ARIS SUMMARY SHEET

District Geologist, Kamloops   Off Confidential: 89.09.01

ASSESSMENT REPORT 18028   MINING DIVISION: Revelstoke

PROPERTY: Oro Viejo
LOCATION: LAT 51 40 00 LONG 118 35 00
UTM 11 5724933 390497
NTS 082M10E
CLAIM(S): Oro Viejo 2,Oro Viejo 4
OPERATOR(S): Hurlburt, G.
AUTHOR(S): Hurlburt, G.;Meyer, B.H.
REPORT YEAR: 1988, 26 Pages
COMMODITIES
SEARCHED FOR: Dolomite
GEOLOGICAL
SUMMARY: More than 300 million tonnes of high purity dolomite is present in the Lower Cambrian Badshot Formation about 100 kilometres north of Revelstoke, BC. Enclosing rocks include Proterozoic to Lower Paleozoic phyllites and slates of the Horsethief Creek, Hamill, and Lardeau Groups. The western contact of the Badshot Formation and Lardeau Group has many small pods and lenses of talc magnesite schist. Although highly deformed, the beds generally dip gently to the west or north.
WORK
DONE: Geological,Geochemical
GEOL 800.0 ha
Map(s) - 1; Scale(s) - 1:5000
ROCK 13 sample(s) ;ME
RELATED
REPORTS: 16604
MINFILE: 082M

THE ORO VIEJO GROUP

GEOLOGICAL AND GEOCHEMICAL REPORT

LOCATION:

LATITUDE: 51 DEGREES 40 MINUTES NORTH
LONGITUDE: 118 DEGREES 35 MINUTES WEST
NTS 82 M-10E
REVELSTOKE MINING DIVISION, B.C.

OWNER/OPERATORS: GORD HURLBURT
KORY KOKE
ROBERT KOMARECHKA
BRIAN MEYER

REPORTED BY: G. C. HURLBURT, B. SC., P. GEOL.
K. R. KOKE, M. SC., P. GEOL.
B. H. MEYER, B. SC., P. GEOL.

SUBMITTED: 15 NOVEMBER, 1988

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MAPS AND FIGURES

THE ORO VIEJO GROUP

SUMMARY

The Oro Viejo property, which is situated near the confluence of the Columbia and Goldstream Rivers within the Revelstoke Mining Division, is underlain by a succession of northwest-southeast trending Proterozoic and Lower Cambrian sediments comprising dolomitic marble (Badshot Formation) enveloped by phyllitic schist, phyllite, and slate (Hamill-Horsethief Creek Groups and Lardeau Group). Lenticular pods of talc-magnesite schist are evident near the western Lardeau-Badshot contact. Structurally, foliation planes dip moderately west.

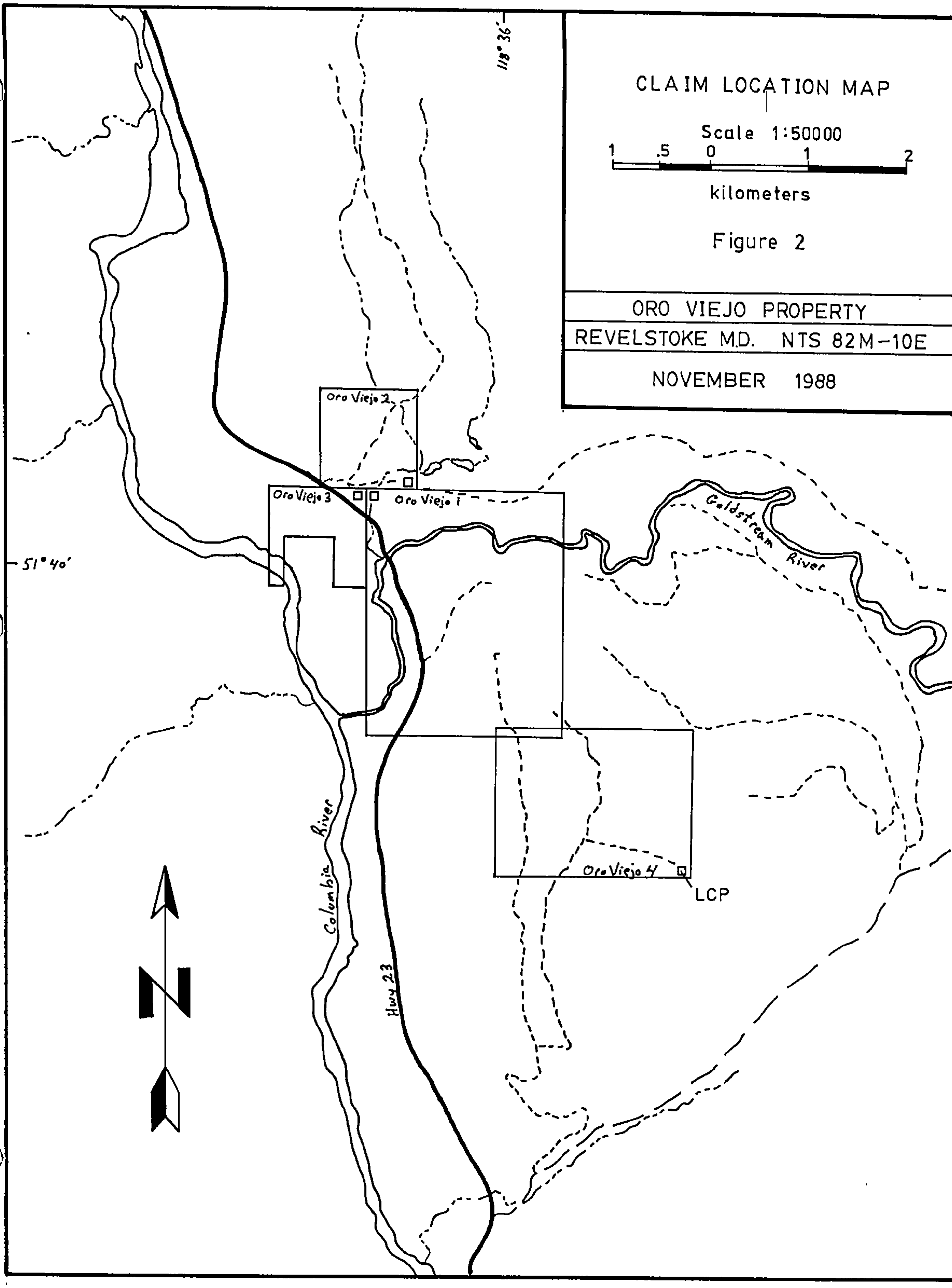
A detailed mapping and rock sampling program conducted within a survey grid overlying a portion of Badshot Formation dolomite has resulted in the delineation of large tonnages of high purity industrial grade dolomite, with excellent potential for increasing the size of this resource.

A continuation of the exploration program involving mapping, rock sampling, and diamond drilling of high quality dolomite has been recommended along with a qualitative investigation of talc deposits situated within the property. Also recommended is the completion of a research study of the marketability of the Oro Viejo dolomite deposit.

ORO VIEJO PROPRERTY

INDEX MAP

FIGURE 1


CLAIM LOCATION MAP
Scale 1:50000
1 .5 0 1 2
kilometers
Figure 2
ORO VIEJO PROPERTY
REVELSTOKE M.D. NTS 82M-10E
NOVEMBER 1988
118° 36'
51° 40'
Oro Viejo 2
Oro Viejo 3
Oro Viejo 1
Oro Viejo 4
LCP
Goldstream River
Columbia River
Hwy 23
N

INTRODUCTION

This report describes the results of the geochemical and geological mapping project carried out on the Oro Viejo Group in the 1988 field season. The program consisted of geological mapping and geochemical whole rock sampling along a blazed and chained grid system.

The work forms part of an ongoing effort to define the internal compositional variations within a large body of high purity dolomite by detailed mapping and assay.

LOCATION AND ACCESS

The subject property is located at the mouth of the Goldstream River, a tributary of the Columbia River. Access is readily gained from the paved Highway #23 about 100 road kilometers north of the city of Revelstoke, B.C. The Oro Viejo Group straddles the highway at this point, and a series of logging roads provides easy access to all parts of the property.

Refer to the Index Map #1 for details on the location of the Oro Viejo Group within the province of British Columbia and the Revelstoke Mining Division.

PHYSIOGRAPHY, CLIMATE, AND VEGETATION

Physiography in the immediate area of the claims consists of gentle to moderately steep hills rising to a maximum elevation of 3800 feet (1160m) above the broad valley floors of the Columbia and Goldstream Rivers. The elevation of the mouth of the Goldstream River is about 1900 feet (580m).

The climate in the Goldstream area is temperate with warm summers and moderate to cold winters. Precipitation is moderate to heavy with a high percentage occurring as snow from November to April. The field season commences in May and ends in October, with the driest months being July and August.

Vegetation consists of good marketable stands of western red cedar, hemlock, Douglas fir, balsam, western white pine, and Englemann spruce. Less obvious species include alder, willows, yew and birch. In logged areas, nearly impenetrable thickets of devil's club and alder impede progress on foot.

PROPERTY AND OWNERSHIP

The Oro Viejo property consists of a grouping of 40 units comprising the current sizes of the following modified grid claims:

NAME	CURRENT SIZE	CURRENT EXPIRY	RECORD NUMBER
Oro Viejo #1	20 Units	May 11, 1990	2251
Oro Viejo #2	4 Units	Sept 2, 1989	2252
Oro Viejo #3	4 Units	Sept 2, 1989	2253
Oro Viejo #4	12 Units	Sept 2, 1989	2385

The claims are owned by Gordon Hurlburt (31.55%), Kory Koke (31.55%), Robert Komarechka (31.55%), and Brian Meyer (5.35%). Oro Viejo #1, #2, and #3 were recorded in September, 1986 and Oro Viejo #4 was staked in May, 1987. The claims were subsequently grouped, and 16 units of Oro Viejo #2 were dropped in 1988, leaving a 2X2 unit block in the southeast corner of the original claim.

Refer to the Claim Location(Map #2) for exact location of the property and positions of the Legal Corner Posts plotted on NTS 82M-10E.

HISTORY

The exploration of the Goldstream area was initiated by the discovery of placer gold in the Goldstream and Columbia Rivers and in French, McCulloch, and Old Camp Creeks. Small quantities of lode gold were produced from four properties in the Groundhog Basin, a glacial cirque at the headwaters of McCulloch Creek. Most of this activity occurred in the late 1800's and early 1900's, when enough people were resident in the area to warrant the establishment of a post office at the mouth of the Goldstream River.

The discovery of sulphides led to the development of the Goldstream Mine by Noranda in the 1970's. This property, currently inactive, is located about 15 kilometers east-southeast of the Goldstream River mouth.

The proximity of the Goldstream Mine and the numerous gold shows in the general area has encouraged sporadic exploratory activity with claims being staked in the area of the Oro Viejo Group several times. Noranda, Cominco, and Seaforth Mines have all been involved in geological and geochemical investigations in the immediate area of the subject property; the work was carried out in the late seventies and was primarily directed at sulphides.

Currently active mining claims in the area include the F.A.R. claims (carving talc) to the east, the Broken Pick claim (minor sulphides) to the west, and the G.R. claims (minor sulphides) on the eastern border.

PRESENT ACTIVITY AND OBJECTIVES

A total of 8 man-days was spent on the Oro Viejo Group in the summer of 1988. An early visit by Gord Hurlburt was made from July 14-16. This was followed up by a later visit (August 25-28) by Brian Meyer and Gord Hurlburt. Both are professional geologists currently practising in the province of Alberta.

A 600X600 meter blazed and flagged reference grid was established to provide control for a detailed geological mapping and whole rock sampling project. A sampling frequency of 100 meters was aimed for, but some stations with no outcrop were not sampled. The location of this grid is primarily on Oro Viejo Claim #4 with the northwest corner touching Oro Viejo #1. The northwest corner of this grid is approximately 100 meters east of the northwest corner post of Oro Viejo claim #4. See Detailed Geology Map #3 (in pocket) for detail on the grid and local geology.

The object of the program was to outline areas of highest purity dolomite. The results will be used to plan further sampling and mapping programs, outline potential drill targets, and ultimately determine the location of a test pit for bulk sampling.

Subtle variations in the composition of dolomite are of critical importance in the determination of the suitability of the product for a particular use. Whole rock geochemistry (hand samples or core) will be the most important tool in the delineation of economic reserves. It is essential that the first bulk shipment be absolutely as pure as possible.

GEOLOGY

The Oro Viejo Group is situated within the western portion of the Selkirk Mountains near the contact with the Shuswap Metamorphic Complex. A fault in the bed of the Columbia River divides the Selkirks to the east from the Monashee Mountains in the Shuswap Complex to the west. The rocks in the vicinity of the claims are moderately metamorphosed (greenschist facies) with the metamorphic grade increasing in intensity to the northeast (Wheeler, 1965). Foliation tends to strike from about 270-360 degrees and usually dips 20-40 degrees to the north (Komarechka, 1987) but can be locally chaotic. The original strike of most beds was likely from northwest to southeast, but up to three phases of deformation (Hoy, 1979) complicates the situation.

STRATIGRAPHY

At the subject property, the oldest rocks are Proterozoic and/or Lower Cambrian rocks of the Horsethief Creek Group. Lithology includes dark grey to dark brown slates and phyllites with scattered bands of quartz-mica schist, quartzite, and impure marble. Limy and arenaceous bands are common near the top where the contact with the overlying Hamill Group is probably transitional. The recessive nature of this formation and the presence of rotated blocks makes identification and the determination of structural relationships difficult.

The Hamill Group in this area appears to be nearly indistinguishable from arenaceous phases of the Horsethief Creek. No useful separation of these units could be made in the immediate vicinity of the claims. It is probable that the grey slates and phyllites mapped by Wheeler (1964) as Lardeau (immediately east of the Badshot Formation at the claims) are argillaceous phases of the Hamill Group. An alternative interpretation placing Lardeau rocks both to the east and west of the Badshot requires seeing the Badshot as the core of an anticlinal structure (Komarechka, 1987). Although this is possible, the writers feel that there is insufficient evidence to decide this issue either way.

Of Lower Cambrian age and overlying the Hamill Group is the Badshot Formation. This is a persistant carbonate unit that parallels the Colulmbia river for several hundred kilometers as far as the South Kootenays (Wheeler, 1965). In the immediate vicinity of the Oro Viejo Group, it is composed primarily of snow-white to buff dolomitic marble with minor phases of grey to white calcitic marble. It is microcrystalline to very fine crystalline and is intensely jointed with most outcrops showing blocky fragments and heaps of rubble. As mentioned previously, it is possible that the claims straddle an anticlinal fold structure with the Badshot at the core as the Formation appears to be tectonically thickened in the area. Another possible explanation could involve shortening perhaps caused by thrusting without overturning. The resemblance of the Lardeau Group to argillaceous phases of the Horsethief Creek and Hamill rocks makes this problem difficult to resolve (see Lane et al, 1977, and Hoy, 1979).

The youngest rocks of importance to this study are the dark grey slates and phyllites of the Lardeau Group. Schist, quartzite, and thin marble stringers are known from this group, but are not dominant in the map area. The contact of the Lardeau with the Badshot was found to be associated with pods of talc magnesite schist and minor sulphides.

On the Oro Viejo Group, the predominant lithology is the northwest-southeast trending Badshot dolomitic marble. This body is bounded on both northeast and southwest by dark grey phyllites and slates with minor limy and arenaceous bands near the contact with carbonate. Talc magnesite schists and pods of steatite and talc occur discontinuously along the western contact. The claims were staked to include a minimum of slate and phyllite while acquiring most of the dolomitic marble and contact zone. Refer to Map #3 for the detailed geology of the Claim Group.

STRUCTURE

The basic structure of the area appears to be a northwesterly dipping monocline with numerous secondary tight folds. Foliation dips seem to average 20-40 degrees west and north with strikes from west to north. Locally the situation is very chaotic and true bedding is always difficult to ascertain.

The Badshot Formation is tectonically thickened at the claims due either to tight isoclinal folding or perhaps thrusting. The presence of two to three sets of jointing nearly everywhere in the marble points to some sort of crustal shortening.

ECONOMIC POTENTIAL

The Oro Viejo claims were originally staked for talc and high purity dolomite. Virtually all of the Badshot exposure on the claims is dolomitic marble, and the contacts of the Badshot with the overlying Lardeau Group and possibly also the underlying Hamill/Horsethief Creek rocks is characterized by pods and lenses of talc magnesite schist. The known tonnages of dolomite are very large (Komarechka, 1987) and exploitation of this material depends entirely on purity and markets. The talc, however, occurs in small bodies that appear subeconomic, both in terms of tonnage and grade. The presence of talc along a 6400 meter trend (ibid., 1987) is somewhat encouraging, but the recessive nature of talc schist makes prospecting difficult. The F.A.R. claims to the east of the Group have produced several hundred tons of carving grade talc but to the writers' knowledge, no filler or pharmaceutical grade material has been discovered or produced in the area.

GEOCHEMISTRY

BACKGROUND

Dolomite has the chemical formula Ca,Mg$(CO_3)_2$. A 100% pure sample of dolomite (mole ratio $Ca_{.50}$) should have the following whole rock analysis:

Ca, Mg$(CO_3)_2$	CaO	30.41%
	MgO	21.86%
	CO_2	47.73%
	Total	100.00%

For comparison, pure calcite $CaCO_3$, and pure magnesite $MgCO_3$ compositions are as follows (weight %):

$CaCO_3$	CaO	56.03%
	CO_2	43.97%
	Total	100.00%
$MgCO_3$	MgO	47.81%
	CO_2	52.19%
	Total	100.00%

The normal Ca:Mg mole ratio in dolomite varies from about $Ca_{.49}$ to $Ca_{.57}$. Note that the LOI (loss on ignition) in a carbonate whole rock analysis would be entirely due to the CO_2 driven off by heating. Thus, LOI can be roughly equated to CO_2 in an analysis where organic materials are negligable.

Generally speaking, the carbonate content of a sample is the sum of CaO, MgO, and LOI. Good numbers for a pure carbonate will be over 98%. Iron content in excess of about 0.1% is deleterious as it decreases brightness of product and increases the hardness. Silica, alumina, and titania increase hardness and should be under about 2% in the aggregate. Manganese should be below 0.1% as it darkens the product.

METHOD

Thirteen carbonate rock samples collected within the grid area underwent whole rock analysis by ACME Analytical Laboratories Ltd., utilizing 0.10 grams of sample fused with 0.60 grams of $LiBO_2$ and dissolved in 5% HNO_3. Oxide values in weight percent were determined by the ICP method. Results are presented in Appendix I.

Twenty-seven carbonate rock samples previously analysed by Terramin Labs using the AA method (Komarechka, 1987), were re-analysed by Barringer-Magenta using the ICP method to verify the purity of the dolomite. Samples were freshly prepared from rock using the method outlined above.

DISCUSSION

The ACME results indicate that the dolomite in the grid area is significantly pure. Nine of the samples contained greater than 20% magnesia (MgO). Pure dolomite contains up to about 22% magnesia (p. 638, Mineral Facts and Problems). Three samples containing less than 20% magnesia are densely fractured and infilled with a dark material (manganese or iron oxides?). These were obtained from a narrow north-south trending fracture zone outlined during the geological mapping program. One sample, containing an anomalous magnesia content of 31.54% may indicate the localized presence of brucite.

Wishing to confirm Komarechka's (1987) work on the dolomite geochemistry, the same suite of twenty-seven rock samples collected by R. Komarechka in 1986-1987 were submitted to a different lab (Barringer-Magenta) to be analysed using a different analytical technique (ICP). A comparison of these new results with Komarechka's 1987 work (Terramin Labs, AA method) shows some important differences. The new results are lower in MgO, higher in CaO, and almost an order of magnitude higher in SiO_2. The magnesias are averaging so low that the mineralogy indicated is that of a high magnesian calcite rather than typical dolomite. The Terramin results, however, compare favorably with the Acme work despite the fact that these companies used different analysis techniques, AA for Terramin and ICP for ACME.

Since the Barringer-Magenta results differ markedly from the results of ACME and Terramin, we are confident that re-analysis will confirm Komarechka's 1987 results as analyzed by Terramin. The authors agree that the Barringer-Magenta results are suspect as the high silica content recorded would be observable in hand specimen either as silica fracture fillings or increased overall hardness.

CONCLUSIONS

The talc magnesite schists on this property presently appear subeconomic. In view of the high price currently paid for good filler and pharmaceutical talc, however, every effort should be made to extend the size of known showings. Small pods of very pure talc are known on the Oro Viejo Group. Pure talc can command prices up to US$500.00 per tonne for refined product. It is, therefore, economically possible to mine bodies as small as 25,000 tonnes if markets are available. Additional prospecting with a view to finding more talc is therefore worthwhile.

The writers concur with Komarechka's (1987) conclusion that this prospect represents an unusually high tonnage of very pure dolomite. If the surface exposure of the dolomite is taken as being 4000X1000m^2 (see Map #3), it can be seen that a volume of 4000X1000X30m^3 is possible assuming a depth of 30 meters for the deposit. This represents roughly 300 million tonnes of material of which it appears likely that over 25 million tonnes will be 98+% pure dolomite. The writers feel that this estimate is very conservative.

It should be clear from the above analysis that the dolomite tonnage will be adequate for almost any product end use. The Oro Viejo Group contains a huge, unusually pure accumulation of dolomitic marble. Questions that should be answered before production can commence will involve grade, mining feasability, and markets. A comprehensive economic study is mandatory before any commercial projects are initiated.

RECOMMENDATIONS

For purposes of doing a rigorous evaluation of the dolomite and to a lesser degree the talc present on the Oro Viejo Group, the writers recommend a two phase exploration program be carried out on the property as follows:

Phase I

1. Extend the present grid baseline 1000 meters due north with tie lines established normal to base line spaced at 200 meter intervals, extending 400 meters both east and west of the baseline.

2. Conduct geological mapping at 1:5000 scale over grid area.

3. Conduct geochemical rock sampling program along tie lines at approximately 100 meter intervals. Analyze samples for whole rock composition.

4. Qualitatively analyze grab samples of talc to determine mineralogical composition and grade.

Phase II

1. Conduct diamond drilling program directed at specified target areas based on assessment of Phase I results.

PROPOSED EXPENDITURES

PHASE I

Control grid (5 line km @ $150/km)	$750.00
Rock analysis (45 samples @ $20 each)	900.00
Mineralogical analyses of talc	200.00
Geologist (1 month @ $5000/month)	5,000.00
Geological assistant (1 month @ $2500/month)	2,500.00
Logistics (30 days at $50/day)	1,500.00
Vehicle (30 days at $50/day)	1,500.00
Report preparation	1,500.00
Contingency (10%)	1,400.00
Subtotal	15,250.00

PHASE II

Diamond Drilling (1000m at $100/m)	100,000.00
Rock analyses (300 core samples @ $20 each)	6,000.00
Geologist (1 month @ $5000/month)	5,000.00
Geological assistant (1 month @ 2500/month)	2,500.00
Logistics (30 days at $50/day)	1,500.00
Vehicle (30 days at $50/day)	1,500.00
Report preparation	1,500.00
Contingency (10%)	11,800.00
Subtotal	129,800.00
TOTAL (Phase I & II)	**145,050.00**

BIBLIOGRAPHY

Hoy, T., 1979, Geology of the Goldstream Area. British Columbia Ministry of Energy, Mines, and Petroleum Resources, Bulletin # 71.

Komarechka, R. G., 1987, Geological Report of the Oro Viejo Claims, Revelstoke Mining Division. Assessment Report submitted to British Columbia Ministry of Energy, Mines, and Petroleum Resources, 30 November, 1987.

Lane, L., Brown, R. L., and Hoy, T., 1977, Geology of the Goldstream River - Downie Creek Area, Southeastern British Columbia. Preliminary Map #25, British Columbia Ministry of Energy, Mines, and Petroleum Resources.

United States Bureau of Mines, 1975, Mineral Facts and Problems, 1975 edition by the Staff, Bureau of Mines. United States Department of the Interior.

Wheeler, J. O., 1965, Big Bend Map-area, British Columbia. Geological Survey of Canada, Paper #64-32.

FINAL STATEMENT OF 1988 EXPENDITURES

PHOTO ENLARGEMENT OF TOPOGRAPHIC MAP	$108.55
TOPOGRAPHIC MAP	4.50
FIELD SUPPLIES	68.01
FOOD FOR FIELD	141.11
ACCOMODATION	135.60
GAS	89.97
GOVERNMENT PUBLICATION	11.00
WHOLE ROCK GEOCHEMISTRY	868.00
REPORT PREPARATION (3 DAYS AT $100.00 PER DAY)	300.00
GEOLOGISTS (8 MAN-DAYS AT $250.00 PER DAY)	2000.00
TOTAL	$3726.74

APPENDIX 1

Dolomite Geochemical Analysis

Job#: 87-260

Sample Number	SiO2 -%-	Al2O3 -%-	CaO -%-	MgO -%-	Na2O -%-	K2O -%-	Fe2O3 -%-	MnO -%-	TiO2 -%-	LOI -%-	Total -%-
1	0.19	0.06	30.08	21.72	0.009	0.004	0.13	0.008	0.02	47.00	99.21
2	0.06	0.02	30.64	21.22	0.003	0.001	0.16	[illegible]	0.02	47.15	99.28
3	0.04	0.02	30.22	21.55	0.003	0.001	0.17	0.008	0.02	47.15	99.18
3a	0.09	0.02	30.08	21.72	0.007	0.001	0.10	0.006	0.02	46.95	98.98
4	0.09	0.06	30.36	21.55	0.005	0.004	0.17	0.010	0.02	46.90	99.16
5	0.09	0.06	29.94	21.72	0.004	0.002	0.16	0.008	0.02	47.00	98.99
6	0.96	0.30	49.66	4.59	0.012	0.040	0.19	0.012	0.03	43.75	99.55
6a	1.16	0.43	42.25	10.50	0.009	0.057	0.39	0.023	0.03	44.65	99.49
7	0.06	0.04	30.50	21.39	0.004	0.001	0.09	0.006	0.02	46.90	99.00
8	2.80	0.81	40.71	10.59	0.100	0.013	0.60	0.039	0.03	43.30	99.01
9	4.06	1.28	43.37	7.53	0.066	0.308	0.53	0.021	0.07	42.25	99.49
10	0.09	0.06	30.36	21.55	0.007	0.001	0.13	0.006	0.02	46.95	99.16
11	0.06	0.04	30.50	21.22	0.011	0.001	0.33	0.090	0.02	46.85	99.12
12	0.09	0.06	34.28	18.07	0.005	0.002	0.19	0.057	0.02	46.50	99.26
13	0.11	0.04	30.22	21.55	0.007	0.001	0.13	0.021	0.02	47.10	99.19
14	0.06	0.04	30.50	21.39	0.015	0.004	0.11	0.019	0.02	47.05	99.21
15	0.17	0.06	30.22	21.55	0.007	0.002	0.11	0.009	0.02	47.00	99.15
15a	0.19	0.08	30.64	21.22	0.011	0.001	0.14	0.013	0.02	46.85	99.16
16	0.06	0.04	31.06	20.89	0.009	0.006	0.16	0.034	0.02	46.95	99.22
17	0.28	0.15	49.10	5.41	0.016	0.022	0.10	0.014	0.02	44.00	99.11
18	0.06	0.06	30.64	21.22	0.005	0.001	0.26	0.044	0.02	46.90	99.21
19	0.04	0.04	30.22	21.55	0.003	0.001	0.16	0.041	0.02	46.95	99.02
20	0.06	0.04	30.22	21.55	0.003	0.002	0.20	0.014	0.02	47.05	99.16
21	0.24	0.11	48.69	5.89	0.005	0.006	0.19	0.026	0.02	44.00	99.16
22	0.04	0.04	30.50	21.39	0.012	0.001	0.27	0.049	0.02	47.00	99.32
23	0.06	0.04	30.78	21.06	0.003	0.001	0.29	0.048	0.02	46.90	99.19
24	0.04	0.04	31.62	20.39	0.003	0.001	0.11	0.027	0.02	46.60	98.85

Sample Number	Cu ppm	Ag ppm
9	4	<0.1
11	3	<0.1

BARRINGER MAGENTA
Laboratories (Alberta) Ltd.
4200B - 10 STREET N.E., CALGARY, ALBERTA, CANADA T2E 6K3
PHONE: (403) 250-1901

BARRINGER
Laboratories (NWT) Ltd.
P.O. BOX 864, YELLOWKNIFE, NWT, CANADA X1A 2N6
PHONE: (403) 920-4500

13-JUN-88

COPY: 2 OF 2

AUTHORITY:G. HURLBURT

MR. GORDON HURLBURT
432, 6400 COACH HILL RD. S.W.
CALGARY, ALBERTA

WORK ORDER: 5132D-88

*** FINAL REPORT ***

GEOCHEMICAL LABORATORY REPORT

SAMPLE TYPE: GRAB

SAMPLE NUMBER	TOTAL SIO2 %	TOTAL AL2O3 %	TOTAL FE2O3 %	TOTAL MGO %
1	1.94	0.08	0.1	16.54
2	1.56	0.26	0.02	16.17
3	2.14	0.06	0.02	16.53
3a	3.69	0.11	0.07	17.55
4	3.5	0.08	0.07	18.73
5	2.72	0.05	0.1	18.14
6	2.83	0.06	0.17	5.06
6a	8.41	1.59	0.53	9.5
7	4.25	0.16	0.06	18.23
8	3.5	0.57	0.33	10.51
9	2.11	0.12	0.28	8.89
10	2.53	0.02	0.1	18.55
11	2.14	0.04	0.24	18.47
12	2.53	0.1	0.08	15.76
13	2.21	0.08	0.12	18.51
14	1.17	0.18	0.08	19.27
15	1.36	0.03	0.09	19.06
15a	6.22	0.04	0.1	19.51
16	4.67	0.19	0.14	20.77
17	3.5	0.09	0.13	7.57
18	1.17	0.07	0.23	19.73
19	0.39	0.25	0.13	19.94
S20	1.17	0.02	0.13	20.8
21	3.5	0.07	0.09	5.4
22	0.39	0.09	0.24	20.34
23	3.69	0.08	0.19	19.91
24	1.17	0.1	0.1	16.43

BARRINGER MAGENTA
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BARRINGER
Laboratories (NWT) Ltd.
P.O. BOX 864, YELLOWKNIFE, NWT, CANADA X1A 2N6
PHONE: (403) 920-4500

13-JUN-88

COPY: 2 OF 2

AUTHORITY:G. HURLBURT

MR. GORDON HURLBURT
432, 6400 COACH HILL RD. S.W.
CALGARY, ALBERTA

WORK ORDER: 5132D-88

*** FINAL REPORT ***

GEOCHEMICAL LABORATORY REPORT

SAMPLE TYPE: GRAB

SAMPLE NUMBER	TOTAL CAO %	TOTAL NA2O %	TOTAL K2O %	TOTAL TIO2 %
1	31.92	0.4	0.06	0.004
2	31.61	0.46	0.03	0.002
3	32.07	0.34	0.03	0.001
3a	29.72	0.36	0.05	0.004
4	30.62	0.34	0.03	0.002
5	31.55	0.25	0.02	0.002
6	47.61	0.05	0.06	0.009
6a	39.81	0.22	0.58	0.035
7	31.24	0.42	0.03	0.001
8	41.45	0.15	0.02	0.002
9	46.92	0.26	0.04	0.004
10	32.39	0.45	0.04	0.002
11	32.67	0.35	0.04	0.003
12	36.38	0.41	0.03	0.002
13	31.7	0.39	0.04	0.002
14	33.2	0.46	0.04	0.001
15	31.39	0.28	0.04	0.001
15a	30.34	0.28	0.03	0.003
16	31.43	0.31	0.03	0.002
17	46.28	0.13	0.04	0.003
18	35.31	0.26	0.04	0.002
19	35.07	0.51	0.03	0.001
S20	33.03	0.29	0.04	0.001
21	48.41	0.07	0.02	0.002
22	32.36	0.19	0.03	0.001
23	31.1	0.22	0.02	0.002
24	36.26	0.25	0.03	0.001

BARRINGER MAGENTA
Laboratories (Alberta) Ltd.
4200B - 10 STREET N.E., CALGARY, ALBERTA, CANADA T2E 6K3
PHONE: (403) 250-1901

BARRINGER
Laboratories (NWT) Ltd.
P.O. BOX 864, YELLOWKNIFE, NWT, CANADA X1A 2N6
PHONE: (403) 920-4500

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*** FINAL REPORT ***

GEOCHEMICAL LABORATORY REPORT

SAMPLE TYPE: GRAB

SAMPLE NUMBER	TOTAL P205 %	TOTAL MNO %	LOI %	SUMOX %
1	0.055	0.011	46.15	97.26
2	0.031	0.006	46.45	96.6
3	0.029	0.008	46.91	98.14
3a	0.045	0.007	46.6	98.21
4	0.045	0.01	46.5	99.93
5	0.03	0.007	46.44	99.31
6	0.045	0.013	43.2	99.11
6a	1.524	0.022	37.73	99.95
7	0.022	0.005	45.31	99.73
8	0.012	0.046	42.77	99.36
9	0.018	0.024	41.15	99.82
10	0.033	0.007	45.44	99.56
11	0.026	0.095	43.31	97.38
12	0.039	0.059	44.14	99.53
13	0.017	0.026	46.01	99.11
14	0.044	0.021	45.51	99.98
15	0.006	0.011	46.85	99.12
15a	0.04	0.012	42.93	99.51
16	0.148	0.048	42.2	99.93
17	0.07	0.016	41.76	99.59
18	0.322	0.057	42.7	99.89
19	0.132	0.044	43.42	99.92
S20	0.021	0.014	43.91	99.43
21	0.021	0.028	42.07	99.68
22	0.03	0.048	45.49	99.21
23	0.145	0.05	43.64	99.05
24	0.014	0.048	44.77	99.17

A ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST NCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604 3-1716

WHOLE ROCK ICP ANALYSIS

A .1000 GRAM SAMPLE IS FUSED WITH .60 GRAM OF LIBO2 AND IS DISSOLVED IN 50 MLS 5% HNO3.
- SAMPLE TYPE: Pulp

DATE RECEIVED: SEP 1 1988 DATE REPORT MAILED: Sept 16/88 ASSAYER. C. Leong ..D.TOYE OR C.LEONG, CERTIFIED B.C. ASSAYERS

LORING LABORATORIES LTD. PROJECT 31739 File # 88-4135

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba PPM	LOI %	SUM %
0+00 0+81E	.31	.08	.19	21.48	32.40	.08	.05	.01	.09	.01	.01	9	45.1	99.81
0+00 2+00E	.47	.14	.14	21.04	32.27	.16	.34	.01	.09	.03	.01	19	45.1	99.80
0+00 3+60E	.19	.04	.12	21.20	32.67	.18	.06	.01	.08	.01	.01	6	45.2	99.77
0+10S 2+35E	.78	.18	.38	13.98	39.14	.13	.26	.01	.07	.21	.01	89	44.4	99.57
2+00S 0+60E	.37	.10	.17	20.40	33.03	.26	.05	.02	.08	.01	.01	10	45.3	99.80
2+00S 2+00E	.11	.02	.17	20.80	32.50	.11	.19	.01	.08	.01	.01	6	45.8	99.81
2+00S 2+90E-A	.16	.03	.21	18.08	35.24	.14	.05	.01	.08	.01	.01	13	45.8	99.82
2+00S 2+90E-B	.05	.01	.19	20.20	33.63	.13	.11	.01	.06	.01	.01	8	45.4	99.81
2+00S 4+00E	.10	.03	.19	18.58	34.73	.12	.05	.01	.17	.03	.01	21	45.8	99.82
4+00S 1+70E	.01	.01	.35	31.54	51.36	.17	.11	.01	.13	.04	.01	12	16.1	99.84
4+10S 4+00E	.16	.07	.13	20.63	32.92	.15	.17	.01	.14	.03	.01	18	45.4	99.82
6+00S 2+25E	.19	.04	.29	19.36	34.25	.11	.15	.01	.08	.02	.01	17	45.4	99.91
6+00S 3+72E	.02	.02	.06	21.10	33.07	.12	.05	.01	.06	.03	.01	5	45.3	99.85
std SO-4	68.06	9.92	3.30	.98	1.61	1.41	2.03	.53	.24	.07	.01	769	11.4	99.69

APPENDIX II

ROCK SAMPLE DESCRIPTIONS

0+00-0+81E	Dolomite: white to slightly greyish white, microcrystalline to fine crystalline, homogenous.
0+00-2+00E	Dolomite: as above
0+10S-2+35E	Dolomite: white to greyish white, microcrystalline to fine crystalline, densely fractured.
0+00-3+60E	Dolomite: white, microcrystalline, homogenous.
2+00S-0+60E	Dolomite: white to greyish white, microcrystalline to fine crystalline, homogenous.
2+00S-2+00E	Dolomite: white to greyish white, microcrystalline to fine crystalline, rare fractures.
2+00S-2+90E-A	Dolomite: white, microcrystalline to coarse crystalline, common fractures, some black material along fractures.
2+00S-2+90E-B	Dolomite: as above, rare fractures.
2+00S-4+00E	Dolomite: white, microcrystalline to very coarse crystalline, few fractures with dark material within.
4+00S-1+70E	Dolomite: white to greyish white, microcrystalline to fine crystalline.
4+10S-4+00E	Dolomite: white to slightly greyish-white, microcrystalline to fine or medium crystalline, homogenous.
6+00S-2+25E	Dolomite: white, microcrystalline to coarse crystalline.
6+00S-3+72E	Dolomite: as above.

APPENDIX III

STATEMENT OF QUALIFICATIONS

I, Gordon C. Hurlburt, Professional Geologist, of the city of Calgary, Alberta, do hereby declare as follows:

1. I am a geologist residing in Calgary, Alberta, providing services to the mineral and oil industries.

2. That I am a graduate (B. Sc. Geology, 1977) of the University of Alberta at Edmonton. I am registered in Alberta as a P. Geol. (Professional Geologist) with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta, an affiliate of the Canadian Council of Professional Engineers. I have been practising geology since graduation.

3. I hold a 31.55% undivided interest in the Oro Viejo Group.

4. The foregoing report on the Oro Viejo Group is based on work carried out by Brian Meyer (B. Sc., P. Geol.) and myself in the summer of 1988, previous related reports, and published material available from various government geological departments.

Gordon C. Hurlburt

15 November, 1988

STATEMENT OF QUALIFICATIONS

I, Kory R. Koke, Professional Geologist, of the city of Calgary, Alberta, do hereby declare as follows:

1. I am a consulting geologist residing in Calgary, Alberta, providing services to the mineral and oil industries.

2. That I am a graduate (B. Sc. Geology, 1976, M. Sc. Geology, 1979) of the University of Alberta at Edmonton. I am registered in Alberta as a P. Geol. (Professional Geologist) with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta, an affiliate of the Canadian Council of Professional Engineers. I have been practising geology since graduation.

3. I hold a 31.55% undivided interest in the Oro Viejo Group.

4. The foregoing report on the Oro Viejo Group is based on work carried out by Gord. Hurlburt (B. Sc., P. Geol.) and Brian Meyer (B. Sc., P. Geol.) in the summer of 1988, previous related reports, and published material available from various government geological departments.

Kory Koke

15 November, 1988

STATEMENT OF QUALIFICATIONS

I, Brian H. Meyer, Professional Geologist, of the city of Calgary, Alberta, do hereby declare as follows:

1. I am a consulting geologist residing in Calgary, Alberta, providing services to the mineral and oil industries.

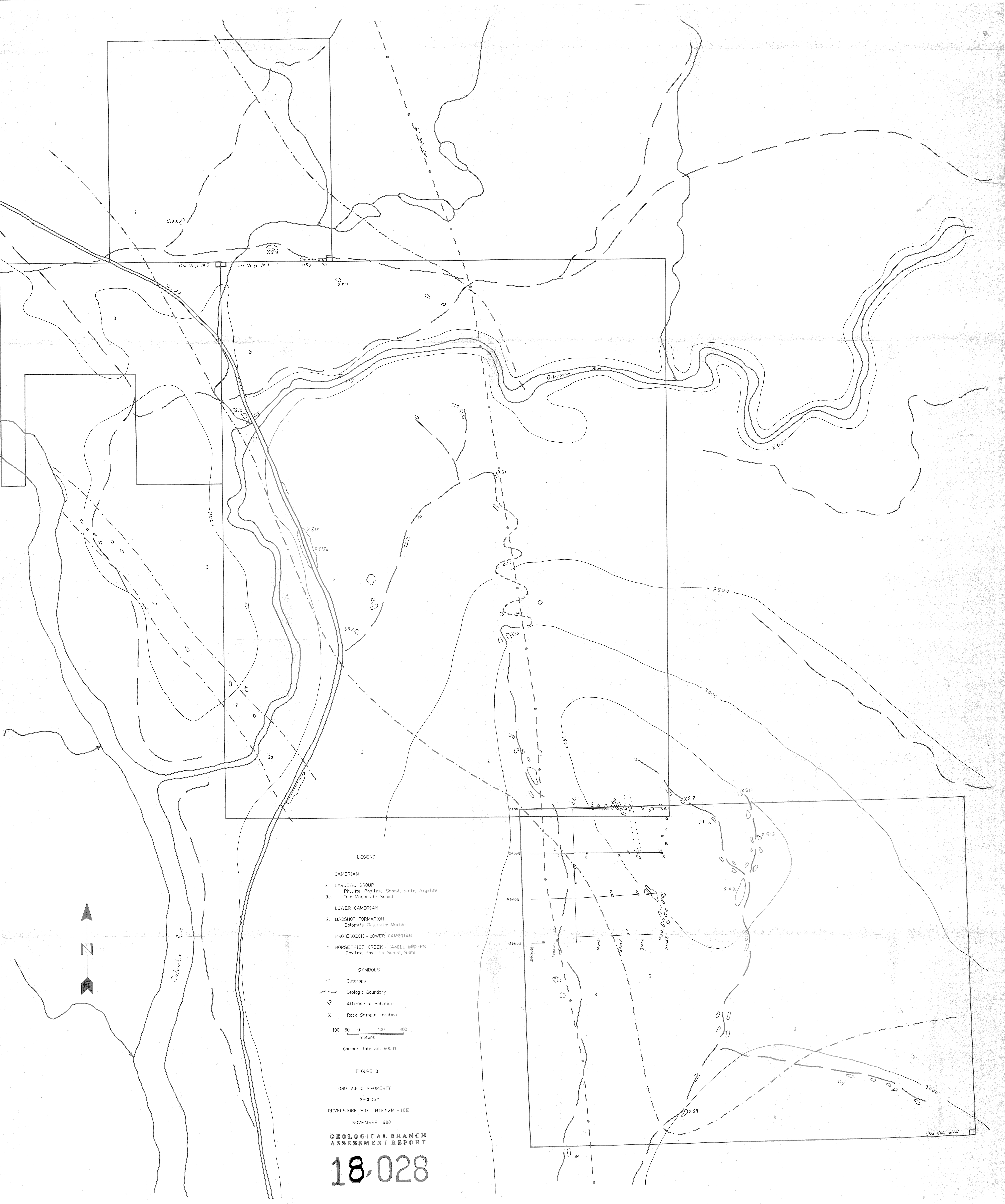
2. That I am a graduate (B. Sc. Geology, 1979) of the University of Alberta at Edmonton. I am registered in Alberta as a P. Geol. (Professional Geologist) with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta, an affiliate of the Canadian Council of Professional Engineers. I have been practising geology since graduation.

3. I hold a 5.35% undivided interest in the Oro Viejo Group.

4. The foregoing report on the Oro Viejo Group is based on work carried out by Gord Hurlburt (B. Sc., P. Geol.) and myself in the summer of 1988, previous related reports, and published material available from various government geological departments.

Brian H. Meyer

15 November, 1988



LEGEND

CAMBRIAN

3. LARDEAU GROUP
Phyllite, Phyllitic Schist, Slate, Argillite
3a. Talc Magnesite Schist

LOWER CAMBRIAN

2. BADSHOT FORMATION
Dolomite, Dolomitic Marble

PROTEROZOIC - LOWER CAMBRIAN

1. HORSETHIEF CREEK - HAMILL GROUPS
Phyllite, Phyllitic Schist, Slate

SYMBOLS

Outcrops

Geologic Boundary

Attitude of Foliation

X Rock Sample Location

100 50 0 100 200
meters

Contour Interval: 500 ft.

FIGURE 3

ORO VIEJO PROPERTY

GEOLOGY

REVELSTOKE M.D. NTS 82M - 10E

NOVEMBER 1988

GEOLOGICAL BRANCH
ASSESSMENT REPORT

18,028