LOG NO: FEB 14 RD.
ACTION:
FILE NO:

LOG NO: JUN 0 8 1992 RD.
ACTION:
FILE NO:

COGEMA Canada Ltd.

SUB-RECORDER
RECEIVED
M.R. # $
VANCOUVER, B.C.

Assessment Report

Geological and Geochemical Surveys

on the

WATERLOO PROPERTY
(Bralorne Project)

Lillooet Mining Division
British Columbia

NTS 92J/15
50°47'N / 122°45'W

GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,119

Karl Schimann
Warren Robb
December 1991
91-CND-66-08

Table of Contents

	Page
SUMMARY	1
LOCATION, ACCESS, AND PHYSIOGRAPHY	2
LEGAL DESCRIPTION	2
REGIONAL GEOLOGY	5
EXPLORATION HISTORY	10
1991 WORK	12
RESULTS	13
Geology	13
Geochemistry	16
Mineralization	18
CONCLUSIONS / RECOMMENDATIONS	19
REFERENCES	20

List of Appendices

APPENDIX I	Geochemical Results
APPENDIX II	Rock Sample Description
APPENDIX III	Statement of Expenditures
APPENDIX IV	Statement of Qualifications

List of Tables

		Page
Table 1	List of Claims	2
Table 2	Generalized Stratigraphic Section	6
Table 3	Summary Statistics	14
Table 4	Percentiles	15

List of Figures

		Page
Figure 1	Location Map	3
Figure 2	Claim Map	4
Figure 3	Metal Zonation in the Bridge River Camp	11
Figure 4	Deposit Age Versus Distance from the Coast Plutonic Complex	11

List of Maps (in Pocket)

1. Geology and Sample Location
2. Gold Geochemistry

SUMMARY

Work performed on the Waterloo property in the Bridge River Mining Camp from May to August 1991 consisted of mapping/prospecting and rock and stream geochemistry.

No significant mineralization nor any new targets were found.

No additional work is recommended.

LOCATION, ACCESS AND PHYSIOGRAPHY

The Waterloo property is located along a north trending ridge of Fergusson Mountain, 10 kilometres south of Goldbridge in southwestern British Columbia. The central part of the claims are at latitude 50°47' and longitude 122°45'. Elevations on the claims range from 1,550 metres in the Fergusson Creek Valley, to 2,593 metres on Fergusson Peak (Figures 1 and 2).

The topography is rugged and mostly alpine, dominated by talus slopes. Timberline is at approximately 2,000 metres.

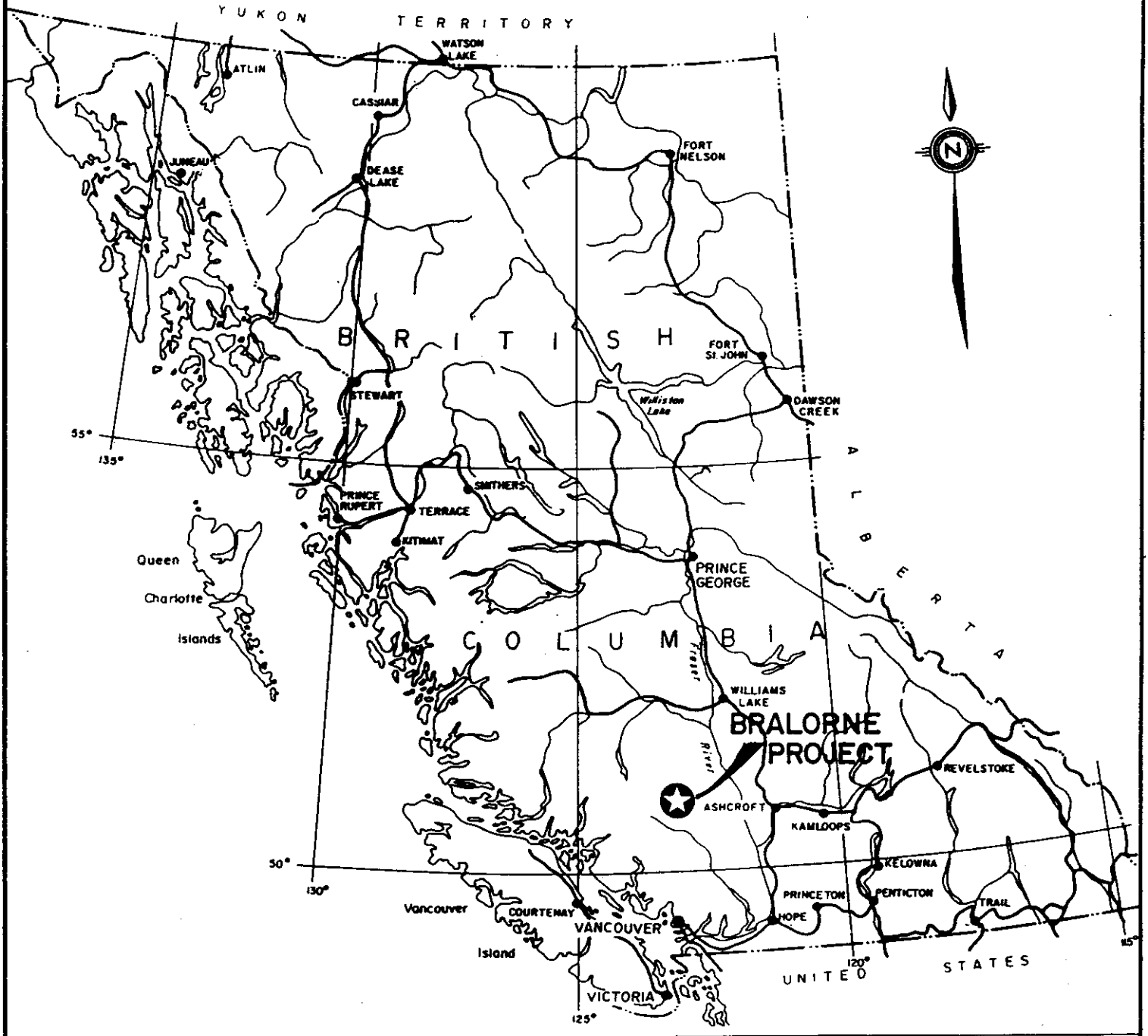
Access is from the Kingdom Lake Forest Road via cat trail up the Fergusson Creek Valley or by helicopter from the Goldbridge helicopter pad, 7 kilometres to the northwest.

LEGAL DESCRIPTION

The Waterloo property consists of four contiguous claims (67 units, 13.5 km^2) located by Cogema in 1991. They are shown on Figure 2 and listed on Table 1 hereafter.

Table 1

Claim Name	Record No. Old	Record No. New	No. of Units	Expiry Date (Dec. 16, 1991)
Water 1	4574	229398	16	Feb. 23, 1993
Water 2	4582	229406	16	Feb. 23, 1993
Water 3	4575	229399	20	Feb. 23, 1993
Water 4	4576	229400	15	Feb. 23, 1993



COGEMA Canada Ltee/Ltd.

BRALORNE PROJECT

LOCATION MAP

FIG. 1

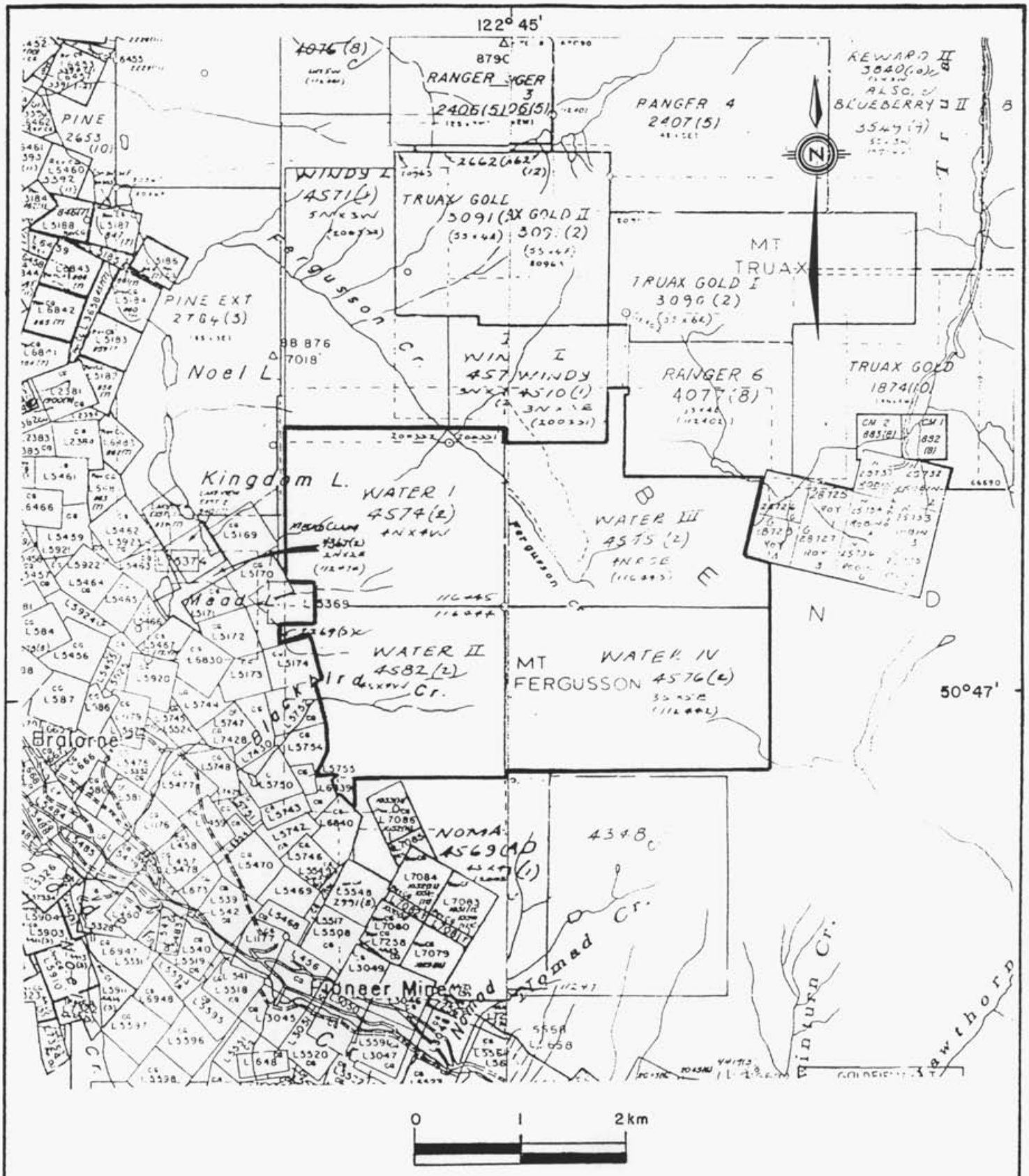


FIG. 2 WATERLOO PROPERTY CLAIM MAP

REGIONAL GEOLOGY

A good summary of the regional geology is given in Leitch (1990) and is reproduced in part hereunder.

The latest published geological map of the area (92J, 1:250,000) based on field mapping is by Woodsworth (1977). Table 2 gives the principal units based on recent mapping by Church (1987), Church et al. (1988), compilation of available data, and recent age dating.

The principal stratigraphic assemblages of the Bralorne area have traditionally been called the Bridge River (Fergusson) and Cadwallader groups, although the former should properly be called the Bridge River Complex. The Bridge River Complex contains the oldest known rocks of the map-area and has generally been assigned a Permo-Triassic age on the basis of its similar lithology to the Cache Creek Group and correlation to the Hozameen Group. The Permian age is supported by recent dating of the Bralorne diorite (284 $\pm$ 20 Ma by K-Ar on hornblende and 270 $\pm$ 5 Ma by U-Pb on zircons) which appears to intrude the Bridge River Complex. However, fossil evidence suggests a Triassic to Jurassic age.

The Bridge River Complex consists of great thicknesses (1000m or more) of ribbon chert and argillite with very minor discontinuous limestone lenses, and large volumes of basalt, some pillowed.

The Cadwallader Group, previously considered to be Upper Triassic (pre-Norian, or pre-225 Ma) age on the basis of conodonts recovered from limestone of the upper sedimentary part of the section, is also apparently intruded by the Bralorne diorite and thus may be at least partly Permian in age. Traditionally, the Cadwallader Group, as defined originally in the Bralorne area, has been subdivided into three formations: the lowermost sedimentary Noel Formation, the Pioneer Formation greenstones, and the upper Hurley Formation sediments. However, the distinction between the two sedimentary formations is often difficult to make and the Cadwallader may be best divided into a lower volcanic unit (Pioneer Formation) and overlying sedimentary package (Hurley Formation). The contact is generally considered to be conformable.

TABLE 2. Generalized stratigraphic section listing geological units in the Bridge River area, showing equivalents in usage at the Bralorne mine and updated names from this study

Unit[1]	Age	Regional name[2]	Mine name	Name and description (this study[3])
	T	Plateau lavas		
10	T	Eocene volcanics	Lamprophyre dykes	Kersantite
	T	Rexmount porphyry		
	K-T	Coast plutonics	Bendor dykes	Dacitic porphyry
9	LK	Felsic dykes	Green hornblende porphyry dykes	Basaltic andesite porphyry
8	LK	Felsic dykes	Albitite dykes	Sodic dacite porphyry
8a			Grey plagioclase porphyry dykes	Sodic dacite porphyry
	K	Taylor Creek Group		
	J-K	Relay Mountain Group		
	J	*Jurassic shale*		
	Tr	Tyaughton Group		
7			Bralorne soda granite	Albite tonalite or trondhjemite
6	P	Bralorne intrusions	Bralorne diorite	Hornblende quartz diorite
6a			Mafic diorite	Hornblendite
5	?P-J	Shulaps Ultramafic Complex	President ultramafics	Dunite, peridotite and pyroxenite
4			Hurley sediments	Turbidites, wackes and argillites
3	?P-Tr	*Cadwallader Group*	*Pioneer greenstone*	Aquagene breccias, basaltic andesite
			Noel argillites	
2	?P-J	Bridge River Complex	Bridge River Group	Ribbon chert and argillite
1				Pillow basalts

[1] Unit is as defined in the Bralorne mine area (this study).
[2] Regional name is taken from Schiarizza *et al.*, 1989.
[3] *Prefix "meta-" is understood in all rocks older than Tertiary.*

FROM LEITCH 1989

The Pioneer Formation has commonly been called "greenstone", but abundant volcanic textures are preserved in less altered areas within the Bralorne block. On the basis of their uniform colour index and chemical analyses, the rocks appear to be basalts and basaltic andesites. Although the contact with the overlying sedimentary package was not mapped in detail, in the Bralorne block the volcanics seem to grade upward into finely interbedded green volcanic wackes and dark argillites of the Hurley Formation. Elsewhere a boulder and pebble conglomerate, sometimes containing limestone olistoliths, is often found at the base of the Hurley where it rests conformably on the Pioneer volcanics.

Triassic to Lower Jurassic sediments of the Tyaughton, Relay Mountain, and Taylor Creek Groups and Upper Jurassic to Tertiary volcanics and sediments occur mainly to the north of Carpenter Lake, outside of the main area of interest, but small patches of Tertiary volcanics occur along the north-west shore of Anderson Lake.

A recent volcanic ash deposit (2400y B.P.) covers much of the area and may reach 1.5 metres thick; it is thinner or absent on steep slopes.

Igneous rocks within the Bralorne block include Upper Paleozoic ultramafics and Bralorne intrusives, Mesozoic Coast Plutonic rocks. Tertiary Bendor intrusives, and dykes of Cretaceous-Tertiary age. Ultramafic rocks are common in the Bridge River camp, forming narrow serpentinized bodies that were probably emplaced as thrust slices of oceanic, upper mantle material. With the pillow basalts and radiolarian ribboned cherts of the Bridge River Complex, they form the trinity of a typical ophiolite package. The Shulaps ultramafic complex, which lies 30 km to the northeast of Bralorne, is a much larger mass but may be of similar origin. The ultramafics in the Bralorne area range from dunite to pyroxenite, but peridotites are most common. They are usually partly to completely serpentinized, or altered to talc-antigorite-tremolite-carbonate. In the Bralorne mine area they are intruded by the diorite and so must be Permian or older.

The Bralorne intrusive suite includes the so-called "augite diorite" and "soda granite", which commonly occur together. Usually the contact between the two is highly complex, forming

such an intimate mixture that it may be properly termed a variety of migmatite called agmatite. Although their isotopic dates are indistinguishable (270 ± 5 Ma by U-Pb on zircons), sharp contact relations and chill margins near Goldbridge demonstrate that the soda granite is the younger phase. These intrusives are exposed at intervals over a 40 km strike length in a northwest trending belt parallel to and often confined by the ultramafic rocks. This belt stretches from Anderson Lake across the Bridge River valley to the lower reaches of Gun Creek.

Several workers in the Bralorne area have remarked on the unusual contact relationships of the diorite with the Pioneer volcanics. The diorite is not chilled against the volcanics, implying intrusion before significant cooling of the volcanic pile. These relations suggest that the Pioneer volcanics may be simply an extrusive expression of contemporaneous dioritic intrusions.

There are a large number of minor intrusives throughout the Bridge River camp, which are mainly dykes of various ages. However, in the light of recent mapping and isotopic dating in the Bralorne area, it is now clear that one group of dykes is early Late Cretaceous in age. These dykes are closely associated with mineralization at Bralorne, and have traditionally been called "albitite". Dates obtained range from 91.4 ± 1.4 Ma by U-Pb on zircons from the highly altered, and therefore pre-mineral albitite dykes, to 85.7 ± 3 Ma by K-Ar on fresh hornblende in a late intra- to post-mineral green hornblende porphyry dyke. Other dykes, locally called feldspar porphyries, are present at the Minto and Congress properties. They give Early Tertiary whole-rock K-Ar ages of 67 to 69 ± 2 Ma, approximately in the middle of the range for Coast Plutonic activity. An Eocene magmatic event is also evident from lamprophyre dykes that cross-cut mineralized veins at Bralorne and are 43.5 ± 1.5 Ma by K-Ar on biotite, because this coincides with similar dates of about 45 Ma on the Rexmount porphyry, the Beece Creek and Lorna Lake plutons, and dates as young as 42 Ma for plutons south of the Bendor pluton.

The eastern boundary of the Coast Plutonic Complex granitic rocks lies only 2 km to 5 km west of the Bralorne deposit. The age range for these intrusions spans the interval from early

Late Cretaceous (80 Ma) to Lower Tertiary (59 Ma), with the youngest ages coming from isolated stocks such as the Bendor pluton, which occur as a swarm parallel to the margin of the Coast Plutonic Complex, some 2 km to 3 km to the east of Bralorne.

Many vein gold deposits of the Archean Superior Province in the Canadian Shield are found within a mafic volcano - clastic sedimentary - ultramafic rock assemblage, thought to have formed mainly on a oceanic, accreting plate margin. A similar setting is found in the Bridge River camp, where two main lithologic assemblages can be distinguished: one dominantly oceanic and the other dominantly island arc. The former is represented by the Permian to Jurassic Bridge River Complex which comprises basalts and associated clastic sedimentary rocks with thick accumulations of ribbon chert, and minor limestone. Alpine-type ultramafic rocks in lensoid to very elongated bodies are spatially associated with the stratified rocks and are thought to form part of the assemblage. The ultramafic rocks may mark the sites of major crustal shortening that were later focuses for major transcurrent movements. Such major crustal structures are also associated with many of the large mining camps of the Superior Province or the Yilgarn Block in Australia.

The island arc assemblage, represented by the Cadwallader Group of ?Permo-Triassic age, is composed of a basaltic andesite pile with minor felsic volcanics and an overlying volcaniclastic sedimentary sequence, again with minor limestone.

The Bridge River and Cadwallader terranes containing these two assemblages form small lozenge-like fault-bounded slices sutured between the Insular super-terrane on the west and the Intermontane super-terrane on the east.

The two major faults closely bounding the major ore-producing Bralorne-Pioneer block are marked in large part along their length by narrow sinuous serpentine bodies. These could represent the sites of former major crustal shortening that have been reactivated by later transcurrent faulting, so the emplacement of the ultramafics could have been as solid bodies. Movement on the faults may have been of the same sense as the Fraser fault system, i.e. right lateral.

Although the majority of the Bridge River Camp production comes from the Bralorne-Pioneer mine, there is a host of other prospects and occurrences which can be classified into four main groups:

- mesothermal ribboned Au quartz-veins: Bralorne-Pioneer
- transitional to epithermal Ag-Au-Sb-Ag veins: Congress, Minto
- epithermal Sb-Hg veins: Tyaughton, Yalakom area
- epithermal Au-Ag veins: Blackdome (north of the Yalakom fault and outside the Bridge River Group per se)

These occurrences form a chemical and thermal zonation, away from the Coast Plutonic Complex (Figures 3 and 4). Reserves have been published for a number of these occurrences:

	Tonnes	g/t Au
Bralorne-Pioneer	965,000	9.3
Congress	450,000	10.0
Reliance	454,000	6.0
Lucky Jem	112,000	20.6
Wayside	148,000	3.6
Mary Mac	60,000	7.4

EXPLORATION HISTORY

Little information is available on the history of the Waterloo ground. The ground was originally staked in 1934 by J. Marron, F. Joubin, and J.L. Stewart as the Summit claims. The earliest recorded work completed in the area of the Waterloo claims is described in the British Columbia Minister of Mines Annual Report for 1937.

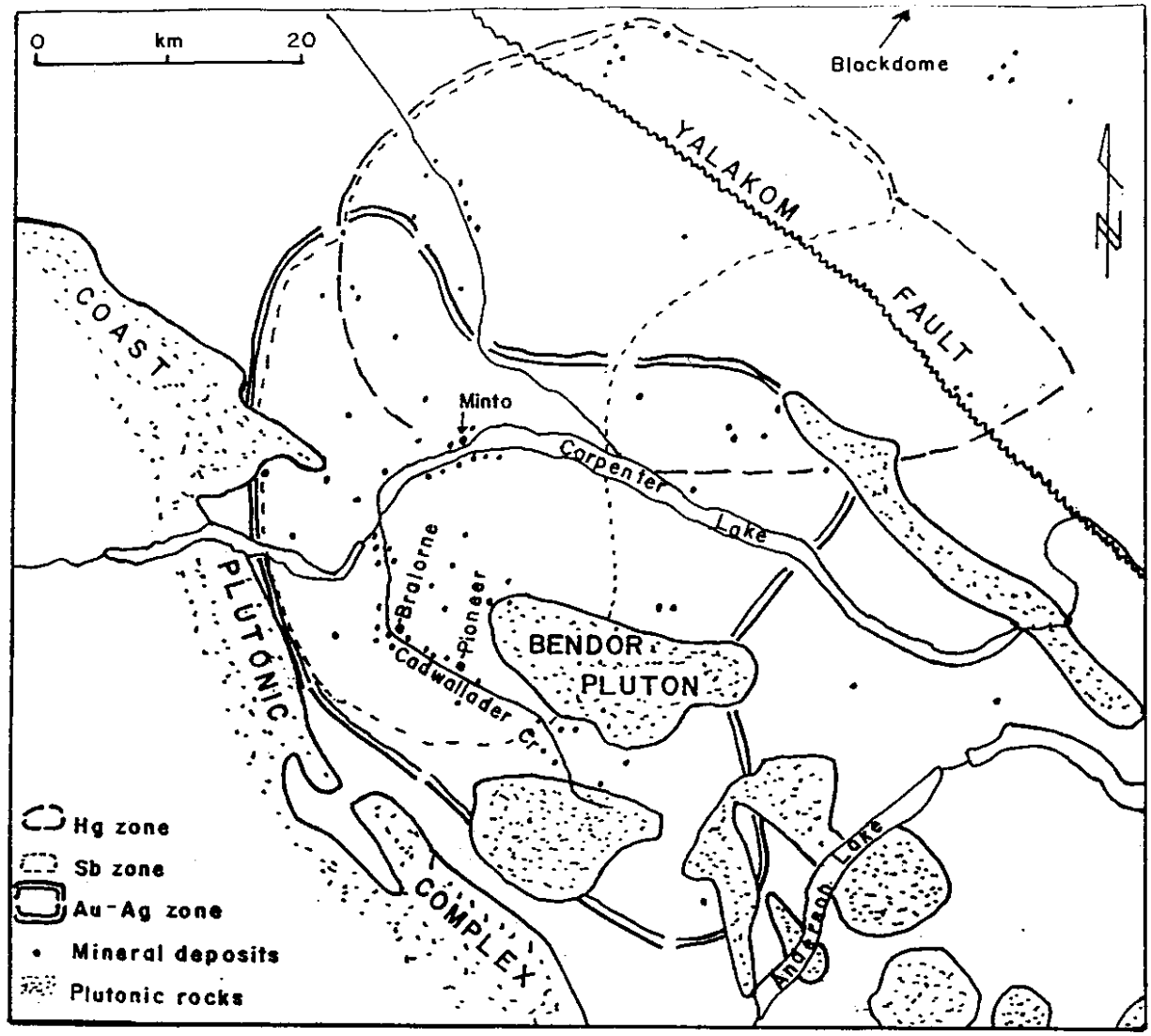


FIG. 3 Generalized metal zoning pattern in Bridge River area (G.J. Woodsworth, D.E. Pearson, A.J. Sinclair, 1975)

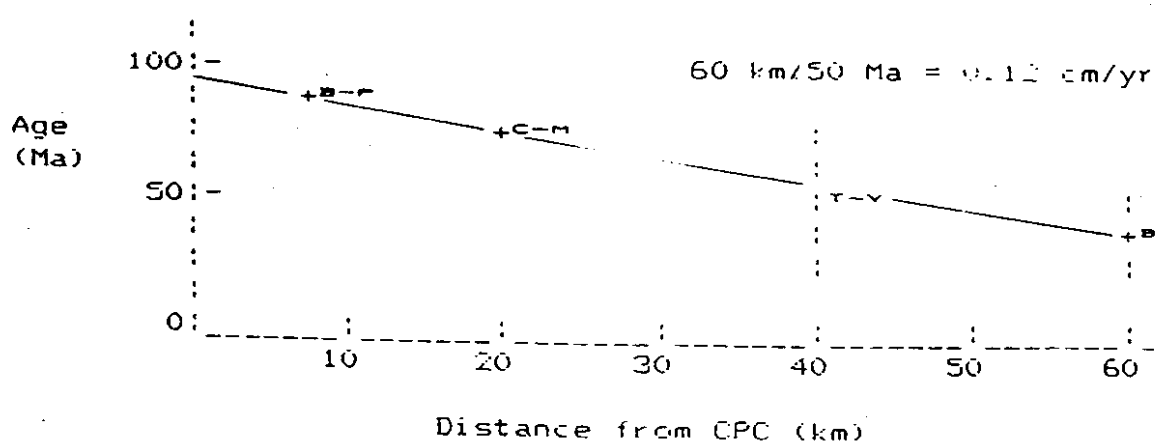


FIG. 4 Deposit age versus distance from the Coast Plutonic Complex. B-F = Bralorne-Pioneer, C-M = Congress-Minto, T-Y = Tyaughton-Yalakom, B = Blackdome.

There is evidence of old work on the property. The Zone 1 showing is exposed by an open cut perpendicular to the ridge crest. A short adit, now caved, lies to the west below the showing. There is a hand trench on the ridge to the south of Zone 1, and another hand trench in the saddle to the west.

There are believed to be two old showings, the Summit and the Waterloo, on the ground, but their exact locations are not known. The two showings may be the same one. The British Columbia Department of Mines and Petroleum Resources Revised Mineral Inventory Map (Map Sheet 92J/NE (M1), 1970) located the Waterloo showing to within 300 metres accuracy on the west side of the ridge near the centre of the Waterloo 1 claim at approximately 2,040 metres elevation. Therefore, the Zone 1 showing may be the old Summit showing, while the original Waterloo showing remains undiscovered.

Work on the claim group consisted of:

1984 - limited reconnaissance; mapping, rock, soil, and stream sampling (respectively, 35, 79, and 35 samples), concentrated in southern part of the property

1985 - prospecting, trenching of Zones 1 and 2, detailed sampling, five rock samples

1987 - soil sampling on two grids (49 samples), rock sampling (42 samples)

1991 WORK

Mapping and prospecting were carried out on Mount Fergusson, the ridge extending to the north, and the upper Fergusson Creek Valley.

Systematic moss-mat sampling covered the perennial creeks. Some silt samples were taken where moss-mats were unobtainable.

Statistics

Rocks	35	samples
Moss-Mats	16	samples
Silts	9	samples

RESULTS

Geology

The property is underlain to the east by intrusives of the Bendor pluton and to the west by Bridge River Group sediments and volcanics, separated by a major fault along Fergusson Creek.

The Bendor intrusives consist of a large mass of granodiorite east of Fergusson Creek, as well as several small dioritic plug-like masses, and feldspar-porphyry dykes to the west of the valley.

The Bridge River Group consists of interlayered chert, argillite, and andesitic to basaltic volcanics, mostly massive; they are hornfelsed on Mount Fergusson and pyrite-pyrrhotite-bearing, forming spectacular rusty gossanous cliffs on the east face of Mount Fergusson.

Sediments and volcanics are interlayered but sediments dominate on the ridge to the north and on the slope to the west of Mount Fergusson and east of Fergusson Creek while volcanics dominate around the peak and immediately north of it.

BRALORNE PROJECT

Moss Samples. **Table 3**

Summary Statistics

	Au_ppb	Ag_ppm	Cu_ppm	Pb_ppm	Zn_ppm	As_ppm	Sb_ppm	Ni_ppm	Mn_ppm	Mg_pct
Number	446	446	446	446	446	446	446	446	446	446
Mean	66.971	0.234	66.51	9.33	100.07	73.02	4.64	252.62	885.65	2.2596
Std Dev	203.300	0.363	43.62	12.71	30.85	103.08	17.73	222.88	706.59	1.8662
Variance	41330.9	0.1	1903	161	952	10626	314	49675	499267	3.48
Maximum	2430.0	7.0	417	205	225	662	352	1702	11578	15.57
Minimum	0.2	0.1	9	2	19	2	2	14	76	0.18
Range	2429.8	6.9	408	203	206	660	350	1688	11502	15.39
Coef Var	303.5659	154.7517	65.5886	136.2098	30.8349	141.1619	382.0627	88.2271	79.7815	82.5895
Std Err	9.6265	0.0172	2.0656	0.6017	1.4610	4.8811	0.8397	10.5536	33.4579	0.0884
Median	10.80	0.20	57.5	6.0	96.0	36.5	2.0	182.0	765.5	1.760
Mode	4.0	0.1	35	2	84	7	2	36	491	0.73
Variance	41330.875	0.131	1902.91	161.49	952.02	10626.10	314.44	49674.73	499267.40	3.4827
Skewness	6.2223	14.8228	3.2225	9.1052	0.9732	2.9632	17.1624	1.8364	8.6494	2.4299
Kurtosis	51.0686	269.4417	17.2219	126.9461	1.5388	10.2789	328.0744	4.9198	117.6945	8.5589

Silt Samples

Summary Statistics

	Au_ppb	Ag_ppm	Cu_ppm	Pb_ppm	Zn_ppm	As_ppm	Sb_ppm	Ni_ppm	Mn_ppm	Mg_pct
Number	94	94	94	94	94	94	94	94	94	94
Mean	38.596	0.204	77.00	7.30	105.22	97.07	5.50	246.06	843.19	2.3726
Std Dev	88.990	0.187	110.33	6.35	39.19	107.21	8.43	205.09	479.41	1.8539
Variance	7919.3	0.0	12172	40	1535	11495	71	42062	229838	3.44
Maximum	719.5	1.6	1083	35	249	527	44	927	3100	11.44
Minimum	0.9	0.1	18	2	39	4	2	20	331	0.45
Range	718.6	1.5	1065	33	210	523	42	907	2769	10.99
Coef Var	230.5703	91.6390	143.2793	87.0310	37.2401	110.4457	153.2317	83.3480	56.8571	78.1396
Std Err	9.1787	0.0193	11.3792	0.6551	4.0417	11.0583	0.8693	21.1533	49.4478	0.1912
Median	11.35	0.20	60.5	5.0	95.5	53.0	2.0	195.5	740.5	1.845
Mode	1.4	0.1	61	2	88	27	2	49	609	1.03
Variance	7919.281	0.035	12171.61	40.34	1535.49	11494.97	71.03	42061.59	229837.83	3.4370
Skewness	5.5581	4.7278	8.0915	1.6924	1.1052	1.7156	2.7708	1.7153	2.7210	2.6718
Kurtosis	36.3204	30.6915	70.5944	3.3009	1.1439	2.7600	7.4414	2.8309	8.8057	9.1598

Soil Samples

Summary Statistics

	Au_ppb	Ag_ppm	Cu_ppm	Pb_ppm	Zn_ppm	As_ppm	Sb_ppm	Ni_ppm	Mn_ppm	Mg_pct
Number	264	264	264	264	264	264	264	264	264	264
Mean	21.676	0.169	86.58	4.43	98.21	19.46	8.04	294.61	633.94	2.1586
Std Dev	62.424	0.158	97.73	3.18	54.31	41.10	93.78	254.93	599.74	1.8243
Variance	3896.8	0.0	9551	10	2950	1689	8795	64991	359689	3.33
Maximum	450.0	1.3	743	23	526	374	1526	2185	6478	16.73
Minimum	0.2	0.1	7	2	27	2	2	9	131	0.18
Range	449.8	1.2	736	21	499	372	1524	2176	6347	16.55
Coef Var	287.9860	93.1443	112.8805	71.9106	55.3023	211.1765	1166.2164	86.5326	94.6054	84.5135
Std Err	3.8419	0.0097	6.0150	0.1960	3.3428	2.5295	5.7720	15.6901	36.9115	0.1123
Median	4.30	0.10	56.0	3.0	86.0	9.0	2.0	245.0	449.5	1.800
Mode	2.1	0.1	56	2	78	2	2	135	322	0.81
Variance	3896.785	0.025	9551.44	10.14	2949.96	1689.16	8795.29	64991.12	359689.29	3.3281
Skewness	4.5718	4.1375	3.9784	2.1419	3.0814	5.1732	16.0618	3.3158	4.8061	4.2892
Kurtosis	21.7613	20.7015	18.7456	6.7247	16.5350	30.9891	256.9769	17.0665	35.4110	27.3889

BRALORNE PROJECT

(Table 4)

Percentiles.

ELEMENT	50%ile	80%ile	90%ile	95%ile	98%ile
Soils					
Au_ppb		12	40	103	250
As_ppm	8	16	36	57	147
Moss:					
Au_ppb		45	135	340	515
As_ppm	35	95	180	270	395
Silts:					
Au_ppb	15	38	85	155	200
As_ppm	58	160	265	325	360

Geochemistry

Procedures

The following sample types were collected: rocks, moss-mats and silts in streams, and soils.

Soil samples were taken below the Bridge River Ash, a Recent white pumiceous horizon which blankets the area and varies in thickness from a few centimetres to one metre or more; the horizon collected would be equivalent to a B horizon.

All samples were analyzed by Acme Analytical Laboratories Ltd. in Vancouver. Sample preparation included for:

- rocks - crushing and pulverizing 250 g to -100 mesh
- moss-mats, silts, soils - drying and sieving to -150 mesh

Two types of analyses were carried out on all samples:

- Au by wet extraction and atomic absorption (A.A.): a 50-gram sample is ignited at 600°C, digested with hot aqua regia, extracted by MIBK (methyl isobutyl ketone), and analyzed by graphitic furnace A.A.
- multi-elements by wet extraction and inductively coupled plasma spectometry (ICP): a 0.5-gram sample is digested with 3 ml 3-1-2 HCl-HNO_3-H_2O at 95°C for one hour and is diluted to 10 ml with water. This extraction may be incomplete for certain mineral forms of Mn, Fe, Sn, Ca, P, La, Cr, Mg, Ba, Ti, B, W, Na, K, Al.

The detection limits are:

- Au (A.A.): 0.3 ppb

- Multi-element:
  - Ag: 0.1 ppm
  - Cd, Co, Cr, Cu, Mo, Mn, Ni, Sr, Zn, W: 1 ppm
  - As, Au, B, Ba, Bi, La, Pb, Sb, Th, V: 2 ppm
  - U: 5 ppm
  - Al, Ca, Fe, K, Mg, Na, Ti: 0.01%
  - P: 0.001%

In the tables of Appendix I, Au by A.A. is shown in ppb at the beginning of the table, just after the weight ("grams") of the -150 fraction which is given for moss-mats, silts, and soils to control the amount of sample available for analysis. Au by ICP is given in ppm (with a 2 ppm detection limit).

In these tables, the results given as "detection limit" should read "at or below the detection limit".

A 50-gram aliquot was used for Au by A.A. to improve the detection limit together with a finer fraction than usual (-150 mesh) to decrease the nugget effect, i.e., improve the representativity of soil or stream samples. Going from 10 grams of -80 mesh to 50 grams of -150 mesh material decreases the potential nugget effect by a factor of 25.

In the case of stream samples, it also increases somewhat the background level.

Results

None of the moss-mat nor silt samples are anomalous in Au or any of the base metals. As is somewhat above background in most samples and one sample (582M) from a tributary of Fergusson Creek below the Waterloo showing is slightly high in Cu, Zn, As, and Au.

Mineralization

The Waterloo showing consists of two parallel veins some 100 metres apart along a narrow ridge extending north of Mount Fergusson. Both have been trenched in the past where they cross the ridge and also on the east slope of the ridge. A short adit was driven along the vein in 1935-1937 (F. Joubin, pers. comm., 1991) but its entrance is now hidden by a rock slide. Samples 387R, 573R, and 574R are from the southern vein: 387R where it crosses the ridge, 573R and 574R from the old trench dump lower on the east slope.

Both veins are 5 to 10 centimetres thick and composed of quartz, carbonate, arsenopyrite, sphalerite, pyrite; they are tabular and oriented at N140/60E. Grades are in the range 7.9-17.3 g/t Au, 7-12 g/t Ag, 0.8-2.9% Zn, and 7.8% to more than 10% As. Cu and Sb are anomalous.

An old trench, parallel to the ridge (N20 about) is located some 250 metres to the south; it contains a 10-centimetre quartz, chlorite vein with minor pyrite and arsenopyrite (390R).

A boulder, probably fairly local, along the ridge extending northwest from Mount Fergusson, contains drusy quartz veining with stibnite, pyrite, and arsenopyrite in a cherty host (571R): 2.6% Sb, 3.6% As, 0.1 g/t Au, 1.0 g/t Ag. A selected grab sample from a 50-centimetre pegmatitic quartz pyrite, pyrrhotite (galena, chalcopyrite) vein in granodiorite reaches 0.1 g/t Au, 33 g/t Ag, 0.16% Cu, 0.21% Pb, 0.47% As, 0.14% Sb (648R, 649R).

CONCLUSIONS AND RECOMMENDATIONS

Prospecting and geochemistry led to no new significant mineralization or anomaly.

The Waterloo showing veins are small, polymetallic structures with no volume potential and outcrop conditions are sufficiently good that no major hidden veins can be expected in the vicinity. The east face of Mount Fergusson is spectacularly rusty but this is due only to disseminated pyrrhotite and pyrite in hornfelsed volcanics. No further work is recommended on this property.

REFERENCES (General)

CAIRNES, C.E. (1937); Geology and Mineral Deposits of the Bridge River Mining Camp, B.C.; Geological Survey of Canada, Memoir 213, 140 p.

CAIRNES, C.E. (1943); Geology and mineral deposits of Tyaughton Lake map-area, British Columbia; Geological Survey of Canada, Paper 43-15.

LEITCH, C.H.B. (1990); Bralorne: a Mesothermal, shield-type vein gold deposit of Cretaceous age in southwestern British Columbia. CIM Bull., 83, 53-80.

LEITCH, C.H.B. (1989); Geology, wallrock alteration, and characteristics of the ore fluid at the Bralorne mesothermal gold vein deposit, southwestern British Columbia; Unpublished Ph.D. thesis. University of British Columbia, Vancouver, 483 p.

WOODSWORTH, G.J. (1977); Pemberton (92J) map-area British Columbia, Geological Survey of Canada, Open File 482 (1:250,000 scale map).

WOODSWORTH, G.J., PEARSON, D.E. and SINCLAIR, A.J. (1977); Metal distribution patterns across the eastern flank of the Coast Plutonic Complex, south-central British Columbia; *Economic Geology, Vol. 72, pp. 170-183.*

REFERENCES (Property)

SANDBERG, T.M. and SAMPSON, J. (1985); Geological and Geochemical Report on the (Waterloo Group) Waterloo, Haley and Dayton Claims, Lillooet Mining District.

TURNER, A.J. (1984); Geological and Geochemical Report on the Waterloo, Haley and Dayton Claims, Lillooet Mining Division.

APPENDIX I

GEOCHEMICAL RESULTS

BRALORNE PROJECT WATERLOO PROPERTY

ROCK SAMPLES

GRID	Samp	Grams	Auppb	Agppm	Cuppm	Pbppm	Znppm	Moppm	Asppm	Sbppm	Nippm	Crppm	Bappm	Mnppm	Fepct	Capct	Mgpct	Alpct	Kpct	Napct	Uppm	Thppm	Auppm	Coppm	Cdppm	Bippm	Wppm	Vppm	Ppct	Tipct	B_ppm	Srppm	Lappm
5	085R		4.0	0.2	32	2	6	5	10	2	20	7	7	32	0.86	0.01	0.07	0.02	0.01	0.01	5	1	2	2	0.2	3	3.00	1	.001	0.01	3.00	1	2
5	086R		7.0	0.5	178	2	21	1	6	2	9	4	51	165	3.40	1.90	0.56	3.51	0.22	0.47	5	1	2	15	0.3	2	1.00	60	.040	0.14	3.00	144	2
5	087R		6.0	0.3	268	8	23	3	6	7	53	18	145	273	4.21	0.22	1.10	1.01	0.56	0.07	5	1	2	22	0.3	2	2.00	90	.031	0.16	4.00	11	2
5	088R		1.0	0.2	46	2	32	1	2	2	12	7	80	235	3.26	0.75	0.66	1.80	0.46	0.21	5	1	2	11	0.2	2	2.00	48	.041	0.18	3.00	57	2
5	089R		3.0	0.2	77	2	13	14	6	2	17	6	29	168	3.80	0.47	0.54	0.90	0.09	0.14	5	1	2	12	0.2	2	1.00	52	.035	0.14	5.00	28	2
5	090R		8.0	0.3	198	4	22	28	2	2	100	36	65	202	3.69	0.75	0.71	0.93	0.34	0.11	5	1	2	33	0.2	2	2.00	45	.055	0.25	18.00	28	4
5	091R		3.0	0.2	259	2	37	4	2	2	67	39	112	212	4.56	1.80	0.70	2.66	0.37	0.35	5	2	2	23	0.2	2	2.00	54	.098	0.32	8.00	113	8
5	092R		1.0	0.1	215	2	21	2	2	2	18	11	73	210	3.59	0.20	0.78	0.86	0.45	0.08	5	1	2	10	0.2	2	1.00	46	.043	0.17	2.00	12	2
5	387R		7938.0	7.0	45	298	28524	5	78196	120	27	15	27	991	7.84	2.05	0.03	0.33	0.03	0.05	5	1	8	12	465.3	8	1.00	6	.004	0.01	2.00	38	2
5	388R		15.0	0.9	732	4	188	2	382	2	194	125	34	235	10.12	3.72	0.38	2.83	0.22	0.26	5	1	2	112	2.8	7	256.00	16	.037	0.12	2.00	168	2
5	389R		10.0	0.3	128	4	64	2	76	2	10	9	25	321	3.25	1.19	0.59	2.27	0.18	0.33	5	1	2	8	0.9	2	7.00	24	.070	0.07	2.00	61	2
5	390R		4.0	0.2	207	2	55	1	32	2	148	33	126	179	1.98	3.18	0.25	1.15	0.08	0.12	5	1	2	27	1.0	2	1.00	14	.035	0.10	8.00	330	2
5	391R		13.0	0.2	38	3	191	1	251	2	18	22	104	357	1.61	0.20	0.59	0.96	0.31	0.04	5	3	2	3	2.2	2	1.00	28	.012	0.07	2.00	18	5
5	392R		18.0	0.3	90	3	28	17	18	2	341	104	149	284	2.39	4.15	0.86	2.54	0.50	0.19	5	1	2	26	0.7	2	5.00	22	.062	0.16	4.00	109	3
5	393R		2.0	0.1	68	2	33	3	101	5	43	53	44	133	2.05	4.55	0.45	7.02	0.36	0.48	5	1	2	6	0.9	2	1.00	29	.029	0.07	2.00	23	3
5	394R		2.0	0.1	127	2	57	5	1021	10	39	93	107	104	5.73	0.89	0.85	2.57	0.27	0.26	5	1	2	8	0.8	2	1.00	42	.081	0.02	2.00	132	9
5	395R		2.0	0.1	23	3	9	2	25	2	9	14	132	128	1.59	0.09	0.41	0.70	0.15	0.02	5	3	2	1	0.2	2	1.00	13	.029	0.02	2.00	5	7
5	396R		1.0	0.2	130	2	59	1	23	2	174	123	60	251	4.75	1.02	1.29	1.69	0.97	0.17	5	1	2	25	1.0	3	2.00	69	.139	0.31	3.00	50	2
5	571R		140.0	1.0	76	46	210	1	36249	26404	15	30	3	43	4.67	0.10	0.03	0.10	0.02	0.01	5	1	2	3	5.5	2	1.00	5	.002	0.01	2.00	4	2
5	572R		9.0	0.7	120	7	68	1	629	352	4	6	21	350	2.80	0.46	0.41	0.93	0.10	0.11	5	1	2	4	0.6	2	1.00	21	.067	0.06	2.00	18	2
5	573R		17388.0	9.1	949	178	7804	2	99999	148	15	12	11	92	25.74	0.03	0.01	0.16	0.12	0.01	5	1	22	50	202.6	20	1.00	1	.002	0.01	2.00	10	2
5	574R		16902.0	12.0	345	1002	16946	3	99999	101	14	11	16	197	24.59	0.13	0.01	0.49	0.50	0.01	5	1	19	16	354.9	33	1.00	6	.003	0.01	2.00	24	2
5	610R		7.0	0.2	47	2	24	3	53	4	37	14	65	179	1.59	0.56	0.75	1.00	0.25	0.09	5	3	2	6	0.2	2	1.00	15	.009	0.03	2.00	23	3
5	611R		5.0	0.2	38	2	49	1	40	2	9	20	98	408	3.12	0.64	1.24	1.59	0.71	0.13	5	1	2	9	0.5	2	3.00	62	.042	0.16	2.00	25	2
5	614R		2.0	0.1	84	3	107	5	42	8	192	184	274	458	3.29	0.08	2.66	2.67	1.17	0.03	5	2	2	21	1.0	2	1.00	58	.016	0.12	2.00	4	8
5	648R		110.0	33.3	1597	2110	59	1	4738	1396	163	11	6	357	17.27	3.14	0.56	0.08	0.01	0.01	5	4	2	64	2.3	275	1.00	10	.029	0.01	47.00	65	5
5	649R		21.0	1.0	130	34	196	3	1443	45	17	14	14	859	2.56	5.26	1.37	0.18	0.03	0.01	6	1	2	6	2.3	1716	1.00	8	.049	0.01	39.00	51	5
5	752R		9.0	0.7	55	10	66	5	13	2	31	44	96	619	3.35	1.78	1.37	3.08	0.75	0.08	5	1	2	15	0.9	17	14.00	88	.030	0.20	7.00	196	3
5	900R		1.0	0.4	121	3	23	2	67	2	10	11	72	223	2.70	0.77	0.70	1.58	0.40	0.24	5	1	2	8	0.2	115	1.00	53	.037	0.15	5.00	66	2
5	901R		2.0	0.1	42	2	21	19	17	2	10	21	177	239	2.34	0.69	0.64	1.49	0.29	0.22	5	1	2	6	0.3	3	1.00	49	.036	0.15	5.00	39	3
5	902R		8.0	0.2	124	2	21	36	93	2	9	12	130	197	2.52	0.69	0.61	1.52	0.40	0.25	5	1	2	7	0.2	2	2.00	47	.036	0.16	4.00	65	2
5	903R		3.0	0.2	167	3	81	2	11	2	205	80	95	375	3.71	1.89	1.32	2.49	0.85	0.30	5	1	2	30	0.2	12	3.00	48	.206	0.40	7.00	207	9
5	904R		2.0	0.1	345	4	69	3	2	2	29	36	388	478	2.25	0.07	1.07	1.72	0.97	0.04	5	4	2	7	1.4	2	1.00	37	.011	0.17	2.00	23	12
5	905R		4.0	0.1	91	3	50	7	8	7	31	27	103	391	1.79	0.63	0.65	1.82	0.48	0.11	5	3	2	10	0.4	2	2.00	34	.014	0.08	2.00	32	5
5	906R		1.0	0.1	8	2	3	3	2	2	15	13	8	62	0.43	0.04	0.06	0.11	0.02	0.01	5	1	2	1	0.2	10	1.00	4	.002	0.01	2.00	3	2

BRALORNE PROJECT WATERLOO PROPERTY
MOSS-MAT SAMPLES (-150 MESH)

GRID	Samp	Grams	Auppb	Agppm	Cuppm	Pbppm	Znppm	Moppm	Asppm	Sbppm	Nippm	Crppm	Bappm	Mnppm	Fepct	Capct	Mgpct	Alpct	Kpct	Napct	Uppm	Thppm	Auppm	Coppm	Cdppm	Bippm	Wppm	Vppm	Ppct	Tipct	B_ppm	Srppm	Lappm
5	575M	109	11.5	0.4	98	11	70	11	102	4	46	91	305	307	3.74	0.25	1.36	2.07	0.77	0.05	5	1	2	6	0.4	2	1.00	66	.058	0.26	2.00	35	5
5	577M	137	12.4	0.6	38	24	60	1	98	3	16	54	120	389	4.47	0.74	0.73	1.05	0.28	0.02	5	6	2	10	0.6	2	1.00	110	.263	0.14	3.00	54	15
5	578M	28	24.7	0.2	42	12	78	3	357	17	53	66	156	603	3.02	0.61	0.92	1.62	0.24	0.02	5	1	2	12	0.4	2	1.00	69	.142	0.15	3.00	41	10
5	579M	54	7.7	0.2	36	6	73	3	465	8	40	53	158	516	3.14	0.57	0.91	1.72	0.30	0.02	5	2	2	12	0.6	3	1.00	68	.097	0.19	2.00	42	8
5	580M	170	6.1	0.1	232	4	68	24	65	2	139	169	255	325	5.61	0.38	1.96	2.65	0.83	0.06	5	1	2	27	0.2	3	1.00	77	.072	0.29	2.00	72	4
5	581M	118	5.3	0.1	174	9	108	15	136	2	108	131	305	381	5.03	0.42	1.68	2.34	0.89	0.06	5	1	2	24	0.3	2	1.00	83	.072	0.28	2.00	62	6
5	582M	133	25.6	0.3	379	12	205	16	660	6	333	191	278	1057	6.29	0.55	2.39	3.75	0.73	0.06	5	1	2	110	1.1	3	2.00	73	.085	0.28	3.00	61	6
5	583M	46	9.6	0.1	54	3	104	3	662	9	102	76	241	654	3.29	1.05	1.13	1.92	0.47	0.03	5	1	2	17	0.8	2	1.00	65	.069	0.15	4.00	50	4
5	584M	93	6.0	0.4	54	2	88	4	166	8	99	86	303	589	3.75	0.83	1.38	2.61	0.58	0.04	5	2	2	16	1.0	2	1.00	82	.093	0.15	4.00	124	9
5	585M	93	4.4	0.4	148	2	101	12	158	4	107	107	241	418	4.14	0.40	1.54	2.10	0.62	0.06	5	3	2	37	1.0	2	1.00	80	.072	0.21	3.00	57	5
5	586M	49	5.8	0.2	64	2	80	3	109	19	46	68	214	443	3.45	0.64	1.11	1.88	0.46	0.03	30	10	2	14	0.4	2	5.00	88	.147	0.20	3.00	45	15
5	588M	160	15.1	0.1	130	2	97	11	165	2	95	110	283	407	4.20	0.48	1.68	2.35	0.74	0.06	5	1	2	22	0.5	2	1.00	84	.091	0.24	2.00	61	6
5	612M	18	55.5	0.2	165	5	174	11	129	2	118	58	213	699	3.34	0.48	0.99	1.90	0.76	0.04	5	1	2	23	1.3	2	3.00	47	.128	0.12	3.00	50	5
5	613M	95	67.2	0.2	196	8	147	19	169	2	122	55	306	2125	5.61	0.35	1.31	2.51	0.67	0.05	5	2	2	25	0.6	2	1.00	73	.088	0.20	2.00	65	10
5	651M	25	9.7	0.3	66	11	97	2	386	12	110	104	256	554	3.24	0.62	1.14	1.92	0.37	0.04	5	1	2	16	0.4	3	1.00	79	.155	0.20	5.00	36	7
5	751M	84	6.5	0.3	110	16	155	8	432	17	83	115	348	655	4.31	0.27	2.13	2.91	0.88	0.04	6	2	2	21	0.4	2	2.00	116	.049	0.33	2.00	38	6

BRALORNE PROJECT WATERLOO PROPERTY
SILT SAMPLES (-150 MESH)

GRID	Samp	Grams	Auppb	Agppm	Cuppm	Pbppm	Znppm	Moppm	Asppm	Sbppm	Nippm	Crppm	Bappm	Mnppm	Fepct	Capct	Mgpct	Alpct	Kpct	Napct	Uppm	Thppm	Auppm	Coppm	Cdppm	Bippm	Wppm	Vppm	Ppct	Tipct	B_ppm	Srppm	Lappm
5	576S	133	7.4	0.3	70	7	83	9	134	2	47	89	319	365	3.91	0.19	1.45	1.96	0.91	0.04	5	2	2	9	0.2	3	1.00	70	.051	0.29	3.00	29	5
5	587S	57	6.5	0.1	69	2	75	1	109	2	80	95	232	602	3.59	0.81	1.35	1.68	0.51	0.03	5	8	2	20	0.9	4	1.00	76	.157	0.17	2.00	47	17
5	609S	181	9.3	0.1	175	2	51	15	31	2	64	64	255	343	5.15	0.27	1.62	2.87	0.70	0.07	5	1	2	14	0.2	2	1.00	91	.067	0.28	2.00	89	4
5	615S	72	44.0	0.1	161	8	109	13	84	2	77	46	268	859	4.37	0.25	1.08	1.92	0.58	0.04	5	3	2	20	0.3	2	1.00	57	.054	0.17	2.00	50	9
5	616S	64	24.1	0.2	161	10	111	12	87	2	107	85	299	784	4.62	0.31	1.41	2.23	0.60	0.04	5	3	2	22	0.4	3	1.00	63	.062	0.19	2.00	56	8
5	617S	41	9.1	0.2	110	8	161	7	87	3	242	253	314	610	4.42	0.38	2.50	2.49	0.67	0.03	5	3	2	29	0.8	4	1.00	61	.052	0.20	2.00	39	13
5	618S	140	1.5	0.3	138	9	106	12	92	2	113	99	292	677	4.53	0.34	1.43	2.12	0.70	0.04	5	2	2	21	0.3	3	2.00	61	.055	0.21	2.00	51	9
5	647S	64	24.2	0.2	37	11	70	2	139	6	22	43	162	560	3.23	0.55	0.69	1.26	0.38	0.02	5	10	2	12	0.2	3	1.00	62	.134	0.18	2.00	38	19
5	650S	75	1.5	0.2	59	5	82	3	60	3	69	128	331	553	5.30	0.47	2.06	2.91	1.56	0.07	5	4	2	13	0.2	8	1.00	104	.133	0.24	2.00	133	11

APPENDIX II

ROCK SAMPLE DESCRIPTION

ROCK SAMPLE DESCRIPTION

No.	Location	Description
BR085R	BC7787/212	5 cm quartz, some sulphides, in hornblende pyroxene, porphyritic diorite; N40/45E; average.
BR086R	BC7787/212	Rusty patch in medium grained diorite; disseminated and veinlets of sulphides; average.
BR087R	BC7787/212	Fine grained felsic granodioritic rock (hornfels?), disseminated sulphides; float; grab.
BR088R	BC7787/212	Hornfelsed basic-intermediate volcanic, disseminated pyrrhotite; grab.
BR089R	BC7787/212	- - - - - - - - - - - do - - - - - - - - - - - float
BR090R	BC7787/212	- - - - - - - - - - - do - - - - - - - - - - - float
BR091R	BC7787/212	- - - - - - - - - - - do - - - - - - - - - - - outcrop
BR092R	BC7787/212	- - - - - - - - - - - do - - - - - - - - - - - float
BR387R	Old trench main showing elev. 2270	10 cm wide quartz vein with massive arsenopyrite, pyrite, sphalerite; 141/56NE.
BR388R	North of main showing elev. 2235	Andesite with abundant blebs of pyrrhotite, pyrite; sample from scree.
BR389R	North of main showing elev. 2250	5 m wide felsic intrusive with blebs of pyrite, pyrrhotite; trends at 100°; sample across 5 m.
BR390R	South of Showing elev. 2275	10 cm wide quartz vein in volcanics, quartz is crystalline with chlorite; contains fine disseminated pyrite, arsenopyrite, chalcopyrite?; sample taken from end of old trench.
BR391R	South of showing elev. 2310	Highly silicified volcanic rock white in colour with stockwork of micro veinlets and fractures; no visible sulphides.
BR392R	South of showing elev. 2340	Float, 3 cm wide quartz vein in volcanics, medium grained quartz crystals with patches and blebs of weathered sulphides, volcanic envelope contains patches of pyrite.

No.	Location	Description
BR393R	In small saddle below Fergusson Peak elev. 2380	Large calcite vein, float; vein is vuggy and pervasively altered to ankerite; no visible sulphides; vein trends 170°.
BR394R	In small saddle below Fergusson Peak	Talus sample taken above calcite vein.
BR395R	elev. 2400 m	Stockwork of small quartz veinlets in altered siliceous volcanic; no visible sulphide.
BR396R	West side of Fergusson Peak elev. 2440	10 m^2 zone of intense silicious altered fine grained volcanic with disseminated patches of pyrite; rock is oxidized lime green.
BR571R	On ridge NW of showing elev. 2245 m	Grab from boulder float (subcrop) - hydrothermal quartz veining, drusy; yellow staining on fresh surfaces; host rock is siliceous deformed sediments (cherty); stibnite in pockets up to semi-massive; Sb 10% of sample, Py 1%; high grade grab.BR648Relev. 2140 mGrab sample - high grade grab in rubble below pegmatitic vein o/c; vein contains gangue quartz and semi-massive sulphides (pyrite, pyrrhotite, minor galena, chalcopyrite); host is quartz diorite intrusive.
BR572R	100 m from showing at Zone 1 elev. 2220 m	Chip (2 m) across rusty siliceous zone of pale andesites; zone runs across hillside; hydrothermal quartz veining (drusy) through parts of sample but generally rare; disseminated pyrite 1%; limonite on weathered surfaces.
BR573R	Old trench below showing east side of ridge elev. 2190 m	Grab - float from dump at low end of trench; host rock is a dark, fine grained hornfels andesite; significant calcareous veins generally <2 cm, quartz carbonate veins rusty limonitic containing massive sulphide, mainly pyrite and arsenopyrite 30-40%; sphalerite trace to 2%; selective high grade sample.
BR574R		Grab - same as above. Less selective sample including more wallrock and less of the vein material.

No.	Location	Description
BR610R	Waterloo Creek elev. 2100 m	Chip (0.5 m) - across siliceous breccia zone adjacent to hypabyssal intrusive stock with large biotite phenocrysts; breccia contains dark (argillite) silicified stringers (1-3 mm) in irregular patterns with sulphide along them. Sulphide mineralization mostly anhedral py 1-2% in stringers and disseminations, ± hematite.
BR611R	Waterloo Creek	Grab - representative sample from boulder talus and surrounding rock type; intrusive quartz diorite stock green alternative veins and envelope contains minor py, po.
BR614R	Waterloo Creek elev. 1710 m	Grab - representative across 0.5 m o/c; argillite with quartz sweats; extremely rusty on weathered surfaces, yellow to red limonite stain; pyrite, trace to 1%; argillite orientation; 140/60N.
BR649R	elev. 2155 m	Chip (0.5 m) - across pegmatitic vein in quartz diorite host; white bull quartz fills much of vein; other gangue minerals include actinolite, hornblende; blebs of pyrrhotite, chalcopyrite, pyrite visible in dyke; total sulphide content <3%; dyke/vein parallel to jointing; N70/45N.
BR752R	South ridge elev. 2315	Grab - boulder talus just below ridge crest; grey black siliceous volcanic with rusty limonite staining; trace py.
900R	South of Fergusson Peak elev. 2575 m	Silicified intrusive with weak pervasive Fe alteration, blebs of pyrite.
BR901R	Saddle between Fergusson Peak & South Ridge elev. 2520	Silicified intrusive with weak pervasive Fe-Carbonate alteration and blebs of pyrite.
BR902R	elev. 2400 m	Silicified intrusive with weak pervasive Fe-Carbonate alteration and blebs of pyrite.
BR903R	elev. 2310	Silicified volcanics, very black fine grained contains disseminated pyrite.
BR904R	elev. 2325 m	Hornfelsed volcanic rock with disseminated pyrite occurring along stained fractures; rock is very silicified.
BR905R	2350 m	Silicified volcanic with pyrite occurring as blebs and patches.
906R	Near east ridge elev. 2570	Quartz vein - bull quartz; no visible sulphides; sample is float.

APPENDIX III

STATEMENT OF EXPENDITURES

STATEMENT OF EXPENDITURES

WATERLOO PROPERTY

Geological and Geochemical Surveys

May to August 1991

Personnel		
K. Schimann	2.5 days @ $411	$ 1,028
W. Robb	4.0 days @ $144	576
A. Sostad	0.5 days @ $115	57
C. Church	4.5 days @ $161	724
		2,385
Helicopter rental	3.9 hrs. @ $722	2,816
Truck rental 8.0 days @ $60		480
Field equipment and supplies		367
Accommodation and food		306
Telephone and shipping		25
Geochemical analyses	25 soil/stream samples @ $13.50	337
	35 rock samples @ $14.50	508
Data processing and report preparation		700
		$ 7,924

APPENDIX IV

STATEMENT OF QUALIFICATIONS

APPENDIX IV

STATEMENT OF QUALIFICATIONS

I, **Karl Schimann**, residing at 5442 Columbia Street, Vancouver, B.C., hereby state that:

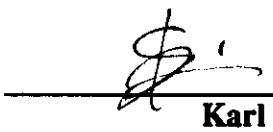
1. I am the senior author of the report *Geological and Geochemical Surveys on the Waterloo Property, Lillooet Mining Division.*

2. I have worked on the property from May to August 1991 for COGEMA Canada Ltd. and supervised the work described in this report.

3. I graduated from the Université de Montréal with a B.Sc. in Geology in 1968.

4. I graduated from the University of Alberta with a Ph.D. in Geology in 1978.

5. I have worked in mineral exploration since 1976.



Karl Schimann
District Geologist

LEGEND

STRATIFIED ROCKS

Tertiary (Eocene?)	7v	Volcanics: porphyritic dacite and volcanic breccia
	7s	Sediments: conglomerate, sandstone, siltstone
Upper Cretaceous	6v	Volcanics: andesitic breccia, tuffs, and flows
	6s	Polymictic and volcanogenic conglomerate, minor sandstone and shale
Lower Cretaceous	5	Taylor Creek Group: conglomerate, sandstone, shale
Middle Jurassic to Lower Cretaceous	4	Relay Mountain Group: grey to green sandstone and shale
Upper Triassic	3	Tyaughton Group: conglomerate, sandstone, limestone, shale
		Cadwallader Group:
	2s	Hurley Formation: sandstone, conglomerate, shale
	2v	Pioneer Formation: green to purple pillowed, massive and brecciated greenstone
Permian to Jurassic		Bridge River Complex:
	1s	Chert, argillite, limestone
	1v	Grey-green to brown massive and pillowed metabasalt and greenschist

INTRUSIVES

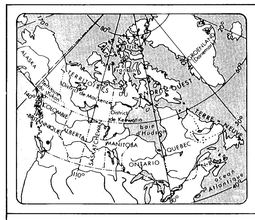
Tertiary	P	Porphyry
	D	Granodiorite to quartz diorite
Cretaceous to Tertiary	G	Coast Plutonic Complex and outlying stocks: granodiorite to granite
Triassic	B	Bralorne Intrusive: augite, diorite, gabbro (Bg: soda granite)
Permian to Jurassic (?)	A	Shulaps Ultramafic Complex: serpentinite mélange

SYMBOLS

- Geological Contact
- Area of Outcrops
- Fault
- ₀576M Moss Mat Sample Location
- ₀647S Silt Sample Location
- x394R Rock Sample Location (▲ Float)

ANOMALIES

	ROCKS	SOILS	MOSS MATS	SILTS	
x999R	300-1000	40-100	100-300	80-150	ppb Au
x999R	1000	100	300	150	ppb Au



30'	123°	30'	122°	30' 15'
0/3	0/4	0/5	P/4	51°00'
J/14	J/15	J/16	i/13	45'
J/11	J/10	J/9	i/12	30'
J/6	J/7	J/8	i/5	15'

INDEX TO ADJOINING N.T.S. SHEETS

COGEMA Canada Ltée/Ltd.

Scale 1: 10,000

Meters 0 200 400 600 800 1000 1200 Mètres

Feet 0 1000 2000 3000 4000 Pieds

BRALORNE PROJECT B.C.

WATERLOO PROPERTY

GEOLOGY AND SAMPLE LOCATION MAP

GEOLOGICAL BRANCH ASSESSMENT REPORT

22,119

Interpretation by: K. Schimann	Date Nov, 1991
Drafted by: W. Robb	Report no. 91-CND-66-08
Base map:	Annex no.
Revise by:	MAP NO. 1

Noel Lake

Kingdom Lake

Mead L.

Creek

Mount Truax

Mount Fergusson

alorne

SYMBOLS

- ○ Moss Mat Sample Location
- □ Silt Sample Location
- • Soil Sample Location
- X Rock Sample Location
- △ Rock (float) Sample Location
- 287 Value for Au in ppb

INDEX TO ADJOINING N.T.S. SHEETS

30'	123°	30'	122°	30'	15'
0/3	0/4	0/5	P/4		51°00'
J/14	J/15	J/16	i/13		45'
J/11	J/10	J/9	i/12		30'
J/6	J/7	J/8	i/5		15'

COGEMA Canada Ltée/Ltd.

Scale 1: 10,000

Meters 0 200 400 600 800 1000 1200 Mètres

Feet 0 1000 2000 3000 4000 Pieds

BRALORNE PROJECT B.C.

WATERLOO PROPERTY

GOLD GEOCHEMISTRY

A.R. 22119

Interpretation by:	Date
Drafted by: Alpha - 2000 Drafting 92 05 29	Report no. 91 - CND - 66 - 08
Base map:	Annex no.
Revise by:	MAP NO. 2