

DEWAR CREEK PROJECT - 1972

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February 1973

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DEWAR CREEK PROJECT

1972

Submitted by:

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SUMMARY AND CONCLUSIONS

During the Dewar Creek project in 1971, three groups of claims called the Mc 1-4, Nine Lake 1-84 and the Doc 1-6 were staked. These covered a Cu-Zn-Pb sulphide showing, an anomalous Zn silt geochemical area, and a galena occurrence with exceptionally high Pb soil geochemical values. The Cu-Zn-Pb sulphide showing is a 1.5-foot shear located at the initial posts of the Mc 1-4 claims. The silt samples containing up to 500-1000 ppm Zn were obtained from the drainages into Nine Creek and Greenland Creek. The highest geochemical areas are located on Nine Lake # 7 on Nine Creek, and claims 1, 2, 4, 49, 60, 61, 67 and 72 on both sides of Greenland Creek. A 1000 ppm Pb anomaly with values up to 3000 ppm Pb lies on the six Doc claims and covers an area approximately 3000 feet by 4000 feet downslope from the quartz-galena mineralization in argillitic rock.

In 1972 a combined exploration programme including mapping, magnetic and electromagnetic surveys and soil sampling was conducted to evaluate the three claim blocks. Each programme totalled approximately 30 line-miles of survey. The work was done by four men during the period between June 29th and August 31st.

Geological mapping and prospecting did not uncover any important evidence for an economic mineral deposit on the Mc and Nine Lake claims. Galena mineralization on the Doc claims was found over a larger area than previously observed.

The geophysical survey outlined four coincident Mag. - E.M. anomalies, plus several separate ones on the Mc and Nine Lake claims. All the prominent magnetic and electromagnetic anomalies reflect small, narrow, near-vertical bodies buried at a shallow depth.

Results from geochemical soil sampling over the geophysical anomalies did not indicate any hidden Cu, Zn or Pb deposits. Although numerous high geochemical assays, especially zinc, were obtained, their anomalous values were not judged to be significant.

Recent reviews of the geophysical surveys prompted geochemical tests for tungsten to be done on soil samples over a Mag. - E.M. anomaly on the Nine Lake claims. The results showed unusually high tungsten content in the soils on claims 1, 3, 57, 61 to 68 inclusive, and 71. Anomalous tungsten values of 100 ppm W or greater occur over an area approximately 3000 feet by 6000 feet. Numerous samples assayed 400 ppm W. The possibilities for economic tungsten mineralization are being investigated.

Prospecting on the Doc claims indicated several locations of galena mineralization plus a rough outline of the favourable argillitic rock formation on Doc # 2 claim. The outcrops expose low-grade (about 0.8% Pb) galena mineralization in bedded and veined quartz. Further work is required to assess the potential of the Doc claims.

RECOMMENDATIONS

It is recommended that investigation and research be carried out for possible economic tungsten mineralization on the Nine Lake claims north of Greenland Creek. Bulldozer stripping should be used as a first step in this investigation to be followed by diamond drilling if warranted.

It is further recommended that prospecting, additional soil sampling, and three I.P. test lines be carried out in the area of the large Pb anomaly on the Doc claims.

The Mc claims and the Nine Lake claims south of Greenland Creek should be allowed to lapse.

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DEWAR CREEK PROJECT 1972LIST OF MAPSMap No.

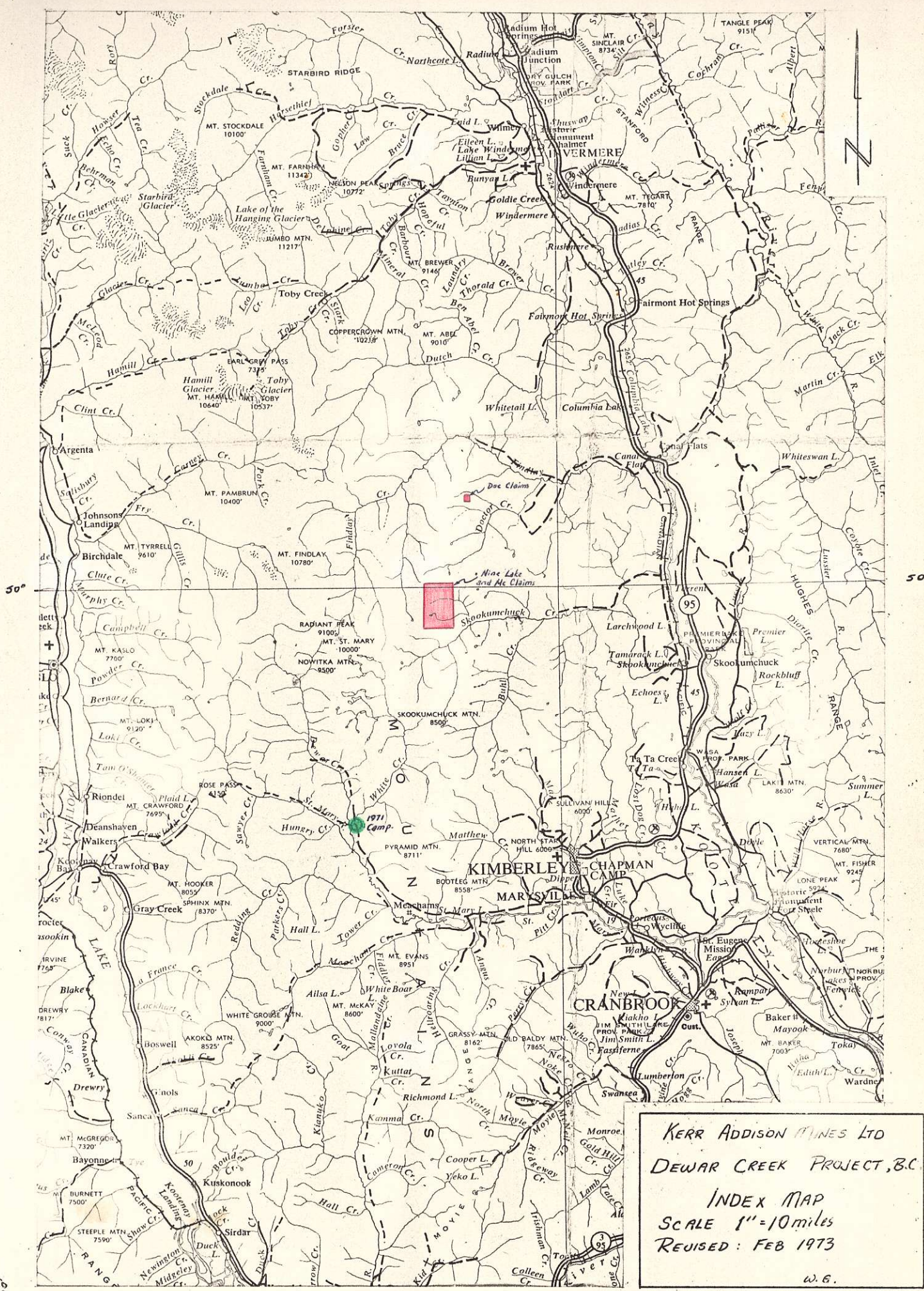
Fig. 1	Index Map	1" = 10 miles
2	Location Map - Mc and Nine Lake Claims	1.25" = 1 mile

Mc and Nine Lake Claim Group

1	Geological Plan	1" = 400 feet
2	Geophysical Plan (Mag)	1" = 400 feet
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4A	Geochemical Plan (Cu)	1" = 400 feet
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Doc Claim Group:

D3	Geological Plan	1" = 400 feet
D4-A	Geochemical Plan (Cu)	1" = 400 feet
D4-B	Geochemical Plan (Zn)	1" = 400 feet
D4-C	Geochemical Plan (Pb)	1" = 400 feet



KERR ADDISON MINES LTD
 DEWAR CREEK PROJECT, B.C.
 INDEX MAP
 SCALE 1" = 10 miles
 REVISED: FEB 1973
 W.G.

Figure 1

INTRODUCTION

A total of 94 mineral claims were staked in three blocks, based on geochemical anomalies and/or mineral finds, during the 1971 Dewar Creek project. These claims include the Mc Nos. 1-4 and adjoining Nine Lake Nos. 1-84 mineral claims in the Dewar Creek map area, Fort Steele M.D., plus the Doc Nos. 1-6 mineral claims in the Finlay Creek map area, Golden, M.D.

Follow-up work was recommended by the writer on the Doc and Mc groups, plus 47 claims on the Nine Lake group. A combined programme of geological mapping, electromagnetic surveying, magnetic surveying and soil sampling was carried out on the claims during the period between June 29 th-August 31, 1972. Four men were employed during the season. Each type of survey covered about 30 line-miles.

Six campsites were selected for operation bases and the camps were moved by helicopter. This plan provided for efficient coverage of the large, mountainous area, and minimized unproductive walking time.

The field work commenced at a late date because of the slow spring break-up. The programme was hampered by deep, wet snow covering most of the survey area. Winter snowfall at the end of August forced a cut-back on the programme for the Doc group of claims.

Assessment work filed on the three claim groups are as follows :-

Geological and Geochemical Surveys on Doc 1-6 MCs

Magnetic and Geochemical Surveys on Mc 1-4 MCs

Geochemical Survey on Nine Lake Nos. 1-4 inc., 6,
8, 10-12 incl., 25, 26, 28, 30, 32, 34-38 incl.,
41-46 incl., 49-51 incl., 61-68 incl., 70, 74,
76 and 78 MCs (40)

A total of 50 mineral claims are kept in good standing until August and September of 1973.

MC AND NINE LAKE MINERAL CLAIMSA. GEOLOGY (Map # 1)

Mapping was confined mainly to outcrops observed along the grid survey lines. Within this area, outcrop covers approximately 12% of the area and talus about 15%. The remaining ground is believed to be mostly float covered, under a relatively thin layer of soil.

The claims are underlain by the Lower Aldridge quartzite formation. These rocks are intruded by the Moyie diorite sills which occupy about a quarter of the thickness of the rock formations. A pegmatite mass intrudes the formation about the centre of the eastern property boundary. Satellitic plugs and dykes of pegmatite occur within 3,000 feet of the main mass. This assemblage of rocks lies within an embayment of the White Creek Batholith which borders the south and east side of the property.

The area lies on the crest of a regional anticline. Rocks between Greenland Creek and the Batholith have been compressed into isoclinal folds, with much drag folding and faulting. Axes of the isoclinal folding is northerly. Faulting is north-south and east-west. Latest faulting occurred after emplacement of the pegmatite. Evidences of this are angular pegmatite blocks folded within quartzite at a fault at STA. 45 + 90 NE on line 18 NW. The sediments generally strike northeast to northwest and dip gently east or west. Sediments north of Greenland Creek do not show much disturbance and they trend east-west and dip northward.

Quartzites are light to medium grey, grey or rusty weathering, thin-bedded, medium to fine-grained, and often sericitic. Alteration of the quartzite to quartz-mica schist or quartz-chlorite schist occurs at intrusive contacts, also along fault zones.

Moyie Intrusions vary in composition from a light coloured quartz diorite to a dark coloured gabbroic rock. The rock is usually medium grained but is commonly fine grained in the narrow sills. Hornblende is the main mafic mineral, biotite is often abundant along borders, and chlorite plus calcite is often present. The latter two minerals may represent alteration and reaction with the bordering sedimentary rocks.

Pegmatites are simple in composition, consisting essentially of feldspar and quartz, with well crystallized black tourmaline and tabs of muscovite.

Quartz Monzonite and Prophyritic Quartz Monzonite rocks of the White Creek Batholith are fresh-looking. Their contacts with the sediments lie somewhere along or south of Nine Creek, within the southern claim boundary, but was not seen. One piece of monzonite float was found on the north bank of the creek.

B. MINERALIZATION

Prospecting in 1971 located a small shear containing pyrrhotite, sphalerite, chalcopyrite, arsenopyrite and galena on the Mc claims. On the Nine Lake claims, calcite-quartz veins and stringers are commonly found in Moyie sills, some with minor chalcopyrite, galena, sphalerite, pyrrhotite and pyrite. These are isolated occurrences and generally are located at the contacts with the sedimentary rocks.

During the 1972 exploration work, no new mineralization was found on the Mc claims. On the Nine Lake claims, quartz veins of the above mentioned type were noted to occur within the pegmatite dykes. Mineral claims 1, 4, 74 and 75 showed the greatest number of quartz vein occurrences, though the amount and the mineralization are not significant. Similar mineralization was not found with the quartzite formation.

MC GROUPA. MAGNETIC SURVEY (Map # 2)

The magnetometer survey covered an area approximately 1,300 feet (NW-SE) by 800 feet (NE-SW), centred around the sulphide showing, and totalling 5,900 lineal feet. Lines were spaced 200 feet and 100 feet apart, with stations chained and flagged every 100 feet. Readings were taken at each 100-foot station, also at 25 and 50-foot intervals over the magnetic anomalies. A Sharpe MF-1 magnetometer was used on the survey.

Three NS linear magnetic anomalies lying in echelon, parallel and close together were located on claim MC # 1, about 450 feet NW of the sulphide showing (Initial Post). These are short, narrow features with values of 1,100, 1,200 and 1,700 gammas. Two smaller, round-shaped anomalies with values of 1,600 and 1,900 gammas were located about 250 feet SE of the sulphide showing.

Profiles of the anomalies indicate narrow (30 - 40 feet), flatly dipping (Westward), shallow structures with the greatest magnetic mass down dip. Calculations based on the "horizontal slab formula" gave a magnetic mass containing 0.066% magnetite or 5.0% pyrrhotite equivalent in the 1,200 gamma anomaly (A). The other magnetic bodies range from 0.099% to 0.355% magnetite (7.1 to 27.5% pyrrhotite) content. (The depth of burial to the top and to the centre of the mass were not used in the calculations).

The sulphide showing was not detectable, probably due to an insignificant mass.

B. E.M. SURVEY (Map # 3)

A Crone C.E.M. unit was used on the electromagnetic survey. Readings were taken over the 100-foot stations at 200-foot coil separation, on the 1830 Hz frequency. Line 6N was re-surveyed using a 300-foot coil separation.

A N-S linear E.M. anomaly was located over the northern half of magnetic anomaly "A". The lowest negative reading (-14°), located on Line 4N/2W, coincides with the magnetic centre. The E.M. anomaly crosses line 6N at station 2W and shows readings -7° and -11° on 200 feet and 300 feet coil spacing respectively. The magnetics show background values over the E.M. anomaly with a narrow magnetic anomaly 125 feet to the west.

Using Crone's depth calculation, the depth to the top of the conductor is 50 feet at the centre and about 75 feet on Line 6N. The dip of the conductor changes from about 10° W to 45° W on the two lines.

The coincident Mag and E.M. anomaly is believed to be caused by magnetite and pyrrhotite mineralization. Variations of the magnetite and pyrrhotite content, down dip and along the N-S structure, could cause the offset Mag. and E.M. features on the west.

No conductive mass was detected over the sulphide showing. A slight increase in conductivity occurs south of magnetic anomaly "D" (SE of BL 00/15).

C. GEOCHEMICAL SOIL SURVEY (Map Nos. 4A, 4B and 4C)

The soils contain a low content of Cu, Zn, Pb and As. Lead was the only anomalous element, found only in three samples, and all within 100 feet of the sulphide showing. For reasons unknown, the sample taken directly above the sulphides assayed low - 90 ppm Cu, 115 ppm Zn, and 200 ppm Pb. Lead background value is 23 ppm and the highest assay is 2,500 ppm Pb.

Geochemical contour maps of the four elements do not show any metal concentrations except a weak 50 ppm Pb contour extending 75 feet around the shear zone.

D. CONCLUSIONS

The geophysical surveys outlined several small magnetic anomalies and one E.M. anomaly. The latter is coincident with one of the magnetic anomalies. Profile plotting indicates narrow bodies buried at shallow depths. The geophysical anomalies indicate a shallow source but the lack of significant geochemical response together with the limited extent of the geophysical anomalies, militate against further investigation of these targets.

NINE LAKE GROUP

A combined survey involving magnetic, electromagnetic, geochemical soil sampling, and geological mapping was conducted on 44 claims of the Nine Lake group. Grid lines were spaced at 400-foot centres with stations 100 feet apart. Base lines were established on claim location lines and tie lines placed where necessary. Grid lines were slashed out, blazed, flagged and marked with coloured flagging at 100-foot intervals. Approximately 30 line miles were surveyed.

A. MAGNETIC SURVEY (Map # 2)

A Sharpe MF-1 magnetometer was used on the survey. A general increase in magnetic intensity occurs from south to north and west to east on the property. The variance in the background is about 200 gammas. No definition of the assumed contact along Nine Creek between the White Creek Batholith and the Aldridge quartzite formation was observed. The other three rock types cannot be distinguished by magnetics. Generally speaking, the magnetic mineral content of all the rocks is low and small concentrations occur in an irregular pattern. The area north of Greenland Creek shows the greatest magnetic "action".

All the magnetic anomalies are located in the northern half of the surveyed area, straddling Greenland Creek. They are lenticular features, more or less parallel to the flatly dipping rock formations. Nearly all the magnetic profiles depict near-vertical narrow bodies. This would indicate that concentrations of the magnetic minerals are occurring in fault or shear zones rather than in strata-bound formations. The "sharp" magnetic anomalies detected over gently dipping diorite sills and diorite quartzite contacts would mean that high concentrations of magnetic minerals occur only to a limited depth. Most of the magnetic anomalies occur in quartzite covered areas, though underlying diorite sills may not be far below. These anomalies are located on claims 2, 3, 30 and 74 (Lines 16-21 NE), on claims 1 and 3 (Lines 27-29 NW), on claims 61-64 (Lines 28-30 NW) and on claim 68. The latter is a 1,100 gamma-high anomaly located at Line 33NW/34NW, and was found to be caused by a near-vertical, 10 feet to 25 feet wide, basic dyke containing 5% pyrrhotite with probably finely disseminated magnetite. The cause of the other anomalies, ranging from 100-500 gammas, were not determined by field observations because of overburden and absence of mineralization.

Magnetic anomalies occurring over diorite sills are located on claims 66 and 61-64. The anomalies range from 100-700 gammas, with most magnetic highs above the diorite-quartzite contact. These anomalies are attributed to magnetite which is known to occur in isolated concentrations within the diorite.

B. E.M. SURVEY (Map # 3)

A Crone C.E.M. unit was employed using the horizontal shootback method, on 1830 Hz frequency, and with 300-foot coil spacing. Check readings were obtained on the 390 Hz frequency. Tests were conducted with different frequencies on a 600-foot spread, but the work was not completed due to electrical storms at the end of August.

In general, E.M. response is greater in the areas of higher magnetics. The E.M. anomalies also depict narrow, near-vertical and lenticular features similar to the magnetic anomalies. There are a few coincident E.M. - Mag. anomalies. All the E.M. anomalies are considered small, weak conductors. The conductive bodies range in width from 30 feet to 50 feet, with dip angles varying from -4° to -10° and $+4^{\circ}$ to 16° .

a) Coincident Mag. and E.M. Anomalies

There are three targets or areas which show coincident Mag. and E.M. anomalies. These are located on claims 1 and 3 along the north side of Greenland Creek, NW on claims 61-64 (Lines 27 to 29 NW), and further north on claim 68 (Line 33 NW/Sta. 34 NW).

The first anomaly (claims 1 and 3) shows positive dip angles of $+10^{\circ}$ to $+20^{\circ}$. The ratio of low/med (390/1830 Hz) frequencies are 1:1 approximately. E.M. profiles indicate a narrow, near-vertical conductor buried at a shallow depth. On the E.M. map the $+6^{\circ}$ contour forms a lens-shaped figure 150 feet x 1,300 feet long. A weak 100- γ magnetic anomaly coincides with the E.M. anomaly. The conductor may be caused by pyrite with pyrrhotite, the latter giving the magnetic response. The structure is possibly a fault or shear parallel to the strike of the sediments.

The second anomaly (on claims 61-64) also shows positive dip angles. On plan, it is irregular in shape and is surrounded by small negative E.M. features. The higher dip angles range from $+8^{\circ}$ to $+15^{\circ}$. The ratio of low/med frequencies is about 0.5 : 1. The E.M. anomaly lies over a diorite sill which outcrops at the common corner of claims 61, 62, 63 and 64, and extends on strike of the sill. The magnetic anomalies occur along the diorite-quartzite contacts and also over the quartzite. At line 27 NW / 25+50 NW, the $+12^{\circ}$ E.M. reading is over a magnetic low or negative, which may be the results of reverse polarity. The E.M. profiles indicate narrow, near-vertical conductors except on Line 28 NW a broad $+8^{\circ}$ dip angle is spread 600 feet across a diorite sill. The cause of the latter response is unknown. A combination of pyrite, pyrrhotite and magnetite mineralization may be the cause of the conductive and magnetic anomalies. As in the case of the first E.M. anomaly, the structure(s) would have to be a fault, shear or sill running parallel to the strike of the flatly dipping Aldridge and Moyie rocks.

The third coincident Mag. and E.M. anomaly is located on claim 68. It is discussed under magnetic Survey (page 10). A $+8^{\circ}$ E.M. reading was obtained over the 1,100 γ anomaly. A speck of chalcopyrite was seen in the outcrops over the area.

b) Other E.M. Anomalies

The remaining ground south of Greenland Creek shows relatively low conductivity. A moderate change in conductivity occurs on claims 34, 42 and 44 (Line 12 to 15 NE). There are three small negative anomalies with dip angles ranging from -5° to -10° . They exhibit

features of narrow, lenticular, conductive bodies which are weakly magnetic (60 to 180 gammas). The anomalies may be caused by weak pyrrhotite mineralization within narrow zones. No evidence of this was noted.

A few small quartzite outcrops were found in the area. Small pegmatite dykes and diorite sills appear to intrude the quartzites along the south-west side. The large pegmatite mass borders the northeast edge.

C. GEOCHEMICAL SOIL SURVEY (Map # 4A, 4B and 4C)

Soil samples were taken at 200-foot intervals along the grid lines. Greater intervals were used where terrain dictated such as talus slopes, rock outcrops, and swampy ground. The samples were taken from the top of the "B" horizon when available. Along steeply sloping hillsides and open cirques, the existence of each horizon is doubtful. Profile sampling was conducted at selected locations to evaluate and compare the metal content of each soil horizon. All the samples were analyzed for total metal content in copper, zinc and lead. A group was analyzed for tungsten and a chosen number were tested for arsenic.

Most of the profile samples showed lower metal content in the "A" horizon, higher in the "B" horizon and slightly higher again in the "C" horizon soil. For the purpose of locating an anomalous geochemical zone the "B" horizon sampling was the logical choice.

The regional exploration programme in 1971 located a large area containing anomalous zinc values in the stream silt sampling of the Greenland Creek drainage system. Copper and lead content was low. The exploration work in 1972 was directed towards the area which showed the highest geochemical values.

The results of the soil survey indicated two moderately anomalous Cu-Zn zones and one definitely anomalous zinc anomaly within the Nine Creek drainage. Also, several moderately anomalous zones with definitely anomalous zinc values around the Greenland Creek drainage area. Copper and lead values are usually low within the Greenland Creek drainage. Arsenic geochemistry on a low conductive area (claims 32, 42 and 44) did not indicate base metal mineralization.

Tungsten analyses were done on above mentioned area and over one coincident Mag. and E.M. anomaly (claims 1 and 3), where Cu, Zn and Pb geochemistry showed only background values. Moderate to definitely anomalous W assays were obtained.

For analysis of the geochemical soil survey, the following values were used:

	<u>ppm. Cu</u>	<u>ppm. Zn</u>	<u>ppm. Pb</u>	<u>ppm. W</u>
Background Range	0- 50	0-125	0- 25	0- 25
Threshold Range	50-150	125-250	25- 75	25- 50
Weakly Anomalous	150-200	250-375	75-100	50-100
Moderately Anomalous	200-250	375-500	100-125	100-150
Definitely Anomalous	>250	>500	>125	>150

C. GEOCHEMICAL SOIL SURVEY

a) Copper Geochemistry (Map # 4A)

The distribution of Cu values in the soil form small, isolated geochemical highs with moderately to definitely anomalous assays. Two moderately anomalous Cu zones are located on the south side of Nine Creek on claims 5, 6, 7, and 8, and on claims 10 and 12.

The first one forms a closed 200 ppm Cu anomaly with definitely anomalous assays, though lacks extremely (1000 ppm plus) high values to be classified as important. It trends 1,400 feet east-west, with a downward diapereion of 200 feet to 600 feet into Nine Creek.

The second Cu geochemical high shows a moderately anomalous zone open towards the south and east. Highest Cu assays occur upslope of the zone. Moderately to definitely anomalous Zn assays coincide with the Cu values.

The east-west trend of the 50 ppm Cu contour suggests the hidden trace of the White Creek Batholith and Aldridge sediment contact. Neither the Pb nor the Zn values indicate a change of rock types. Metal dispersion is normal with the Cu assay contours cutting the topographical contours at a slight angle downhill.

Quartz monzonite float and talus rock cover a large portion of the surveyed area south of Nine Creek. Areas shown as over-burden on the geological plan contain abundant monzonite float above and below the surface. No quartzite or diorite was seen. On the north side of the Nine Creek only one piece of monzonite float was noted. The White Creek Batholith outcrops immediately south of the survey grid. No sulphide mineralization was found amongst the talus and the quartz monzonite float was fresh and barren looking.

The geochemical anomalies are likely caused by Cu and Zn mineralization along the intrusive sedimentary contact. Mineralization occurring within the multi-phase batholith is possible, although no sulphide mineralization has been recorded in the past. Silt samples taken along Skookumchuch Creek on the south side of the monzonite ridge showed slightly above background values.

b) Zinc Geochemistry (Map # 4B)

The soils within the Nine Creek drainage showed a much lower zinc content than those within the Greenland Creek drainage. There is only one zinc anomaly of interest in the first area and several in the second area.

On the north slope of Nine Creek, one zinc anomaly with high assays occurs on claims 26, 35 and 37 on Line 7A NE. It forms an 800-foot circular anomaly with zinc assays up to 1,100 ppm. One of the samples

contained 1,450 ppm Pb but the others were below lead background (25 ppm) values. One high Cu sample is located uphill and one downhill from the zinc anomaly.

The anomaly straddles a ravine, its long axes parallel to the topographical contour; thus suggesting a NE-SW zone of mineralization. Most of the anomaly lies on the south-west side of the ravine which is covered by overburden and pegmatite with diorite talus. On the uphill side, a pegmatite mass intrudes the Aldridge quartzite and Moyie diorite sills. The anomaly appears to lie across a section of the rock contacts where the greatest disruption of the sediments and sills occurred. The source of the zinc is probably traceable to the tongues of pegmatite dykes. Without correspondingly high Cu and/or Pb values the zinc anomaly is a weak target.

Similar zinc highs occur on the northwest corner of claim 41 (Lines 16 and 17 NE) near Greenland Creek. Again, it is not regarded as a potential target.

Upstream in Greenland Creek and on the south side several zones with definitely anomalous zinc values are outlined on claims 1, 2, 30, 74, 76 and 49. The trend of each anomaly is northwest along the general strike of the sediments and sills. Their locations line up in a north-east direction. The geochemical dispersion appears to follow local drainages (NW-N) rather than downslope towards the N-NE. The most impressive anomaly is the larger one on claims 2, 49, 74 and 76, measuring 400 feet to 600 feet wide by 2,000 plus feet long, with assays higher than 1,000 ppm Zn. Copper values form small, scattered, moderate anomalies located slightly uphill. Lead geochemical assays are low.

The zinc anomaly lies over an area occupied largely by a diorite sill. A small number of quartz veins with minor pyrite, chalcopyrite, pyrrhotite and sphalerite were found within the diorite sills. These veins are short (50 to 60 feet) and narrow ($\frac{1}{2}$ " to 6") veinlets which have a northwesterly strike and a variable dip. A basic dyke was found at the east end of the anomaly (Line 20 NE/45 NE). No sulphides were noted but the soil samples contain highly anomalous Zn, moderately anomalous Cu, and weekly anomalous Pb values.

The trend of the Zn anomaly follows a narrow band of quartzite in diorite rather than on strike with the basic dyke. Westward projection of the quartzite band would intersect Line 23 NE @ Station 46NE where the definitely anomalous zinc values occur again.

Minor sphalerite mineralization along the contacts of the narrow quartzite band with the diorite sill is the probable cause of the zinc soil anomaly. The ratios of Zn to Cu and Pb assays suggest occurrences of this type, based on previous seasons' work.

Many small zinc anomalies are outlined on the north side of Greenland Creek towards the northwest corner of the surveyed area. These are moderately anomalous zinc highs located on NW Lines 28, 30, 31 and 32, within claims

61, 63, 68 and 71. The Cu content in the soil is low but the Pb content is weakly to moderately anomalous. The anomalous zones occur along a northwest line following the creek. The geochemical dispersion appears to be downslope from several metal sources along a NE-SW line.

The anomalous area is underlain chiefly by Aldridge quartzite and bounded by thick Moyie diorite sills which strike about N60°E and dip 25° to 30° northwest.

The sources of the anomalies are likely from scattered occurrences of sphalerite in fractures along a probable fault parallel to the small southeasterly flowing creek (?)

Another possible fault along Greenland Creek may best explain the abrupt change in geochemical values on either side of the main drainage.

c) Lead Geochemistry (Map # 4C)

Anomalous Pb values form small isolated highs within the area (see Map 4C), but are not significant Pb anomalies. In all cases, they are directly related to the zinc anomalies.

Although the area north of Greenland Creek shows some magnetic and electromagnetic response relative to the rest of the property, the lack of subordinate geochemistry and absence of favourable mineralization do not provide much evidence for a Cu, Zn or Pb deposit.

d) Arsenic Geochemistry (Map 4, 5th assay)

A selected number of soil samples from Line 12 to 15NE were tested for As content. This was done to evaluate the low negative EM anomalous area which gave no Cu, Zn or Pb geochemical targets. Results were negative.

e) Tungsten Geochemistry (Map 4, 4th assay)

Tungsten geochemistry was first applied to the area mentioned in the previous paragraph when negative results were obtained for base metal mineralization. Also, the Skookumchuck Creek area contains several tungsten occurrences. Two of these are located about 1.5 miles and 2 miles southeast, and both have been explored by diamond drilling.

Tungsten analyses were conducted on all samples over and surrounding the target areas (Line 8NE to 19NE inclusive) to provide background values for evaluation. The results showed weakly (50 - 100 ppm W) to moderately (100 - 150 ppm) anomalous values, indicating small isolated zones of tungsten mineralization, and not significant enough for further exploration.

Re-assaying of soil samples for tungsten content was done in January 1973, over the area showing a coincident E.M. and Mag. anomaly on claims Nine Lake 1 and 3. This anomaly occurs in a low (Cu-Zn-Pb) geochemical area, and was believed to be caused by pyrite and pyrrhotite in a fault or shear zone. The possible association of scheelite with pyrrhotite prompted the re-evaluation of the E.M. - Mag. anomaly.

Results from the tungsten analyses showed moderately to definitely (> 150 ppm) anomalous values with the zone open to all sides. Consequently, further re-evaluation of the soil samples was continued step-by-step. To date, samples within an area 5,000 feet long by 1,600 feet wide, north of Greenland Creek have been re-examined for tungsten. Approximately 50% of this area showed 100 plus ppm W in the soils. Tungsten values classified as definitely anomalous (≥ 150 ppm W) form five anomalies; the smallest measuring 400 feet x 1,400 feet and the largest averaging about 1,200 feet wide x 1,800 feet plus long (open east and west). Two of these anomalies contain values between 200 - 300 ppm W, and the other three contain values between 400 and 450 ppm W. The geochemical trend is NE-SW, parallel to the rock formations, but there is also a probable NW-SE trend at 90° to the one above.

Presently, rock geochemistry is being conducted to find the true source of the tungsten mineralization. Further re-assaying of the samples collected during the 1972 season is planned. Tungsten analysis on selected silt samples collected around the periphery of the Greenland Creek drainage, during the 1971 field season, is proposed. Other Mag. and E.M. anomalies may warrant re-checking for tungsten values.

The underlying rocks in the area are gently dipping Lower Aldridge quartzites with accompanying Moyie diorite sills. Other intrusive rocks nearby are small pegmatite outcrops $\frac{1}{2}$ mile on the east plus the large pegmatite mass located one mile southeast. The contact of the White Creek Batholith forms an irregular semi-circle around the east and south side, about 1.5 to 2 miles from the tungsten area.

Rocks in the immediate area of the anomalous tungsten soils are not noted for tungsten mineralization. Calcite was found only in Moyie diorite sills but similar carbonate mineralization was found elsewhere in the Dewar Creek Project area. The diorites often contain a high carbonate content (vigorous reaction with HCL). This was often noted in metamorphosed diorite where the rock assumes a medium green colour. The formation of tungsten minerals, notably scheelite may derive from this source. Whether scheelite mineralization is a common occurrence with all metamorphosed diorite sills is unknown.

In summation, the geochemical anomalies outlined by the survey are not considered potential targets for a Cu, Zn and/or Pb deposit. The possibilities for economic tungsten mineralization will be investigated.

D. CONCLUSION

The combined survey (mapping, E.M. and Mag.) of the Nine Lake claims to investigate the cause of the anomalous zinc silt samples and to locate hidden base metal deposits did not show positive results.

The geophysical surveys picked up three coincident Mag. and E.M. anomalies plus several individual anomalies. All the anomalies indicated near-vertical and narrow features. The profiles reflect near-surface, magnetic and/or conductive bodies. These locations do not show anomalous Cu, Zn, or Pb values in the soils. One must conclude that the geophysical anomalies do not represent hidden deposits of Cu, Zn or Pb mineralization.

The geochemical survey showed low Cu-Pb and high Zn content in the soils. Numerous zinc soil anomalies were outlined, some with anomalous Pb and/or Cu values but the latter two elements were generally not significant. Only one zinc anomaly covered a large area. Although definitely anomalous values were outlined over a wide zone, its potential was discounted because of visible Cu-Zn quartz veins, probable sphalerite mineralization in a narrow quartzite band bounded by diorite, and no magnetic or electromagnetic anomaly.

Recent tests on tungsten geochemistry carried out by re-assaying the samples, showed unusually high tungsten content in the soils. Further investigation is required to assess the situation. This is now in progress.

DOC GROUP

Four days were spent during the end of August on the property. Prospecting, mapping and soil sampling were conducted on the Doc Nos. 1 and 2 claims. E.M. and Mag. field tests over the mineralized area failed to show any response. An I.P. survey was conducted during the end of September but the results were poor because of the difficulty in grounding power electrodes in rocky, frozen ground.

A. GEOLOGY (By Werner Gruenwald) (Map # D3)

The Doc mineral claims occupy part of the Purcell Upper Aldridge unit near the Creston formation contact. Three rock types were delineated; two being variations of the Upper Aldridge, the third being altered diorite dykes (Moyie). The lower sequence of the Upper Aldridge consists of brown to greenish argillaceous quartzites and quartzites, while the overlying sequence is a grey to black limonite bearing argillite and argillaceous quartzite (biotite and sericite rich). It is this upper sequence which contains the lead bearing quartz veins.

The mineralized area is located in the northwest portion of Doc # 2 where the rocks, as most elsewhere, strike north-northeast and dip 15° to 30° NNW except in areas of localized folding. Also located in the northwest portion of Doc # 2 are a number of Moyie diorite dykes (?) which have been altered to chlorite and contain small calcite veinlets and minute cubes of pyrite.

In the area of the black argillites, mineralized quartz veins are fairly abundant. The veins are of two distinct types; one being a bedded type with straight to irregular contacts and thicknesses of 1/16" to 3". The other is a crosscutting type which trends N45^oW and dip nearly vertical. Thicknesses of these range from 1" to 14" with the average being approximately 8". The bedded veins have the simplest mineralogy consisting of milky white quartz, galena and the occasional wall rock fragment while the crosscutting veins contain quartz, galena, chalcopyrite (< 1%), malachite and azurite.

Small amounts of greenish-yellow stain (pyromorphite?) were observed on weathered surfaces and in solution voids as well as minor limonite and carbonate.

In all veins the galena was fine to medium grained and cleavage was not well developed; those observed were usually curved which might indicate deformation. The sulphide mineralization is not very massive, the maximum sulphide content being about 25%, with the bedded veins generally having the higher sulphide content.

The following sequence probably took place:-

- a) Solutions moving along bedding planes occasionally breaking off bits of wall rock.
- b) Quartz forming in fractures and around fragments with galena forming soon after.
- c) Second stage of fracturing allowing crosscutting veins to form with quartz crystals and voids in some places.
- d) Later solutions depositing galena and chalcopyrite in void around crystals.
- e) Fracturing and deformation of quartz veins and galena.
- f) Solution and formation of alteration minerals.

B. GEOCHEMICAL SOIL SURVEY (Map #D4A-B-C)

The additional soil sampling done on claims 1 and 2 extended the Pb geochemical anomaly 1,000 feet southwest. The 1000 ppm Pb geochemical anomaly now has a width of 700 - 1000 feet and a length of about 4200 feet. Soils containing 2000 plus ppm Pb occupy over 50% of the above anomaly. The anomalous area covers almost the entire area of claims 2, 4 and 6 along a NE-SW trend. The known mineralization at the top of the ridge will undoubtedly disperse the metal further down the north and south slopes (see also Map # 25C, Dewar Creek project 1971).

Geochemical dispersion is affected by mechanical and chemical means. In this situation it is more pronounced because of the steep topography plus the drainage pattern. However, the geochemical anomaly on claim # 2 is directly over the mineralized area. The anomaly straddling claims 4 and 6 could easily be caused by the same source.

The geochemical dispersion does not indicate that the mineralization would extend much beyond the southwest corner of claim # 2. Fill-in soil sampling and/or prospecting plus trenching may show whether the anomaly on claims 4 and 6 is strictly a secondary dispersion train.

C. CONCLUSIONS

The limited amount of field work done in 1972 did not provide enough information to add to or further assess the potential of the lead mineralization.

Galena was found to occur in beds and veins within argillitic rocks of the Upper Aldridge formation, probably at the topmost horizon as the contact of the younger Creston formation is nearby. The mineralization occurs within an area roughly 800 feet x 600 feet in extent.

The results of the additional soil samples verified the projected geochemical dispersion of Pb downslope from the ridge top. The anomalous Pb values on claims 4 and 6 are likely due to secondary dispersion, though a second source is not ruled out.

The Doc claims remain a good hunting ground for a lead deposit. The following work is recommended for the 1973 season.

1. Stake additional three mineral claims surrounding the southwest corner of claim # 2 for protection.
2. Run three I.P. test lines over the mineralized area. This should be carried out during the latter part of June or early July when the ground is moist from the melting snow.
3. Prospect known mineralized area plus other possibilities.
4. Map geology and determine limits of mineralization.
5. Fill-in soil sampling on north slope between the two most westerly lines, also continue soil sampling on south slope @ 200-foot sample spacing on lines 400 feet apart to the creek at the bottom.
6. Prospect, map and soil sample the area east of the most easterly survey line, especially the area where previous sampling has indicated an anomalous (> 100 ppm) Pb zone.



FC/ah

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