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GEOCHEMICAL REPORT

MINERAL HILL AREA

SMITHERS, BRITISH COLUMBIA

PREPARED FOR

WILLIAM M. SHARP, P.ENG.
CONSULTING GEOLOGICAL ENGINEER
SUITE 808
900 WEST HASTINGS STREET
VANCOUVER 1, B.C.

and

MANEX MINES LIMITED
535 THURLOW STREET
SUITE 200
VANCOUVER, B.C.

PREPARED BY

BARRINGER RESEARCH LIMITED
304 CARLINGVIEW DRIVE
REXDALE, ONTARIO, CANADA

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INTRODUCTION

The undersigned visited the Mineral Hill area near Smithers, British Columbia, on May 1967. The main purpose of the visit was to examine the area with respect to the applicability of geochemical prospecting in the area.

Preliminary soil samples had been collected along two lines crossing known copper, molybdenum mineralization.

GENERAL

Soil profiles were examined in the sample pits and also in some trench and road cuttings.

The soil profile in the area is somewhat changeable. In the hilly topography, the overburden thickness may range from zero to 20 feet and even greater locally. Furthermore, the content of transported material in the overburden varies.

Most of the preliminary samples collected by Manex Mines personnel constitute the upper portion of the soil profile. Additional samples, however, were also collected from the entire soil profile in two trench sections representing a mineralized and unmineralized area. In these trench section, the overburden comprized a greyish sand with abundant rock fragments.

Analyses were undertaken for total copper, mercury and molybdenum on all the preliminary samples, the results of which are given in Appendix 1 and 2.

DISCUSSION OF ANALYTICAL RESULTS

The salient points arising from a study of the analytical data are summarized below. A. Mineral Hill

1. In the trench profiles T_1 (mineralized) and T_2 (unmineralized) the analytical data (Appendix 1) show relatively high values in the T_1 series of samples, particularly for molybdenum but also, to a less extent, for both mercury and copper. The soil horizons are essentially undeveloped and the overburden contains a large proportion of transported material.

   The results from the entire section in trench T_1, however, are higher in metal concentration than those in trench T_2, but there is little variation in metal content within each soil profile except that for mercury in the uppermost sample. The similarity in values throughout the profile, at least for molybdenum and copper, confirm the absence of well developed soil horizons. The transported nature of the overburden could also give this type of analytical data. Nevertheless, the data suggest that soil sampling is applicable, at least to localize the zones of mineralization in the area.

2. In the a) series of samples (Appendix 2) soil profile 10 represents an unmineralized zone while soil profile 2 overlies mineralization.

   The analytical data show 1) copper values to be anomalously high throughout profile 2 compared to profile 10, 2) molybdenum values to be anomalously high also in profile 2 excluding the 'B' sample in profile 10 and 3) mercury values to be relatively high in profile 2 below the organic-rich soil layers.

The analytical results from the other sample sites in the a) line indicate a definite anomalous zone extending from profile 1 to profile 4 with profiles 5, 6 and 7 in the threshold envelope around the anomaly. A build up to anomalous values is also apparent in profiles 11 and 12. This distribution pattern is indicated by the copper data in particular, supported by molybdenum in the 'C' samples. The mercury data also confirm this trend in general, except for profile 5 in which samples the mercury values are low. This discrepency may indicate some local feature related to the variation in properties of these metals. It is worthy of note in that the mercury data may provide important additional information delimiting the primary dispersion patterns of the economic sulphides more particularly than molybdenum or copper.

3. In the b) series of samples (Appendix 2) soil profile 11 is overlying unmineralized rocks whereas soil profile 5 overlies mineralization.

The main anomalous values for copper and molybdenum coincide with soil profiles 2 and 3 but both metals show higher concentrations in soil profile 5 compared to soil profile 11. If no mineralization underlies sample sites 2 and 3 then it will be necessary to study these data more carefully with respect to topography, ground water hydrology, soil transportation and other aspects of soil formation which may influence metal dispersion.

The mercury data also shows relatively high values in soil profile 3 but the mercury results over the b) sample line as a whole are somewhat erratic.

This erraticness may be a result of the variation in content of organic material which is present in most of the samples. Organic material is a precipitation barrier to mercury migration and the metal tends to accumulate in the organic-rich zones of the soil profile. The mercury content of organic-bearing samples, therefore, may vary depending on the amount of organic material in the sample.

B - MICROWAVE HILL.

4. The series of samples 198-215 (Appendix 2) were collected from Micro-wave hill and represent 3 soil profiles as follows:

198-202 - soil profile over cadmium mineralization

203-209 - soil profile over copper mineralization

210-215 - soil profile over unmineralized rocks

The analytical data for all three metals analyzed shows little variation, and none which appears to be related to mineralization. Indeed the mercury content of samples collected over unmineralized rocks are higher than that in soils overlying mineralization. The samples collected over the cadmium mineralized rocks will be analyzed for zinc which is known to be associated with the cadmium mineralization.

The absence of any indication of copper overlying copper mineralized rocks suggests that the overburden is completely transported and not applicable to soil geochemical prospecting, at least as far as pinpointing the bedrock source of mineralization.

* Cu zone much Cu anyway

CONCLUSIONS AND RECOMMENDATIONS

Results from Mineral Hill indicate that soil sampling of the 'C' type samples collected in the preliminary sampling will be effective in outlining the major zones of mineralization. Analyses is recommended for both total copper and total molybdenum initially. For a more detailed interpretation of the bedrock mineralization, mercury analysis of the anomalous copper and molybdenum samples may be required.

Results from Micro Wave Hill showed no Cu, Mo, Hg soil anomaly related to the underlying mineralization. The absence of this indication at least as far as the copper mineralization is concerned , may indicate completely transported overburden. In this case soil geochemical prospecting would not be a valid approach in the immediate area. However, the interpretation is limited because only one site was sampled at each mineral occurrence. Additional samples across these mineral occurrences would be necessary in order to assess the data more fully.

It is recommended that the analytical data now available should be studied in the field in relation to all the known geological information, as well as to topographic and other aspects which may affect the geochemical dispersion of metals.

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BARRINGER RESEARCH LIMITED

John L. Walker
Consulting Geochemist

JLW:np

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Appendix 1

BARRINGER RESEARCH LIMITED
304 CARLINGVIEW DRIVE
REXDALE (TORONTO), ONTARIO

REPORT NO. 100 DATE ______ LOCATION ______ SHEET 1

PROJECT ______ MATERIAL ______

NO. OF SAMPLES ______ COLLECTOR ______ DATE ______ ANALYST ______ DATE ______

REMARKS ______

t.t. No.	SAMPLE NUMBER	Mo ppm	Hg ppb	TOTAL Cu ppm							
	T1-0-6"	12	568	32							
	6" to 10"	10	45	26							
	10" - 1'3"	8	152	26							
	1'3" - 2'	12	90	35							
	2' - 2'6"	16	41	35							
	2'6" - 3'	14	45	33							
	3' - 3'6"	12	24	28							
	3'6" - 4'	20	27	42							
	4' - 4'6"	20	83	36							
	T2-0-3"	4	534	21							
	3" - 8"	2	22	12							
	8" - 1'	4	15	14							
	1' - 1'6"	3	18	16							
	1'6" - 2'	2	20	16							
	2' - 2'6"	2	16	22							
	2'6" - 3'	2	19	23							
	3' - 3'6"	4	21	24							

Appendix 2

BARRINGER RESEARCH LIMITED
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REPORT NO. 109 DATE ______ LOCATION ______ SHEET 1

PROJECT ______ MATERIAL ______

NO. OF SAMPLES ______ COLLECTOR ______ DATE ______ ANALYST ______ DATE ______

REMARKS ______

* organic ** very organic

t.t. No.	SAMPLE NUMBER	TOTAL Cu ppm	Hg ppb	TOTAL Mo ppm		SAMPLE NUMBER	TOTAL Cu ppm	Hg ppb	TOTAL Mo ppm		
	a 1-A	48	598*	18		a 6-A	79	596**	16		
	1-B	46	42	14		B	46	83	10		
	1-C	357	43	30		C	43	28	10		
	2-A_o	125	962**	30		7-A	37	544**	14		
	2-A_1	185	386*	30		B	55	90	10		
	2-A_2	209	163	30		C	40	22	30		
	2-B	262	90	40		8-A_o	37	400**	2		
	2-C	500	169	50		A_2	25	83	30		
	3-A_o	67	1285**	30		B	25	26	50		
	3-A_2	59	165	50		C	37	21	6		
	3-B	71	83	30		9-A_o	50	520**	6		
	3-C	137	50	30		A_2	67	303*	10		
	4-A_o	445	580**	36		B	34	30	30		
	4-A_2	1190	534*	50		C	34	20	6		
	4-C	1070	275	30		10-A_o	37	832**	8		
	5-A_o	75	338**	20		A_1	40	315*	6		
	5-A_2	119	175	24		A_2	31	86	2		
	5-B	46	15	18		B	25	28	30		
	5-C	48	20	20		C	34	35	2		

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304 CARLINGVIEW DRIVE
REXDALE (TORONTO), ONTARIO

REPORT NO. 109 DATE ______ LOCATION ______ SHEET 2

PROJECT ______ MATERIAL ______

NO. OF SAMPLES ______ COLLECTOR ______ DATE ______ ANALYST ______ DATE ______

REMARKS ______

t.t. No.	SAMPLE NUMBER	TOTAL Cu ppm	Hg ppb	TOTAL Mo ppm		SAMPLE NUMBER	TOTAL Cu ppm	Hg ppb	TOTAL Mo ppm		
	a 11-A_0	28	1210**	6		b 4-B	59	86	14		
	A2	48	275*	12		C	83	43	18		
	B	31	35	30		5-A	48	245	18		
	C	31	25	10		B	55	185	14		
	12-A_0	59	814**	10		C	61	90	18		
	A_1	131	196	14		6-A	43	630**	14		
	A_2	95	130	18		B	40	54	4		
	B	61	80	20		C	40	43	6		
	C	43	47	18		7-A	67	684**	20		
	b 1 -A	137	484**	30		B	75	183	26		
	B	99	318*	30		C	83	112	50		
	C	61	16	26		8-A	59	84*	10		
	2 -A	401	180*	40		B	43	40	14		
	B	239	145	26		C	46	13	14		
	C	122	18	26		9-A	61	166*	12		
	3- A	167	386	50		B	43	54	10		
	B	191	239	50		C	61	45	14		
	C	111	248	30		10-A	46	172*	6		
	4 -A	71	351	20		B	37	102	3		

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REPORT NO. 109 DATE ______ LOCATION ______ SHEET 3

PROJECT ______ MATERIAL ______

NO. OF SAMPLES ______ COLLECTOR ______ DATE ______ ANALYST ______ DATE ______

REMARKS ______

t.t. No.	SAMPLE NUMBER	TOTAL Cu ppm	Hg ppb	TOTAL Mo ppm		SAMPLE NUMBER	TOTAL Cu ppm	Hg ppb	TOTAL Mo ppm		
	b 10-C	43	42	10		212	20	28	2		
	11-A	43	496**	6		213	20	26	2		
	B	46	83	6		214	19	27	2		
	C	37	94	2		215	20	20	2		
	12-A	55	180*	18							
	198	10	26	2							
	199	16	11	2							
	200	18	9	2							
	201	20	7	2							
	202	23	5	2							
	203	14	15	2							
	204	23	14	2							
	205	28	11	2							
	206	24	9	2							
	207	23	7	2							
	208	28	8	2							
	209	42	15	2							
	210	18	25	2							
	211	18	27	2							