COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

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## ASSESSMENT REPORT

# 1977 GEOLOGICAL AND GEOCHEMICAL REPORT

## ON THE

## BAY 1-4 MINERAL CLAIMS

## KAMLOOPS MINING DIVISION

51°05'N 119°47'W

Period of work June 2 - August 21, 1977

P.J. Wojdak



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EXPLORATION

WESTERN DISTRICT March 14, 1978

#### BAY ASSESSMENT REPORT

## INTRODUCTION

The Bay claims are located at Skwaam Bay on Adams Lake, 65 km northeast of Kamloops at 51°05'N, 119°47'W. The Bay property is situated on the steeper northern side of an asymetrical U-shaped valley occupied by Sinmax Creek. Relief on the property is 2500 feet and there is abundant outcrop, although large areas are covered by talus. Allweather gravel roads along Sinmax Valley and the west side of Adams Lake provide good access. A dirt road to the plateau provides detailed access to the southeastern end of the claim block. The 1977 program consisted of geological mapping at 1:20,000 scale, rock and soil geochemistry which covered all four Bay claims. The number of analyses reported is 38 rocks (major element analyses), 258 rocks (minor element analyses), 139 soil and 3 silt. Mapping control was established by 1:20,000 air photographs, an enlargement of published 1:50,000 topographic map 82 M/4 and altimeter. Field work was carried out in the period of June 2 - August 21, 1977.

#### PROPERTY AND OWNERSHIP

The Bay property consists of 4 100% Cominco owned claims within the Kamloops Mining Division:

<u>Claim</u>	Legal Corner Post	Units	Date Recorded
Bay 1	42513	10	May 10, 1977
Bay 2	42514	10	May 10, 1977
Bay 3	42515	2	May 10, 1977
Bay 4	42516	6	May 10, 1977
		28	

#### HISTORY AND PREVIOUS EXPLORATION

Showings near Adams Lake at the southeast end of the Bay claims have been explored at least since the 1920's when they were known as the Try Mc (1924) and Douglas and Lower Six (1930). Two short adits were present when the showings, covered by the Agate Group, were examined by D.W. Heddle for Cominco in 1959. The property was not recommended. Bulldozer trenching by Huestis Mining Corporation in 1961 failed to enhance the property. In 1967, Buchanan Mines Ltd. of Edmonton contracted IP and magnetic surveys to Eagle Geophysics (Assessment Report 1114). Subsequently, several holes were drilled but the work was not filed for assessment. In 1972, Adams Lake Mining Ltd. conducted an EM survey (Assessment Report 4134), a geochemical survey and geological mapping (Assessment Report 4135). This was followed by 1218 feet of diamond drilling in 5 holes in 1974 which did not intersect significant mineralization.

#### REGIONAL SETTING

The Bay property is underlain by the Paleozoic Eagle Bay Formation, a sequence about 100 km long by 25 km wide. It consists of basalt to rhyolite volcanic rocks, quartzite to argillaceous sedimentary rocks and limestone. These have been converted to phyllites and schists during greenschist facies metamorphism and two major phases of folding. The claims are located in a mineralized area: silver-barite-zinc-lead mineralization occurs 3 km northwest at Homestake and several high grade lead-zinc-silver showings occur 10-20 km east on the Adams Plateau.

#### BAY PROPERTY GEOLOGY (Plates 2, 3)

#### 1) Lithologies

Parallel traverses spaced 500 m apart or less were used to map the Bay claims. As rock strata strike parallel to the valley wall and dip at 70° - 90° relative to the land surface, these traverses can be represented as stratigraphic sections (Plate 2).

The stratigraphically lowest rocks are schistose green andesites of unit 8. These are at least 200 m thick and are best exposed at the northwestern and southeastern ends of the property. Most andesites are featureless fine grained rocks and fragmental varieties are rare. Chemical analyses in Table 1 show that composition of unit 8 includes basalt and dacite as well as andesite. Two samples of altered calcareous andesite (analyses 29 and 30) are depleted in SiO<sub>2</sub>, enriched in CaO and have a high weight loss on ignition, implying high CO<sub>2</sub> content. Major element analyses listed in Table 1 were performed at Cominco's Exploration Research Laboratory employing standard X-ray fluorescence procedures.

Unit 7 is a thin (~ 30 m thick) altered rhyolite that occurs as a lens within unit 8 andesite. It is a white to yellow-weathering quartz sericite schist with minor disseminated pyrite. It resembles the overlying rhyolite and is probably represented by the Zone B IP anomaly described in Assessment Report 1114. The main body of altered rhyolite, unit 6, lies above unit 8 andesite and is up to 250 m thick. It is altered along its entire length, although intensity of alteration diminishes at the southeast end of the property. Analysis 28 (Table 1) on section 9 characterizes relatively fresh rock, an aphanitic white rhyolite. Alteration produces a white to yellow and orange weathering pyritic quartz-sericite rock. Chemical analyses indicate leaching of Ca, Na and possibly Mg. Advanced alteration features loss of Fe and addition of K. High Si values reflect the common presence of interbedded chert. Locally, as on section 3, these chert beds are brecciated resulting in a rhyolite breccia.

A thin, probably discontinuous bed of black graphitic argillite (unit 5) caps unit 6 rhyolite. It may be present more commonly than indicated on the sections in the generally covered interval in between cliff-forming units 3 and 6.

Unit 4 consists of fresh, pale grey dacite to rhyodacite, locally with quartz-eyes, that was found only on section 6 where it is 180 m thick. A chemical analysis (#16) is dissimilar to both unit 3 and unit 6 but it may represent a local variant of either unit.

2.

Unit 3 is a distinctive pink, cherty, quartz-eye rhyolite, which reaches its greatest thickness of 210 m on section 5. It has not been affected by alteration.

Unit 3 rhyolite is overlain by sedimentary rocks of units 2 and 5 that are up to 250 m thick on section 4 but are more commonly about 60 m thick. Unit 2a is a highly fissile but poorly bedded pale green to grey rock that was initially mistaken for dacite. However, it grades vertically into argillaceous varieties (section 4) and laterally into siltstone/argillite slump breccias of unit 2b (sections 1, 3, 7). Any remaining doubt as to their origin is removed by chemical analyses 2 and 3. These are similar to published chemical analyses of some sedimentary rocks considered to be a mixture of silt, argillaceous and calcareous material. Their pale green colour results from high iron content. On section 8, unit 2 appears to be represented by a reddish-brown weathering carbonate. Section 4 includes immature reworked? conglomerate beds consisting of well-rounded quartzite clasts to 10 cm in size in an argillaceous, greywacke matrix.

The volcanic-sedimenatary succession represented by units 2 - 8 is capped by homogeneous, weakly schistose basalt of unit la. The base of the basalt is marked by conglomerate on section 5 consisting of well rounded quartzite cobbles to 15 cm in size, in a green matrix. Basalt epiclastic rocks occur at the base of the basalt on section 6.

Underlying strata are cut by several dykes and/or sills of feldspar porphyry basalt unit 1b, feeders to overlying lava flows.

2) Structure

The stratigraphic succession is believed to be upright based on the position of intrusive feeders to unit 1 basalt. Large scale fold structures likely are present within Eagle Bay rocks but are not evident on the claims.

#### MINERALIZATION

A lake level adit at the mouth of Skwaam Bay exposes interbedded chert, pyrite and chalcopyrite within unit 8 andesite. Quartz veins sparsely mineralized with sphalerite and galena occur on the hillside above the adit. Some veins crosscut foliation, others are conformable. All veins pinch and swell. Several minor galena veinlets were found elsewhere on the property (Plate 3). Pyrite occurs as heavy disseminations in some chert beds within unit 6.

#### GEOCHEMISTRY

1) Rock Geochemistry (Plate 2, 4)

Rock samples were routinely collected in the course of mapping and mercury content determined at Cominco's Exploration Research Laboratory by HNO<sub>3</sub> digestion followed by cold vapour evolution and atomic absorption analysis. Results are included on Plate 2 and indicate high mercury levels occur within unit 6 rhyolite.

Base metal and mercury content of unit 6 rhyolite were investigated in detail by traverses approximately along the top and base of the colour anomaly (Plate 4). Rock samples were crushed and analysed

3.

at Cominco's Exploration Research Laboratory. Copper, lead and zinc determinations were by hot acid digestion and atomic absorption. The results show that base metal values are extremely low (with a few scattered high values) and are consistent with the very low content of mobile major elements (Ca, Na) discussed above. There is a weak suggestion, best exhibited by copper, that the less altered southeastern end of unit 6 rhyolite contains more normal levels of base metals. This trend towards more normal geochemistry in the southeast its clearly exhibited by mercury which is almost consistently high in the northwest and almost consistently low in the southeast.

## 2) Soil Geochemistry (Plates 5 - 8)

There is no significant stream drainage on the Bay claims so that a silt survey is not possible. Two areas of altered rhyolite on section 3 and west of section 1 were selected for a small contour soil survey. Traverses were spaced 100 m apart (about 60 m or 200 ft vertically) and samples collected at 30 m intervals. B horizon soils were sampled if possible, otherwise talus fines were collected. The -80 mesh fraction was analysed for Cu, Pb and Zn by hot nitric acid digestion and atomic absorption. Barium was determined by X-ray fluorescence analysis. The strong bedrock geochemical contrast results in a complex distribution of copper, lead and zinc values and cumulative frequency plots that are difficult to interpret. There appears to be a low population of 0 - 16 ppm Cu, 0 - 10 ppm Pb and 0 - 40 ppm Zn, which probably corresponds to altered unit 6 rhyolite for Cu and Zn but also to a basalt dyke for Pb. The copper and lead plots then show a normal distribution with a third, anomalous population at >90 ppm Cu and Pb. The Zn plot shows greater scatter and the upper 2.5 percentile (300 ppm) has been selected as threshold. The barium cumulative freguency diagram indicates one (background) population only. It is curious that a silt sample from the eastern grid area is strongly anomalous in copper and zinc but soils upslope are background.

#### CONCLUSIONS

Geological mapping of the 28-unit Bay property has shown it to be underlain by volcanic and sedimentary rocks of the Eagle Bay Formation. The stratigraphic succession consists of mafic volcanic overlain by acid volcanic rocks succeded by fine clastic sedimentary strata and capped by basalt. Pronounced colour anomalies result from hydrothermal alteration zones within rhyolite. Alteration results in depletion of mobile major elements (especially calcium and sodium) and base metals and enrichment in mercury.

dole Report by: P.J. Wojdak Geologist Approved for release by: Hardon Manager

Exploration, West. Dist.

TABLE 1

		CHEMI	CAL COMPOSITION	OF SOME ROCK	S FROM THE BAY )	PROPERTY	
Мар	1	2	3	4	5	б	7
Unit #	lb	2a	2a	2a	3	3	3
SiO,	56.41	49.83	43.37	60.46	65,16	73,24	76.27
Tio	.80	. 77	.58	. 47	. 32	.32	.26
AL_O	19.77	16.02	13.11	12.66	14.96	13.45	12.67
Fe <sub>m</sub> *	8.49	7.48	9.71	5.93	3.50	2.30	1.17
MgO	2.66	2.61	3.86	1.87	.78	.23	.16
CaO	<b>1</b> .15	7.89	13.50	6.91	4.26	2.83	2.05
NajO	7.83	,87	1.70	2.42	1.90	4.32	3.09
K 0	. 25	2,63	1.89	1.63	1.93	.88	2.09
P <sub>2</sub> O <sub>2</sub>							.03
Loss on							
Ignition	2.75	13.64	15,16	6.01	7.30	3,33	<u>3.11</u>
	100.11	101.74	102.88	98.36	100.11	100.90	100.90
Мар	8	9	10	11	12	13	14
Unit #	3	3	3	3	3	3	3
SiO,	73.49	75.15	73.69	68.11	71.99	71.23	80.22
TiO,	.18	.19	.21	.41	.30	.28	.25
A1,0,	12.33	11.13	12.75	18.16	11.84	13,13	9.03
re_*	1.63	1.60	1,34	2.62	2.96	2,33	1.96
MgO	. 24	.44	.00	.23	.67	. 52	.08
CaO	3.67	3,06	3.77	.56	3,78	3.56	3.20
NajO	3.74	1.84	3.39	3.65	3.05	2.91	1.23
к,0	1.66	2.00	2.07	3.07	1.70	2.48	2.09
P_05							
Loss on							

Loss on<br/>Ignition3.984.214.012.294.504.243.55100.9299.62101.2399.10100.79100.68101.61

,

Мар	15	16	17	18	19	20	21
Unit #	Ĵ	4	б	6 -	6	6	6
SiO2	75.61	69.08	78.65	77.22	60,90	77.78	74.64
TiO <sub>2</sub>	. 42	.48	. 34	.31	.96	.42	.42
A1,03	13.07	15.88	13.16	10.87	20.29	13.34	15.85
Fe <sub>r</sub> *	1,94	3.44	1.72	1.10	8.57	.74	.83
MgO	.00	.08	.03	.13	. 59	.46	.20
CaO	1.45	1.83	. 09	2.47	.18	.15	.06
Na <sub>2</sub> 0	1.89	2.16	.59	4.51	,55	.41	.06
к <sub>2</sub> 0	2.83	3.38	3,15	.62	2.51	3,28	6.52
P_05			. 04		.05		
Loss on		_					
Ignition	2.53	3.53	2.68	2.91	3.88	2.26	1.88
	99.74	99,86	190,45	100,14	98.48	98.84	100.46
Мар	22	23	24	25	26	27	28
Unit #	6	6	6	6	6	6	6
SiO,	71.34	76.00	76,57	74.74	78.86	80.00	73.69
ті0 <sub>2</sub>	.49	. 49	. 38	.55	.14	. 39	, 33
Al 203	17.51	14,63	13.94	14,91	10.87	12.80	13.02
Fe <sub>T</sub> *	1.20	1.42	.60	1,51	1.81	.88	2.23
MgC	. 33	.13	,15	.14	. 44	.04	.11
CaO	.10	.10	.11	.21	1.39	,05	2.39
Na <sub>2</sub> 0	. 32	.29	.42	2.19	.24	.40	2,39
x,0	5.90	4.63	7,90	4.22	3,53	4,09	4.10
P_05							
Loss on							
Ignition	2.89	2.40	1.20	2.03	3.39	_1.76	2.93
	100.08	100.14	101.27	100.50	100,67	100.41	101.19

Map	29	30	31	32	33	34	35	36	37	38
Unit #	8	8	в	8	8	В	8	8	8	8
SiO <sub>2</sub>	45.71	48.80	55.07	51,91	60.30	58.99	53.77	67.95	60.78	51.48
Tio2	.49	.43	.56	.93	.60	1,32	.67	.34	1.01	1.34
A1203	13.06	11.00	15,91	19.69	16,39	12.83	16.99	13.18	15.90	14,40
Fe <sup>*</sup>	7.94	6,31	7.31	11,10	5.8 <u>1</u>	9.02	7.94	2.92	7.12	14.11
MgO	6.53	5.25	3.21	4.07	1.60	5.88	3.07	1.34	1.68	3.08
CaO	11.76	9.99	6.02	2.04	4,20	2.84	4.65	4.10	2,98	.71
Na <sub>2</sub> O	.80	1.06	2.49	3,59	1.64	.26	3.85	4.32	3.03	.53
к_о	1.25	1.99	2.07	1.04	2.86	1.88	1.49	2.00	2.60	4.35
P_05	.19		.22							
Loss on										
Ignition	13.78	<u>16.15</u>	8.62	5.15	4.08	6.35	8.22	4.05	3,48	9.78
	101.51	100.98	101.48	99,52	97.48	99.37	100.65	100.20	98.58	99.78

\* Fe<sub>m</sub> denotes total Fe as  $Fe_2O_3$ 

1 feldspar porphyry basalt, 2 siltstone, 3 siltstone, 4 siltstone, 5 rhyolite, 6 cherty rhyolite, 7 cherty quartz-eye rhyolite, 8 quartz-feldspar porphyry rhyolite, 9 quartz-eye rhyolite, 10 quartz-feldspar porphyry rhyolite, 11 quartz-feldspar porphyry dacite, 12 cherty rhyolite, 13 quartz-eye rhyolite, 14 cherty rhyolite, 15 cherty rhyolite, 16 rhyodacite, 17 altered rhyolite, 18 altered rhyolite, 19 altered rhyolite, 20 altered rhyolite, 21 altered rhyolite,22 altered rhyolite, 23 altered rhyolite, 24 altered cherty rhyolite, 25 cherty rhyolite, 26 altered cherty rhyolite, 27 altered cherty rhyolite, 26 rhyolite, 29 basalt or altered andesite, 30 altered andesite, 31 andesite, 32 andesite, 33 dacite, 34 andesite, 35 andesite, 36 felsic fragment in andesite breccia, 37 dacite, 38 andesite.

## APPENDIX A

# EXHIBIT "A"

# STATEMENT OF EXPENDITURES ON BAY 1-4 CLAIMS FOR 1977

# Geological Mapping and Rock Geochemical Sampling

P.J. Wojdak - June 2, 23, 25, 27-29, July 6, 11-13; 10 days @ \$116.	\$1,160.
A. Glatiotis - June 23, 25, 26, 29, July 6, 12-14; 8 days @ \$75.	600.
J. Rodriguez - June 26, 27, July 13, 14; 4 days @ \$75.	300.
Major element analyses; 38 rocks @ \$12	456.
Equipment and supplies	25.
Geochemistry and Analyses	
Rock analyses - 258 Hg analyses @ \$4.00 138 Cu, Pb, Zn analyses @ \$3.00	1,032. 414.
Soil and silt sampling: R. Ryziuk - Aug. 11, 21; 2 days @ \$52. G. Sloan - Aug. 11; 1 day @ \$52. M. Glatiotis - Aug. 21; 1 day @ \$35.	104. 52. 35.
Soil and silt analyses - 142 samples @ \$4.35 for Cu, Pb, Zn, Ba	617.70
Camp Support	
Food - 26 man days @ \$10.	260.
Accomodation - cabin rent at Agate Bay Resort; 2 weeks @ \$150.	300
Transportation	
Truck rental; 14 days @ \$22.	308.
Report Preparation	
P.J. Wojdak - 3 days @ \$87. F.J. Perguson - 2 days @ \$75.	261. 150

TOTAL EXPENDITURES \$6,074.70

Signed:

P.J: Wojdak, M.Sc.

#### APPENDIX B

#### IN THE MATTER OF THE

## B.C. MINERAL ACT

AND

IN THE MATTER OF A GEOLOGICAL AND GEOCHEMICAL

PROGRAM CARRIED OUT ON THE

BAY 1-4 MINERAL CLAIMS

Located in the Kamloops Mining Division

of the Province of British Columbia

More Particularly N.T.S. 82 M/4

#### AFFIDAVĨT

I, PAUL J. WOJDAK OF THE MUNICIPALITY OF DELTA IN THE PROVINCE OF BRITISH COLUMBIA, MAKE OATH AND SAY:

- THAT I AM EMPLOYED AS A GEOLOGIST BY COMINCO LTD., AND AS SUCH HAVE A PERSONAL KNOWLEDGE OF THE FACTS TO WHICH I HEREINAFTER DEPOSE:
- 2. THAT ANNEXED HERETO AND MARKED AS "EXHIBIT A" TO THIS MY AFFIDAVIT IS A TRUE COPY OF EXPENDITURES ON A GEOLOGICAL AND GEOCHEMICAL PROGRAM CARRIED OUT ON THE BAY MINERAL CLAIMS.
- 3. THAT THE SAID EXPENDITURES WERE INCURRED BETWEEN THE SECOND DAY OF JUNE AND THE TWENTY-FIRST DAY OF AUGUST, 1977 FOR THE PURPOSE OF MINERAL EXPLORATION ON THE ABOVE NOTED CLAIMS.

Resordate. Rel sidale.

## APPENDIX C

#### COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

#### STATEMENT OF QUALIFICATIONS

I, PAUL J. WOJDAK, OF THE MUNICIPALITY OF DELTA, BRITISH COLUMBIA, HEREBY CERTIFY:

- 1. THAT I AM A GEOLOGIST RESIDING AT 11405-85 AVENUE, DELTA, BRITISH COLUBMIA WITH A BUSINESS ADDRESS AT 2200-200 GRANVILLE SQUARE, VANCOUVER, BRITISH COLUMBIA.
- 2. THAT I GRADUATED WITH A B.Sc. IN GEOLOGY AND CHEMISTRY FROM MCMASTER UNIVERSITY, HAMILTON, ONTARIO IN 1971 AND WITH A M.Sc. IN GEOLOGY FROM THE UNIVERSITY OF BRITISH COLUMBIA IN 1974.
- 3. THAT I HAVE PRACTISED GEOLOGY WITH COMINCO LTD. FROM 1974 TO 1978.

DATED this \_\_\_\_\_ day of March 1978 at Vancouver, British Columbia.

Signed:

Wejdak. <u>Prividak.</u> J. Wojdak, M.Sc.

5;"	CLEARWATER BARRIERE BARRIERE	EAGLE BAY FM EAGLE BAY FM AY ROPERTYNOAMS EAGLE B CHASE	AY FM. SHUSWAP LAKE SICAMOUS SALMON ARM	Kma. 10 20 53°



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- 38 Major element analysis listed in Table 1.
- (9) As above, projected onto section.
- **Py** Heavily disseminated bedded pyrite.
- Gn Galena in vein on fracture.
- 20 Hg in rock, as determined by atomic absorption analysis.
- (75, 60) As above, projected onto section.



#### BAY CLAIMS Orawn by: Traced by: Powned by Date Revised by Date STRATIGRAPHIC SECTIONS · · · · · · · · · Scale. Schematic (Date: Manch, 1978) Plate: 2 · -····



# LEGEND

20 / 26	

Io, Basalt flows and agglomerate, local conglomerate at base.
 Ib, Basalt dykes and for sills

3	
4	
5	
6	~

2a, Siltstane , poorly bedded , fissile , pale green to grey , minor conglomerate , dolomite. 2b, Intraformational breccia , fragments of 2a in argillite.

Rhyolite, pink, cherty, commonly with abundant quartz eyes. Dacite, locally with quartz eyes.

Black argillite and thin bedded turbidite.

Rhyolite, white, cherty. Commonly pyritic and altered resulting in strong colour anomalies. Overlies Unit 8. Rhyolite, white, cherty. Pyritic and altered resulting in moderate colour anomalies. Within Unit B.

? 8

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Andesite, fissile chlorite schist.

1997 - 19	Hydrothermal alteration zone.
111	Geologic contact; defined, approximate, inferred.
*********	Base of zone of abundant outcrop
L	Bedding attitude
4 7	Foliation attitude
<12	Outcrop examined
~~~~	Interred fault.
۲ <u>۵</u>	Legal corner post.
• 36	Major element analysis (listed in Table 1).
x Pb	Minor showing or accurrence.











