

## **1.0 INTRODUCTION**

In 1988, from September 20 to October 31 Placer Dome Inc. conducted a soil geochemistry survey on the Brandywine Property, located 40 km north of Squamish, British Columbia. The program involved grid construction, soil and rock sampling.

## **2.0 SUMMARY**

A total of 35 km of flagged grid lines were established using hip-chains and Silva compasses. The soil survey consisted of B-horizon samples taken on the grid lines at a 40 m separation. A total of 862 soil samples and 19 rock samples were taken during the 1988 program. The survey indicated a precious and base metal anomaly in the southwest portion of the grid as well as a small gold anomaly on line 7700N.

## **3.0 RECOMMENDATIONS**

In order to fully evaluate the mineral potential of the Brandywine property a number of recommendations have been made concerning future work. Primarily, it is recommended that the present grid be extended to the west, utilizing the present baseline, by running lines at 100 meter intervals. These new lines should then be soil sampled at a maximum spacing of 40 meters. It is also recommended that the area of the gold anomaly be examined in more detail by either new intermediate soil lines or closer spaced sampling on the existing grid lines.

Geological mapping at a scale of 1:5000 is also a priority and should be done in conjunction with any new grid work.

A ground geophysics program using VLF and magnetometer is also recommended to delineate the structures in the area of the gold anomaly and elsewhere on the property.

## **4.0 PROPERTY DEFINITION**

### **4.1 History**

The mining activity in the Brandywine area dates back to the early 1900's when prospectors were combing the area adjacent to the P.G.E. Railway. In 1918 the first claim was staked and exploration and development work commenced. In the next few years some surface and underground work was carried out by individuals as well as some public mining companies. This work was reported in various Minister of Mines Reports but most notably the 1936 report. The areas of interest in these early days consisted of showings now known as The Tedi Zone, Silver Tunnel, Main Pit and the Astra showing. In 1962 Mr. M. Levasseur started acquisition of the various showings and in 1965 formed Van Silver Mines which went public as Van Silver Explorations in 1967.

During 1970 and 1971 most of the showings were under option to Noranda

Mines Ltd. who dropped the option late in 1971. By 1974 Van Silver Explorations had acquired all the showings in the immediate area and a year later merged with Tedi Resources under the new name of Van Silver Mines Ltd. In 1977 the Silver Tunnel was put briefly into production utilizing a mill built on the property that year. Production lasted only a few months due to ore control problems. In 1978 the property was optioned to Cominco Ltd. who conducted a short drill program then dropped the option. In 1979 the company was reorganized as Silver Tusk Mines Ltd. who then proceeded to option the ground to Brett Holdings Ltd. Brett Holdings has subsequently transferred its interests in the property to Brandy Resources Inc. who have conducted exploration on the property during 1980, 1981 and 1983 and were the last company to have optioned the property.

#### 4.2 Claims

The Brandywine Property originally consisted of 195 registered mineral claims and one production lease but has since been restaked as the Brandy 1 - 12 claims and is made up of 160 units.

<u>NAME</u>	<u>UNITS</u>	<u>RECORD NO.</u>	<u>EXPIRY DATE</u>
Brandy 1	18	735	Aug. 11, 1990
Brandy 2	18	736	Aug. 11, 1990
Brandy 3	15	737	Aug. 11, 1990
Brandy 4	20	738	Aug. 11, 1990
Brandy 5	18	739	Aug. 11, 1990
Brandy 6	15	740	Aug. 11, 1990
Brandy 7	20	741	Aug. 11, 1990
Brandy 8	20	742	Aug. 11, 1990
Brandy 9	20	743	Aug. 11, 1990
Brandy 10	8	744	Aug. 11, 1990
Brandy 11	3	745	Aug. 11, 1990
Brandy 12	3	746	Aug. 11, 1990

#### 4.3 Location and Access

The Brandywine property is located approximately 100 kilometers north of Vancouver in south western British Columbia. Access to the property is along the paved Highway 99 to about 40 kilometers north of Squamish where a gravel logging road turns west off the highway to directly access the property.

The property can be found on NTS map sheet 92J/3E at latitude 52° 02'N and longitude 123° 05'W.

#### 4.4 Physiography

The property is located within heavily forested, extremely rugged terrain typical of the west coast of British Columbia. Elevations on the property range from 400 meters to 1500 meters above sea level. The topography on the property consists of extremely steep slopes bounded on the east and west by deeply incised

creek valleys. The slopes are also marked by numerous north trending cliff faces some up to 30 meters high.

Vegetation on the property once consisted of lush west coast rain forest with abundant cedar, hemlock and fir. The area has recently undergone extensive clear cut logging and all that remains of the forest are sparse patches of trees representing cliff areas where logging was not possible.

Precipitation in the area is heavy and averages about 250 cm/year with the majority coming down as snow any time from September to May.

#### **4.5 Work Performed**

During the time period between September 20 and October 31, 1988 the following work was performed on the Brandywine property.

- 1) 3 kilometers of compassed and picketed baseline
- 2) 35 kilometers of compassed and flagged cross lines
- 3) 862 B-horizon soil samples
- 4) 19 rock samples taken along the grid lines.

### **5.0 GEOLOGY**

#### **5.1 Regional Geology**

The regional geology surrounding much of the coastal area consists of diorites, quartz diorites and quartz monzonites associated with the Coast Plutonic Complex. Scattered amongst the cretaceous batholiths are remnants of the paleo cover rocks, usually in the form of volcanic and detrital sediments as well as packages of organic material such as limestone. The regional area surrounding the property contains numerous pendants and all are believed to correlate to the Gambier Group of southwestern

The area surrounding the property has seen some recent volcanic activity and much of the valley floors are filled with massive, columnar basalt flows.

#### **5.2 Property Geology**

The geology of the property consists of a variably composed phase of the Cretaceous Coast Plutonic Complex, a volcanic and sedimentary package known as the Callaghan Creek Pendant and a series of late felsic dykes.

The intrusive rocks on the property are dioritic to granodioritic in composition and occur mainly in the central portion of the property. The pendant rocks are primarily pyroclastic in origin, however there are small outcrops of white recrystallized limestone in the area. The contacts between the intrusive and pyroclastic rocks are very sharp and commonly marked by narrow shear zones that form north northwest trending gullies. The pendant rocks have a textural range

from fine ash to coarse fragmental and are representative of explosive deep sea volcanism. It is not known whether the sequence is the product of a single or multiple phase of volcanic activity. Intruding both the intrusives and cover rocks is a series of late felsic dykes of rhyolitic composition. The dykes are recognized by their buff to white coloration and altered contacts.

Metamorphism and deformation have extensively altered the appearance of the rocks on the property. The pendant rocks have undergone regional metamorphism to greenschist facies and the limestone lenses viewed were all well recrystallized. Regional metamorphism has also imparted a northwest trending foliation that is visible in the pyroclastic rocks throughout the area. Local alteration along shear planes was also evident in a number of places particularly the Mill Site and Silver Tunnel areas where extensive sericite and clay alteration was noted. The topography of the property is dominated by a series of subparallel gullies and small valleys that show up as strong linear features. These gullies undoubtedly represent shear or fault planes that transect both the intrusive and pendant rocks. The nature and orientation of the faults has not been determined on the property but it can be assumed that the majority of the faults trend north northeast and dip steeply to the east ( Sinclair and Miller, 1978 ). The fault or shear planes are also evident as prominent cliff faces that also show up as north trending lineations.

### **5.2.1 Mineralization**

The Brandywine property displays four different styles of mineralization, vein, disseminated, massive and skarn type showings. The genesis and relationships between the showings is still uncertain and will have to be determined to evaluate the property's potential.

The Silver Tunnel and Main Pit areas are host to vein deposits characterized by quartz and calcite gangue with sphalerite, galena and various silver minerals. The Mackenzie area hosts disseminated mineralization in the form of dominant pyrite and minor chalcopyrite. This area is also geochemically anomalous in gold and silver. The Tedi Pit area exhibits a zone of massive sulphide consisting of weakly banded galena, sphalerite and chalcopyrite in a clay-sericite matrix. The mineralization in the Tedi area is found within the metamorphosed volcanics or greenstone. Further to the east is the zinc showing that contains sphalerite and minor chalcopyrite peripheral to a thin band of greenstone.

## **6.0 GEOCHEMISTRY**

### **6.1 Soil Geochemistry**

#### **6.1.1 Sampling Procedures**

A total of 862 B-horizon soil samples were taken along the grid lines at intervals of 40 meters. The samples were collected with mattocks and taken from depths ranging from 10 to 100 centimeters. The samples were stored in standard kraft soil bags with the grid coordinate location marked on the bag. The samples were boxed and delivered to the Placer Dome Laboratory in Vancouver for geochemical analysis for Au, Ag, Pb, Zn, Cu and As.

### **6.1.2 Sampling Conditions**

The samples were collected from the B-horizon whenever possible and sampling was generally good. Samples that were not taken were the result of swampy conditions or rock exposures with very little soil. The B-horizon soil was easily recognizable by its red brown colour. The topography on the property is very steep and thus the soil profile is not very well developed and down slope transportation has undoubtedly occurred. The grain size of the soil was variable and usually contained angular fragments of bedrock in a matrix of fine to coarse sand.

The soil on the steep slopes was derived mainly from the underlying bedrock while the valleys contained abundant glacial till and recent basalt flows. The eastern boundary of the grid occupied the Callaghan Creek valley which is filled with till and basalt and was therefore unsampled.

### **6.1.3 Results**

The results of the geochemistry survey are tabulated in Appendix 1. Figures 3 through 8 show the grid locations and the posted data for Au, Ag, Pb, Zn, Cu and As respectively.

### **6.1.4 Discussion of Results**

The results from the soil geochemistry survey show a moderately strong gold anomaly occurring on the southwest portion of the 1988 grid. The anomaly is widest on line 6000N where it extends from 5000E to 5540E, and trends northwesterly to line 6600N where it leaves the present grid. The gold anomaly is also coincident with elevated Ag and Pb values.

A small lens of recrystallized limestone occurring at line 7700N at 5200E showed anomalous gold, lead and moderately anomalous silver.

## **6.2 Rock Geochemistry**

### **6.2.1 Sampling Procedures**

A total of 19 rock samples were taken during the course of the 1988 program. The samples were taken by the geologist on site and placed in plastic bags and then transferred to the Placer Dome Laboratory in Vancouver. Analysis for Au, Ag, Pb, Zn, Cu and As were carried out by a wet geochemical method.

### **6.2.2 Results**

The rock sample locations are shown on figure 9 and a full listing of the geochemical data is provided in tabular form in Appendix 2.

### 6.2.3 Discussion of Results

The 1988 rock samples showed that various different rocktypes on the property are anomalous in Au, Ag, Pb, Zn and Cu. The rock samples also revealed the various styles of mineralization that are present on the Brandywine property. There were no rock samples taken in the area of the gold anomaly that substantiated the presence of gold.

#### Brandywine Property 1988 Rock Geochemistry

Sample #	Grid Coordinate	Au(ppb)	Ag(ppm)	Pb(ppm)	Zn(ppm)	Pb(ppm)
00001	5900N-6140E	300	73	30	900	3.17%
00002	5900N-5360E	55	1.4	8	147	123
00003	7650N-5120E	25	0.8	180	420	334
00004	5900N-5460E	50	0.7	7	108	35
00005	6903N-5076E	1860	48	27	146	3.23%
00006	5700N-5380E	15	0.4	9	70	133
00007	7650N-5120E	5	1.2	12	80	680
00008	6825N-5155E	8	11	72	1140	430
00009	6200N-5310E	240	2.7	14	1.26%	540
00010	6906N-5076E	245	2.5	2430	0.88%	218
00011	6450N-6400E	45	6.0	980	4.80%	700
00012	6879N-5340E	680	74	388	1020	55
00013	7562N-5124E	40	0.8	43	177	363
00014	Zn showing	55	3.6	51	850	620
00015	BWC-3900E	<5	0.4	20	258	52

00016	BWC-4300E	35	1.2	121	255	48
00017	BWC-4520E	85	0.8	64	348	103
00018	BWC-4520E	440	11	116	0.46%	0.31%
00019	Martial L.	<5	0.4	6	111	168

**GEOCHEMICAL REPORT ON THE  
BRANDYWINE PROPERTY  
NTS 92J/3E**

**Latitude 52°02'N Longitude 123°05'W**

**VANCOUVER MINING DIVISION**

**Property Owner: Silver Tusk Mines Ltd.**

**Operator: Placer Dome Inc.**

Richard J. Boase

January, 1989

## TABLE OF CONTENTS

	<b>Page</b>
<b>1.0 INTRODUCTION</b>	
<b>2.0 SUMMARY</b>	
<b>3.0 RECOMMENDATIONS</b>	
<b>4.0 PROPERTY DEFINITION</b>	
4.1 History	
4.2 Claims	
4.3 Location and Access	
4.4 Physiography	
4.5 Work Performed	
<b>5.0 GEOLOGY</b>	
5.1 Regional Geology	
5.2 Property Geology	
5.2.1 Mineralization	
<b>6.0 GEOCHEMISTRY</b>	
6.1 Soil Geochemistry	
6.1.1 Sampling Procedures	
6.1.2 Sampling Conditions	
6.1.3 Results	
6.1.4 Discussion of Results	
6.2 Rock Geochemistry	
6.2.1 Sampling Procedures	
6.2.2 Results	
6.2.3 Discussion of Results	
<b>7.0 CONCLUSIONS</b>	



**REFERENCES**

**STATEMENT OF QUALIFICATIONS**

**STATEMENT OF EXPENDITURES**

**APPENDICES**

**Appendix 1 - Soil Geochemistry Results**

**Appendix 2 - Rock Geochemistry Results**

**APPENDIX 2**

**ROCK GEOCHEMISTRY RESULTS**

**APPENDIX 1**  
**SOIL GEOCHEMISTRY RESULTS**

## **7.0 CONCLUSIONS**

The following conclusions can be made as a result of the 1988 Brandywine geochemistry program.

A moderately strong gold, silver and lead anomaly was located on the southwestern portion of the grid. The anomaly trends north northwest until it leaves the present grid.

A second small anomaly was found near line 7700N-5200E and contained anomalous gold and weakly anomalous silver. This anomaly is small and discontinuous.

## STATEMENT OF EXPENDITURES

The following costs were accumulated for the geochemical survey conducted on the Brandywine property during the time period September 20, 1988 to October 31, 1988.

### 1.0 LABOUR (Salaries and Benefits)

R. Boase -Geologist	43 days @ \$250/day	10,750.00
D. Turner -Technician	43 days @ \$200/day	8,600.00
J. Taylor -Technician	xx days @ \$200/day	x,xxx.xx
D. Travers -Technician	14 days @ \$200/day	2,800.00
R. Kraus -Technician	14 days @ \$200/day	2,800.00

### 2.0 ACCOMODATION (Hotel and Groceries)

xxx man days @ \$100/day	xx,xxx.xx
--------------------------	-----------

### 3.0 TRANSPORTATION

4 wheel drive rental	x,xxx.xx
Fuel	xxx.xx

4.0 GEOLOGICAL SUPPLIES	xxx.xx
-------------------------	--------

### 5.0 ANALYTICAL CHARGES

862 Soil samples for Au,Ag,Pb,Zn,Cu,As	x,xxx.xx
19 Rock samples for Au,Ag,Pb,Zn,Cu,As	x,xxx.xx

6.0 REPORT PREPARATION	x,xxx.xx
------------------------	----------

<b>TOTAL</b>	<b>xxx,xxx.xx</b>
--------------	-------------------