesser finely laminated and coarse agglomeratic varieties. Some siltstone is interbedded with finer tuffs southwest of Smoke Mountain. At the other end of the spectrum, multilithic agglomerates on the Fire 2 Claim contain up to 70% well-rounded fragments that range up to 25 cm in diameter in a plagioclase porphyritic matrix. Observed bedding orientations are northwesterly with shallow southwesterly dips in the western portion of the claims, but orientations on the east side show more variation.

Sedimentary rocks assigned to the Middle Jurassic Ashman Formation occur in the northeastern corner of the Fire 5 Claim. This area hosts not only a siliceous pale green-grey aphanitic sedimentary unit, but also a coarser clastic rock which is very highly fractured and contains considerable chlorite, graphite and pyrite. Alteration and deformation are so intense that original rock types are difficult to distinguish, and some exposures have the appearance of basic volcanics. The most southerly outcrops are uniformly sedimentary. Decreased deformation here reveals a consistent fracture pattern, interpreted as massive bedding, oriented east-northeasterly with a shallow southerly dip.

The lower Cretaceous Skeena Group occurs in the northwestern sector of the Fire 2 Claim. Amygdaloidal pillow basalt, black shale, pale green mudstone(?), and greywacke characterize this unit. Additional Skeena Group rocks are believed to underlie the southcentral portion of the claims, but mapping is still incomplete in this area.

The Kasalka Group was encountered in only one outcrop on the western edge of the property. It consists of a medium grey aphanitic volcanic rock with small biotite and hornblende phenocrysts; it is probably an andesitic flow.

3.2 Intrusive Rocks

Regional mapping indicates that the two intrusions on the Fire claims are Late Cretaceous. The eastern intrusion is of Bulkley affinity, as defined by Carter (1981), and the western one is correlated with the Kasalka intrusions of MacIntyre (1976). According to MacIntyre (1976), these intrusive types may have been derived from a common parent magma. Porphyritic Kasalka intrusions are proposed to be earlier subvolcanic equivalents of deeper seeated, coarser grained Bulkley intrusions.

The Bulkley intrusion consists of equigranular medium to coarse grained quartz diorite to granodiorite. Plagioclase is dominant, with variable K-feldspar and quartz content (up to 20% and 10%, respectively). Fresh to weakly chloritized hornblende and less abundant biotite form up to 30% of rock volume. Potassium-argon dates on these intrusions outside the Fire claims give ages ranging from 70 to 84 Ma (Carter, 1981).

The Kasalka intrusion is commonly altered in creek exposures, but fresh rocks on the ridge west of the lake are of fine grained hornblende feldspar porphyry. Plagioclase phenocrysts (up to 30%) and hornblende needles (up to 5%) occur in a pale to medium grey aphanitic matrix. Phenocrysts are generally 3 mm or less in size. Some epidote clusters were observed in this area. Alteration in creek exposures has made it difficult to recognize original constituents and textures in that area. Toward the eastern limit of this intrusion, exposures are medium to coarse grained and have a strong resemblance to rocks of the Bulkley intrusion. The contact along the creek is a contorted mixture of volcanic (?) and intrusive rocks. The eastern limit, however, is marked by a prominent steep north-northeasterly fault which contains a 2 m zone of white clay gouge.

The rhyolite dyke which intrudes the Skeena Group is a feldspar porphyry with a grey aphanitic groundmass similar to the main Kasalka intrusion just south of it. Plagioclase phenocrysts, however, are less abundant, and may be up to 1 cm long. Mafic minerals are not prominent, but some small hornblende needles are present, and there is up to 2% disseminated pyrite.

The narrow granitic dyke which intrudes the western portion of the Telkwa Formation contains small biotite and hornblende phenocrysts in a flesh coloured aphanitic matrix. It also contains patches of granular quartz and hairline quartz microveinlets.

The entire 97 m length of drill hole 74-5 is of a leucocratic intrusive which may occur on surface as a dyke just north of stream samples 630 and 631. In core, it generally consists of a medium-grained mixture of up to 50% quartz with plagioclase feldspar. Mafic minerals are not present, but a disseminated brown mineral resembling an iron carbonate occurs in amounts up to 10%. On surface, oxidation of contained iron carbonate is strong enough that original constituents are not recognizeable. However, the massive, equigranular nature is highly suggestive of an intrusive rock such as that in hole 74-5, but with less quartz.

3.3 Alteration and Mineralization

3.3.1 Stratified Rocks

Regional chlorite-carbonate-epidote alteration has affected most volcanic rocks to some degree. Chlorite and carbonate are pervasive, whereas epidote generally replaces tuff fragments or fills in vesicles. Epidote, quartz, calcite and/or hematite commonly occur in local small veins, fracture fillings and stockworks throughout the property. The east-central sector of the Fire 2 Claim contains an unusual abundance of massive, discontinuous epidote-quartz lenses and masses of up to 1 m dimensions that also contain local hematite. Jasperiod quartz was noted in two locations as irregular veinlets in the Skeena Group in the west, and as flattened fragments and stringers in tuff just north of rock samples 7566 through 7568. Pyrite is rare in volcanic units, occurring primarily on fractures in Skeena rocks on the Fire 2 Claim, and in one other locality as finely disseminated cubes in tuff on the Fire 3 Claim.

The siliceous nature of sedimentary rocks adjacent to the Kasalka intrusion is probably a contact thermal effect. The variable content of disseminated, fracture-filling and massive vein pyrite was probably also introduced during intrusion. Analysis of a 1 m wide zone of up to 50% coarse crystalline pyrite and strong pervasive carbonate yielded values of 44 ppm Ag (1.3 oz/ton), 1425 ppb Au (0.04 oz/ton), 0.31% Cu, 0.18% Zn, and 0.54% As.

The fault zone in the north-central sector of the Fire 2 Claim is accompanied by a quartz crackle breccia. Disseminated pyrite occurs in tuffs adjacent to this zone, and minor malachite was observed in the breccia. Analysis of two samples from this zone did not encounter any significant values other than one of 400 ppm Cu.

3.3.2 Intrusive Rocks

Alteration of the Bulkley intrusion is concentrated in a zone along its western contact. Abundant narrow anastomosing quartz, lesser calcite and rare epidote veins generally trend northeasterly. The host intrusive is only weakly altered by clay microveinlets, minor chloritization of mafic minerals, and minor disseminated pyrite. Within this altered area, a northwesterly trending chloritic shear zone about 20 cm wide hosts a quartz vein 2 to 6 cm wide with minor malachite, epidote and hematite. A 10 cm wide sample taken across this zone is reported by Diakow and Drobe (1989b) to grade 7.4 ppm Au (0.2 oz/ton) and 73 ppm Ag (2.1 oz/ton). Resampling during this mapping program across the same zone yielded values of only 0.3 ppm Au, 6 ppm Ag and 0.13% Cu.

Outcrops in the creek that drains the main lake exhibit hydrothermal alteration typical of a porphyry copper system. The most westerly creek outcrops show little alteration other than weakly disseminated pyrite. Progressing eastward over a 150 m distance, one observes increasing pyrite and saussuritization of feldspars which changes to a strong potassic alteration assemblage at rock sample site 7590. Streaks and patches of K-feldspar form up to 50% of the rock, and spotty felted secondary biotite forms up to 15%. Patchy strong quartz occurs in areas of high K-feldspar, and there may be up to 50% magnetite disseminations, patches and veinlets. There is up to 3% disseminated pyrite, chalcopyrite and rare bornite. Where biotite is most abundant, chalcopyrite predominates over pyrite. Random chips of this outcrop yielded values of 0.16% Cu, 13 ppm Mo, and 65 ppb Au.

Potassic alteration continues eastward down the creek with a minor phyllic overprint as widely-spaced quartz-pyrite-magnetite±sericite veinlets, but copper sulphides were not observed for another 100 m. As the contact with intruded rocks is approached, much of the felted biotite has undergone retrograde chloritization, and sulphides occur dominantly as fracture fillings. Random chips of the outcrop at sample site 7591 returned no anomalous values, illustrating the weak nature of mineralization.

Eastward beyond rock sample site 7591, intrusive rocks exhibit weak to moderate chloritization, minor pyritization, and patches of waxy clay-carbonate alteration. The last 100 m of intrusive outcrop has considerable pink K-feldspar, small patches of felted biotite, a few chloritized mafics, and strong chlorite-clay-carbonate alteration of the remaining plagioclase. This alteration gives the rock a distinct pink and green colouration. The eastern fault-bound intrusive contact has no mineralization associated with it.

Mineralization was observed at one other location in this intrusion, west of the lake at rock sample site 7572. Rare calcite-quartz microveins and fracture fillings here contain pyrite, chalcopyrite, bornite and possibly some chalcocite. A high-graded grab sample of this material returned 235 ppb Au with only 325 ppm Cu.

3.3.3 Drill Hole 74-5

The leucocratic intrusive rock in this hole shows weak saussuritization of feldspars. Brown iron carbonate is disseminated throughout, and calcite occurs as fracture fillings. Minor chlorite also occurs on fractures. There is a 4.2 m section (32.6-36.8 m) of intense fine biotitization (up to 40%) with added magnetite, and pink K-feldspar veins occur sporadically below the biotite zone to the end of the hole.

Up to 5% pyrite occurs in quartz veinlets and as fracture fillings and disseminations throughout the hole. Chalcopyrite and bornite were observed in a 50 cm interval of massive coarsely crystalline K-feldspar and pyrite at 59.4-59.9 m. Chalcopyrite was also observed to be sparcely disseminated from this zone to the end of the hole (97.0 m).

4.0 GEOCHEMISTRY

Placer Dome Inc.'s geochemical program covers all headwater tributaries above a moss mat sample which returned 500 ppb Au, as reported in the Supplemental Gold Release of the National Geochemical Reconnaissance survey. That sample is on the Fire 5 claim, and is plotted on Figures 4 and 5.

Stream sampling was conducted at 500 m intervals over the entire claim group. A bulk sediment sample and a silt sample were collected at every site where there was sufficient material, and moss wash samples were taken at two sites.

4.1 Analyses

All samples were forwarded to Placer Dome Inc.'s analytical laboratory in Vancouver, British Columbia. They were geochemically analyzed for Au, Ag, As, Cu, Mo, Pb and Zn. Appendix I summarizes the extraction techniques used and their detection limits.

4.2 Bulk Stream Sediment Samples

A sampling technique called bulk stream sediment sampling was developed "in house" by Placer Dome Inc.'s exploration personnel. It is specifically designed for use in detailed and semi-detailed stream sediment geochemical surveys where gold mineralization is the target of interest. A total of 16 bulk sediment samples were taken on the Fire claims.

4.2.1 Sample Collection and Preparation

Bulk sediment samples were collected from natural drop-out sites for heavy minerals in the stream channels. Examples of these sites include plunge pools, riffles, and the upstream side of channel bars. Clastic stream sediments from the selected sites were wet sieved through a -20 mesh stainless steel screen and caught in an aluminum basin. A steel shovel was used to dig up the sediment. A single deep excavation is preferable to take advantage of multiple depositional cycles and to avoid undue influence from very local additions to the stream bed load. Approximately two to three kilograms of sieved fraction were collected and transferred to a plastic bag to form one sample. Descriptions of each sample site were recorded for reference.

Most sample sites on the Fire claims contain only a small amount of -20 mesh material, making collection a time-consuming process that necessitated a very large sample site and up to an hour per sample. At only one site was it not possible to collect a sample in a reasonable amount of time, so a moss wash sample was taken instead.

Samples were oven-dried and sieved to produce a -150 mesh size-fraction for analysis. Three separate aliquots were prepared from each sample for Au analysis in an attempt to address the problem of erratic gold distribution in natural materials, i.e., the "nugget effect."

4.2.2 Results

Analytical results are listed in Appendix II. Sample locations are plotted on Figure 4. Gold results are plotted on Figure 5; other elements were not plotted because their values are low.

Gold values are generally low, with four exceptions which show one or more values over 100 ppb. Three of those samples show anomalous gold in only one of the three analyses, illustrating the erratic distribution of gold and the necessity for multiple determinations. Only one sample, 625, gave anomalous gold (up to 1330 ppb) in all three analyses. This sample also contains slightly elevated Cu (107 ppm).

4.2.3 Interpretation

North of the main lake, sample 627 has very high gold values in all three aliquots (530, 1330 and 300 ppb Au), and elevated values occur in the next two samples upstream (25 and 150 ppb Au, respectively). While there may be some input from higher up the creek, the source of the anomalous lower sample is probably close to this sample site, and may be related to the porphyry system drilled previously.

The creek draining the lake and the exposed porphyry showings east of it did not yield exceptional results, but the eastern creek has two samples which can be considered anomalous, 7554 (45, 5 and 125 ppb Au) and 648 (5, <5 and 680 ppb Au). Mapping and prospecting around sample 7554 is incomplete, and the source remains unknown. The area around sample 648 has been prospected, and no likely sources were encountered with the exception of glacio-fluvial debris. Considering that no other elements were anomalous, a glacial source is hereby assumed.

Bulk samples are not intended to detect hydromorphically-distributed metals, so it is not surprising that other elements are generally not elevated for any samples. Exceptions are 625, with 107 ppm Cu, and 7552, with 75 ppm Cu. Both of these samples drain the porphyry system, and it is their assumed source.

4.3 Silt Samples

A total of 17 conventional silt samples were collected from locations adjacent to bulk sediment samples.

4.3.1 Sample Collection and Preparation

Conventional silt samples are designed to identify hydromorphic dispersion trains developed in clays, iron and manganese precipitates, and organic materials. Material was taken from accumulations of fine sediment in back eddies and quiet pools, usually located along the edges of the stream, and usually from several different proximal locations. A plastic spoon and a Kraft paper bag were used to obtain the sample.

Samples were oven-dried and sieved in the laboratory to produce a -80 mesh size-fraction for analysis.

4.3.2 Results

Sample locations are plotted on Figure 4. Analytical results are contained in Appendix III. Gold values are plotted on Figure 5.

Three silt samples show interesting gold values of 50, 65 and 125 ppb. Other elements are generally low with the exception of sample 626 which has elevated Cu and Mo values of 140 and 4 ppm, respectively, and sample 639 which has 7 ppm Mo.

4.3.3 Interpretation

Only three silt samples returned values of interest. Sample 626, directly north of the main lake, returned 50 ppb Au and 140 ppm Cu, reinforcing the anomalous Au and Cu results in the accompanying bulk sample (625).

Samples 643 and 7562 returned 125 and 65 ppb Au, respectively, but other elements are not elevated. Both samples are in areas of abundant glacial debris, and this is their assumed source.

4.4 Moss Wash Samples

The collection of washed moss mat material is a technique which was developed by Placer Dome Inc. personnel as a variation of moss mat sampling described by Matysek and Day (1987). The fine material which is trapped in moss mats not only collects both hydromorphically transported base metals as do conventional silt samples, but also produces a high background-to-anomaly contrast for gold as do bulk sediment samples. Two moss wash samples were collected.

4.4.1 Sample Collection and Preparation

Moss wash sampling was done only where deemed desireable or necessary, since moss was not available at every site, and a bulk/silt combination is sufficient. Sample 629 was taken in addition to bulk and silt samples in order to get as complete a signature as possible in the area of Noranda's drilling, and moss was abundant. Sample 7561 was necessary because it was not possible to obtain bulk sediment sample material.

Moss is scraped off rocks in the active portion of the stream channel or, if no other material is available, from the sides of the creek bed. The moss is wet-scrubbed on the -20 mesh screen to free the contained silt which is collected in an aluminum basin and transferred to a plastic bag. The size of the samples varied according to how much material was available; sample 629 was 3.4 kg, but sample 7561 was only 0.9 kg.

Moss wash samples were prepared and analyzed in the same manner as bulk sediment samples.

4.4.2 Results

Sample locations are plotted on Figure 4. Analyses are included with those of bulk sediment samples in Appendix II. One slightly elevated gold value of 45 ppb was obtained from sample 629, but all other results are low.

4.4.3 Interpretation

The 45 ppb Au result from sample 629 is only weakly elevated, and may be sourced from nearby glacial material.

4.5 Drill Core Samples

Drill core is stored on a rack at the old campsite just south of the main lake. The rack and core boxes are in excellent shape, and labelling is still visible. Hole 5 was chosen to split and assay because it was partially split and analysed previously. It is also located at the north end of the drilled area near a fault which extends northerly away from the porphyry system. The results of the original assays are not in the public record.

4.5.1 Sample Collection and Preparation

A manual core splitter was used to obtain samples from the upper portion of the hole down to the level of previous splitting at 47.5 m. Time constraints did not allow a quarter split of the remaining core, so composite samples composed of small pieces taken about every 20 cm made up samples from 47.5 m to the bottom of the hole. Split samples (7626-7643) are approximately 2 m long, whereas composites were made from each box, and vary from 6.4 to 8.0 m in length.

Samples were placed in plastic bags and forwarded to the lab, where they were crushed and pulverized, and a subsample was weighed for analysis.

4.5.2 Results

Analytical results and sample intervals are presented in Appendix IV. Only two samples (7641 and 7645) gave interesting Cu values of about 0.1%, and 7645 contained 120 ppm Mo. Gold values are universally low, the highest being 70 ppb. Elevated arsenic over 100 ppm is associated with the higher Cu zones.

4.5.3 Interpretation

The "best" sample, 7645, with 0.1% Cu and 120 ppm Mo, includes a 50 cm section of massive pyrite and K-feldspar with chalcopyrite and bornite. The sample is not, therefore, representative of the entire 6.6 m interval. Au is disappointingly low in this sample.

Alteration indicates that this hole is in an area of very weak incipient phyllic alteration with only a few narrow potassic zones. It is also in an intrusive unit which can only be tentatively correlated with one small outcrop on surface. The lack of mineralization is not, therefore, surprising, considering that mineralization on surface is directly associated with pervasive potassic alteration in a different intrusive unit. Relative to more peripheral potential targets, i.e., propylitized volcanics, the hole is not far enough away from the potassic intrusive centre.

5.0 CONCLUSIONS

Geological mapping and stream geochemical sampling indicate that the area of most interest is within and proximal to the porphyry system. Surface rock and drill core sampling have not indicated exceptional Cu or Au values to date, but examination of the area is not yet complete.

Highly anomalous Au and elevated Cu values in creek samples taken just north of the drilled area are encouraging indicators of potential Cu-Au mineralization. The target is probably a peripheral manifestation of mineralizing porphyry fluids which were drawn away from the hydrothermal centre along a structure.

The southern edge of the porphyry system has not been explored at all, and mapping of the eastern edge is incomplete. Increased alteration observed along the eastern contact deserves a thorough examination, especially since the Au-anomalous government moss mat sample was taken in the creek below this zone.

6.0 RECOMMENDATIONS

Those areas which were not mapped during 1989 must be completed, with special attention to the northern and eastern edges of the porphyry system. The remaining drill holes should also be examined and at least partially sampled.

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Matysek, P. F., and Day, S. J. (1988): Geochemical Orientation Surveys: Northern Vancouver Island, Fieldwork and Preliminary Results, B. C. Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork, 1987, Paper 1988-1, pages 493-502.

APPENDIX I

Analytical Techniques and Detection Limits

ANALYTICAL TECHNIQUES AND DETECTION LIMITS

Placer Dome Inc.'s Vancouver Analytical Laboratory

Geochemical Procedures:

	Units	Wt(g)	Attack	Time	Range	Method
Ag	ppm	0.5	$HClO_4/HNO_3$	4 hrs	0.2-20	A.A. Background Correction
As	ppm	0.5	Aqua Regia	3 hrs	2-2000	DC Plasma
Au	ppb	10.0	Aqua Regia	3 hrs	5-4000	A.A. Solvent Extraction
Cu	ppm	0.5	$HClO_4/HNO_3$	4 hrs	2-4000	Atomic Absorption
Mo	ppm	0.5	$HClO_4/HNO_3$	4 hrs	1-1000	Atomic Absorption
Pb	ppm	0.5	$HClO_4/HNO_3$	4 hrs	2-3000	A.A. Background Correction
Zn	ppm	0.5	$HClO_4/HNO_3$	4 hrs	2-3000	Atomic Absorption

Assay Procedures:

	Units	Wt(g)	Attack	Time	Range	Method
Ag	ppm	2.0	$HCl/HNO_3/HClO_4$	1.5 hrs	>1	A.A. Background Correction
As	%	1.0	HNO_3	1 hr	>.01	A.A. Background Correction
Cu	%	2.0	$HCl/HNO_3/HClO_4$	1.5 hrs	>.001	A.A. Background Correction

APPENDIX II

Bulk Stream Sediment and Moss Wash Sample Analyses

PDI GEOCHEM SYSTEM: Data From: FIRE Claims - Bulk and Moss Wash Sample Analyses

GRID	SAMPLE		PROJECT	Ag PPM	As PPM	Au1 PPB	Au-A PPB	Au-B PPB	Cu PPM	Mo PPM	Pb PPM
93E14		625	9373	0.3	44	530	1330	300	107	5	16
93E14		627	9373	0.2	18	25	<5	<5	35	2	14
93E14		629	9373	<0.2	10	15	45	<5	28	1	12
93E14		630	9373	0.2	9	150	10	<5	51	1	13
93E14		633	9373	<0.2	9	<5	20	<5	33	1	9
93E14		635	9373	<0.2	5	5	30	<5	28	1	10
93E14		637	9373	0.2	5	<5	10	75	31	1	11
93E14		639	9373	<0.2	<2	<5	15	30	40	1	10
93E14		642	9373	<0.2	6	<5	10	<5	25	<1	9
test	STD P1		9373	0.2	16				21	50	50
93E14		644	9373	<0.2	24	<5	10	<5	21	<1	10
93E14		646	9373	0.2	4	<5	<5	<5	29	<1	10
93E14		648	9373	0.2	4	5	<5	680	27	<1	14
93E14		650	9373	0.2	7	<5	<5	<5	23	<1	9
93E14		650*	9373	0.2	NSS	NSS	NSS	8	24	<1	9
test	STD AU5		9373					470			
93E14W		7552	9488	<0.2	11	NSS	20	40	75	2	15
93E14W		7554	9488	<0.2	4	45	5	125	39	2	13
93E14W		7556	9488	0.2	10	<5	<5	5	37	1	16
93E14W		7559	9488	<0.2	8	<5	15	<5	50	1	14
93E14W		7561	9488	<0.2	6	NSS	<5	NSS	13	2	9
93E14W		7561*	9488	<0.2	5		20		12	2	9

END OF LISTING - 22 RECORDS PRINTED Run on: 90:04:30 at 13:58:01

APPENDIX III

Silt Sample Analyses

PDI GEOCHEM SYSTEM: Data From: FIRE Claims - Silt Sample Analyses

GRID	SAMPLE		PROJECT	Ag PPM	As PPM	Au1 PPB	Cu PPM	Mo PPM	Pb PPM	Zn PPM
93E14		626	9456	0.3	12	50	140	4	15	162
93E14		628	9456	0.2	11	<5	33	<1	12	164
93E14		631	9456	0.3	3	<5	45	<1	12	130
93E14		634	9456	0.2	7	<5	33	<1	11	128
93E14		636	9456	0.2	3	<5	32	<1	10	110
93E14		638	9456	0.2	<2	10	28	<1	9	108
93E14		640	9456	0.2	3	<5	31	1	9	127
93E14		643	9456	<0.2	<2	125	26	<1	9	82
test	STD P1		9456	0.2	16		22	50	54	126
93E14		645	9456	<0.2	<2	10	21	1	7	62
93E14		647	9456	<0.2	<2	<5	28	<1	8	86
93E14		649	9456	0.2	2	<5	17	7	10	227
93E14		651	9456	<0.2	6	<5	23	1	10	128
93E14		651*	9456	<0.2	5	<5	23	1	8	128
test	STD AU5		9456			405				
93E14W		7553	9486	<0.2	23	NSS	77	1	17	138
93E14W		7555	9486	<0.2	12	<5	40	1	16	96
93E14W		7557	9486	<0.2	10	10	45	1	16	110
93E14W		7560	9486	<0.2	4	<5	20	2	9	100
93E14W		7562	9486	<0.2	5	65	46	1	14	105
93E14W		7562*	9486		5					
test	STD AU6		9486			450				
test	STD P1		9486	0.3			23	53	52	121

END OF LISTING - 23 RECORDS PRINTED Run on: 90:04:30 at 13:58:01

APPENDIX IV

Drill Core Sample Intervals and Analyses

PDI GEOCHEM SYSTEM: Data From: FIRE Claims - Drill Core Sample Analyses

SAMPLE			PROJECT	Ag PPM	As PPM	Au1 PPB	Cu PPM	Mo PPM	Pb PPM	Zn PPM
DDH 74-5	15.8-17.8 m	7626	9531	0.5	69	10	260	3	10	81
"	-19.8	7627	9531	0.2	19	<5	148	2	3	62
"	-21.6	7628	9531	0.3	80	10	260	5	16	70
"	-23.6	7629	9531	0.2	39	<5	225	3	9	48
"	-25.5	7630	9531	0.2	45	<5	146	3	8	57
"	-27.1	7631	9531	0.2	11	70	140	4	8	44
"	-28.8	7632	9531	<0.2	81	10	158	1	15	51
"	-30.8	7633	9531	<0.2	39	10	142	4	6	44
"	-32.0	7634	9531	1.2	37	20	163	2	33	44
		7634*	9531	1.2	33	25	163	2	33	44
"	-33.5	7635	9531	0.3	30	70	159	6	8	53
"	-35.4	7636	9531	0.2	39	20	288	1	27	60
"	-37.1	7637	9531	0.2	19	25	217	1	6	48
"	-38.9	7638	9531	0.2	<2	5	236	2	6	44
"	-40.7	7639	9531	0.2	24	<5	138	2	6	48
"	-42.4	7640	9531	1.0	165	15	415	6	15	81
"	-43.9	7641	9531	2.1	131	20	1010	1	28	280
"	-45.7	7642	9531	0.2	20	<5	293	4	10	45
"	-47.5	7643	9531	<0.2	2	<5	192	1	6	34
test	STD AU6		9531			330				
DDH 74-5	47.5-54.3	7644	9531	0.5	23	<5	262	6	15	58
"	-60.9	7645	9531	4.5	130	25	1060	120	41	372
"	-68.9	7646	9531	0.2	11	<5	141	4	8	48
"	-75.3	7647	9531	<0.2	5	<5	121	5	5	30
"	-81.7	7648	9531	<0.2	3	<5	55	10	8	35
"	-88.4	7649	9531	0.2	8	<5	71	4	15	66
"	-96.0	7650	9531	0.2	10	<5	135	4	11	36
		7650*	9531	0.2	9	<5	137	5	9	37
test	STD P1		9531	0.3	18		23	50	53	120

END OF LISTING - 29 RECORDS PRINTED Run on: 90:04:30 at 13:58:01

APPENDIX V

Surface Rock Sample Analyses

PDI GEOCHEM SYSTEM: Data From: FIRE Claims - Surface Rock Sample Analyses

SAMPLE	PROJECT	Ag PPM	As PPM	Au1 PPB	Cu PPM	Mo PPM	Pb PPM	Zn PPM
py,cal,sid,mal in volc-RC 632	9452	1.4	<2	105	780	<1	11	180
632*	9452	1.3	<2	20	760	<1	10	178
he/ep/qz vein in volc-GB 7558	9487	0.4	4	40	30	4	6	15
10-20cm qz/cal vein; intr -HG 7563	9487	0.2	16	75	90	3	15	30
various qz/cal veinlets-HG 7564	9487	0.2	10	15	91	2	13	53
5-17cm qz/mal vein-HG 7565	9487	6.0	6	360	1290	2	13	174
diss py in volc-RC 7566	9487	0.2	30	25	68	1	9	70
qz crackle bx along fault-RC 7567	9487	0.2	<2	<5	15	5	4	13
fault zone with lim,mal-RC 7568	9487	0.2	<2	<5	400	1	6	51
7568*	9487	0.2	2	<5	410	1	6	50
gossanous qz bx? otc? flt?-GB 7569	9530	<0.2	20	<5	56	6	4	16
pyritic intrusive-RC 7570	9530	0.3	31	<5	35	3	26	1520
pyritic feldspar porp otc?-RC 7571	9530	0.2	14	<5	21	2	26	323
cal/qz/py/cp/bo FF in intr-GB 7572	9530	0.4	6	235	325	2	4	52
py + cp diss + FF in intr-RC 7590	9530	0.4	<2	65	1580	13	5	40
py + cp in intr-RC 7591	9530	<0.2	<2	10	78	2	3	57
1m white clay fault gouge-CP 7592	9530	<0.2	6	20	232	1	4	58
1m zone of up to 50% py-GB 7593	9530	44	0.54%	1425	0.31%	3	322	1820
test STD P1	9530	0.3			25	48	50	124
test STD PB-ZN	9530		0.11%					
test STD AU6	9530			335				

END OF LISTING - 21 RECORDS PRINTED Run on: 90:04:30 at 13:58:01

bo bornite
bx breccia
cal calcite
cp chalcopyrite
diss disseminated
ep epidote
FF fracture fillings
flt float
he hematite
intr intrusive
lim limonite
mal malachite
otc outcrop
porp porphyry
py pyrite
qz quartz
sid siderite
volc volcanic

CP chip sample
GB grab sample
HG "high grade" grabs
RC random chips

APPENDIX VI

Statement of Costs

STATEMENT OF COSTS

Fire Claims

Labour (Salary and Benefits)

G. Ditson, Project Geologist, 11 days @$340/day	$ 3,740.00
D. Lockie, Junior Geologist, 15 days @$250/day	3,750.00
G. Linden, Junior Geologist, 2 days @$250/day	500.00
S. Soby, Contract Sampler, 2 days @$215/day	430.00

Site Costs

Room & Board in Smithers (11 man-days @$84.61/day)	930.71
Camp Groceries	182.56
Base Station Radio Rental (1 month)	68.90
Airphotos; Base Map Preparation	69.88
Equipment Purchases	1,500.00

Vehicle Expenses

Truck Rental (1 week)	106.00
Gasoline	20.00

Freight

Sample Shipment (Smithers to Vancouver)	33.85

Helicopter

11.6 hours @$628/hour	7,284.80

Analyses

16 Bulk Sediment (Ag,As,Cu,Mo,Pb,Zn,Aux3) @$31.17	498.72
2 Moss Wash (Ag,As,Cu,Mo,Pb,Zn,Aux3) @$31.17	62.34
17 Silt (Ag,As,Cu,Mo,Pb,Zn,Au) @$12.60	214.20
25 Drill Core (Ag,As,Cu,Mo,Pb,Zn,Au) @$15.25	381.25
16 Rock (Ag,As,Cu,Mo,Pb,Zn,Au) @$15.25	244.00
1 Rock (As,Cu,Ag) @$24.50	24.50

Report Preparation

Drafting (3 days @$250/day)	750.00
Maps	50.00
G.Ditson (5 days @$340/day)	1,700.00
D.Lockie (4 days @$250/day)	1,000.00
TOTAL	$ 23,541.71

APPENDIX VII

Statement of Qualifications

STATEMENT OF QUALIFICATIONS

I, Gwendolen May Ditson, of the municipality of Vancouver, British Columbia, do hereby certify that:

1. I am a graduate of the University of Southern California where I received a B.S. in Geology in 1974, and of the University of British Columbia where I received an M.Sc. in Geology in 1978.

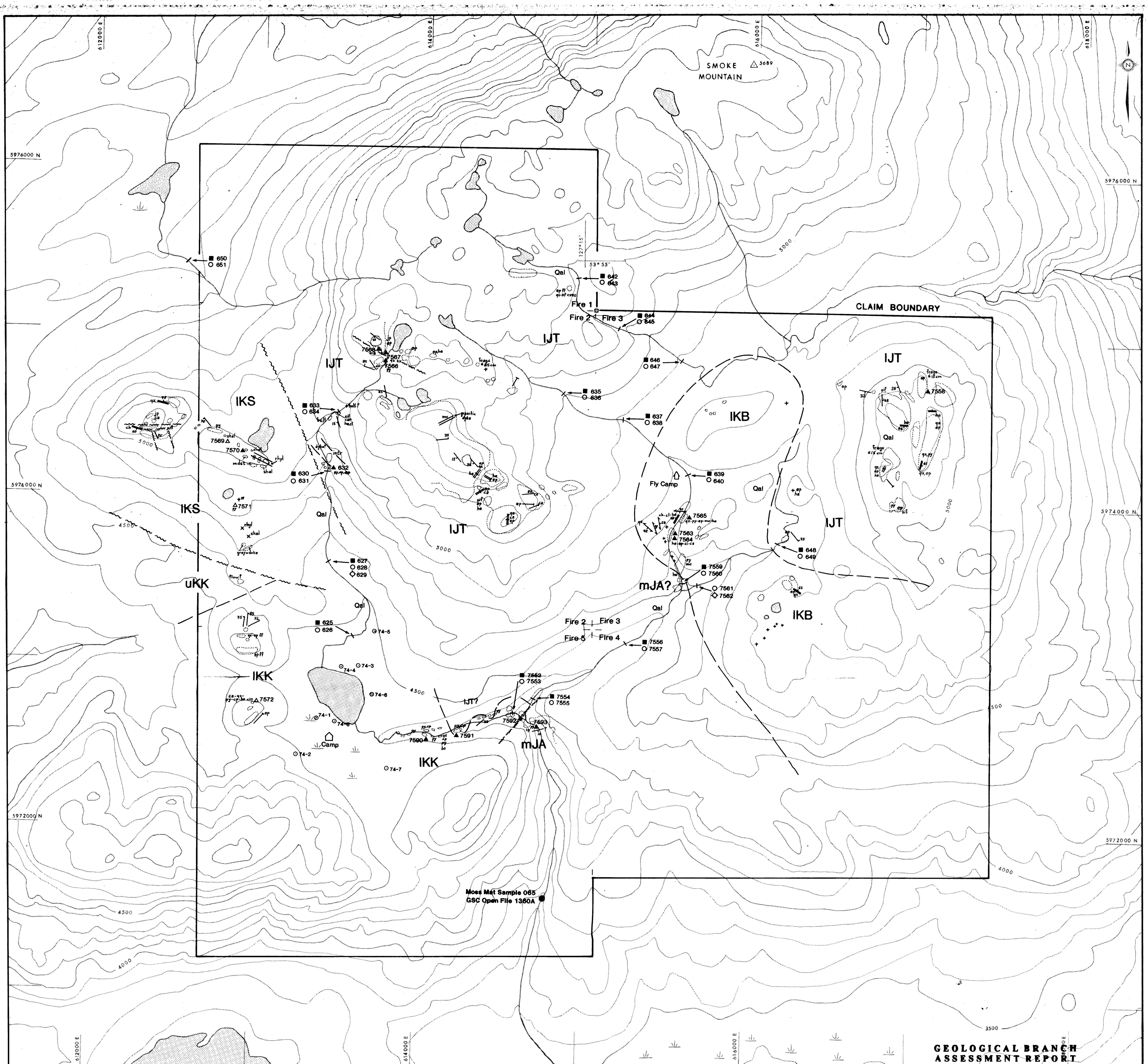
2. I have practiced my profession part-time since 1976, and full-time since 1978.

3. I am a member in good standing of the Canadian Institute of Mining and Metallurgy.

4. I am currently employed by Placer Dome Incorporated, and was responsible for the field exploration program on the Fire claims during 1989.

May 1, 1990
Date

Gwendolen May Ditson



GEOLOGICAL BRANCH ASSESSMENT REPORT

20,012

CONTOUR INTERVAL = 100 FEET

0 200 500 1000
meters

STRATIGRAPHIC ROCKS

QUATERNARY

Qal — Glacio-fluvial detritus

UPPER CRETACEOUS

Kasalka Group

uKK — Aphanitic grey andesite flow (?).

LOWER CRETACEOUS

Skeena Group

lKS — Amygdulitic basalt, pillow basalt, black shale, pale green mudstone(?); outcrops are basalt unless otherwise noted.

MIDDLE JURASSIC

Bowser Lake Group

mJA — Ashman Formation — Strongly altered or deformed argillite and siltstone?

LOWER JURASSIC

Hazelton Group

lJT — Telkwa Formation — Tuff, lapilli tuff, tuff breccia, agglomerate, minor laminated tuff and siltstone; outcrops are tuffaceous unless otherwise labelled.

INTRUSIONS

LATE CRETACEOUS

lKK	Kasalka-equivalent	Fine grained hornblende feldspar porphyry.
lKB	Bulkley-equivalent	Medium to coarse grained quartz diorite to granodiorite.

SYMBOLS

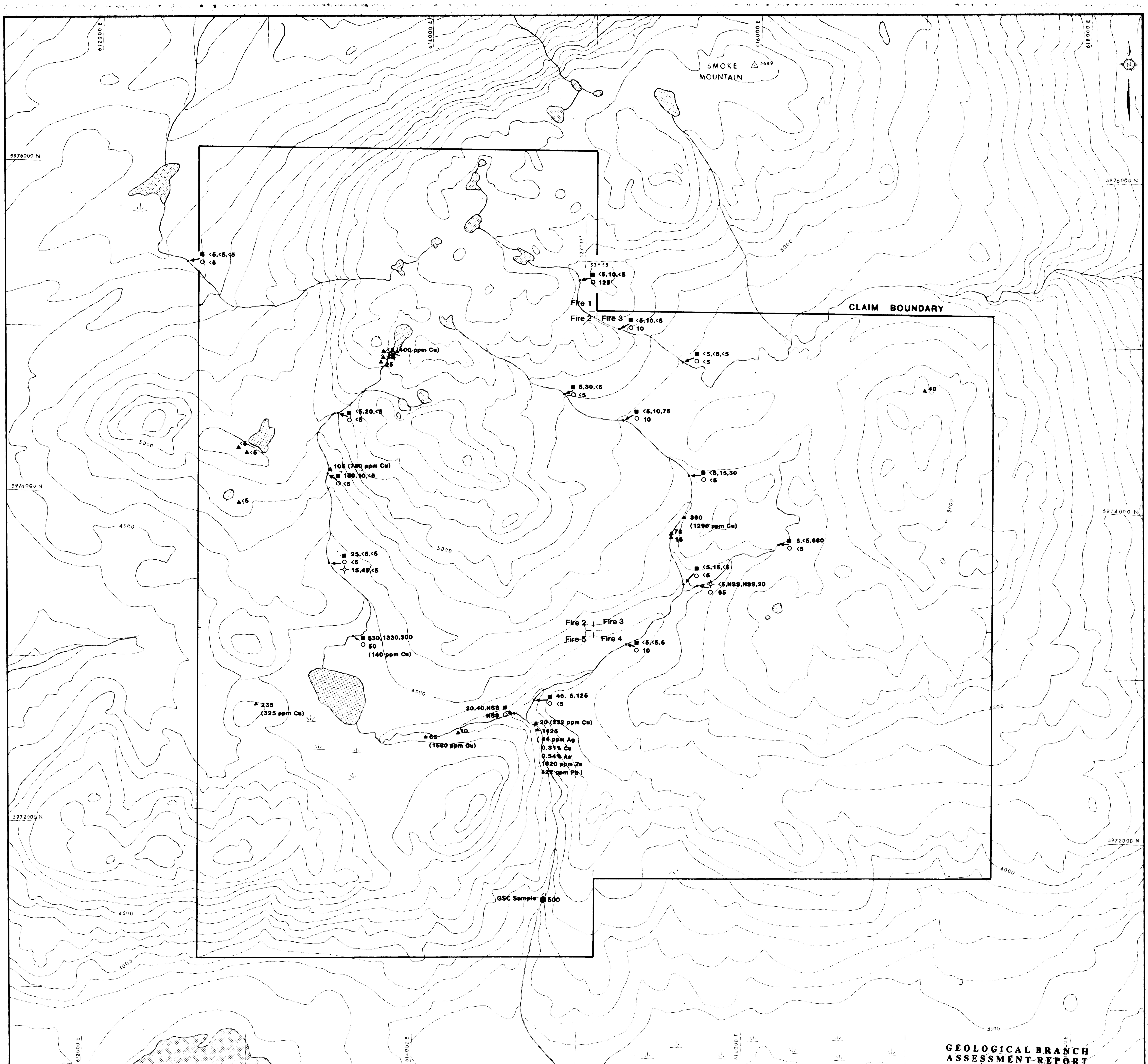
- Outcrop (large; small)
- Float
- Geological boundary (defined; assumed)
- Fault
- Bedding
- Fractures and joints
- Fault/shear zones
- Veins and veinlets
- Claim post
- Drill hole (locations approximate)
- Bulk stream sediment sample
- Silt sample
- Moss wash sample
- Rock sample (bedrock; float)

ABBREVIATIONS

bo	bornite
bslt	basalt
ca	calcite
carb	carbonatization
cl	chlorite
cp	chalcopyrite
ep	epidote
ff	fracture fillings
frags	fragments
he	hematite
intr	intrusive
jp	jasper
mc	malachite
mdst	mudstone
pill	pillows
py	pyrite
qz	quartz
rhyl	rhyolite
shal	shale
sif	silicification
vn	vein
<vn	microvein

Figure 4

PLACER DOME INC.	
FIRE PROPERTY	
DRAWN: GMD	GEOLOGY AND SAMPLE LOCATIONS
DATE: NOV. 89	
SCALE: 1:10,000	
REVISED: MAY 1990	FILE No. 031752 — 93E/14



20,012

CONTOUR INTERVAL = 100 FEET

0 200 500 1000
meters

SYMBOLS

- ■ Bulk stream sediment sample
- ○ Silt sample
- ✧ Moss wash sample
- ▲ Rock sample
- NSS Not sufficient sample

Note: - All Au results in ppb.
- Bulk and moss wash samples have 3 separate Au analyses.
- Interesting values for other elements are reported in parentheses.

Figure 5

PLACER DOME INC.

FIRE PROPERTY

DRAWN: GMD	GOLD GEOCHEMISTRY
DATE: NOV. 89	
SCALE: 1:10,000	
REVISED: MAY 1990	FILE No. 031752 93E/14