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SUMMARY REPORT, 1972

42K

O.K. PROPERTY

Powell River

W. Meyer, P. Eng.

P. Boyle, B. Sc.

Feb., 1973

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O. K. PROPERTY

Powell River, B. C.

Under option to and work done by or on behalf of

GRANITE MOUNTAIN MINES LTD. (N.P.L.)

by

W. Meyer, P. Eng.

P. Boyle, B. Sc.

February, 1973

TABLE OF CONTENTS

SUMMARY & CONCLUSIONS

The O. K. prospect, comprising 344 claims and fractions in the Powell River area, Vancouver Mining Division, was optioned by Granite Mountain Mines Ltd. (N.P.L.), in June, 1972.

Previous optionees (Noranda Mines Ltd., American Smelting & Refining Co., Falconbridge Nickel Mines Ltd., and Duval International Corporation) had carried out geological, geophysical and geochemical surveys over the key claim area during the period 1966 to 1971. Anomalous areas were tested by approximately 16,000 feet of diamond and percussion drilling. Expenditures by the four companies are estimated to be in the order of $400,000 - $500,000.

Copper-molybdenum mineralization occurs in fractured and altered granodiorite peripheral to a dyke-like body of Tertiary age quartz monzonite approximately two miles long. The mineralization is related to a pyrite halo and broad zonal alteration pattern, also peripheral to the quartz monzonite. The mineralized areas are cut by a swarm of barren dykes. Previous drilling indicated large zones of .25% to .30% copper with significant molybdenum values. None of the zones was completely tested, however.

The basis for the Granite Mountain Mines Ltd. option was:

1. A re-evaluation of the available technical data
2. Most of the large mineralized zones were only superficially tested by drilling.
3. One good exploration target was not tested at all.
4. Of the huge area that would grade .20% copper (indicated to

be in the order of a billion tons), the probability of finding a small portion of that (50,000,000 to 100,000,000 tons) grading .4 to .5% copper was considered to be high.

5. A favourable option agreement was negotiated.

During the period June - October, 1972, Granite Mountain Mines Ltd. incurred expenditures of approximately $250,000 on the property, consisting primarily of diamond drilling. A total footage of 14,031 feet of NQ drilling was completed in 22 holes. Other activities included prospecting, an extension of the geochemical grid to the north, a small amount of I. P. and re-mapping of the geology of the key claims.

The bulk of the drilling was carried out on the "North Lake Zone" on essentially a 400 foot grid. Some holes, however, were 200 to 600 feet apart and "step-outs" of 1200 to 2000 feet were used. A large area of near surface mineralization was partly outlined. Reserves of the order of 100,000,000 tons of 0.32% Cu and 0.02 MoS_2 are indicated or inferred. The reserves and grades are the subject of further studies complicated by the distribution of holes and problems related to the frequency and attitude of the post-mineral dykes. Geological mapping indicates post mineral faulting with horizontal displacements of up to 800 feet in "North Lake Zone" area, leading to the possibility of significantly extending the zone to the south.

Although the mineralization encountered to date does not appear to be economic under present circumstances, it should make mill-feed if a sufficient amount of higher grade material could be outlined. The exploration problem, therefore, remains to find sufficient reserves in the 0.5% area to justify a production decision.

Four holes were drilled in the "South Zone" to follow up mineralization encountered in previous drilling. Grades similar to the "North Lake Zone" were intersected but the tonnage potential appears small.

Target areas, based on previous drilling, geological projections, geochemistry, and I. P. data, which require further exploration, include:

1. Southern extension of the "North Lake zone"
2. Pyrite Lake area
3. Lizard Lake area
4. The "North End" where, of the geochemistry completed, the copper anomaly of the greatest areal extent and highest magnitude occurs.

Respectfully submitted,

Wm Meyer

W. Meyer, P. Eng.

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P. Boyle, B. Sc.

February 21, 1973

INTRODUCTION

The following report is a summary of the 1972 field programme carried out by Granite Mountain Mines Ltd. (N.P.L.) on its optioned copper-molybdenum prospect in the Powell River area. The subject property is owned by Mrs. M. V. Boylan and Mr. R. Mickle, Powell River prospectors, and is presently under option to Granite Mountain Mines Ltd. The property now consists of 344 claims and fractions, located approximately 15 miles north of Powell River and bounded on the north by Theodosia Inlet.

The work upon which the report is based was conducted by consultants to Granite Mountain Mines Ltd. during the period June to November, 1972.

Initially, the emphasis in the programme was to re-assess the technical and physical work carried out by previous operators and to test, by diamond drilling, large areas of mineralization encountered by the previous programmes but not followed up. The widespread mineralization, consisting essentially of chalcopyrite and molybdenite, occurs in a typical "porphry" setting in granodiorite over a distance of approximately 4 miles and is peripheral to a central core of quartz monzonite averaging 800 feet wide and 2 miles long. Previous work on the claims during the period 1966-1971 was carried out by Noranda Mines Ltd., American Smelting & Refining Co., Falconbridge Nickel Mines Ltd., and Duval International Corporation. This work consisted of geological, geophysical and geochemical surveys, trenching and drilling. Diamond and percussion drilling totalled approximately 16,000 feet.

The Granite Mountain programme centered around an intensive drilling programme (aggregating 14,031 feet in 22 holes), but also included remapping the central area, extending the geochemical survey, a limited I. P. survey, additional staking, and general prospecting.

The programme on behalf of Granite Mountain Mines Ltd. (N.P.L.) was under the direction and supervision of W. Meyer & Associates Ltd., who also supplied geologists, assistants, general labour and equipment. A. R. Allen of Allen Geological Engineering Ltd. prepared a compilation of previous data on which his report, "Report on the OK Property, Powell River, B. C.", August, 1972, is based. Diamond drilling was carried out by Tonto Drilling Ltd., of Vancouver, B. C.

PHYSIOGRAPHY

The O. K. property extends south from Theodosia Inlet, up rugged steep gradients to a gently irregular, plateau-like surface, ringed by hills to the east and west. The topography on the property appears to be controlled by a series of ring structures expressed as a series of hills and raised area. The central plain, ranging in elevation from 2500-2800 feet above sea level, has a generally subdued relief. The hills to the east and west have long, steep slopes rising to between 3300 and 3600 feet above sea level. (Fig. 3)

There are several large lakes on the property: Claim Lake, Pyrite Lake, Lizard Lake, O.K. Lake, White Rectangle Lake, Big North Lake and Little North Lake. Between these lakes there are a

large number of elongate sloughs and swampy areas, separated by northerly trending ridges 100-200 feet wide and 15-50 feet high.

Drainage is in part fault controlled. To the north streams drain down precipitous gullies to Theodosia Inlet. Streams in the center and south of the property drain southwest and to the south.

Approximately 85% of the area is covered by a thin veneer of glacial till. Recent glaciation has resulted in hog's back features and glacial striations trending in a north-south direction.

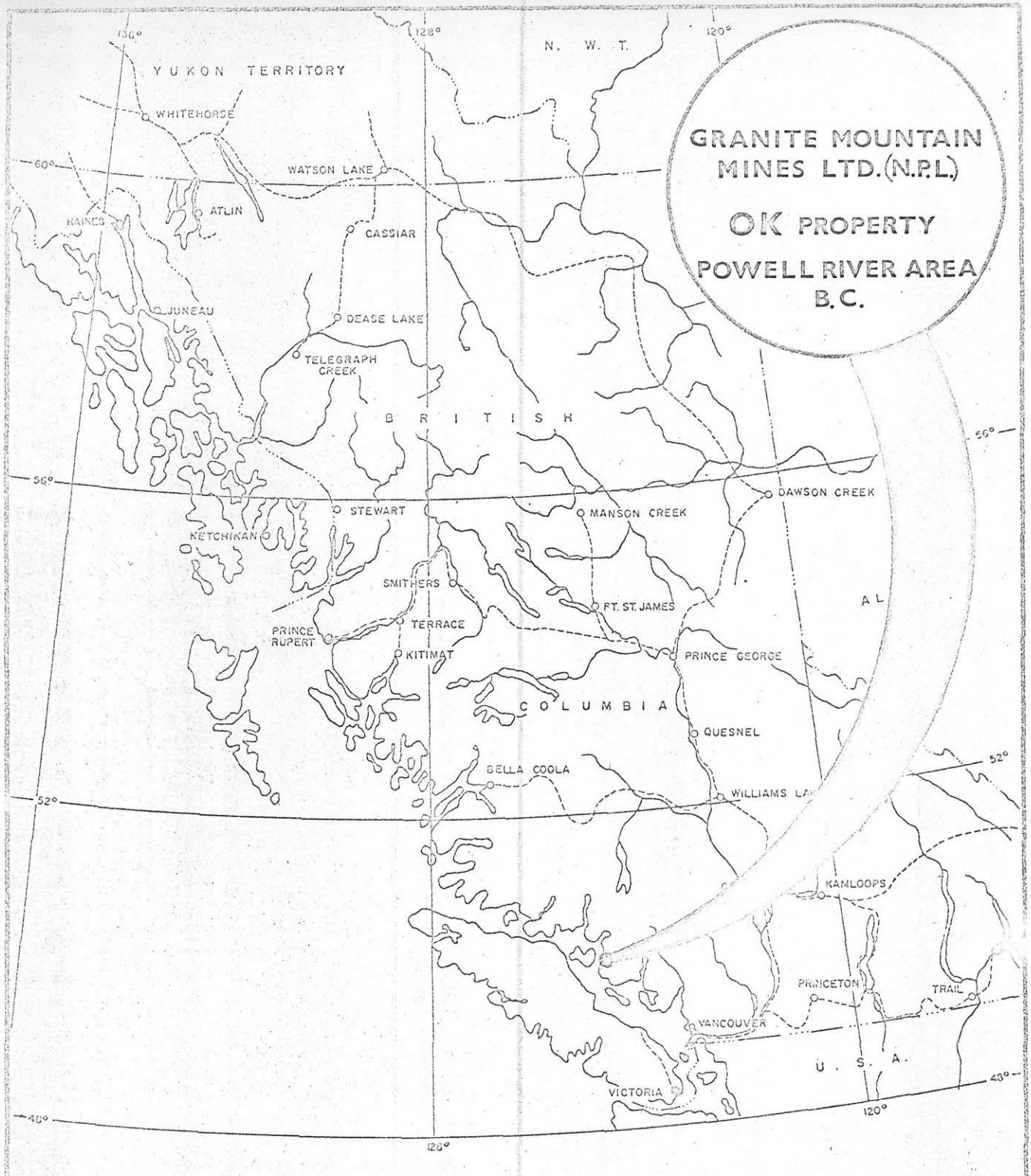
LOCATION AND ACCESS

Granite Mountain Mines Ltd. (N.P.L.) holds under option 344 continguous mineral claims and fractions in the Powell River area on the coast of British Columbia. The 344 claims under study cover an area of about 25 square miles extending 5.7 milessouth from Theodosia Inlet, centered about Long.124°40'N, Lat. 50°03' E (NTS 92-K-2).

The O.K. property is located in the Vancouver Mining Division, 15 miles northwest of Powell River. (Fig. 1)

The claims are accessible from the Powell River-Lund Highway, 10 miles northeast on Wilde Road, followed by 4 miles of 4-wheel drive road onto the property. The grades are gentle.

The camp is located in the south-central part of the property. An access road extends 2 miles further north, terminating 1.7 miles from Theodosia Inlet.



GRANITE MOUNTAIN MINES LTD.(N.P.L.)

PROPERTY LOCATION MAP

BRITISH COLUMBIA

SCALE : 1" = 125 MILES

Fig. 1

CLAIMS

The following 344 claims are under option to Granite Mountain Mines Ltd. (N.P.L.):

O.K. 27 GROUP

Name of Claim	Record Number	Expiry Date
O.K. 27, 28	12343, 12344	Sept.6, 1980
MBM 1-6	18470-18475	July 7, 1986
DEE 3, 5	20086, 20088	July 7, 1985
DEE 9-13	20092-20096	July 7, 1985
DEE 15-24	20098-20107	July 7, 1985
DEE 31-36	20114-20119	July 7, 1985
DEE 161	20212	July 7, 1985
DEE 162	20213	July 7, 1984
DEE 163-166	20214-20217	July 7, 1985
IN 1, 14, 16	12501A, 12502, 12504	Sept.16, 1986

O.K. 19 GROUP

Name of Claim	Record Number	Expiry Date
O.K. 19	12313	Aug.26, 1980
IN 2	12502A	Sept.16, 1981
IN 4	12504A	Sept.16, 1981
IN 13, 15	12501, 12503	Sept.16, 1980
DEE 37-46	20120-20129	July 7, 1979
DEE 118-123	20187-20192	July 7, 1979
DEE 167-174	20218-20225	July 7, 1979
IN 3	12503A	Sept.16, 1980

THEODOSIA GROUP 3 Supp.

Name of Claim	Record Number	Expiry Date
O.K.1	12064A	July 7, 1980
O.K.2	12065	July 7, 1981
O.K.4	12067	July 7, 1980
O.K.5	12131	July 22, 1984
O.K.7	12133	July 22, 1985
O.K.9, 11, 12	12135, 12137, 12138	July 22, 1980
O.K.13, 15, 17	12172, 12174, 12176	Aug. 1, 1980
O.K.41, 43, 45	12357, 12359, 12361	Sept. 6, 1984
O.K. 51, 52	12435, 12436	Sept. 13, 1980
O.K. 63, 65, 67	12447, 12449, 12451	Sept. 13, 1980
DEE 79-82	20162-20165	July 7, 1975

Theodosia Group 3 Supp. (cont'd.)

DEE 124-128	20193-20197	July 7, 1975
DEE 209, 210	20335, 20336	July 18, 1975
DEE 211-218	20337-20344	July 18, 1974
Inlet Fr. 7	13092	Dec. 7, 1974
Inlet Fr. 16	13146	Dec.16, 1977

O.K. 8 GROUP

Name of Claim	Record Number	Expiry Date
O.K. 6, 8, 10	12132, 12134, 12136	July , 1980
O.K. 53-58	12437-12442	Sept.13, 1976
DEE 65	20148	July 7, 1974
DEE 66	20149	July 7, 1975
DEE 67	20150	July 7, 1974
DEE 68-78	20151-20161	July 7, 1975
INLET 8-10 Frs.	20204-20206	Dec. 7, 1974
DEE 153-156	20208-20211	July 7, 1974
DEE 157-160	20301-20304	July 18, 1974
DEE 203-208	20329-20334	July 18, 1974

IN 161 GROUP

Name of Claim	Record Number	Expiry Date
IN 155	12642	Sept.30, 1974
IN 156	12643	Sept.30, 1975
IN 161, 163	12648, 12650	Sept.30, 1975
IN 180	12664	Sept.30, 1975
IN 183, 184	12667-12668	Sept.30, 1974
DEE 95	20176	July 7, 1975
DEE 97, 99	20178, 20180	July 7, 1974
DEE 101	20254	July 12, 1974
DEE 103-105	20182-20184	July 7, 1975
DEE 106-107	20185-20186	July 7, 1974
DEE 108, 109	20256-20257	July 12, 1974
DEE 111	20353	July 18, 1975
DEE 112-114	20354-20356	July 18, 1973
DEE 116	20357	July 19, 1974
DEE 117	20291	July 18, 1974
DEE 137	20358	July 19, 1974
DEE 138	20359	July 19, 1975
DEE 139	20293	July 18, 1974
DEE 140	20294	July 18, 1975
DEE 143-148	20295-20300	July 18, 1974
DEE 225-226	20351-20352	July 18, 1974

IN 162 GROUP

Name of Claim	Record Number	Expiry Date
IN 9-12	12509A-12512A	Sept.16, 1975
IN 162-164	12649-12651	Sept.30, 1975
DEE 25-28	20109-20111	July 7, 1975
DEE 29, 30	20112, 20113	July 7, 1974
DEE 61, 62	20144, 20145	July 7, 1975
DEE 83-86	20166-20169	July 7, 1974
DEE 87, 88	20170, 20171	July 7, 1975
DEE 89-92	20171-20175	July 7, 1974
DEE 93-94	20252-20253	July 12, 1974
DEE 96	20177	July 7, 1975
DEE 98, 100	20179, 20181	July 7, 1974
DEE 102	20255	July 12, 1974
DEE 191-198	20321-20328	July 18, 1974

O.K. 20 GROUP

Name of Claim	Record Number	Expiry Date
O.K. 18	12177	Aug. 1, 1980
O.K. 20	12314	Aug. 26, 1980
O.K. 33-37	12349-12353	Sept. 6, 1980
O.K. 38	12354	Sept. 6, 1981
O.K. 69-74	12453-12458	Sept.13, 1980
IN 150	12637	Sept.30, 1975
IN 151	12638	Sept.30, 1974
IN 152	12639	Sept.30, 1973
IN 153	12640	Sept.30, 1974
IN 154	12641	Sept.30, 1975
DEE 181, 182	12665, 12666	Sept.30, 1974
DEE 129-134	20198-20203	July 7, 1975
DEE 135, 136	20290, 20292	July 18, 1975
DEE 219-224	20345-20350	July 18, 1975

O.K. 22 GROUP

Name of Claim	Record Number	Expiry Date
O.K. 21-26	12337-12342	Sept. 6, 1980
IN 5	12505A	Sept.16, 1976
IN 6-8	12506A-12508A	Sept.16, 1975
DEE 47-60	20130-20143	July 7, 1975
DEE 175-190	20305-20320	July 18, 1975

O.K. 30 GROUP

Name of Claim	Record Number	Expiry Date
O.K. 3	12066	July 7, 1980
O.K. 14, 16	12173, 12175	Aug. 1, 1980
O.K. 29	12345	Sept. 6, 1980
O.K. 30	12346	Sept. 6, 1978
O.K. 31	12347	Sept. 6, 1980
O.K. 32	12348	Sept. 6, 1978
O.K. 39	12355	Sept. 6, 1980
O.K. 40, 42	12356, 12358	Sept. 6, 1978
O.K. 44	12360	Sept. 6, 1974
O.K. 46	12362	Sept. 6, 1977
O.K. 47	12363	Sept. 6, 1978
O.K. 48, 49	12364-12365	Sept. 6, 1977
O.K. 50	12366	Sept. 6, 1978
O.K. 59, 60	12443-12444	Sept. 13, 1976
DEE 1, 2	20084, 20085	July 7, 1974
DEE 4, 6	20087, 20089	July 7, 1974
DEE 7	20090	July 7, 1976
DEE 8	20091	July 7, 1974
DEE 14	20097	July 7, 1974
DEE 63, 64	20146, 20147	July 7, 1974
DEE 149-152	20204-20207	July 7, 1974
INLET 12 Fr.	13097	Dec. 7, 1974
Kydidle 2 Fr.	13145	Dec. 16, 1977
Kydidle 1 Fr.	13144	Dec. 16, 1977
O.K. 6	12132	July 11, 1979
INLET 6 Fr.	13091	Dec. 7, 1980
INLET 3 Fr.	13088	Dec. 7, 1978
INLET 11 Fr.	13096	Dec. 7, 1974
INLET 13 Fr.	13098	Dec. 7, 1974
INLET 14 Fr.	13099	Dec. 7, 1980
INLET 1 Fr.	13057	Nov. 5, 1980
INLET 2 Fr.	13087	Dec. 7, 1983
INLET 4 Fr.	13089	Dec. 7, 1978
INLET 5 Fr.	13090	Dec. 7, 1978
INLET 15 Fr.	13100	Dec. 7, 1980

HISTORY

Summary of Previous Technical Work

The O.K. prospect is a relatively recent discovery made by Mr. R. Mickle in 1965 as a result of follow-up prospecting to reconnaissance geochemical sampling using the Rubianic Acid method. The discovery showings consisted of widespread copper-molybdenite mineralization in creek bottoms in the Claim Lake and Lizard Lake areas.

During the period 1966 to 1971, the property was optioned by four major companies - Noranda Mines Ltd., American Smelting & Refining Co., Falconbridge Nickel Mines Ltd., and Duval International Corporation. The activities of these companies are compiled and discussed in Mr. A. R. Allen's "Report on the O. K. Property, Powell River, B. C." of August 10, 1972.

Briefly, technical work by the four companies included geological mapping, I. P., magnetometer, E. M. surveys and geochemical surveys. Each company followed up their initial technical surveys by drilling. By 1971, approximately 16,000 feet of diamond and percussion drilling had been completed. Large areas of low grade copper-molybdenum mineralization were encountered. A partial list of reports and data made available to Granite Mountain Mines Ltd. is tabulated below:

Wares, R.	Report on O.K. Property for Falconbridge	Apr., 1971
Wares, R.	Petrographic Report	" "
Brand, R. B.	Geochemical Report	Aug., 1970
Irvine, J.R. & Schurr, W.	Induced Polarization Report & I. P. Map	Nov., 1967

Noranda Mines	Map, Geology, Okeover Property	Oct., 1966 & June, 1967
Noranda Mines	Geochemical Survey, Copper, Molybdenum	Oct., 1966
Falconbridge Nickel Mines	Geological Maps	Aug., 1969
Falconbridge Nickel Mines	Magnetometer Survey Maps	Oct., 1969
Falconbridge Nickel Mines	Copper & Molybdenum Stream Stream Sediment Map	Oct., 1969

A compilation of the previous data was prepared by A. R. Allen, P. Eng., in his "Report on O.K. Property for Granite Mountain Mines Ltd.", dated August 10, 1972.

Current Programme

The programme carried out by Granite Mountain Mines Ltd. (N.P.L.) during the period June-December, 1972 included:

(1) Compilation of previous data

(2) Staking

(3) Line cutting

(4) Soil geochemistry

(5) I. P.

(6) Prospecting

(7) Geological mapping

(8) Diamond drilling

(9) Tape and compass surveys of all drill holes, trenches, roads, etc.

(10) Preparation of current data on base maps and sections

The emphasis in this programme was on diamond drilling mineralized areas encountered by previous operators. A total of 14,031 feet of NQ drilling was completed, essentially in two zones.

The "South Zone" centering around Line 36N 58E was tested and largely delimited by 4 holes.

The "North Lake Zone", which previously had been tested by 2 diamond drill holes and 3 percussion holes on or near its margins, received the bulk of the drilling effort. 14 holes were drilled in the north part of this zone or on its possible extensions.

Three additional drill targets were not tested in this programme.

Previous geochemical surveys were terminated on the north where anomalous values reached 5,000 parts per million copper. The geochemical survey was extended north from this anomalous area to the south shore of Theodosia Inlet.

The object of the geological mapping was to develop a knowledge and feeling for the geological setting and the relationship of the known mineral occurrences to that environment.

GEOLOGY

Regional Geology

The O.K. property lies on the western flank of the Coast Crystalline complex. The complex, which is approximately 50 miles wide and extends along the entire coastline of British Columbia, is predominantly composed of granitic rocks.

To the east of the property lies the main mass of the Coast Range, and to the west, the complex is separated from the Insular Fold Belt by the Georgia and Hecate basins which developed in late Cretaceous.

The Coast Crystalline Complex has been an area of positive uplift intermittently since the early Paleozoic. The complex was affected by the mid-Paleozoic Orogeny, late Jurassic to Cretaceous Columbian Orogeny, and by the late phases of the Laramide Orogeny. Many of the plutonic pulses are broadly synchronous with orogenic spasms; the latest phase of intrusion probably accompanied the latest phases of the Columbian Orogeny in the upper Cretaceous, but may have been as late as Eocene.

The rocks about these plutons have been metamorphosed to gneisses, particularly at the center of the belt. K-Ar dating indicates ages of 88-125 million years for the gneisses in the region, which is compatible with the ages obtained for many of the intrusives, indicating that the intrusives occupy centers of high heat flow which were active over long periods. On a regional scale a trend of progressively later plutonic activity to the north in the Coast Range is evident.

The rocks of the Coast Crystalline Complex are massive, medium

to coarse grained diorite-gabbro, quartz diorite, granodiorite, and granite. Numerous small areas of metamorphosed sediments and volcanics are found, representing small roof pendants.

Associated with the granitic rocks and schists, particularly on the flanks, are numerous and varied mineral deposits. Copper, iron, gold, silver, lead, zinc, and molybdenum have been, and are being, produced from west coast deposits.

Local Geology

The claim area is underlain by diorite-gabbro complex of the Coast Crystalline Belt. The diorite-gabbro complex which underlies the margins of the property has been invaded by two pulses of plutonic rocks which resulted in emplacement of granodiorite and a central core of quartz monzonite. The entire area has been cut by a dyke swarm which occupies late fractures parallel to the structure. (Fig. 4)

The granodiorite is elliptical in plan with the long axis trending approximately N 15° E and extending 5 miles south from Theodosia Inlet. The minor axis is approximately 2 miles. The quartz monzonite, which forms a core about which the granodiorite lies, is more than 2 miles long but less than 2,000 feet wide and strikes northward toward Theodosia Inlet.

The O.K. intrusive complex is believed to be of Cretaceous or Tertiary age, although no age dating has been attempted. The intrusive relationships, however, have been clearly established on a basis of drill data and field mapping.

The mineralization appears to be related to the quartz monzonite,

within which low grades of chalcopyrite, and at some points localized fine grained minor pyrite, are found. The better grades of chalcopyrite, however, are observed to exhibit a distinctly coaxial distribution about the quartz monzonite within the granodiorite. Chalcopyrite is found in this zone with disseminated molybdenite. A pyrite molybdenite (minor chalcopyrite) halo lies outside this zone, which is in turn bordered by a very distinct pyrite halo.

The dyke swarm is post-mineral and barren. Locally the attitudes of the dykes are relatively uniform.

LITHOLOGY

General Statement

On a basis of differences in colour, texture, and per cent mineral constituents, the Coast Range diorite-gabbro rocks, two major phases of plutonic rocks which intruded the O. K. structural lineament, and 6 varieties of dykes, were identified.

The rock units are listed below in increasing order of age. No regional correlation is attempted.

Table of Lithic Units

Lamprophyre dykes

Dacite, andesite and porphyritic andesite

Porphyritic and siliceous diorite

Quartz monzonite

Granodiorite

Gabbro

Specific local descriptions are presented in the paragraphs which follow:

Quartz Monzonite

The quartz monzonite is a very distinct porphyritic rock, veined with a pervasive (low temperature) white quartz. In core, and representing the margins of the unit, the quartz monzonite has pink, and to a lesser extent, white euhedral feldspar phenocrysts 4-7 mm, which exhibit some zoning. White siliceous spots 4-8 mm, roundness 5, are also common. Occasional euhedral quartz grains 1-1½ mm are seen proximal to the siliceous spots or interstitial to the feldspar phenocrysts. Chlorite books 2-3 mm (widely spaced) are seen. Magnetite is present at the center of some feldspar phenocrysts, size 2-3 mm. The matrix is very fine grained (crushed), and siliceous in composition. Occasional sericite alteration is seen.

Feldspar phenocrysts	pink white	40% 10%	4-7 mm
Siliceous spots	white	30%	4-8 mm
Quartz grains	transparent	3%	1-1½ mm
Magnetite		2%	2-3 mm
Chlorite		1%	2-3 mm
Matrix		14%	very fine grained

The distinct characteristics of the quartz monzonite are the coarse grained pink feldspars, siliceous spots, occasional quartz grains and magnetite.

In outcrop in the central part of the unit, the quartz monzonite weathers to a clean white, porphyritic rock, with large sub-rectangular quartz phenocrysts 12-20 mm, and occasional feldspar phenocrysts 10-15 mm. Magnetite grains 3-7 mm may be present, and widely spaced biotite books are distinct.

Quartz Monzonite - Granodiorite Contact

The contact between quartz monzonite and granodiorite is relatively uniform and distinct. The quartz monzonite is a long dyke-like intrusive, the width varying from 100 to 2000 feet. Within 20 feet of the main body of quartz monzonite there are a few irregular dykes of quartz monzonite which have sharp contacts. These quartz monzonite dykes intrude a highly chloritized granodiorite (60-70% chlorite). Occasionally, pink feldspars occur (chloritized quartz monzonite?). The transition from chloritic granodiorite to highly chloritized granodiorite near the contact is gradational over 5-20 feet.

Granodiorite

The granodiorite is a medium grained, K feldspar rich, leucocratic rock. The only mafics present are chlorite and secondary biotite, which exhibit a "salt and pepper" texture and locally weak foliation.

There are indications that the granodiorite has been almost completely altered and recrystallized within 1000 feet of the quartz monzonite. Ghost fragments and the "recrystallized" porphyritic texture appear to confirm this.

The granodiorite is relatively uniform in composition and characterized by:

(1) Mafics (3-10%): Secondary biotite and chlorite (after biotite and hornblende) are present. The chlorite appears as very fine grained aggregates $1\frac{1}{2}$-3 mm or books 2-3 mm in an otherwise leucocratic groundmass. Secondary biotite is seen as large fresh plates (3-5 mm). Two distinct zones, one biotite rich and the other chloritic, appear to correspond, crudely, to the pyrite and chalcopyrite zones. Small mineralized intersections of biotite

rich granodiorite within the chalcopyrite zone are noted but not regarded as significant. Within the pyrite halo, pyrite and minor molybdenite are found only in the chloritic areas.

(2) Silicification & Sericitization: The intensely fractured granodiorite has been flooded by hydrothermal silica forming a quartz stockwork. Silica healing the fractures may have been introduced during three closely spaced intervals. The number of veinlets in the stockwork decreases outward from the quartz-monzonite. At the contact, the quartz veins become increasingly irregular and translucent, the fracture pattern resembling tension fractures.

Sericite is associated with quartz veinlets and developed on scattered fractures without quartz. The sericite alteration also decreased outward from the quartz monzonite core, extending to the pyrite halo.

(3) Textural Features: The granodiorite exhibits an almost completely metasomatic alteration of the original granodiorite. Indistinct ghosts, more chloritic areas 1-2", roundness 5, are occasionally seen within 1000 feet of the quartz monzonite contact. Zones of medium to coarse grained porphyritic granodiorite with 30-70% plagioclase are found within the chalcopyrite zone. Occasional phenocrysts can be seen to have grown across fractures. In less porphyritic or non-porphyritic areas the matrix is medium grained, composed of euhedral plagioclase grains and minor quartz grains.

Petrographic studies (Wares, 1971) indicate that the granodiorite exhibits certain remnant igneous features which have survived the subsequent hydrothermal alteration. These features consist of the delicate osciliatory zoning and the euhedral nature of the potash

feldspar grains, 15% increasing to 30% near the center of the granodiorite unit. The 30-50% plagioclase occurs as euhedral to subhedral zoned grains, An 35-20 with albitic rims. Plagioclase is found to rim many potash feldspar grains.

The intrusive event which culminated in the emplacement of the quartz monzonite resulted in significant brecciation and granulation of the granodiorite host. Remnant features include: breccia "ghosts" and quartz grains exhibiting strain shadows and sutured boundaries. These features are only found marginal to the quartz monzonite.

Subsequent hydrothermal alteration involved a pervasive silicification and alteration of the potash feldspars to sericite, scapolite and carbonate assemblages. A zonal alteration (which is not evident in the field mapping) is indicated. Immediately about the quartz monzonite, sericitization grades outwards to a peripheral zone of chloritization. The effect of the alteration is to make most primary features unrecognizable.

Granodiorite-Gabbro Contact

The granodiorite intrudes the diorite-gabbro complex, the contact exhibiting typical intrusive features. Near the contact inclusions of gabbro, roundness 4, were seen, the groundmass having a quartz rich granodioritic composition. The granodiorite is highly sheared 100-150 feet from the contact, with much chlorite developed on the shears. The actual contact is indistinct due to the intense shearing and subsequent chloritization of the sheared zone. The gabbro is slightly chloritized up to 60 feet from the contact, and shearing is weak.

Gabbro

The oldest rock type in the region is the gabbro, typical of the Coast Range diorite-gabbro rocks. The gabbro (a hornblende gneiss) apparently grades into a hornblende diorite as the distance from the granodiorite contact increases, suggesting that the intrusives center has been an area of high heat flow over a long period. However, on a regional scale the gabbro is reported to be extremely variable in texture.

The eastern and western margins of the property are underlain by gabbro. The gabbro has an extremely variable gneissic texture (over several inches), though the composition is very uniform. Occasionally gabbro, near faults, has been brought into contact with granodiorite and contains grains of quartz (secondary?).

The gabbroic rocks are characterized by:

Amphibole (hornblende)	2-30 mm	35%
Plagioclase	1-4 mm	65%
(Quartz grains	1-2 mm - occasionally replacing plagioclase)	

The plagioclase exhibits marginal normal zonation.

The only mineralization observed in gabbro is pyrite and magnetite.

Outcrops of gabbro are large and frequent.

Dykes

The dykes generally trend north 015° froming steep ridges. They cut across the granitic rock contacts, occupying late fractures. All dips measured on surface are near vertical. While trending northwards, they intruded along jointing, commonly at 015°. There is a chill margin on many of the dykes, particularly on porphyritic andesite and porphyritic diorite dykes; however, there is little or no evidence of alteration of the wall rock. The dykes are barren, except in rare cases where sulphides

occur on fractures near the contact.

Porphyritic diorite: Forming large dykes 5-100 feet thick. The porphyritic diorite is commonly medium grained, composed of 50% large, white plagioclase feldspar phenocrysts 2-4 mm in a dark green matrix. Epidote is common around the feldspar phenocrysts and in fractures. Hornblende phenocrysts 1-2 mm are sometimes seen, particularly in the southern portion of the property.

Siliceous diorite dykes (up to 100 feet) are very similar to the porphyritic diorite dykes with the exception that they have no feldspar phenocrysts and are more siliceous. The siliceous diorite has a distinct contact with andesitic dykes and is distinctly blue in color.

Andesite dykes have a very fine grained texture. They are observed to cut and intrude porphyritic diorite dykes, indicating that they represent a later phase of intrusion. Occasionally the andesite dykes contain up to 20% small feldspar phenocrysts, 1-2 mm. The feldspars are commonly replaced by epidote.

Dacite dykes are rare. They are fine grained, brownish in color, and there is much epidote alteration.

Lamprophyre dykes are rarely found on the property. They are all hornblende rich in a medium grained or very fine grained black matrix.

STRUCTURE

Regional Structure

The O.K. property lies within a major structure which appears to be a down-warp on the western flank of the Coast Range Plutonic complex. Granodiorite and quartz monzonite have intruded along the north-south O.K. structure.

There are a number of ring structures evident in air photographs, which appear to be remnant tectonic features related to the intrusion of the granodiorite. Very little evidence, however, can be found of them on field examination. These ring structures may be related to the ring structures on Redonda Island to the north and Goat Island to the southeast.

Late faulting (northeast-southwest movement) transverse to the O.K. structure has resulted in significant displacements.

The mineralization is truncated to the south by a fault trending southeast from Claim Lake.

Faulting

Several large vertical faults, cutting obliquely across structure, have significant left lateral movement resulting in an apparent thickening of the quartz monzonite. The south side of these faults appears to be down-thrown. There is evidence that rotation has occurred on these faults. On fresh rock surfaces, concave features 1-2 feet in diameter, 1-8 inches deep, can be seen, the surfaces of which are slickenslided. The dykes, which in general are subvertical, in some areas appear to be almost flat-lying. If these dykes pre-date the final movement on the transverse faults they may provide additional evidence of rotation. No dykes have been noted crossing these faults.

Faulting parallel to structure presumably is related to the main O.K. structure. Fresh shattering and fault gouge is evident on one of these faults near Big North Lake. On the west of this fault, good Cu-MoS_2 values are obtained, representing mineralization both in fractures and disseminations. To the east, after a short distance in which mineralization is restricted to fractures, good disseminated pyrite occurs. Apparently some rotation and/or lateral displacement has occurred.

MINERALIZATION

Primary sulphide minerals consist mainly of pyrite, chalcopyrite and minor molybdenite. Traces of bornite were observed in one drill hole and sphalerite was reported to occur in one location. Oxides, mainly limonite and lesser malachite and azurite, are common in surface exposures. From drill hole data, only minor oxidation occurs below 20 feet. Secondary chalcocite (?) was observed in hand specimens but is not considered a significant mineral.

Chalcopyrite occurs as disseminations, in quartz veins and fractures, peripheral to the quartz monzonite core and in the inner alteration halo. In the "South Zone" chalcopyrite with minor pyrite occurs predominantly on fractures and quartz veins. In the North Lake Zone, and particularly the higher grade parts, the distribution of chalcopyrite is equally abundant as disseminations, fractures and veins. Molybdenite occurs throughout the inner halo predominantly on fractures.

Pyrite occurs mainly on fractures in the pyrite halo where grades would range in the order of 3 to 5% and may go as high as 10%.

The sulphide minerals are crudely zoned about the central quartz monzonite core. The best information is on the "North Lake Zone" where chalcopyrite and minor molybdenite extends 800-1000 feet outward from the quartz monzonite to a thin zone of mixed chalcopyrite, pyrite and molybdenite. This zone is flanked by an outer pyrite halo which has only erratic copper-molybdenum values.

I. P. SURVEY

An I. P. survey covering approximately 4 miles was carried out by personnel of Placer Development Ltd. The object of the survey

was to check previous I. P. data in the North Lake Zone and particularly to see if the "barren", the "chalcopyrite zone" and the "pyrite halo" could be better defined.

The previous survey employed the "time domain" method using one 200 foot separation and a pole-dipole configuration. The present method used frequency domain equipment, a 400 foot dipole-dipole configuration and obtained 3 lines of information.

Although there was general agreement between the two surveys, the frequency-domain method had the effect of "smoothing-out" or averaging the erratic values of the original survey and generally provided much better resolution of the mineralized areas. The difference between the two surveys is related primarily to field procedure and data presentation.

GEOCHEMICAL SURVEY

The results of the several previous geochemical surveys are compiled and discussed in A. R. Allen's "Report on the O.K. Property" of August 10, 1972. Geochemical surveys by Granite Mountain Mines Ltd. during 1972 involved extending the original grid north from L182N to L242N. Sample spacings were at 100 foot intervals on lines spaced 400 feet apart.

Previous geochemical surveys were stopped at Line 182N where anomalous values ranging to 5000 parts per million copper were obtained. These high values were re-sampled and the grid extended. Re-sampling verified the location of the anomaly and the erratic high values. In the re-sampling, however, erratic highs ranged to 12,000 ppm copper.

The anomaly bounded on the south by Line 180N was extended to L234N. The anomaly is open to the west between Line 206N and Line

23[illegible] where the grid (and anomaly) is bounded by a canyon. The anomalous area extends for approximately one mile down the moderate to steep slope to Theodosia Inlet. (Fig. 5)

In most cases, the erratic high values were inorganic samples and the broadening of the anomaly down slope and to the north may be related to drainage.

The anomaly, however, is one of the largest in areal extent and magnitude in the surveyed area. It is underlain by chloritic granodiorite intruded by a quartz stockwork similar to the mineralized areas to the south. To date the anomalous area has not been investigated except for a small pit on Line 180N which was dug to bedrock. The pit exposed brecciated and altered granodiorite mineralized with pyrite, chalcopyrite and molybdenite.

Late in the programme, the original grid was extended south from Line 20N to Line O. The object of this extension was to check an area of anomalous I. P. data. The survey largely outlined small, scattered, discontinous anomalies. One of the more consistent anomalies was checked by two drill holes. Mineralization in this area is characteristic, in mineralization and alteration, of the pyrite halo in the North Lake Zone.

The survey data is plotted on the enclosed "Geochemical Survey Compilation" map which is an extension of a map originally drawn by A. R. Allen for his August 10, 1972 report.

DIAMOND DRILLING

Since the property was first staked in 1965, it was optioned by five successive companies: Noranda Mines Ltd., American Smelting & Refining Co., Falconbridge Nickel Mines Ltd., Duval International Corporation, and Granite Mountain Mines Ltd. Each company carried out technical surveys which were followed up by drilling programmes. Granite Mountain enjoyed an advantage in that most of the initial technical surveys had been completed (the 1972 technical programmes involved checks and extensions).

All drill programmes used diamond drilling with the exception of Duval, who carried out a percussion drill programme. It appears that Noranda's drilling was guided largely by geochemistry, Asarco's largely by I. P., Falconbridge's by geology and Duval's by geology. As the programmes developed, much of the drilling turned out to be in the quartz monzonite or in the pyrite halo, the areas flanking the chalcopyrite zones. Other holes encountered long intersections of copper mineralization in the range of 0.2 to 0.3% copper but were not followed up. The Granite Mountain programme essentially involved compiling and re-assessing the existing technical and drill hole data and proceeding immediately with a large scale drill programme in areas of known mineralization.

The location of all drill holes to date is shown on Fig. 7.

A summary of this drilling follows:

Noranda, 1966 AQ

DDH	Location	Bearing	Dip	Length
66-1	64N-46E	245°	-45°	524
-2	64N-46E	65	-45	500
-3	58N-54E	65	-45	506
-4	58N-54E	245	-45	500
-5	76N-46E	245	-45	501
-6	106N-54E	65	-45	507
-7	128N-55E	245	-45	500

Noranda (cont'd.)

DDH	Location	Bearing	Dip	Length
66-8	132N-68E	65°	-45°	506'
-9	"	245	-45	506
-10	68N-47E	245	-45	606
-11	60N-47E	245	-45	682
-12	56N-46E	245	-45	666
-13	"	65	-45	626
-14	126N-63E	65	-45	785
-15	36N-60E	245	-45	534
Total				449

Asarco, 1968 AQ

68-1	28N-68E	245°	-45°	507'
68-2	36N-68E	245	-45	500
-3	68N-77E	245	-45	500
-4	132N-59+50E	245	-45	500
-5	124N-77E	245	-45	494
-6	36N-62E	245	-45	401
-7	46N-62+50E	245	-45	388
Total				3290

Falconbridge, 1970 AQ

70-1	135N-67E	245°	-37°	402'
-2	" "	65	-37	400
-3	162N-81E	245	-37	391
-4	" "	65	-37	401
-6	84N-46E	245	-35	402
Total				1996

Duval, 1971 - Percussion

1	64N-64E		-90°	200'
2	76N-68E		-90	200
3	72N-79E		-90	200
4	88N-67E		-90	
5	80N-56E		-90	
6	63N-68E		-90	
7	80N-67E		-90	
8	84N-54E		-90	
9	84N-46E		-90	200
10	130N-72E		-90	200
11	133N-74E		-90	180
12	136N-76E		-90	200
Total				2300

Total Footage drilled prior to 1972: 16,035 ft.

Granite Mountain Mines Ltd. (N.P.L.), 1972

DDH	Location	Bearing	Dip	Length
72-1	L36N-58+50E		-90°	400'
-2	L36N-54E		-90	438
-3	L124N-70+90E		-90	534
-4	L32N-58+ooE		-90	402
-5	L42N-61E		-90	318
-6	L122+50N, 73+76E	245°	-45	787
-7	L170N-76E	65	-45	356
-8	L170N-76E	245	-45	360
-9	L116N-75E	65	-45	457
-10	L128N-72+64E	245	-45	772
-11	L128N-77E	245	-45	936
-12	L132N-76+30E	65	-45	956
-13	L132N-83+48E	65	-45	1189
-14	L124N-73+76E	245	-45	1035
-15	L152N-84+00E	245	-45	846
-16	L128N-70+73E	65	-45	536
-17	136N-76+20E	65	-45	716
-18	L112N-81E	65	-45	556
-19	L12N-50E	245	-45	500
-20	L112N-71E	245	-45	706
-21	L12N-57+50E	245	-45	500
-22	L84N-63E	245	-45	731
	Total			14031'

DRILL RESULTS & ORE RESERVES

South Zone

The initial drilling was carried out on Line 36N in the "South Zone" where previous holes (AQ core) indicated an area of mineralization 800 feet along the section, to a depth of 200 feet grading .31% Cu and 0.01 Mo. DDH 72-1 (NQ core) was drilled on the section partly to check the effect of vertical drilling (and contribution to average grades by barren vertical dykes) and to see if average grades were affected by the larger sample and more complete recovery.

The change in dip of the holes and large sample did not appear, in this particular instance, to have a significant effect on average grades. Step-out holes along the section and laterally had the effect of severely limiting the tonnage potential of this zone.

North Lake Zone

The bulk of the drilling effort in 1972 was in the "North Lake Zone", where 14 holes were drilled either in the zone or its possible extensions. The attached plan map (after page 31), drawn on a scale of 1"=200', shows the location of holes presently completed in the main North Lake area. Assay sections for all holes are enclosed in the pocket of the report.

A mineralized zone approximately 4000 feet long, varying from 200 to 1000 feet in width, is outlined on the plan map. The basis for this outline is drill hole data and geological projections. The zone is bounded on the west by the quartz monzonite contact and on the east by the pyrite halo. The zone probably dips steeply to the east, although the actual dip has not been determined with certainty by the drilling to date.

A formal ore reserve calculation and grade estimate has not been attempted at this time due to the lack of holes in some parts of the zone and uncertainty in the effects on grade by barren dykes. The mineralized zone contains approximately 20% barren, post mineral dykes varying in size from a few feet to 200 feet or more. The dip of the dykes, which is important in attempting to determine the effects on grade, cannot be established with any certainty. The most desirable situation would be vertical dips on the dykes. Surface mapping indicates this to be so, while steep dips have not been verified by drill data.

An order of magnitude for reserves and grade has been estimated using the following assumptions:

70 E

150 N—

N

QM

72-15

QUARTZ
MONZONITE

?

72-17

70-1 70-2

66-9 66-8

72-12

72-13

QUARTZ
MONZONITE

130 N—

72-16

72-10

72-11

66-14

73-4

73-3

73-1

72-3

72-14

68-5

72-6

Mineralized Zone.

72-9

72-20

QM

70 E

110 N—

inches
0 1 2
0 1 2 3 4 5
centimetres

BRITISH COLUMBIA GEOLOGICAL SURVEY

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

GRANITE MOUNTAIN MINES LTD. (N.P.L.)

DRILL HOLE PLAN

"NORTH LAKE ZONE"

FEB. '72	SCALE: 1" = 200'	FIG:

(1) The mineralized zone contains 20% barren dykes

(2) All dyke material mined as waste (i.e., assume no dilution)

(3) The grade of the zone is close to the average grade of all intersections within the zone.

(4) The bias introduced by the higher density of drill holes immediately north of the section through DDH 72-6 is offset by a trend surface analysis which indicates that the mineralization north of the section can reasonably be expected to continue south of the section.

Grades were calculated by first compositing all diamond drill assay data on 50 foot vertical intervals or benches and assuming no effect on the grade by dykes.

Using a 0.25% copper cut-off with the above assumption, reserves are estimated at 90,000,000 tons grading 0.33% Cu and 0.02 MoS_2 with 22,000,000 tons below cut-off and 28,000,000 tons barren dyke material.

Using a 0.20% copper cut-off the reserves are estimated to be 97,000,000 tons grading 0.32% Cu and 0.02 MoS_2 with 15,000,000 tons below cut-off and 28,000,000 tons barren dyke.

Internal waste to ore would be approximately .35:1. The external waste would depend on the ultimate geometry of the ore zone but would be of the order of 1:1 for the main part of the zone, the waste increasing as the zone narrows to the north.

More drilling would be required in order to reasonably estimate the dilution to be expected by the barren dykes.

The objective in the initial programme was to find within the huge, low grade reserves on the property a significant tonnage (50-100 million tons) grading 0.4-0.5% Cu, on which a production decision could be made.

The grade of the reserves in the North Lake Zone does not satisfy this goal. This material, however, should make mill feed if a viable operation were established on the property. The exploration objective still remains, therefore, to find significant tonnages of slightly higher grade than that now established.

Other Areas

During the current programme two holes were drilled on L172N to check mineralization exposed in a creek bottom. These did not locate significant mineralization.

Two holes were drilled at the south end of the property to check an area of coincident I. P. response and a weak copper geochemical anomaly. While the holes did not intersect significant copper values, they were drilled in mineralization and alteration characteristic of the pyrite halo. This area warrants further study.

POTENTIAL TARGETS

1. The most significant untested target on the property is the geochemical anomaly bounded by L180N and extending north toward Theodosia Inlet. There is one known copper-molybdenum showing within the anomaly but no technical or physical work other than the geochemical survey and one shallow pit that exposed the mineralization has been carried out. There is some geological

evidence to indicate the anomaly may occur near the end or at the top of the quartz monzonite unit, where more extensive and hopefully higher grade mineralization could be found.

2. Geological mapping has established that NE trending faults post-date the central intrusive and may have displaced the southern extension of the North Lake Zone to the east in the area of White Rectangle Lake. One hole in this block, drilled to the east, was in mineralization characteristic of the pyrite halo.
3. The Pyrite Lake area has been incompletely tested. The tonnage potential of untested ground in this area, however, is now more limited.
4. Two previous holes in the Lizard Lake area, drilled in material grading in the .2 to .25% copper area, are open on the north. It is in this area that some of the better surface mineralization occurs.

RECOMMENDATIONS

Technical Surveys

The programme is now to a point where the initial technical surveys are too widely spaced to provide the resolution that is now required or has not provided any coverage in some areas. This is particularly true of the I. P. data.

It is recommended that detailed I. P. surveys, using the frequency domain method with at least three separations, be run in the White Rectangle Lake, Pyrite Lake, Claim Lake and Lizard Lake areas, as well as extending I. P. coverage north from the original grid to Theodosia Inlet.

The geological mapping, at least in a reconnaissance fashion, should be extended out to at least the diorite-gabbro complex.

The geochemical survey in the northern portion of the property should be extended to the west to close the anomaly in that area.

Physical Programme

Diamond drilling, at this point, should make up the bulk of the physical work. Further drilling is warranted in the south part of the North Lake Zone, as well as the areas described above under "Potential Targets".

Road access to the north end of the property is expected to be a continuing problem. The "North End" should be examined on the ground with a view to putting in access road south from Theodosia Inlet.

The cost of the proposed programme is estimated below:

Prospecting & mapping of "outside" claims	$ 8,000.00
Geochemical surveys, 20 miles (linecutting, sampling & assaying)	10,000.00
I. P. surveys (40 miles @ $500/mi.)	20,000.00
Diamond drilling, 10,000 ft. NQ @ $15/ft. (direct & indirect costs)	150,000.00
Access road to north end	10,000.00
Camp & core shack facilities	5,000.00
Transportation & communication	3,000.00
Consulting, supervision, report preparation, drafting, etc.	15,000.00
	221,000.00
Contingency	29,000.00
	$ 250,000.00

Respectfully submitted,

Wm Meyer

W. Meyer, P. Eng.

Peter J Scott Boyle

P. Boyle, B. Sc.

February 21, 1973

APPENDIX 1

CERTIFICATE

I, William Meyer, do hereby certify that:

1. I am a geologist with residence at 911 Jarvis St., Coquitlam, B.C.

2. I am a graduate of the University of British Columbia (B.Sc., 1962).

3. I am a registered member of the Association of Professional Engineers of the Province of British Columbia.

4. I have worked as an exploration geologist for eleven years for the following companies: Phelps Dodge Corporation of Canada Ltd., Gibraltar Mines Ltd., Associated Geological Services Ltd., Western Geological Services Ltd., (senior partner). I am presently a senior partner in W. Meyer & Associates Ltd.

5. I personally directed & supervised the diamond drilling programme on the O.K. property.

6. I have no interest, direct or indirect, nor do I anticipate receiving any, in the properties or securities of Granite Mountain Mines Ltd. (N.P.L.).

Wm Meyer

W. Meyer, P. Eng.

February 21, 1973.

APPENDIX 2

CERTIFICATE

I, Peter Boyle, do hereby certify that:

1. I am a geologist with residence at 207-1250 Burnaby St., Vancouver 5, B. C.

2. I am a graduate of the University of Saskatchewan (B.Sc. Advanced, 1972)

3. I have been employed as a geologist from July 22, 1972 to December 1, 1972 with W. Meyer & Associates Ltd.

4. During the period July 22, 1972 to December 1, 1972, I supervised field work and participated in the preparation of this report.

Peter J Scott Boyle

December 1, 1972