



**Ministry of Energy & Mines**  
Energy & Minerals Division  
Geological Survey Branch

**ASSESSMENT REPORT**  
**TITLE PAGE AND SUMMARY**

<b>TITLE OF REPORT [type of survey(s)]</b>	<b>TOTAL COST</b>
--	-------------------

AUTHOR(S) \_\_\_\_\_ SIGNATURE(S) \_\_\_\_\_

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S) \_\_\_\_\_ YEAR OF WORK \_\_\_\_\_

STATEMENT OF WORK - CASH PAYMENT EVENT NUMBER(S)/DATE(S) \_\_\_\_\_

PROPERTY NAME \_\_\_\_\_

CLAIM NAME(S) (on which work was done) \_\_\_\_\_

COMMODITIES SOUGHT \_\_\_\_\_

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN \_\_\_\_\_

MINING DIVISION \_\_\_\_\_ NTS \_\_\_\_\_

LATITUDE \_\_\_\_\_ ° \_\_\_\_\_ , \_\_\_\_\_ "    LONGITUDE \_\_\_\_\_ ° \_\_\_\_\_ , \_\_\_\_\_ " (at centre of work)

OWNER(S)

1) \_\_\_\_\_ 2) \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

OPERATOR(S) [who paid for the work]

1) \_\_\_\_\_ 2) \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS \_\_\_\_\_

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for ...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY/PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
		TOTAL COST	

**ASSESSMENT REPORT**  
**on the**  
**2005 Stream Sediment Survey of the**  
**SANTA MARIA PROPERTY**  
**Tenure Number 512882**

**MOOSESKIN JOHNNY LAKE AREA**

**OMINECA MINING DIVISION, B.C.**

BCGS Maps: 093L 044  
NTS: 093l/06W  
Latitude: 54°28'00"N  
Longitude: 127°22'09"W  
Owner: Bearclaw Capital Corp.  
Operator: Bearclaw Capital Corp.  
Author: J.W. Page, P.Geo.  
Date: May 10, 2006

## **TABLE OF CONTENTS**

SUMMARY .....	Page 1
LOCATION AND ACCESS .....	Page 1
TOPOGRAPHY .....	Page 2
PROPERTY .....	Page 2
HISTORY .....	Page 3
GENERAL GEOLOGY .....	Page 4
WORK COMPLETED .....	Page 5
CONCLUSIONS AND RECOMMENDATIONS.....	Page 7
BIBLIOGRAPHY .....	Page 9
STATEMENT OF COSTS .....	Page 10
STATEMENT OF QUALIFICATIONS .....	Page 12

## **LIST OF ILLUSTRATIONS**

Figure 1	Location Map	Following Page 2
Figure 2	Claim Map	Following Page 3
Figure 3	Ag, Cu, Pb, Zn Values in Stream Sediments	in pocket
Figure 4	Au, Se, Te, Ti Values in Stream Sediments	in pocket
Figure 5	As, Fe, S, Sb Values in Stream Sediments	in pocket

## **LIST OF APPENDICES**

APPENDIX A	Silt Sample Results
APPENDIX B	Preliminary Interpretation of Lithogeochemical Data for Volcanic Rocks of the Santa Maria Property, Mooseskin Johnny Lake Area. Tyler W. Ruks, March 30, 2006.

## **SUMMARY**

The Santa Maria property is described as a subvolcanic copper-silver-gold deposit contained within mineralized rhyolite sills of supposed late Cretaceous to Eocene age which had intruded volcanic rocks of Jurassic age. However, age dating carried out in 2001 on rocks collected in 2000 indicates that the rhyolite sills are contemporaneous with the enclosing rocks, being also Jurassic in age.

The Santa Maria occurrence is located 37 kilometres south-southwest of Smithers and 1.2 kilometres west of Mooseskin Johnny Lake.

Exploration work has been carried out on the property since 1916. Mineralization comprises chalcopyrite, chalcocite, bornite, tetrahedrite, malachite, azurite and pyrite.

In 2005 a program of stream sediment sampling was carried out on the property. Fifty-four samples were collected and analysed for gold and multi-elements. In addition, fourteen volcanic rocks were collected in order to determine the tectonic setting and prospectivity of the Santa Maria rocks.

## **LOCATION AND ACCESS**

The Santa Maria property is centred at latitude 54° 28'00" north and longitude 127°22'09" west, 37 kilometres south-southwest of Smithers (Figure 1).

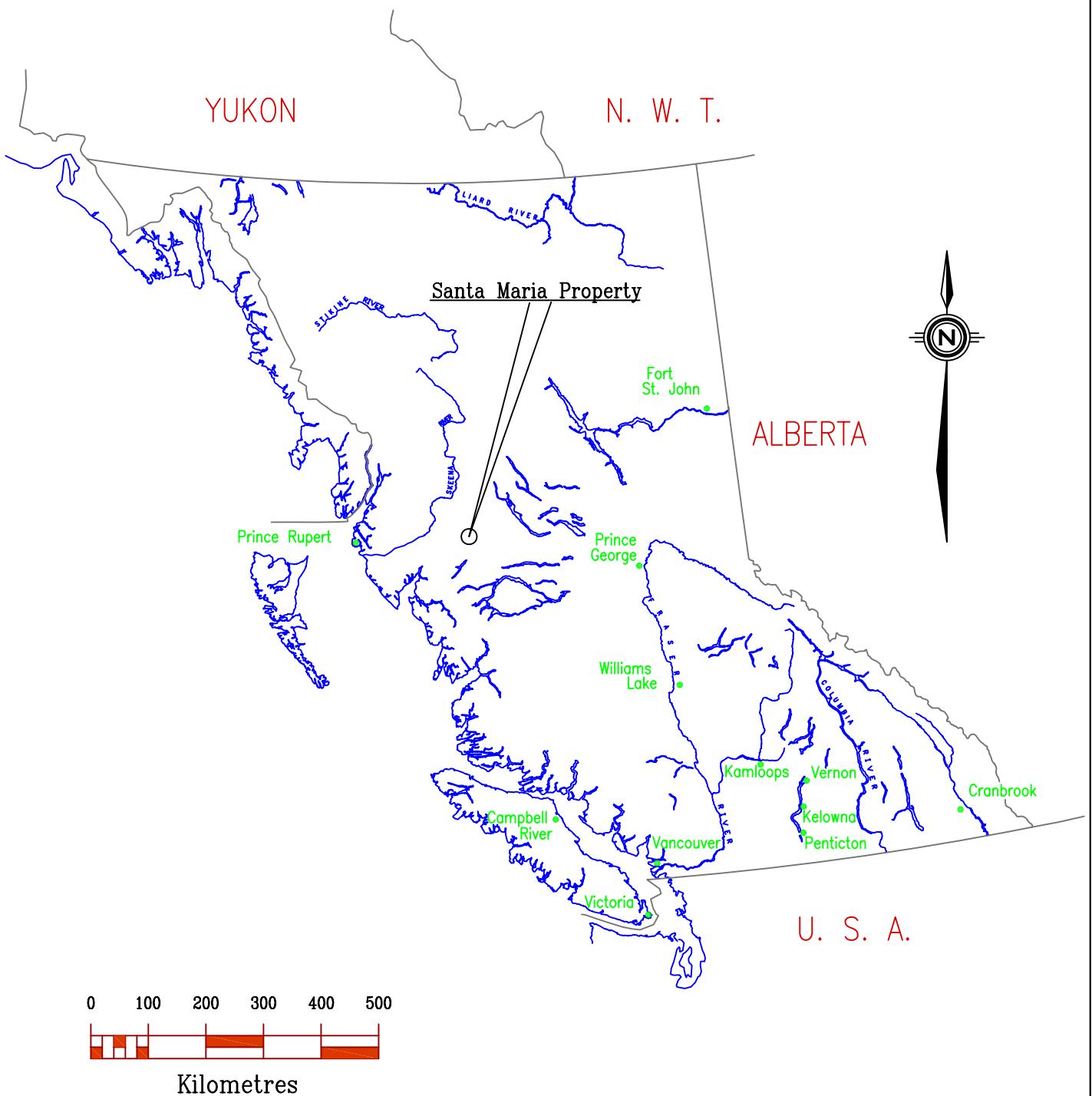
Access to the property can be gained by helicopter from Smithers. In the 1970's, a 17 km road was built to the property along Howson Creek, starting from a point about 22.5 km west of Telkwa along the Telkwa River road. This road is presently overgrown in part and would need clearing and upgrading to allow vehicular access to the property.

## **TOPOGRAPHY**

The property is contained within the Telkwa Range of the Hazelton Mountains at an elevation of approximately 4000 ft. Relief within the property ranges from 5100 ft in the southwest corner to 3800 ft to the north east. The property is near treeline on a north-northeasterly trending ridge between the headwaters of Howson Creek to the west and Mooseskin Johnny Lake to the east. Valley bottoms are covered by a thick forest of pine and spruce.

## **PROPERTY**

One Mineral Tenure Online (MTO) title group covers the project area. The tenure number is # 512882 and is 676.61 hectares in size. (Figure 2). It was recorded by David Taiwai Wu online on May 18, 2005. The claims are owned by the Bearclaw Capital Corp. Syndicate. This MTO includes the former Santa Maria claims (SM1 to SM6) staked in 2000 and recorded by Richard G.Mitchell in Vernon, B.C.



DISCOVERY

Consultants

Bearclaw Capital Corp.

Santa Maria Property

LOCATION MAP

## **HISTORY**

The Santa Maria property was first staked in 1916 and a shipment of 1000 tons was reported. In 1917 a shaft was sunk on the main vein to a depth of 120 feet and 300 feet of drifting was carried out on two levels. A total of 239 tons of hand sorted ore was shipped out, grading 17% copper, 9.5 oz silver and traces of gold.

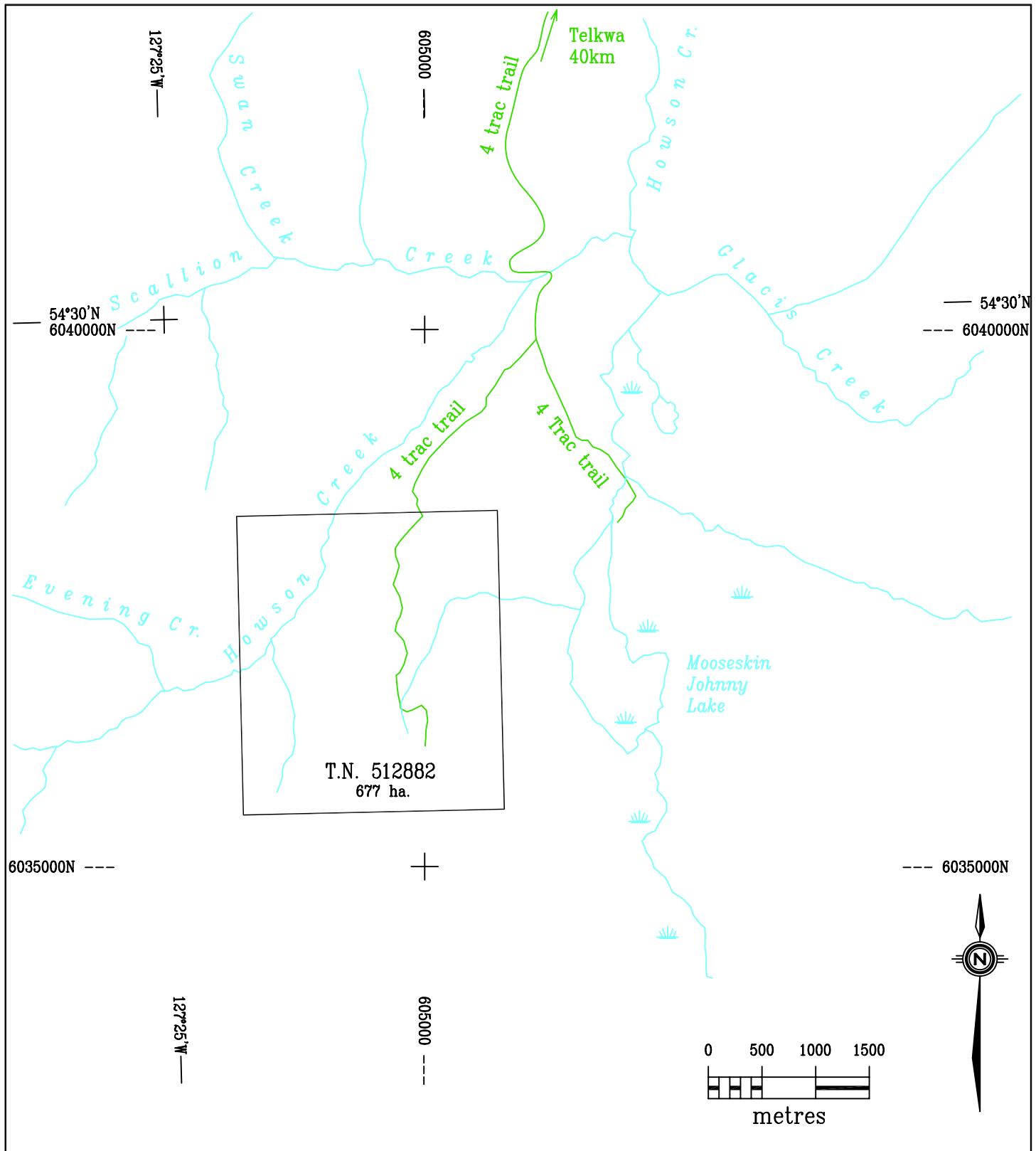
In 1966, Norcan Mines Ltd. carried out exploration over a large area including the Santa Maria property. Work included mapping, EM, SP and IP surveys, an EM airborne survey, soil sampling, road building, 5,350 feet of trenching and 3,742 feet of diamond drilling in ten holes.

In 1967 and 1968 Bethex Explorations Ltd. carried out exploration on the property that included 11,200 feet of trenching and 922 feet of drilling in two holes.

No further work was reported on the property until 1970 when Pathfinder Resources completed a seven-hole, 1,243 foot diamond drill program.

The property was staked by the Peregrine Syndicate in 2000. In 2001, a rock sampling program was carried out to determine the age of the felsic rocks hosting the mineralization. The Jurassic age of the felsic rocks indicates a correlation between the rhyolitic rocks and the Hazelton volcanic rocks, suggesting the presence of a submarine, bimodal volcanic suite in the area.

In 2003, the Peregrine Syndicate was acquired by Bearclaw Capital Corp. which is the current owner of the property.



**DISCOVERY**

Consultants

BEARCLAW CAPITAL CORP.

Santa Maria Property

Claim Location Map

## **GENERAL GEOLOGY**

The Santa Maria property is underlain by west dipping Lower Jurassic Hazelton Group volcanics consisting mainly of lapilli tuff and volcanic breccia. North of the Howson Creek, the strata dip to the south at low angles, while south of the creek, the strata dip to the east and are somewhat steeper. The Hazelton volcanics are cut by contemporaneous quartz porphyry/aplite/felsite sills and dykes.

Mineralization on the property comprises two main copper-silver + zinc vein structures at the contacts of the rhyolitic unit. These zones have been referred to as the Santa Maria or the Footwall vein and the S. H. or Hanging Wall vein. The vein system strikes 330° and dips moderately to steeply southwest. The vein systems have a surface width of 76 to 91 metres. The mineralization consists of chalcopyrite, pyrite, chalcocite, bornite, tetrahedrite, malachite and azurite. Other veins or mineralized fracture zones are also present. On a local scale the mineralization occurs within quartz veins and variably silicified, composite fracture-breccia zones.

The Hazelton Group host rocks are intensely altered and sheared adjacent to the mineralized veins. This includes reddish lapili tuff and volcanic breccia, and buff to greenish highly altered andesites. Other rocks on the property include red rhyolitic porphyry and buff coloured dykes. Strong propylitic alteration and minor silicification occur adjacent to the fracture zones. Alteration products consist of epidote, calcite, sericite, zoisite and prehnite. Rocks within the vein zone are strongly sheared. Farther outboard is a zone of saussurite alteration in the country rocks along with minor silicification and sulphide mineralization. Post mineralization faulting and shearing took place along a north trending direction.

## **WORK COMPLETED**

### **Field Sampling Method**

During the period August 10 - 13, 2005 a two-man crew conducted a stream sediment sampling program on the drainages within the Santa Maria claim block. A helicopter was used to access most of the sample sites. Fifty-four sieved sediment samples were sieved in the field to -20 mesh. They were subsequently sent to Acme Analytical Labs in Vancouver, B.C. by ground transport for geochemical analysis.

In addition, lithogeochemical sampling of rocks on the property was conducted from Aug 5 - 8, 2005. Fourteen rock samples were collected and sent off for major and minor elemental analysis to Acme Analytical Labs. The volcanic rocks of the property could then be characterized to determine the tectonic setting and prospectivity for volcanogenic massive sulphides (VMS) mineralization. The report on this work, written by Tyler W. Ruks of Cambria Geosciences is included in Appendix A.

### **Laboratory Sample Preparation, Analysis and Quality Control.**

The field samples were sieved to -80 mesh (<177 microns). A sub-sample of 30g was taken and digested in aqua regia. This was subsequently analysed by ICP-MS techniques (method Group 1F-MS at Acme). Gold and 36 other elemental concentrations were determined. Quality Control was maintained by the addition of field blanks, field duplicates, lab blanks, lab duplicates and lab standards. A field blank, consisting of a sample taken in an area of low targeted elements, was collected every 50 samples. A field duplicate sample was taken every twentieth sample. At the lab, blank 'silt' samples are inserted at the start of each batch and also within the batch. These samples undergo the same sample preparation and digestion as the field samples. A lab standard of similar geochemical characteristics is used to monitor the accuracy of the instrumental analysis.

The geochemical analyses of both the field blank and the lab blank show no contamination in the sample preparation procedure.

Precision, or reproducibility in the analyses, is monitored by field and lab duplicate samples. The analyses of the duplicate field samples show acceptable results.

## **CONCLUSIONS AND RECOMMENDATIONS**

Six main drainages were sampled (Figures 3, 4 and 5). Three of these are tributaries of the Howson Creek, and lie to the west of the northeast trending ridge transecting the property. All drain northward into the Howson Creek. Three of the sampled drainages lie to the west of the northeast trending ridge and drain eastward into Mooseskin Johnny Lake.

Several anomalous gold values were obtained. A high gold value of 23.4 ppb occurs at the headwaters of the Lukene Creek, which drains into the Howson Creek. A field duplicate sample yielded a value of 8.3 ppb Au. A value of 14.0 ppb Au was obtained at the head of a tributary to the west of Lukene Creek within the cirque along the ridge.

Of the drainages east of the ridge, one location yielded a gold value of 17.9 ppb.

One anomalous copper value was found on an easterly drainage of Mooseskin Johnny Creek. That sample contained 775 ppm Cu as well as 3178 ppb Ag, 65 ppm Pb, 874 ppm Zn.

For the northerly drainages into Howson River, Lukene Creek was anomalous in Cu and to a lesser extent, Pb and Zn.

The lithogeochemical study of the felsic and mafic volcanic rocks indicate formation in a subduction zone setting. Specifically, the mafic volcanics indicate formation in a mid-ocean ridge/ backarc setting. Y-Nb-Zr systematics suggest that the felsic rocks were formed in a back arc/arc setting (Ruks, 2006).

It is recommended that a soil survey be undertaken to further delineate areas of anomalous geochemistry. Further rock sampling and prospecting is recommended, however, because of the heavy undergrowth in the valley floors and the steep terrain on the property, its effectiveness is likely curtailed. Prospective areas include the headwaters of the tributaries flowing north into the Howson Creek. Follow-up work should also include soil sampling over the anomalous tributaries draining into the Mooseskin Johnny Lake.

Respectfully submitted,

J.W. Page, P.Geo.

Vernon, BC

May 10, 2006

## **BIBLIOGRAPHY**

British Columbia Ministry of Energy, Mines and Petroleum Resources – Annual Reports

1916 - p. 91, 125	1966 - p. 92
1917 - p. 118, 447	1967 - pp. 91-97
1918 - p. 117	1968 - p. 127

British Columbia Ministry of Energy, Mines and Petroleum Resources – Assessment Reports #919, #3,485 and #20,601

Geological Survey of Canada Bulletin 270

Lefebure, D.V. and Ray, G.E., Editors (1995): Selected British Columbia Mineral Deposit Profiles. British Columbia Ministry of Energy, Mines and Petroleum Resources, Open File 1995-20

Ruks, T. W. (2006): Preliminary Interpretation of Lithogeochemical Data for Volcanic Rocks of the Santa Maria Property, Mooseskin Johnny Lake Area. Cambria Geosciences, dated March 30, 2006.

## **STATEMENT OF COSTS**

1. Professional Services

W.R. Gilmour, P.Geo		
Program Planning, Supervision, Data Interpretation		
3.0 days @ \$550/day		\$1,650.00
J.W. Page, P.Geo.		
Report Writing		
3.0 days @ \$550/day		1,650.00
T. Ruks, M.Sc. (Geology)		
Field Programme (Aug. 03-09, 2005)		
6.0 days @ \$680/day		4,080.00
Data Interpretations and Report Writing		
12.0 days @ \$680/day		<u>8,160.00</u>
		\$15,540.00

2. Personnel

<u>Field</u>		
C. O'Leary, geologist helper		
Field Programme (Aug. 03-09, 2005)		
6.0 days @ \$290/day		1,740.00
R. Anctil, geologist		
Silt Sampling (Aug. 09-16, 2005)		
8.0 days @ \$425/day		3,400.00
J. Mayrhofer, field technician		
Silt Sampling (Aug. 09-16, 2005)		
8.0 days @ \$280/day		<u>2,240.00</u>
		7,380.00

Office

Drafting	745.76
Field Support	324.00
Data Compilation	160.80
Secretarial	<u>486.40</u>
	1,716.96

3. Expenses

Analyses	- ACME Lab		
	14 Whole Rock Samples @ \$41.99/sample	\$587.86	
	54 silt samples @ \$24.28/sample	1,310.83	
	- freight	<u>147.99</u>	
			2,046.68
Equipment Rentals		85.00	
Field Supplies		288.89	
Communications		51.55	
Contracting- Cambria Geosciences ( <i>formerly</i> Tecucomp Geological)		882.00	
Lodging & Meals		1,634.66	
Office		230.20	

Maps & Publications	67.01
Travel	2,314.91
Management Fee	<u>437.65</u>
	8,038.55
<b>Exploration Expenditures:</b>	<u>\$32675.51</u>
4. Transportation	
Canadian Helicopter	<u>9,199.52</u>
	<b><u>\$41,875.03</u></b>

## **STATEMENT OF QUALIFICATIONS**

**I, Jay W. Page** of 8201 Kalview Drive, Coldstream, B.C., V1B 1W8,

DO HEREBY CERTIFY that:

1. I am currently employed as a Consulting Geologist;
2. I graduated with a B.A. degree in Physical Geography/Geomorphology from the University of British Columbia in 1977. In addition, I have obtained a B.Sc. in Geology from the University of British Columbia in 1984.
3. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia, registration number 19596.
4. I have worked as a geologist for a total of 21 years since graduation from university.
5. This report is based upon knowledge of the Santa Maria property gained from a review of existing reports and data.

Dated this tenth day of May, 2006 in Vernon, BC.

Signature of

**Jay W. Page, P.Geo.**

## **APPENDIX A**

### **Silt Sample Results**

**Project 683 - Santa Maria**  
**Silt Sample Analytical Results**  
**2005 Programme**

WO #	Sample ID	UTM			Total kg	Sub- sam(g)	Au ppb	Ag ppb	As ppm	Sb ppm	Zn ppm	Pb ppm	Cu ppm	Hg ppb	Tl ppm	Te ppm	Se ppm
		East	North	Elev.													
a506198	<b>683T-002</b>	602931	6035914	1438	1.5	30	14.0	2183	9.4	0.49	2235.5	30.25	197.91	22	0.09	1.16	0.3
a506198	<b>683T-003</b>	603392	6035975	1464	1.7	30	1.9	155	8.9	0.55	189.6	12.34	64.92	7	0.04	0.04	<0.1
a506198	<b>683T-004</b>	603562	6036041	1423	1.9	30	1.6	224	10.0	0.54	232.9	13.92	81.75	7	0.04	0.05	0.2
a506198	<b>683T-005</b>	603583	6036025	1423	2.5	30	3.0	867	13.6	0.54	266.5	24.34	188.22	12	0.04	0.12	0.1
a506198	<b>683T-006</b>	603684	6036277	1352	3.8	30	2.5	923	13.7	0.48	285.7	32.28	191.01	9	0.05	0.12	<0.1
a506198	<b>683T-007</b>	603698	6036474	1314	2.5	30	6.1	1790	20.7	0.74	405.3	36.63	367.72	17	0.08	0.16	0.1
a506198	<b>683T-008</b>	603713	6036819	1244	2.7	30	4.4	1369	17.5	0.64	368.6	34.14	285.14	11	0.06	0.14	0.1
a506198	<b>683T-009</b>	603641	6036881	1223	2.3	30	7.7	1332	18.7	0.70	382.9	39.94	313.93	17	0.07	0.15	0.1
a506198	<b>683T-010</b>	603537	6037136	1160	3.1	30	4.3	1277	20.5	0.71	412.5	41.14	361.19	19	0.08	0.18	0.1
a506198	<b>683T-011</b>	603460	6037265	1129	2.1	30	2.4	946	13.2	0.55	314.1	26.29	201.77	8	0.05	0.10	<0.1
a506198	<b>683T-012</b>	603694	6037161	1182	1.5	30	1.4	252	8.2	0.47	369.9	19.45	79.87	29	0.07	0.09	0.2
a506198	<b>683T-013</b>	603640	6037286	1149	2.1	30	1.1	213	7.2	0.46	302.6	16.12	67.05	23	0.06	0.08	0.1
a506198	<b>683T-014</b>	603614	6037415	1119	2.4	30	1.8	148	6.3	0.51	185.8	12.29	41.97	14	0.05	0.06	0.1
a506198	<b>683T-015</b>	604730	6035700	1310	1.6	30	2.5	183	9.0	1.46	119.0	10.35	44.42	17	0.06	0.03	0.3
a506198	<b>683T-016</b>	604925	6035687	1269	1.5	30	1.6	231	8.0	2.43	188.1	12.95	31.67	36	0.07	0.02	0.7
a506198	<b>683T-017</b>	605101	6035615	1207	2.5	30	1.6	264	8.1	2.22	158.9	12.28	83.15	30	0.08	0.07	0.6
a506198	<b>683T-018</b>	605234	6035494	1162	1.5	30	1.1	193	7.7	1.95	141.4	10.02	67.02	30	0.07	0.04	0.5
a506198	<b>683T-019</b>	603524	6035864	1465	1.4	30	8.3	2865	30.3	0.80	542.7	55.58	635.51	28	0.14	0.25	0.3
a506198	<b>683T-021</b>	605227	6035474	1162	2.0	30	1.6	145	13.9	4.00	188.3	13.07	50.88	54	0.10	0.04	0.1
a506198	<b>683T-022</b>	605134	6035881	1231	1.8	30	0.9	232	8.5	2.54	157.1	17.14	35.94	47	0.12	0.02	0.1
a506198	<b>683T-023</b>	605259	6035739	1192	2.6	30	1.6	344	9.6	2.50	233.0	18.28	54.24	60	0.18	0.03	0.1
a506198	<b>683T-024</b>	605341	6035577	1149	2.3	30	1.9	108	10.4	2.29	178.2	15.50	32.12	22	0.09	0.04	0.1
a506198	<b>683T-025</b>	605371	6035532	1136	2.7	30	1.6	109	13.8	3.54	178.9	14.08	46.07	29	0.08	0.04	0.1
a506198	<b>683T-026</b>	605562	6035571	1104	2.8	30	1.4	191	12.9	1.91	172.7	13.64	72.74	27	0.08	0.10	0.2
a506198	<b>683T-027</b>	605739	6035661	1084	3.0	30	3.0	192	13.0	1.89	177.0	13.56	73.70	21	0.08	0.11	0.3
a506198	<b>683T-028</b>	605919	6035751	1059	2.9	30	4.2	321	13.9	1.24	200.7	14.92	113.25	17	0.07	0.17	0.4
a506198	<b>683T-029</b>	606119	6035755	1040	3.1	30	5.4	201	12.4	1.52	172.5	13.37	75.95	21	0.08	0.13	0.2
a506198	<b>683T-030</b>	606242	6035714	1033	2.1	30	2.2	284	13.3	1.43	201.3	14.35	98.90	17	0.07	0.17	0.3
a506198	<b>683T-031</b>	604678	6036143	1323	2.2	30	0.8	196	9.7	1.32	131.7	9.79	49.56	28	0.09	0.03	0.2
a506198	<b>683T-032</b>	604718	6036332	1309	1.8	30	1.2	162	10.5	1.20	134.0	12.54	69.38	31	0.09	0.04	0.2
a506198	<b>683T-033</b>	604726	6036515	1288	2.0	30	1.4	182	9.7	1.93	142.2	17.59	59.12	27	0.09	0.03	0.2
a506198	<b>683T-034</b>	604717	6036716	1265	1.7	30	1.6	109	9.5	1.63	231.0	25.08	50.38	20	0.08	0.04	<0.1
a506198	<b>683T-035</b>	604757	6036907	1236	2.0	30	1.4	107	8.3	1.36	235.5	26.30	44.59	16	0.06	0.04	<0.1

WO #	Sample ID	Mo ppm	Bi ppm	Fe %	S %	Ba ppm	Mn ppm	Cd ppm	Ni ppm	Co ppm	Cr ppm	Sr ppm	Ca %	Mg %	P %	Al %	K %	Na %
a506198	<b>683T-002</b>	0.45	2.33	4.80	<0.01	107.5	4684	8.28	24.2	23.5	63.5	25.8	0.38	1.69	0.061	2.12	0.09	0.002
a506198	<b>683T-003</b>	0.53	0.18	4.70	0.13	82.2	1635	0.72	42.7	25.1	61.9	37.7	0.65	1.83	0.064	2.32	0.05	0.034
a506198	<b>683T-004</b>	0.59	0.21	4.89	0.03	76.3	1844	0.89	47.4	25.2	77.8	41.3	0.57	1.90	0.059	2.47	0.05	0.022
a506198	<b>683T-005</b>	0.88	0.67	4.28	0.14	75.4	2277	0.91	27.3	19.6	49.0	37.7	1.36	1.45	0.053	1.89	0.05	0.015
a506198	<b>683T-006</b>	1.13	0.64	4.41	0.05	61.3	2509	1.08	31.3	21.6	55.4	37.1	1.46	1.63	0.051	2.01	0.05	0.012
a506198	<b>683T-007</b>	3.41	1.43	5.70	0.03	60.0	3177	1.32	30.2	23.9	58.7	22.3	0.45	1.61	0.049	2.24	0.06	0.008
a506198	<b>683T-008</b>	2.32	1.02	5.27	0.03	67.7	2907	1.26	32.2	24.2	59.7	28.7	0.50	1.68	0.050	2.21	0.06	0.011
a506198	<b>683T-009</b>	2.76	1.13	5.19	0.02	73.0	3100	1.55	30.6	23.8	56.7	30.1	0.58	1.62	0.052	2.15	0.06	0.011
a506198	<b>683T-010</b>	3.19	1.33	5.37	0.01	74.5	3277	1.60	29.6	24.1	56.5	25.8	0.48	1.58	0.054	2.17	0.06	0.009
a506198	<b>683T-011</b>	1.56	0.84	4.74	0.01	57.9	2588	1.00	31.1	21.8	58.3	27.1	0.55	1.67	0.048	2.05	0.05	0.010
a506198	<b>683T-012</b>	0.59	0.30	4.07	<0.01	108.5	1973	2.02	27.3	17.4	48.9	37.3	0.63	1.28	0.054	2.26	0.06	0.011
a506198	<b>683T-013</b>	0.58	0.28	3.82	<0.01	104.9	1911	1.82	25.3	15.7	46.6	34.2	0.58	1.17	0.056	2.01	0.05	0.011
a506198	<b>683T-014</b>	0.55	0.20	3.54	<0.01	91.4	1451	1.03	20.2	14.3	36.6	35.8	0.55	0.93	0.067	1.60	0.05	0.014
a506198	<b>683T-015</b>	0.51	0.16	3.84	<0.01	133.0	891	0.38	18.7	15.5	30.5	34.7	0.47	0.75	0.029	1.88	0.07	0.010
a506198	<b>683T-016</b>	0.53	0.17	3.51	<0.01	128.1	1943	1.43	13.7	13.3	20.9	29.3	0.40	0.42	0.049	1.24	0.05	0.010
a506198	<b>683T-017</b>	0.56	0.45	3.53	0.01	140.9	2280	1.18	12.5	14.0	20.7	28.1	0.39	0.44	0.045	1.25	0.06	0.006
a506198	<b>683T-018</b>	0.54	0.31	3.36	0.01	141.6	1997	0.94	13.6	13.1	23.6	27.3	0.41	0.46	0.043	1.19	0.05	0.007
a506198	<b>683T-019</b>	6.25	2.62	6.44	0.03	66.3	4507	1.92	26.3	28.2	57.0	12.1	0.24	1.46	0.049	2.32	0.07	0.004
a506198	<b>683T-021</b>	0.58	0.20	4.12	0.02	212.6	1866	0.42	20.7	18.5	30.9	46.5	1.44	0.80	0.061	1.29	0.09	0.014
a506198	<b>683T-022</b>	0.58	0.17	3.35	0.01	199.4	3273	1.09	12.2	16.1	19.4	36.3	0.51	0.39	0.059	1.40	0.06	0.007
a506198	<b>683T-023</b>	0.64	0.26	3.33	0.03	223.3	3394	1.72	14.0	15.4	22.0	34.3	0.49	0.36	0.065	1.52	0.06	0.005
a506198	<b>683T-024</b>	0.42	0.19	3.61	0.01	200.0	1947	0.76	13.5	14.1	21.2	28.1	0.39	0.46	0.041	1.29	0.05	0.007
a506198	<b>683T-025</b>	0.60	0.19	3.88	0.03	207.2	2048	0.44	17.9	17.8	24.7	37.6	1.08	0.67	0.055	1.06	0.07	0.013
a506198	<b>683T-026</b>	1.18	0.34	4.02	0.05	178.4	1918	0.48	16.1	16.8	22.6	44.3	1.10	0.78	0.062	1.42	0.08	0.017
a506198	<b>683T-027</b>	1.13	0.33	4.06	0.05	177.6	1944	0.54	16.0	16.9	22.9	42.1	0.86	0.78	0.062	1.44	0.08	0.016
a506198	<b>683T-028</b>	2.08	0.59	4.22	0.09	114.7	1998	0.69	11.8	16.1	17.8	28.7	0.54	0.73	0.063	1.33	0.06	0.011
a506198	<b>683T-029</b>	1.14	0.34	4.04	0.05	177.3	2037	0.54	15.2	17.2	21.5	42.1	0.94	0.78	0.062	1.47	0.07	0.017
a506198	<b>683T-030</b>	1.74	0.49	4.41	0.11	124.4	2020	0.76	12.7	16.1	19.7	27.9	0.48	0.72	0.062	1.32	0.06	0.012
a506198	<b>683T-031</b>	0.65	0.18	4.29	0.01	168.4	2500	1.24	17.3	17.0	27.0	36.5	0.56	0.71	0.048	1.60	0.05	0.014
a506198	<b>683T-032</b>	0.50	0.22	4.38	<0.01	170.9	2356	0.48	16.5	15.4	24.4	31.8	0.48	0.69	0.050	1.71	0.06	0.010
a506198	<b>683T-033</b>	0.63	0.26	4.02	<0.01	176.2	2258	0.68	16.6	14.9	28.0	32.1	0.44	0.60	0.051	1.85	0.06	0.010
a506198	<b>683T-034</b>	0.50	0.22	4.03	<0.01	188.8	2063	1.06	17.1	15.5	26.7	30.2	0.44	0.69	0.049	1.72	0.07	0.009
a506198	<b>683T-035</b>	0.46	0.19	3.62	<0.01	150.4	1909	1.27	17.1	14.4	25.7	27.5	0.45	0.68	0.051	1.48	0.06	0.012

WO #	Sample ID	Ti %	B ppm	Ga ppm	La ppm	Sc ppm	Th ppm	U ppm	V ppm	W ppm
a506198	<b>683T-002</b>	0.037	2	6.5	10.1	6.9	0.7	0.4	75	0.3
a506198	<b>683T-003</b>	0.091	2	7.0	6.7	9.1	0.8	0.3	128	0.1
a506198	<b>683T-004</b>	0.089	2	7.2	5.7	9.4	0.7	0.3	126	0.1
a506198	<b>683T-005</b>	0.054	1	5.8	5.9	7.5	0.6	0.3	81	0.1
a506198	<b>683T-006</b>	0.046	2	6.2	6.0	7.8	0.6	0.2	82	0.1
a506198	<b>683T-007</b>	0.041	2	7.3	7.0	8.1	0.6	0.3	99	0.2
a506198	<b>683T-008</b>	0.052	1	7.1	6.6	8.2	0.6	0.3	98	0.2
a506198	<b>683T-009</b>	0.047	2	6.9	7.6	8.3	0.6	0.3	94	0.2
a506198	<b>683T-010</b>	0.043	1	7.1	7.8	8.6	0.6	0.3	96	0.2
a506198	<b>683T-011</b>	0.051	1	6.4	5.4	7.6	0.5	0.2	87	0.1
a506198	<b>683T-012</b>	0.075	1	6.3	7.9	8.0	0.5	0.4	93	0.2
a506198	<b>683T-013</b>	0.066	1	5.7	7.5	7.3	0.6	0.3	90	0.2
a506198	<b>683T-014</b>	0.065	1	5.1	7.9	5.9	0.8	0.3	95	0.1
a506198	<b>683T-015</b>	0.050	1	5.4	10.6	7.9	1.4	0.5	84	0.1
a506198	<b>683T-016</b>	0.042	2	3.8	11.8	6.5	0.5	0.5	90	0.3
a506198	<b>683T-017</b>	0.030	2	3.8	11.0	6.2	0.5	0.5	74	0.2
a506198	<b>683T-018</b>	0.032	1	3.6	9.9	6.0	0.6	0.4	74	0.2
a506198	<b>683T-019</b>	0.016	1	8.1	11.0	8.8	0.7	0.4	94	0.3
a506198	<b>683T-021</b>	0.034	2	4.2	7.8	12.9	1.3	0.4	93	0.1
a506198	<b>683T-022</b>	0.020	2	4.3	7.1	5.9	0.3	0.5	81	0.3
a506198	<b>683T-023</b>	0.014	2	4.3	8.1	6.2	0.3	0.6	76	0.3
a506198	<b>683T-024</b>	0.035	2	4.2	7.3	6.5	0.6	0.5	82	0.2
a506198	<b>683T-025</b>	0.043	2	3.6	7.9	10.0	1.2	0.4	82	0.1
a506198	<b>683T-026</b>	0.049	2	4.5	8.7	9.0	1.2	0.4	77	0.1
a506198	<b>683T-027</b>	0.048	2	4.6	8.5	8.8	1.3	0.4	77	0.1
a506198	<b>683T-028</b>	0.041	1	4.3	7.8	6.1	1.0	0.4	66	0.1
a506198	<b>683T-029</b>	0.051	2	4.6	8.6	8.2	1.2	0.4	75	0.1
a506198	<b>683T-030</b>	0.054	1	4.4	7.8	6.5	1.1	0.4	78	0.2
a506198	<b>683T-031</b>	0.057	2	4.9	12.2	6.9	0.7	0.4	87	0.2
a506198	<b>683T-032</b>	0.039	2	4.9	9.9	6.9	0.8	0.4	73	0.2
a506198	<b>683T-033</b>	0.037	2	5.4	8.3	6.4	0.5	0.4	91	0.2
a506198	<b>683T-034</b>	0.039	2	5.4	7.2	6.4	0.7	0.4	94	0.2
a506198	<b>683T-035</b>	0.044	2	4.6	7.7	6.1	0.8	0.4	86	0.2

WO #	Sample ID	UTM			Total	Sub-	Au	Ag	As	Sb	Zn	Pb	Cu	Hg	Tl	Te	Se
		East	North	Elev.	kg	sam(g)	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	
a506198	<b>683T-036</b>	604861	6037073	1199	2.1	30	1.2	95	6.6	1.08	284.2	20.89	32.86	14	0.06	0.02	<0.1
a506198	<b>683T-037</b>	604959	6037246	1176	1.9	30	1.2	179	8.4	1.31	444.5	29.77	46.93	21	0.06	0.02	0.1
a506198	<b>683T-038</b>	605018	6037435	1154	2.5	30	3.6	178	7.9	0.99	371.1	36.21	43.91	21	0.06	0.02	<0.1
a506198	<b>683T-039</b>	605093	6037618	1132	2.3	30	1.3	152	7.3	0.95	331.1	28.99	39.52	20	0.06	0.02	<0.1
a506198	<b>683T-041</b>	605266	6037681	1108	1.9	30	0.9	196	7.1	1.15	328.3	26.49	39.36	26	0.06	0.03	0.1
a506198	<b>683T-042</b>	605461	6037707	1083	2.1	30	1.3	154	8.5	1.31	399.2	27.16	44.27	10	0.06	0.02	<0.1
a506198	<b>683T-043</b>	605653	6037663	1064	2.4	30	4.4	99	6.4	0.89	240.4	18.73	32.10	14	0.07	0.02	<0.1
a506198	<b>683T-044</b>	602937	6036102	1425	1.1	30	1.7	137	9.6	0.74	306.5	12.99	57.28	11	0.05	0.04	0.2
a506198	<b>683T-045</b>	602907	6036291	1385	1.2	30	3.1	232	13.7	0.52	430.2	24.15	57.14	23	0.06	0.20	0.2
a506198	<b>683T-046</b>	602883	6036471	1306	2.6	30	2.2	157	11.8	0.47	288.4	16.88	56.98	14	0.06	0.10	<0.1
a506198	<b>683T-047</b>	602832	6036651	1232	1.3	30	1.1	135	10.7	0.47	245.4	14.45	56.29	17	0.07	0.07	0.1
a506198	<b>683T-048</b>	602788	6036844	1172	2.1	30	3.9	139	9.6	0.47	247.5	15.09	54.89	21	0.07	0.07	0.3
a506198	<b>683T-049</b>	602798	6036923	1159	2.5	30	2.2	274	12.4	0.70	256.7	17.77	79.89	14	0.05	0.18	0.1
a506198	<b>683T-050</b>	603228	6037056	1139	3.0	30	2.8	323	14.1	0.78	303.2	25.63	95.48	15	0.06	0.19	0.1
a506198	<b>683T-051</b>	605156	6036894	1190	1.2	30	6.3	3178	147.6	121.62	874.5	65.47	775.62	282	0.13	0.06	0.9
a506198	<b>683T-052</b>	605323	6036988	1145	2.6	30	17.9	355	13.5	6.57	367.7	15.06	146.42	44	0.09	0.02	0.2
a506198	<b>683T-053</b>	605511	6037042	1102	2.2	30	1.8	188	9.0	2.70	266.9	12.21	97.56	31	0.10	0.03	0.1
a506198	<b>683T-054</b>	605697	6037107	1070	1.6	30	1.0	158	8.5	2.15	275.6	11.77	103.56	28	0.09	0.03	0.2
<b><u>Field Blank</u></b>																	
a506198	<b>683T-001</b>				2.0	30	1.3	112	2.4	0.18	42.4	6.83	26.83	6	0.05	0.02	0.2
<b><u>Lab Blank</u></b>																	
a506198	<b>G-1</b>				-	30	<0.2	11	0.4	<0.02	48.3	2.52	2.19	<5	0.39	<0.02	<0.1
<b><u>Field Duplicate</u></b>																	
a506198	<b>683T-019</b>				1.4	30	8.3	2865	30.3	0.80	542.7	55.58	635.51	28	0.14	0.25	0.3
a506198	<b>683T-020</b>				2.6	30	23.4	2686	30.4	0.83	546.1	57.16	643.77	28	0.14	0.24	0.3
a506198	<b>683T-039</b>				2.3	30	1.3	152	7.3	0.95	331.1	28.99	39.52	20	0.06	0.02	<0.1
a506198	<b>683T-040</b>				2.0	30	4.2	143	7.7	1.03	320.9	28.80	39.71	17	0.06	0.03	<0.1
<b><u>Lab Duplicate</u></b>																	
a506198	<b>683T-029</b>				3.1	30	5.4	201	12.4	1.52	172.5	13.37	75.95	21	0.08	0.13	0.2
a506198	<b>RE 683T-029</b>				-	30	13.2	201	12.4	1.47	174.6	13.32	76.88	16	0.08	0.14	0.3
a506198	<b>683T-046</b>				2.6	30	2.2	157	11.8	0.47	288.4	16.88	56.98	14	0.06	0.10	<0.1
a506198	<b>RE 683T-046</b>				-	30	1.3	160	12.0	0.46	287.6	17.29	57.67	14	0.06	0.09	0.1

WO #	Sample ID	Mo ppm	Bi ppm	Fe %	S %	Ba ppm	Mn ppm	Cd ppm	Ni ppm	Co ppm	Cr ppm	Sr ppm	Ca %	Mg %	P %	Al %	K %	Na %
a506198	<b>683T-036</b>	0.45	0.13	4.05	<0.01	195.2	1637	1.50	20.9	15.3	33.1	34.9	0.49	0.72	0.065	1.45	0.06	0.014
a506198	<b>683T-037</b>	0.51	0.17	4.31	<0.01	169.7	2171	2.70	21.9	16.6	34.5	40.5	0.57	0.80	0.064	1.57	0.06	0.014
a506198	<b>683T-038</b>	0.47	0.14	4.46	0.01	145.6	1876	2.33	21.6	17.2	34.0	33.1	0.50	0.82	0.065	1.71	0.06	0.012
a506198	<b>683T-039</b>	0.44	0.14	3.97	<0.01	160.5	1739	1.90	19.8	16.2	32.2	34.7	0.49	0.78	0.064	1.66	0.06	0.014
a506198	<b>683T-041</b>	0.52	0.15	4.24	<0.01	229.5	2128	2.32	21.5	16.7	34.7	36.8	0.55	0.77	0.077	1.67	0.06	0.014
a506198	<b>683T-042</b>	0.50	0.21	4.19	0.02	160.5	2133	2.13	20.0	16.6	29.6	38.5	0.57	0.75	0.068	1.48	0.06	0.016
a506198	<b>683T-043</b>	0.40	0.14	3.67	<0.01	212.5	1545	1.24	16.9	14.2	25.7	39.0	0.52	0.70	0.068	1.51	0.07	0.020
a506198	<b>683T-044</b>	0.72	0.15	4.42	0.01	115.0	1924	1.11	33.9	23.3	56.3	39.5	0.75	1.38	0.072	2.16	0.06	0.014
a506198	<b>683T-045</b>	0.54	0.45	4.33	0.02	87.7	2115	1.54	22.7	17.5	42.9	25.3	0.49	1.26	0.066	1.97	0.07	0.008
a506198	<b>683T-046</b>	0.43	0.26	4.86	<0.01	90.9	1904	1.01	39.2	22.3	64.0	43.7	0.71	1.66	0.052	2.40	0.07	0.012
a506198	<b>683T-047</b>	0.41	0.34	5.17	<0.01	100.9	1758	0.81	41.7	23.1	71.7	49.5	0.78	1.67	0.049	2.69	0.07	0.013
a506198	<b>683T-048</b>	0.48	0.20	4.98	<0.01	108.9	1940	0.97	39.9	22.3	68.5	51.4	0.82	1.66	0.052	2.62	0.07	0.013
a506198	<b>683T-049</b>	1.50	0.55	4.90	0.08	94.4	2261	0.91	21.3	19.4	29.9	29.2	0.52	1.43	0.071	1.86	0.06	0.010
a506198	<b>683T-050</b>	2.07	0.70	5.03	0.06	97.4	2454	1.13	24.7	21.6	37.5	30.6	0.52	1.52	0.068	2.03	0.06	0.009
a506198	<b>683T-051</b>	1.43	0.89	4.64	0.06	337.3	3703	3.99	31.3	19.2	44.0	32.3	0.37	0.37	0.044	1.39	0.07	0.005
a506198	<b>683T-052</b>	0.45	0.20	3.58	0.01	242.3	1698	1.93	18.2	13.2	24.0	42.1	0.55	0.58	0.055	1.77	0.09	0.012
a506198	<b>683T-053</b>	0.37	0.17	3.20	0.01	234.5	1353	1.23	16.7	11.9	21.2	42.3	0.54	0.60	0.056	1.78	0.10	0.013
a506198	<b>683T-054</b>	0.42	0.17	3.60	<0.01	275.3	1663	1.50	19.4	13.5	26.1	51.2	0.63	0.68	0.057	1.96	0.09	0.016
<b><u>Field Blank</u></b>																		
a506198	<b>683T-001</b>	0.84	0.18	1.76	<0.01	35.2	333	0.37	24.0	9.6	20.1	15.6	0.20	0.32	0.056	0.59	0.06	0.008
<b><u>Lab Blank</u></b>																		
a506198	<b>G-1</b>	0.66	0.06	1.78	<0.01	222.8	558	0.01	7.0	4.5	78.5	50.0	0.43	0.59	0.081	0.94	0.53	0.058
<b><u>Field Duplicate</u></b>																		
a506198	<b>683T-019</b>	6.25	2.62	6.44	0.03	66.3	4507	1.92	26.3	28.2	57.0	12.1	0.24	1.46	0.049	2.32	0.07	0.004
a506198	<b>683T-020</b>	6.17	2.49	6.38	0.03	72.1	4600	1.99	26.2	29.3	57.0	12.5	0.25	1.46	0.052	2.31	0.07	0.004
a506198	<b>683T-039</b>	0.44	0.14	3.97	<0.01	160.5	1739	1.90	19.8	16.2	32.2	34.7	0.49	0.78	0.064	1.66	0.06	0.014
a506198	<b>683T-040</b>	0.45	0.14	4.31	<0.01	163.7	1689	1.62	21.0	16.7	34.2	35.0	0.49	0.82	0.069	1.66	0.05	0.015
<b><u>Lab Duplicate</u></b>																		
a506198	<b>683T-029</b>	1.14	0.34	4.04	0.05	177.3	2037	0.54	15.2	17.2	21.5	42.1	0.94	0.78	0.062	1.47	0.07	0.017
a506198	<b>RE 683T-029</b>	1.15	0.36	4.04	0.04	176.7	2034	0.55	16.1	16.9	21.6	43.2	0.94	0.78	0.063	1.49	0.08	0.017
a506198	<b>683T-046</b>	0.43	0.26	4.86	<0.01	90.9	1904	1.01	39.2	22.3	64.0	43.7	0.71	1.66	0.052	2.40	0.07	0.012
a506198	<b>RE 683T-046</b>	0.44	0.24	4.89	<0.01	91.1	1896	1.06	39.4	22.9	64.4	44.4	0.72	1.66	0.052	2.45	0.07	0.012

WO #	Sample ID	Ti %	B ppm	Ga ppm	La ppm	Sc ppm	Th ppm	U ppm	V ppm	W ppm
a506198	<b>683T-036</b>	0.054	2	4.9	8.3	6.2	1.0	0.4	109	0.1
a506198	<b>683T-037</b>	0.053	2	5.0	9.6	6.9	0.8	0.4	112	0.2
a506198	<b>683T-038</b>	0.047	2	5.5	8.8	6.9	0.8	0.4	119	0.1
a506198	<b>683T-039</b>	0.045	1	5.1	8.5	6.8	0.9	0.4	104	0.1
a506198	<b>683T-041</b>	0.053	2	5.3	10.2	7.2	0.8	0.5	119	0.1
a506198	<b>683T-042</b>	0.056	2	4.8	9.2	6.6	0.9	0.4	105	0.2
a506198	<b>683T-043</b>	0.052	2	4.9	9.1	6.3	1.1	0.5	94	0.1
a506198	<b>683T-044</b>	0.085	2	6.2	7.1	9.5	0.7	0.5	113	0.1
a506198	<b>683T-045</b>	0.050	2	6.3	7.7	7.8	0.6	0.4	82	0.1
a506198	<b>683T-046</b>	0.082	2	6.7	6.5	9.3	0.6	0.3	101	0.1
a506198	<b>683T-047</b>	0.085	1	7.3	6.1	9.5	0.6	0.4	117	<0.1
a506198	<b>683T-048</b>	0.085	1	7.3	6.6	9.3	0.6	0.4	114	0.1
a506198	<b>683T-049</b>	0.068	1	6.8	7.6	7.7	0.8	0.3	97	0.1
a506198	<b>683T-050</b>	0.063	1	7.3	7.9	8.7	0.8	0.4	103	0.2
a506198	<b>683T-051</b>	0.020	2	3.4	9.3	8.4	0.6	1.6	83	0.3
a506198	<b>683T-052</b>	0.040	3	4.7	9.9	7.1	0.9	1.1	84	0.1
a506198	<b>683T-053</b>	0.037	2	4.7	9.3	6.8	1.0	1.1	73	<0.1
a506198	<b>683T-054</b>	0.051	2	5.0	10.5	7.1	1.0	1.1	83	0.1
<b><u>Field Blank</u></b>										
a506198	<b>683T-001</b>	0.024	<1	2.1	11.0	2.1	3.4	0.5	23	<0.1
<b><u>Lab Blank</u></b>										
a506198	<b>G-1</b>	0.122	2	4.8	7.0	2.2	4.3	2.3	36	0.1
<b><u>Field Duplicate</u></b>										
a506198	<b>683T-019</b>	0.016	1	8.1	11.0	8.8	0.7	0.4	94	0.3
a506198	<b>683T-020</b>	0.017	1	8.2	11.9	9.1	0.7	0.4	94	0.3
a506198	<b>683T-039</b>	0.045	1	5.1	8.5	6.8	0.9	0.4	104	0.1
a506198	<b>683T-040</b>	0.054	2	5.5	9.1	6.7	0.9	0.4	117	0.1
<b><u>Lab Duplicate</u></b>										
a506198	<b>683T-029</b>	0.051	2	4.6	8.6	8.2	1.2	0.4	75	0.1
a506198	<b>RE 683T-029</b>	0.053	2	4.6	8.6	8.1	1.2	0.5	76	0.1
a506198	<b>683T-046</b>	0.082	2	6.7	6.5	9.3	0.6	0.3	101	0.1
a506198	<b>RE 683T-046</b>	0.086	1	7.0	6.4	9.3	0.6	0.3	102	<0.1

WO #	Sample ID	UTM East	UTM North	Elev.	Total kg	Sub- sam(g)	Au ppb	Ag ppb	As ppm	Sb ppm	Zn ppm	Pb ppm	Cu ppm	Hg ppb	Tl ppm	Te ppm	Se ppm
<b><u>Standard</u></b>																	
a506198	STANDARD DS6				-	30	47.6	269	21.3	3.54	143.5	29.86	124.69	228	1.72	2.11	4.2
a506198	STANDARD DS6				-	30	47.8	270	20.6	3.46	142.0	29.17	122.66	229	1.71	2.00	4.2

WO #	Sample ID	Mo ppm	Bi ppm	Fe %	S %	Ba ppm	Mn ppm	Cd ppm	Ni ppm	Co ppm	Cr ppm	Sr ppm	Ca %	Mg %	P %	Al %	K %	Na %
<b><u>Standard</u></b>																		
a506198	STANDARD DS6	11.49	5.11	2.82	0.02	168.1	706	6.25	24.9	10.8	184.5	39.9	0.85	0.57	0.078	1.90	0.15	0.072
a506198	STANDARD DS6	11.54	5.01	2.80	0.01	163.7	702	6.15	24.8	10.8	186.3	39.6	0.85	0.57	0.079	1.89	0.15	0.074

WO #	Sample ID	Ti %	B ppm	Ga ppm	La ppm	Sc ppm	Th ppm	U ppm	V ppm	W ppm
<b><u>Standard</u></b>										
a506198	STANDARD DS6	0.081	17	6.0	14.3	3.3	3.0	6.6	56	3.4
a506198	STANDARD DS6	0.081	17	6.0	14.2	3.2	3.0	6.6	56	3.3

## **APPENDIX B**

**Preliminary Interpretation**

**of Lithogeochemical Data**

**for**

**Volcanic Rocks**

**of the**

**Santa Maria Property**

**Mooseskin Johnny Lake Area**

**by**

**Tyler W. Ruks, M.Sc. (Geology)**

**Preliminary Interpretation of Lithogeochemical Data for  
Volcanic Rocks of the Santa Maria Property  
MooseSkin Johnny Lake Area**

**Omineca Mining Division, Northwestern British Columbia**

**NTS: 0931/06W  
Latitude: 54°28'00"N  
Longitude: 127°22'09"W**

**For:  
Bearclaw Capital Corp.**

**Prepared By:  
Tyler W. Ruks, M.Sc. (Geology)**

**Cambria Geosciences  
Suite 303 5455 W. Boulevard  
Vancouver BC  
V6M 3W5**

**March 30, 2006**

## TABLE OF CONTENTS

<b>Introduction.....</b>	<b>1</b>
<b>Procedure.....</b>	<b>2</b>
<b>Results .....</b>	<b>2</b>
<b>Discussion .....</b>	<b>3</b>
<b>Tectonic setting of Santa Maria volcanic rocks .....</b>	<b>3</b>
<b>Comparison of Santa Maria felsic volcanic rocks to those associated with         Cordilleran VMS deposits.....</b>	<b>3</b>
<b>Prospectivity of Santa Maria rocks .....</b>	<b>4</b>
<b>Conclusions .....</b>	<b>4</b>
<b>References .....</b>	<b>6</b>
<b>APPENDIX I.....</b>	<b>14</b>
<b>APPENDIX II .....</b>	<b>18</b>

## **Tables**

<b>Table 1</b>	Lithogeochemical data	page 15
<b>Table 2</b>	Hand sample descriptions	page 19

## **Maps**

<b>Map 1</b>	Sample location map for Santa Maria property (in pocket)
--------------	--

## **Figures**

<b>Figure 1</b>	Location Map	page 8
<b>Figure 2</b>	Zr/TiO <sub>2</sub> versus Nb/Y discrimination plot	page 9
<b>Figure 3</b>	Trace element multielement plots	page 10
<b>Figure 4</b>	Zr/Y ratios	page 11
<b>Figure 5</b>	Tectonic discrimination diagrams	page 12
<b>Figure 6</b>	Y-Nb-Zr systematics	page 13

---

## **INTRODUCTION**

---

The Santa Maria property is located 37 kilometres south-southwest of the town of Smithers, B.C., and 1.2 kilometres west of Mooseskin Johnny Lake (Fig. 1). Lithogeochemical sampling of this property was conducted from August 5<sup>th</sup> through 8<sup>th</sup>, 2005. Fourteen samples of volcanic rocks from the property were collected and subsequently analyzed for both major and trace elements at Acme Analytical Labs (Vancouver, B.C.) using inductively coupled plasma mass spectrometry (ICP-MS). The goal of this sampling program was to characterize the tectonic setting and the prospectivity of volcanic rocks on the property for volcanogenic massive sulphide (VMS) mineralization using lithogeochemistry.

---

## PROCEDURE

---

In order to characterize the tectonic setting of the volcanic rocks on the Santa Maria property, lithogeochemical sampling focused on acquiring a sample set containing the broadest range of similarly-aged volcanic rock types (i.e. a potential magma series). To reduce contamination of the volcanic rocks, samples with as little alteration and/or veining were selected for analysis, with weathered surfaces removed. To avoid interpretive error due to elemental mobility caused by alteration and/or metamorphic processes, only immobile trace elements are used herein to interpret the petrology of Santa Maria volcanic rocks. Rocks were analysed using the 4A and 4B packages offered by ACME Labs. Total abundances of the major oxides and several minor elements are reported on a 0.2 g sample analysed by ICP-emission spectrometry following a LiBO<sub>2</sub> fusion and dilute nitric digestion. Loss on ignition (LOI) is by weigh difference after ignition at 1000°C. Rare earth and refractory elements are determined by ICP mass spectrometry following a LiBO<sub>2</sub> fusion and nitric acid digestion of a 0.2 g sample. In addition, a separate 0.5 g split is digested in aqua regia and analysed by ICP-Mass spectrometry to report the precious and base metals.

---

## RESULTS

---

Sample names, coordinates (UTM), rock types, lithogeochemical data and hand sample descriptions are included in Appendices I and II of this report. A sample location map is shown in Map 1 (back pocket).

Use of the Zr/TiO<sub>2</sub> as a function of Nb/Y plot (Fig. 2: Pearce, 1996; Winchester and Floyd, 1977) allows discrimination of the lithologies at Santa Maria. This indicates that rock types collected during this program include basalts, basaltic-andesites, rhyodacites and rhyolites; all of which are subalkaline in composition.

Multielement diagrams normalized to primitive mantle (Fig. 3: Sun and McDonough, 1989) allow determination of the tectonic setting of volcanic rocks (e.g. volcanic arc versus within-plate volcanism). Relative to primitive mantle, the mafic to intermediate volcanic rocks of the Santa Maria property exhibit weak to moderate enrichment in light rare earth elements (LREEs), and low field strength elements (LFSEs), as well as weak to moderate negative anomalies in Nb and Ti (Fig. 3a). Basalt samples exhibit weak to moderate negative anomalies in Zr (Fig. 3a). Relative to primitive mantle, felsic volcanic rocks of the Santa Maria property exhibit moderate to strong enrichment in light rare earth elements (LREEs) and low field strength elements (LFSEs), as well as moderate to strong negative anomalies in Nb, Eu, and Ti (Fig. 3b).

Plots of Zr/Ti versus Y/Ti are useful for interpreting the tectonic setting of igneous rocks through characterization of tholeiitic (back-arc) through calc-alkalic (arc) affinities (Lentz, 1998, 1999). Plots of Zr/Ti versus Y/Ti indicate that the basalts and basaltic andesites of the Santa Maria property range from largely tholeiitic to transitional in character, with one weakly calc-alkalic basalt outlier (Fig. 4). For the

felsic volcanic rocks, Zr/Ti versus Y/Ti plots indicate largely transitional to calc-alkalic character, with one tholeiitic rhyolite outlier (Fig. 4).

Similar to Zr/Ti versus Y/Ti plots, La/Yb ratios can be used to characterize tholeiitic (back-arc) through calc-alkalic affinities for volcanic rocks (Barrett and MacLean, 1999). La/Yb ratios for basalts and basaltic andesites of the Santa Maria property range from 2.4 to 5.1, indicating tholeiitic to transitional affinities (Table 1; Appendix I). La/Yb ratios for felsic volcanic rocks of the Santa Maria property range from 5.4 to 10.2, indicating transitional to calc-alkalic affinities (Table 1; Appendix I).

Tectonic affinities of felsic igneous rocks can be interpreted using Nb vs. Y (Pearce et al., 1984), Ta vs. Yb (Pearce et al., 1996), and Y-Nb-Zr systematics (Barrett and Sherlock, 1996b). Nb vs. Y, and Ta vs. Yb tectonic discrimination plots (Fig. 5) suggest that felsic volcanic rocks of the Santa Maria property formed in a volcanic arc setting. Y-Nb-Zr systematics (Fig. 6) suggest that Santa Maria felsic volcanic rocks formed in a dominantly intra-oceanic island arc setting, with potential slight involvement with either a rifted mature island arc setting or back-arc basin setting which was developed on founded continental crust.

---

## DISCUSSION

---

### TECTONIC SETTING OF SANTA MARIA VOLCANIC ROCKS

Because mineralization at both the Santa Maria property and VMS deposits throughout the Cordillera are closely associated with felsic volcanic rocks, this discussion will focus mainly on the interpretation of lithogeochemical data for the felsic volcanic rocks collected from the Santa Maria property during this study. For both mafic and felsic rocks of the Santa Maria property, LREE and LFSE enrichment, coupled with negative anomalies in Nb and Ti, is indicative of subduction zone involvement in the genesis of these melts (i.e. formation in an arc or back-arc setting). Zr/Ti versus Y/Ti plots and La/Yb ratios suggest that mafic volcanic rocks of the Santa Maria property have dominantly tholeiitic character and formed in a mid-ocean ridge/back-arc setting whereas felsic rocks from the property have dominantly transitional to calc-alkalic character, indicating formation in a back-arc/arc environment (Fig. 4; Table 1; Appendix I). Tectonic setting discrimination diagrams have been created using a large dataset of felsic volcanic rocks from different tectonic settings (Pearce et al., 1984). For the felsic volcanic rocks of the Santa Maria property, tectonic setting discrimination diagrams suggest formation in an arc environment (Fig. 5).

### COMPARISON OF SANTA MARIA FELSIC VOLCANIC ROCKS TO THOSE ASSOCIATED WITH CORDILLERAN VMS DEPOSITS

Notable VMS deposits in the Cordillera where felsic rocks are associated with mineralization include Myra Falls, Tulsequah Chief, and Eskay Creek. Felsic volcanic rocks of the Eskay Creek mine are largely tholeiitic to transitional in character (with a tholeiitic average), whereas rhyolites from the Myra Falls and Tulsequah Chief deposits range from tholeiitic to calc-alkaline in character, with transitional averages (Fig. 4). In comparison, felsic volcanic rocks of the Santa Maria property are mostly

transitional to calc-alkaline in composition (with one tholeiitic outlier) and have a transitional average (Fig. 4). According to Nb-Y tectonic discrimination (Fig. 5), Eskay Creek rhyolites formed in a within-plate/anomalous ocean ridge setting (i.e. back arc), and both Tulsequah Chief and Myra Falls rhyolites formed in volcanic arc settings, with minor back-arc character (Fig. 5). Nb-Y tectonic discrimination suggests that Santa Maria felsic volcanic rocks formed in a volcanic arc setting (Fig. 5). A comparison of Y-Nb-Zr systematics for rhyolites of the Santa Maria property and those from various tectonic settings (Fig. 6) shows that Santa Maria rhyolites are most similar to those erupted in intra-oceanic arc settings, with a small overlap with those erupted in either a mature, rifted island arc setting, or a back-arc setting developed on foundered continental crust. Rhyolites associated with massive sulphide mineralization from both Myra Falls and Tulsequah Chief deposits are most similar to those erupted in either a rifted, mature island arc setting, or a back-arc environment developed on foundered continental crust (Fig. 6). Rhyolites from the Eskay Ck. mine form a series that extend from those similar to rifted mature island arc/back-arc basin developed on foundered continental crust rhyolites to those that developed along continental margins (Fig. 6).

## **PROSPECTIVITY OF SANTA MARIA ROCKS**

Felsic volcanic rocks of the Santa Maria property do not appear to exhibit as strong a back arc character as those of the Eskay Creek, Tulsequah Chief and Myra Falls deposits, as evidenced by tectonic discrimination diagrams (e.g. Fig. 5 and 6), and their dominantly transitional character (e.g. Fig. 4). Because of this, felsic volcanic rocks of the Santa Maria property are not as prospective for hosting VMS mineralization. However, felsic volcanic rocks with transitional to calc-alkaline signatures do exist at the Eskay Creek, Tulsequah Chief, and Myra Falls mines. Because of this similarity, based on lithogeochemical interpretation, the prospectivity of the Santa Maria property for VMS mineralization cannot be entirely ruled out. In summary, although felsic volcanic rocks of the Santa Maria property have fairly strong island arc character, weak to moderate back-arc/rifted mature arc signatures in Y-Nb-Zr systematics (Fig. 6), coupled with a dominantly transitional character similar to rhyolites from other producing VMS mines, suggests that the potential for VMS mineralization on the property should not be dismissed.

---

## **CONCLUSIONS**

---

Volcanic rocks of the Santa Maria property include basalts, basaltic-andesites, rhyodacites and rhyolites. Trace element lithogeochemistry for these rocks suggests formation in a volcanic arc/back-arc setting and a dominantly transitional character. Rhyolites of the Myra Falls and Tulsequah Chief mines are dominantly transitional in character, having formed in rifted mature volcanic arc or a back arc setting developed on continental crust. Felsic volcanic rocks hosting the Eskay Creek deposit are largely tholeiitic in character and appear to have formed in a variety of settings ranging from a rifted mature arc or back-arc setting developed on continental crust to a continental margin setting. This information suggests that felsic volcanic rocks of the Santa Maria property do not share the stronger back arc characters of felsic volcanic rocks from the Myra Falls, Tulsequah Chief and Eskay Creek mines, and as such, are not as prospective for hosting VMS mineralization.

However, although felsic volcanic rocks of the Santa Maria property have fairly strong island arc character, weak to moderate back-arc/rifted mature arc signatures in Y-Nb-Zr systematics, coupled with a dominantly transitional character similar to rhyolites from other producing VMS mines, suggests that the potential for VMS mineralization on the property should not be dismissed.

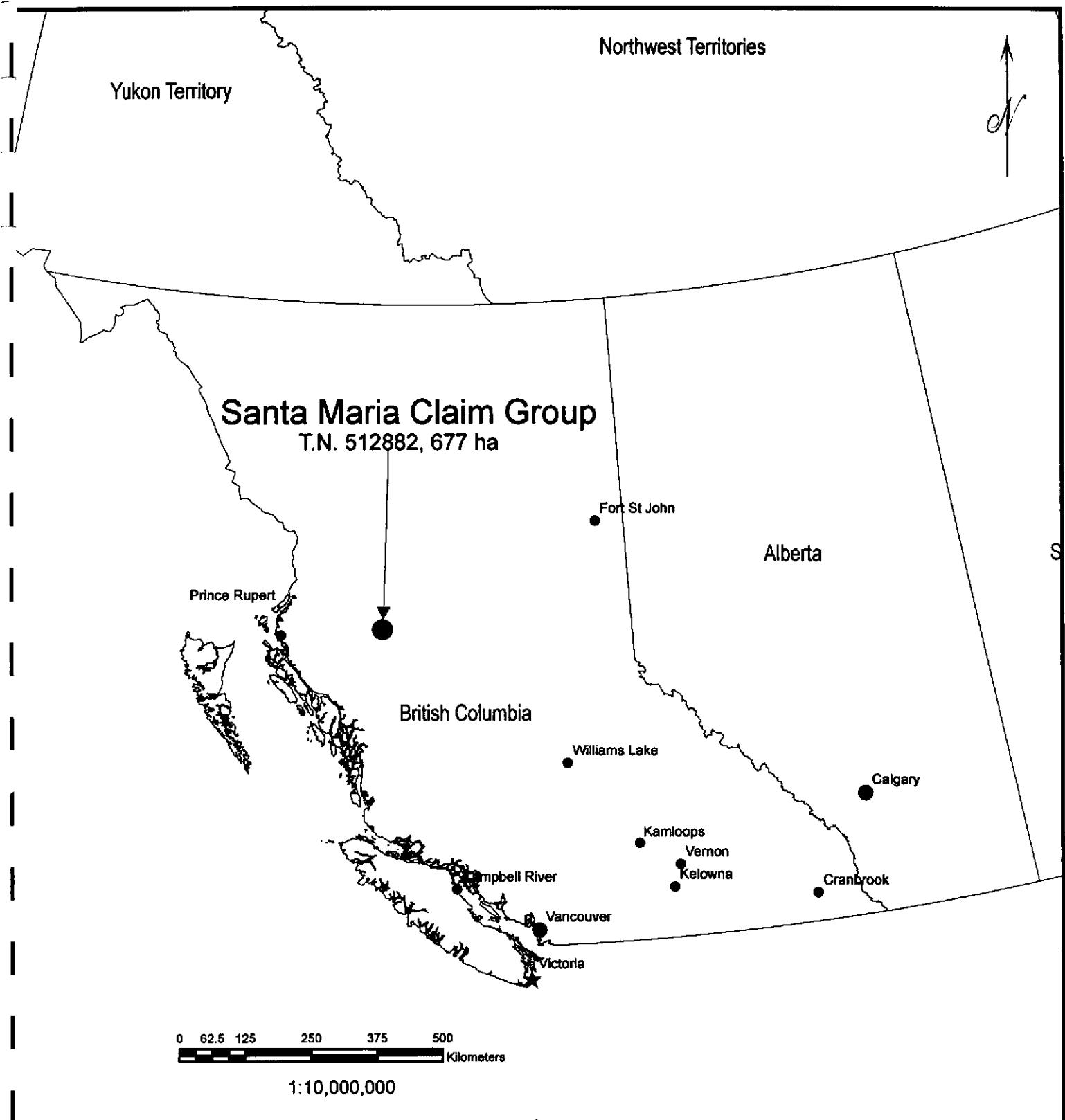
---

## REFERENCES

---

- Barrett, T. J., and MacLean, W. H., 1999, Volcanic sequences, lithogeochemistry, and hydrothermal alteration in some bimodal volcanic-associated massive sulfide systems, *in* Barrie, C. T., and Hannington, M. D., eds., Volcanic-Associated Massive Sulfide Deposits: Processes and Examples in Modern and Ancient Environments, Society of Economic Geologists, p. 101-131.
- Barrett, T. J., and McLean, W. H., 1996, Lithogeochemical and Petrographic Aspects of Volcanic Rocks in the Dead Creek Area, Ambler District, Northwestern Alaska.: Unpublished Report for Teck Explorations Limited, Kamloops, British Columbia, p. 115p.
- Barrett, T. J., and Sherlock, R. L., 1996a, Geology, lithogeochemistry, and volcanic setting of the Eskay Creek Au-Ag-Cu-Zn deposit, northwestern British Columbia: Exploration and Mining Geology, v. 5, p. 339-368.
- , 1996b, Volcanic stratigraphy, lithogeochemistry, and seafloor setting of the H-W massive sulfide deposit, Myra Falls, Vancouver Island, British Columbia: Exploration and Mining Geology, v. 5, no. 4, p. 421-458.
- Bloomer, S. H., Ewart, A., Herdt, J. M., and Bryan, W. B., 1994, Geochemistry and origin of igneous rocks from the outer Tonga forearc (site 841). *in* Hawkins, J., Parson, L., and Allan, J., eds., Proceedings of the Ocean Drilling Program; Scientific Results, p. 625-646.
- Dudas, F. O., Campbell, I. H., and Gorton, M. P., 1983, Geochemistry of igneous rocks in the Hokuroku District, northern Japan, *in* Ohmoto, H., and Skinner, B. J., eds., The Kuroko and Related Volcanogenic Massive Sulfide Deposits. Economic Geology Monograph: Economic Geology Monograph, p. 115-133.
- Ewart, A., Bryan, W. B., Chappell, B. W., and Rudnick, R. L., 1994, Regional geochemistry of the Lau-Tonga arc and backarc systems., *in* Hawkins, J., Parson, L., and Allan, J., eds., Proceedings of the Ocean Drilling Program; Scientific Results, p. 385-425.
- Ewart, A., and Hawkesworth, C., 1987, The Pleistocene-Recent Tonga Kermedec arc lavas: Interpretation of new isotopic and rare earth data in terms of a depleted mantle source model: Journal of Petrology, v. 28, p. 495-530.
- Gamble, J. A., Wright, I. C., Woodhead, J. D., and McCulloch, M. T., 1995, Arc and back-arc geochemistry in the southern Kermadec arc - Ngatoro Basin and offshore Taupo Volcanic Zone, SW Pacific, *in* Smellie, J. L., ed., Volcanism Associated with Extension at Consuming Plate Margins, Geological Society of London, p. 193-212.
- Lentz, D. R., 1998, Petrogenetic evolution of felsic volcanic sequences associated with Phanerozoic volcanic-hosted massive sulfide systems: the role of extensional geodynamics: Ore Geology Reviews, v. 12, p. 289-327.
- , 1999, Petrology, geochemistry and oxygen isotopic interpretation of felsic volcanic and related rocks hosting the Brunswick 6 and 12 massive sulfide deposits (Brunswick Belt), Bathurst Mining Camp, New Brunswick, Canada: Economic Geology, v. 94, p. 57-86.
- Lentz, D. R., and Goodfellow, W. D., 1994, Character, distribution, and origin of zoned hydrothermal alteration features at the Brunswick No. 12 massive sulphide deposit, Bathurst mining camp, New Brunswick., *in* Merlini, S. A. A., ed., Current Research 1993. New Brunswick Department of Natural

- Resources and Energy, Minerals and Energy Division, Miscellaneous Report, p. 94-119.
- Pearce, J. A., 1996, A user's guide to basalt discrimination diagrams, *in* Wyman, D. A., ed., Trace element geochemistry of volcanic rocks: Applications for massive sulphide exploration, Geological Association of Canada, p. 79-113.
- Pearce, J. A., Harris, N. B. W., and Tindle, A. G., 1984, Trace element discrimination diagrams for the tectonic interpretation of granitic rocks: Journal of Petrology, v. 25, p. 956-983.
- Petford, N., and Atherton, M. J., 1995, Cretaceous-Tertiary volcanism and syn-subduction crustal extension in northern Peru., *in* Smellie, J. L., ed., Volcanism Associated with Extension at Consuming Plate Margins. Geological Society of London, Special Publications, p. 233-248.
- Sebert, C., and Barrett, T. J., 1996, Stratigraphy, alteration, and mineralization at the Tulsequah chief massive sulfide deposit, northwestern British Columbia: Exploration and Mining Geology, v. 5, no. 4, p. 281-308.
- Stoltz, A. J., 1995, Geochemistry of the Mount Windsor volcanics: Implications for the tectonic setting of Cambro-Ordovician volcanic-hosted massive sulfide mineralization in northeastern Australia: Economic Geology, v. 90, p. 1080-1097.
- Sun, S.-s., and McDonough, W. F., 1989, Chemical and isotopic systematics of oceanic basalts: implications for mantle composition and processes, *in* Saunders, A. D., and Norry, M. J., eds., Magmatism in the Ocean Basins, p. 313-345.
- Winchester, J. A., and Floyd, P. A., 1977, Geochemical discrimination of different magma series and their differentiation products using immobile elements: Chemical Geology, v. 20, p. 325-343.



Cambria Geosciences

Bearclaw Capital Corp.

Santa Maria Claim Group

Property Location  
Map

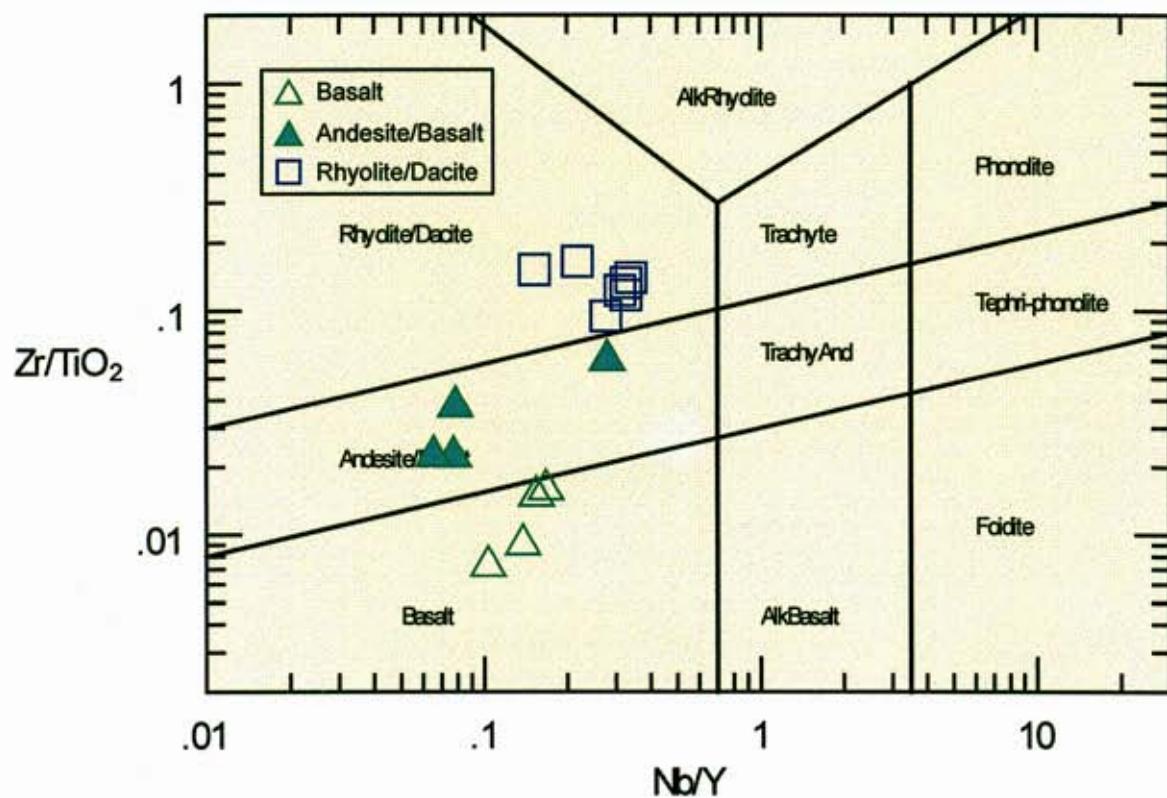


Fig. 2. Zr/TiO<sub>2</sub> versus Nb/Y discrimination plot (Pearce, 1996; Winchester and Floyd, 1977) for Santa Maria volcanic rock types.

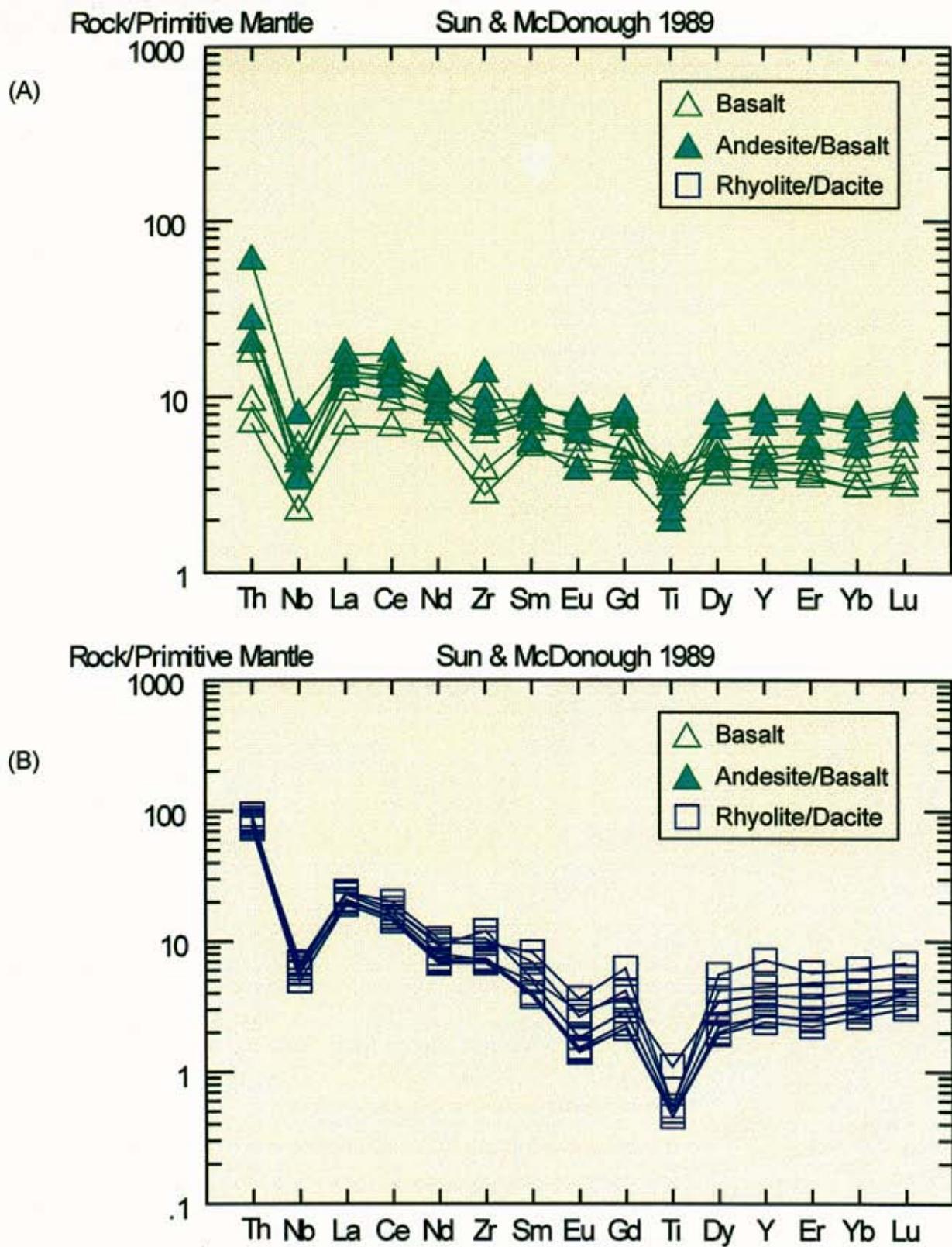


Fig. 3. Multielement plots for mafic (A) and felsic volcanic rocks (B) of the Santa Maria property normalized to primitive mantle (Sun and McDonough, 1989)

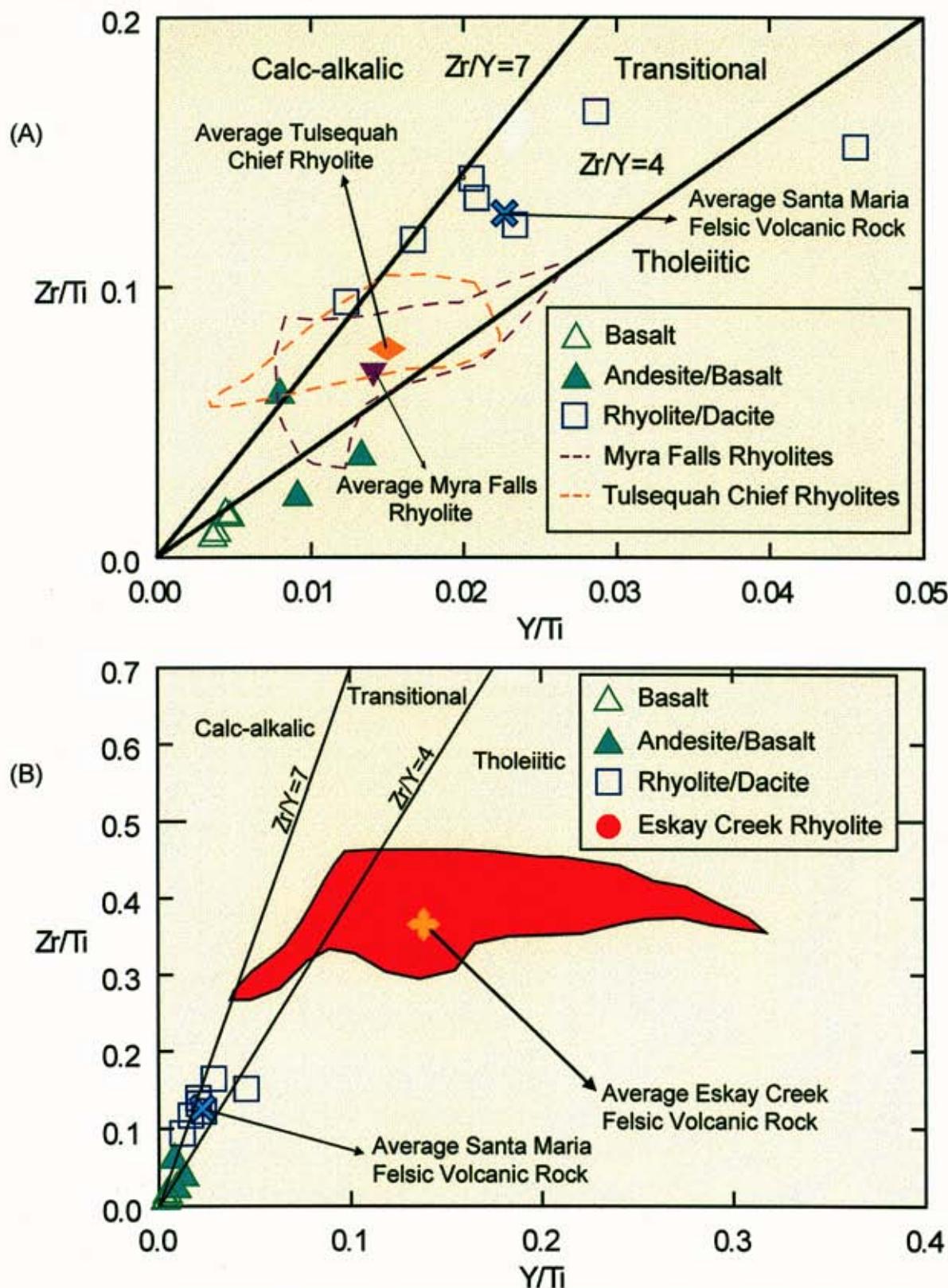


Fig. 4. Zr/Y ratios for deciphering tholeiitic and calc-alkalic affinities of igneous rocks (Lentz, 1998, 1999) : (A) Zr/Y ratios for Santa Maria volcanic rocks, Myra Falls and Tulsequah Chief mine felsic volcanic rocks; (B) Zr/Y ratios for Santa Maria volcanic rocks and Eskay Creek mine felsic volcanic rocks. Data sources: Eskay Ck., B.C.: Barrett and Sherlock, 1996a; Myra Falls, B.C.: Barrett and Sherlock, 1996b; Tulsequah Chief, B.C.: Sebert and Barrett, 1996.

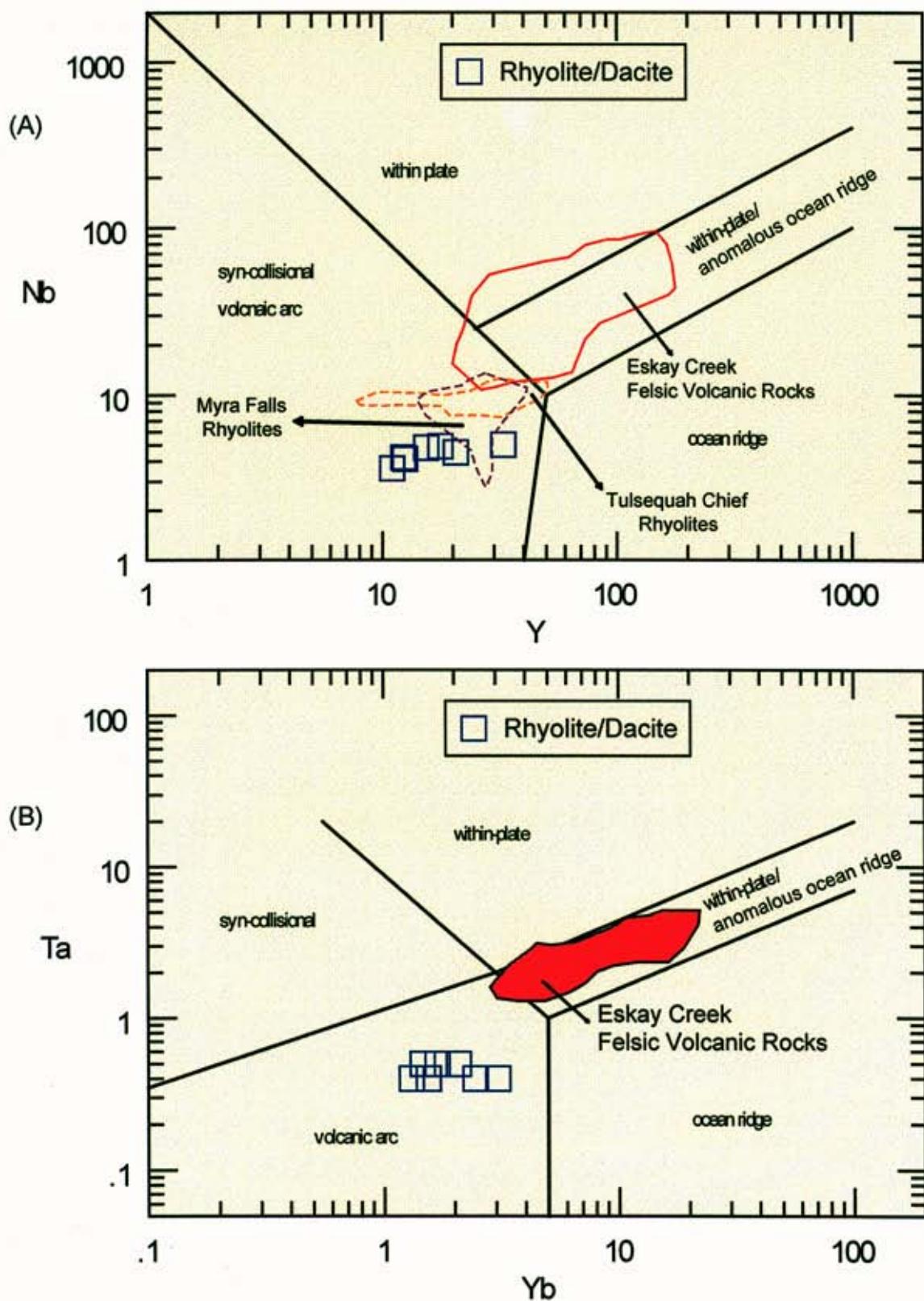
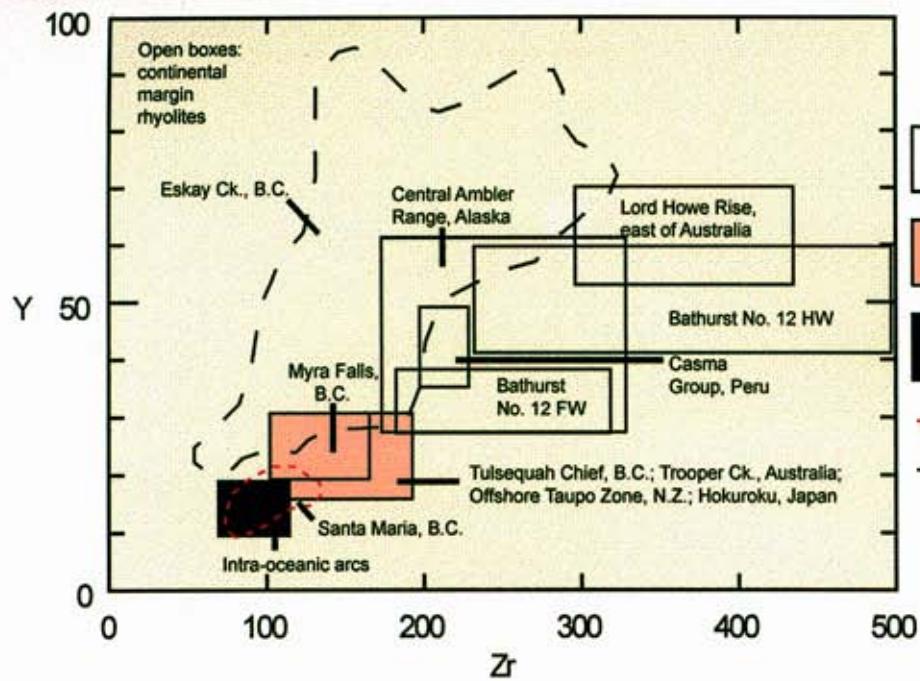


Fig. 5. Discrimination diagrams for Santa Maria and Eskay Creek mine felsic volcanic rocks: (A) Nb vs. Y (Pearce et al., 1984); (B) Ta vs. Yb (Pearce et al., 1996). Data for Eskay Creek mine felsic volcanic rocks is from Barrett and Sherlock (1996a).

(A)



(B)

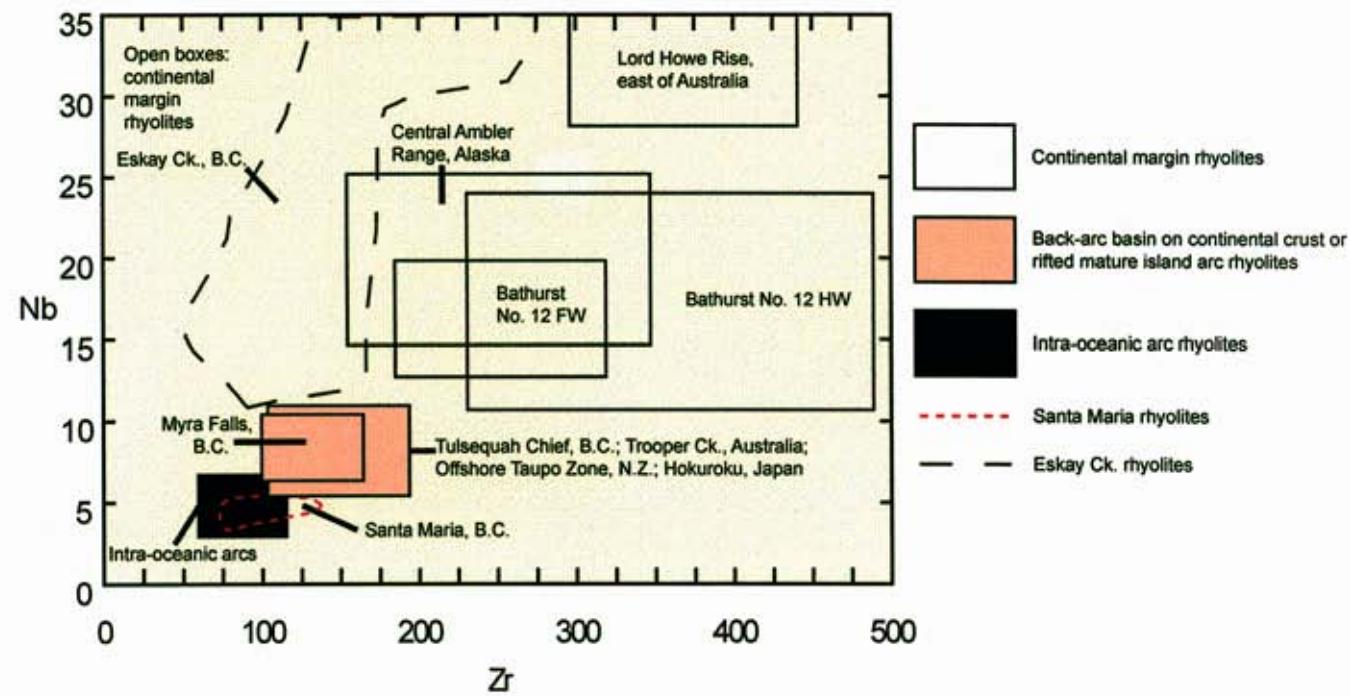


Fig. 6. Comparison of Y-Zr (A) and Nb-Zr (B) contents of rhyolites from the Santa Maria property with rhyolites from a variety of tectonic settings. Fields with open boxes refer to rhyolites generated in continental margin settings, whereas the dark field refers to rhyolites generated in intra-oceanic arc (i.e. no continental crust) settings. The pink fields refer to rhyolites generated in mature rifted island arc settings, or in back-arc basins with founded continental crust influence. The black and red dashed regions refer to rhyolites from the Eskay Ck. mine (Barret and Sherlock, 1996a) and the Santa Maria property (this study). Sources of data: Intra-oceanic (primitive) island arcs: Ewart and Hawkesworth, 1987; Bloomer et al., 1994 and Ewart et al., 1994; Trooper Creek Formation, Australia: Stoltz, 1995; Offshore Taupo Zone, New Zealand: Gamble et al., 1995; Hokuroku Basin, Japan: Dudas et al., 1983; Tulsequah Chief, British Columbia: Sebert and Barrett, 1996; Myra Falls, British Columbia: Barrett and Sherlock, 1996b; Bathurst No. 12, New Brunswick: Lentz and Goodfellow, 1994; Casma Group, Peru: Petford and Atherton, 1995; Central Ambler Range, Alaska: Barrett and McLean, 1996; Lord Howe Rise, submerged continental margin: Bloomer et al., 1994. Modified from Barret and Sherlock (1996b).

---

**APPENDIX I**

---

Table 1. Lithogeochemical data for volcanic rocks of the Santa Maria property

Station	TR003	TR005	TR009	TR010	TR015	TR016
SampleID	68301	68302	68303	68304	68305	68306
Easting	604447	604807	605404	605458	604612	604606
Northing	6036554	6036406	6036639	6036571	6036910	6036750
Lithology (Pearce, 1996)	Basalt	Andesite/Basalt	Andesite/Basalt	Andesite/Basalt	Basalt	Andesite/Basalt
wt. %						
SiO <sub>2</sub>	47.97	66.89	69.97	75.57	44.21	69.59
Al <sub>2</sub> O <sub>3</sub>	16.81	11.45	15.41	13.86	15.46	12.16
Fe <sub>2</sub> O <sub>3</sub>	9.64	8.19	3.59	3.73	10.08	5.34
MgO	6.02	1.65	0.16	0.08	7.15	1.32
CaO	8.25	2.3	0.22	0.07	7.47	1.98
Na <sub>2</sub> O	2.57	0.38	2.83	0.01	3.38	4.03
K <sub>2</sub> O	0.44	3.7	4.12	0.39	0.08	0.69
TiO <sub>2</sub>	0.79	0.57	0.42	0.48	0.72	0.67
P <sub>2</sub> O <sub>5</sub>	0.21	0.08	0.13	0.11	0.18	0.17
MnO	0.2	0.28	0.08	0.03	0.15	0.07
Cr <sub>2</sub> O <sub>3</sub>	0.022	0.001	0.001	0.001	0.023	0.001
LOI	7	4.2	2.8	5.5	11.1	3.8
TOT/C	0.92	0.4	0.01	0.01	1.67	0.41
TOT/S	0.01	0.04	0.01	0.01	0.01	0.01
SUM (ppm)	99.93	99.69	99.73	99.83	100	99.82
Ni	87	5	5	5	102	8
Sc	26	19	9	13	31	19
Ba	274.1	1693.9	1101.2	27.6	80.1	267.5
Be	<1	<1	1	<1	<1	<1
Co	35.8	11.7	5.3	1.1	37.2	4.2
Cs	2.9	17.4	13.2	1.2	0.4	2.4
Ga	15	13	15	11.6	13.6	15.3
Hf	1.3	2.5	4.2	3.5	1.1	3.1
Nb	2.5	2.4	5.6	3	1.6	2.4
Rb	12.6	106.9	98	7	2.1	12.2
Sn	<1	<1	<1	<1	<1	<1
Sr	412.3	86.5	146.7	398.7	182.2	63.8
Ta	0.2	0.1	0.4	0.2	<1	0.2
Th	0.8	1.7	5	2.3	0.6	2.3
U	0.5	0.4	1.4	1.1	0.2	1.1
V	221	70	39	31	203	61
W	<1	0.9	2.3	1.1	<1	0.7
Zr	42.8	76.4	151.7	108	31.3	90.6
Y	18.1	31	20	38.2	15.5	36.6
La	7.3	8.7	12	10.6	4.7	8.9
Ce	16.7	19.5	31.2	24.7	11.9	22.7
Pr	2.22	2.62	2.95	3.08	1.68	2.97
Nd	10.5	12.2	11.1	14	8.5	15.2
Sm	2.8	3.3	2.4	4.2	2.3	4
Eu	1.03	1.06	0.64	1.23	0.75	1.3
Gd	2.96	4.44	2.27	4.77	2.49	4.99
Tb	0.52	0.82	0.44	0.94	0.43	0.89
Dy	2.86	4.78	3.17	5.76	2.63	5.79
Ho	0.6	1.11	0.68	1.36	0.54	1.23
Er	1.75	3.3	2.39	4.05	1.66	3.9
Tm	0.27	0.49	0.36	0.66	0.25	0.57
Yb	1.5	3.08	2.52	3.86	1.52	3.68
Lu	0.25	0.52	0.47	0.64	0.23	0.59
Mo	0.7	0.2	0.4	0.4	0.1	0.4
Cu	44.1	22.6	17.5	1.3	33.4	3.4
Pb	2.9	4.7	6	3.8	2.1	4
Zn	89	49	91	16	58	175
Ni	72.9	3.2	2.5	0.7	82.1	1.7
As	1.6	5.5	4.9	2.9	3.9	2
Cd	0.5	<1	0.3	<1	0.1	0.1
Sb	0.2	2.2	4.8	1.5	0.1	0.3
Bi	<1	0.2	<1	<1	<1	<1
Ag	0.1	<1	0.1	<1	<1	<1
Au	0.7	<.5	<.5	<.5	0.6	<.5
Hg	<.01	<.01	0.01	<.01	<.01	0.01
Tl	<.1	0.1	0.1	<1	<1	<1
Se	<.5	<.5	<.5	<.5	<.5	<.5
La/Yb	4.9	2.8	4.8	2.7	3.1	2.4
Zr/Y	2.4	2.5	7.6	2.8	2.0	2.5

Table 1. Lithogeochemical data for volcanic rocks of the Santa Maria property

Station	TR017	TR019	TR024	TR030	TR031	RETR031
SampleID	68307	68308	68309	68310	68311	RE 68311
Easting	604651	604844	604571	604925	604888	604888
Northing	6036812	6037528	6036628	6036255	6036309	6036309
Lithology (Pearce, 1996)	Rhyolite/Dacite	Basalt	Basalt	Rhyolite/Dacite	Rhyolite/Dacite	Rhyolite/Dacite
wt. %						
SiO <sub>2</sub>	73.68	52.68	51.99	79.96	78.4	79.16
Al <sub>2</sub> O <sub>3</sub>	13.67	16.85	15.82	11.44	11.53	11.85
Fe <sub>2</sub> O <sub>3</sub>	2.17	7.96	9.11	1.16	1.25	1.25
MgO	0.3	2.02	6.14	0.14	0.16	0.16
CaO	0.18	6.18	5.29	0.04	0.03	0.03
Na <sub>2</sub> O	3.1	3.03	4.26	0.1	0.07	0.07
K <sub>2</sub> O	4.54	0.88	2.12	3.49	3.6	3.69
TiO <sub>2</sub>	0.24	0.85	0.72	0.12	0.1	0.1
P <sub>2</sub> O <sub>5</sub>	0.05	0.35	0.19	0.02	0.02	0.01
MnO	0.04	0.16	0.17	0.02	0.02	0.03
Cr <sub>2</sub> O <sub>3</sub>	0.001	0.001	0.02	0.001	0.001	0.001
LOI	1.6	8.8	3.8	3.3	4.6	3.4
TOT/C	0.01	1.42	0.32	0.01	0.01	0.01
TOT/S	0.21	0.01	0.01	0.01	0.01	0.01
SUM (ppm)	99.57	99.77	99.64	99.79	99.78	99.76
Ni	6	5	39	5	5	5
Sc	3	20	30	3	2	2
Ba	1077.2	436.5	822	764.9	1052.6	1022.2
Be	1	1	<1	1	1	1
Co	1.9	15.5	31.5	0.9	2.1	2.4
Cs	1.9	21.9	1.9	3.4	5.4	5.1
Ga	11.4	16.5	15.4	12.7	12.1	11.5
Hf	4.1	2.1	2.1	3.8	2.7	3
Nb	4.9	3.7	3.2	4.5	4.2	4.1
Rb	105.5	25.1	51.9	103.7	124.3	122.2
Sn	<1	<1	<1	<1	<1	<1
Sr	87.5	388	559.4	94.2	187.2	187.4
Ta	0.5	0.3	0.2	0.4	0.5	0.4
Th	6.6	1.5	2.3	6.9	8	7.1
U	2.9	0.7	0.9	2.3	1.5	1.5
V	12	154	218	6	<5	<5
W	0.3	<1	<1	1	0.5	0.8
Zr	135.9	75.9	68.7	118.5	83.8	79.5
Y	17.7	23.9	19.1	20.6	12.3	12.5
La	16.5	10.5	9.5	16.4	14.5	14
Ce	31.8	26.7	23.2	36	27.7	27
Pr	3.46	3.44	2.92	3.82	2.76	2.68
Nd	12.7	16	12.1	14.3	10	9.6
Sm	2.3	3.8	3.2	3.1	1.8	1.7
Eu	0.49	1.36	0.93	0.45	0.26	0.24
Gd	2.24	4.03	3.05	2.53	1.4	1.3
Tb	0.41	0.71	0.55	0.47	0.26	0.26
Dy	2.59	3.74	3.36	3.13	1.65	1.49
Ho	0.55	0.79	0.64	0.69	0.36	0.37
Er	1.8	2.54	2.03	2.33	1.24	1.2
Tm	0.31	0.38	0.29	0.39	0.22	0.21
Yb	2.08	2.23	1.85	2.45	1.46	1.55
Lu	0.32	0.38	0.31	0.4	0.3	0.25
Mo	0.8	0.1	0.4	0.3	0.2	0.1
Cu	4.1	3.2	85.5	27.2	45.5	45.2
Pb	5.3	1.3	1.6	2.4	5.7	5.9
Zn	164	69	71	25	20	21
Ni	1.8	1.2	25.2	1.3	1.3	1.4
As	5.7	1.7	2.9	<5	27.8	28.1
Cd	0.7	0.1	0.1	0.1	<1	<1
Sb	0.2	<1	0.2	0.3	1.6	1.4
Bi	<1	<1	<1	<1	<1	<1
Ag	<1	<1	<1	<1	<1	<1
Au	<.5	<.5	1.2	<.5	<.5	<.5
Hg	<.01	<.01	<.01	0.03	0.36	0.42
Tl	0.1	<1	<1	0.1	0.2	0.2
Se	<.5	<.5	<.5	<.5	<.5	<.5
La/Yb	7.9	4.7	5.1	6.7	9.9	9.0
Zr/Y	7.7	3.2	3.6	5.8	6.8	6.4

table 1. Lithogeochemical data for volcanic rocks of the Santa Maria property

Station	TR033	TR035	TR036	Standard
SampleID	68312	68313	68314	STANDARD SO-18/CSB
Easting	604846	604878	604845	
Northing	6036379	6036479	6036482	
Lithology (Pearce, 1996)	Rhyolite/Dacite	Rhyolite/Dacite	Rhyolite/Dacite	
wt. %				
SiO <sub>2</sub>	78.68	78.73	79.17	58.22
Al <sub>2</sub> O <sub>3</sub>	12.09	11.93	11.38	14.09
Fe <sub>2</sub> O <sub>3</sub>	1.27	1.29	1.6	7.59
MgO	0.17	0.11	0.21	3.32
CaO	0.06	0.04	0.26	6.36
Na <sub>2</sub> O	0.06	0.09	0.06	3.68
K <sub>2</sub> O	3.64	4.27	2.95	2.19
TiO <sub>2</sub>	0.11	0.11	0.12	0.69
P <sub>2</sub> O <sub>5</sub>	0.03	0.02	0.02	0.83
MnO	0.02	0.05	0.07	0.39
Cr <sub>2</sub> O <sub>3</sub>	0.001	0.001	0.001	0.549
LOI	3.7	3.1	4	1.9
TOT/C	0.01	0.01	0.05	2.4
TOT/S	0.01	0.01	0.01	5.36
SUM (ppm)	99.83	99.74	99.83	99.81
Ni	10	5	5	48
Sc	2	2	2	25
Ba	798.9	1075.8	767	477.6
Be	1	1	1	<1
Co	0.8	2.6	2.4	27.4
Cs	9.9	3.3	2.4	7
Ga	12.3	10.7	14.4	18
Hf	2.2	2.4	3.7	10.2
Nb	4.8	3.6	5	20.9
Rb	135.6	114.4	94.4	27
Sn	<1	<1	2	14
Sr	72.5	86.3	53.1	404
Ta	0.5	0.4	0.4	7.9
Th	7.5	6.3	7.2	9.5
U	1.6	1.5	2.5	15.9
V	<5	10	8	206
W	0.9	0.6	0.8	15.7
Zr	80.9	77.3	109.1	287
Y	15.4	11	32.8	33.2
La	15.9	13.3	16.6	11.9
Ce	29.5	25.6	31.7	28.2
Pr	2.86	2.5	3.77	3.27
Nd	11	9.3	13.4	13.5
Sm	2.2	1.8	3.7	2.9
Eu	0.31	0.25	0.62	0.87
Gd	1.76	1.29	3.74	2.94
Tb	0.35	0.28	0.66	0.5
Dy	2.09	1.44	4.14	3.05
Ho	0.47	0.33	0.94	0.63
Er	1.46	1.08	2.79	1.84
Tm	0.26	0.21	0.47	0.29
Yb	1.69	1.31	3.06	1.91
Lu	0.3	0.23	0.51	0.28
Mo	0.2	0.2	0.2	11.4
Cu	44.7	99.5	21.7	126.8
Pb	3	4.2	2.9	29.9
Zn	14	43	64	147
Ni	0.8	2.2	5.3	25.1
As	2.9	3.4	1.4	20.8
Cd	0.1	0.1	0.7	6.1
Sb	0.7	0.4	0.2	3
Bi	<.1	<.1	<.1	4.9
Ag	<.1	<.1	<.1	0.3
Au	<.5	<.5	<.5	42.1
Hg	0.01	0.13	0.03	0.24
Tl	0.1	0.1	0.1	1.7
Se	<.5	<.5	<.5	4.5
La/Yb	9.4	10.2	5.4	6.2
Zr/Y	5.3	7.0	3.3	8.6

---

## **APPENDIX II**

---

Table 2. Hand sample descriptions for volcanic rock samples collected from the Santa Maria property.

Station	SampleID	Description
TR003	68301	Fsp + Bt Porphyry
TR005	68302	Purple Fsp Porphyry
TR009	68303	Red Matrix Fsp Porphyry
TR010	68304	Andesitic Fsp Porphyry
TR015	68305	Basalt
TR016	68306	Andesitic/Dacitic Bt + Fsp Porphyry
TR017	68307	Dacitic/Rhyolitic Kspar Porphyry
TR019	68308	Andesitic/Basaltic Fsp Porphyry
TR024	68309	Andesitic/Basaltic Fsp Porphyry
TR030	68310	Qtz + Fsp Porphyry
TR031	68311	Qtz + Fsp Porphyry
RETR031	RE 68311	Qtz + Fsp Porphyry
TR033	68312	Qtz + Fsp Porphyry
TR035	68313	Qtz + Fsp Porphyry, Red Matrix
TR036	68314	Qtz + Fsp Porphyry, White Matrix

