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Assessment Report for the

IRONY Claim Group

Kamloops Mining Division
N.T.S. 82M/15W

Latitude: 51° 46' 40", Longitude: 118° 58' 30"

for

Nihilist Corporation
676 Woodsworth Road
Calgary, AB
T2J 1M8

Submitted by:

Dynamic Exploration Ltd.
656 Brookview Crescent
Cranbrook, BC
V1C 4R5

Date: September 13th, 1999

SUMMARY

A 5 million ton Zn-Pb deposit grading 7.5% Zn and 2.5% Pb had been previously documented at Ruddock Creek (Minfile 082M 084), located approximately 100 km north-northwest of Revelstoke and 15 km southwest of Mica Creek on the west side of McNaughton Reservoir / Lake Revelstoke (Fig. 1 and 2). The IRONY claims completely surround the previously identified deposit , located on Falconbridge claims. The property lies on N.T.S. mapsheet 82 M/15W, east of the Adams Plateau at approximately 51° 45' 35" N Latitude, 118° 54' 00" W Longitude. The claims are located in the Monashee Mountains at the headwaters of Oliver Creek, immediately west of the headwaters of Ruddock Creek. Access to the property is by helicopter based in Revelstoke or Clearwater on the Yellowhead Highway.

At this point in time, the deposit is probably best described as a Broken Hill-type, being a zinc + lead occurrence hosted in high grade metamorphic calcium-rich sediments in the hinge zone of a large scale, recumbent Phase 1 fold. The host rocks consist of marble- and calc-silicate-rich strata underlying the pelitic upper pelite unit and overlying the amphibolite and semi-pelite bearing semipelite-amphibolite unit. Two mineralized horizons have been previously mapped, extending westward from the hinge zone into the east side of the Oliver Creek valley. These horizons were interpreted as a single mineralized horizon exposed on opposing limbs of the recumbent syncline. However, based on analysis of data available in existing reports, the author believes they represent two separate and distinct mineral horizons exposed on the upper, overturned limb of the syncline. This hypothesis is based on the fact that the horizons, as mapped, both lie to the west of the surface trace of the axial plane of the Phase 1 fold, as measured by Fyles (1970).

The 1998 field program emphasized work on the northwest and western portion of the IRONY claims. Prospecting was undertaken in an attempt to: 1) locate the northwestern extension of one or both of the mineralized horizons at lower to mid-slope levels on the east side of Oliver Creek and 2) locate old Falconbridge claim posts and/or claim lines, particularly for the IF 4 and 5 claims. Evidence of high grade mineralization was found in outcrop in the core of a small parasitic fold, in outcrop in Avalanche Creek and in float in two high gradient watercourses. No evidence of old Falconbridge claims were found.

In addition, 102 soil samples were taken along two lines, one at 1200 m and a second along the Oliver Creek Forest Service Road at approximately 1000 m. The samples were submitted to Eco-Tech in Kamloops for 28 element ICP analysis. Results document highly anomalous values for both lead and zinc south of Avalanche Creek. To the north, the proportion of anomalous values is substantially lower, with no lead values identified above a qualitative background value of 50 ppm and only a few scattered zinc values above a qualitative background of 150 ppm. A fault is interpreted along Avalanche Creek, juxtaposing strata of the structurally overlying SPA to the north of the fault against stratigraphically higher strata of the middle marble to the south on the overturned limb of the Phase 1 fold. Therefore, the fault is interpreted to have north-side down dip-slip offset, with the strike-slip component unknown.

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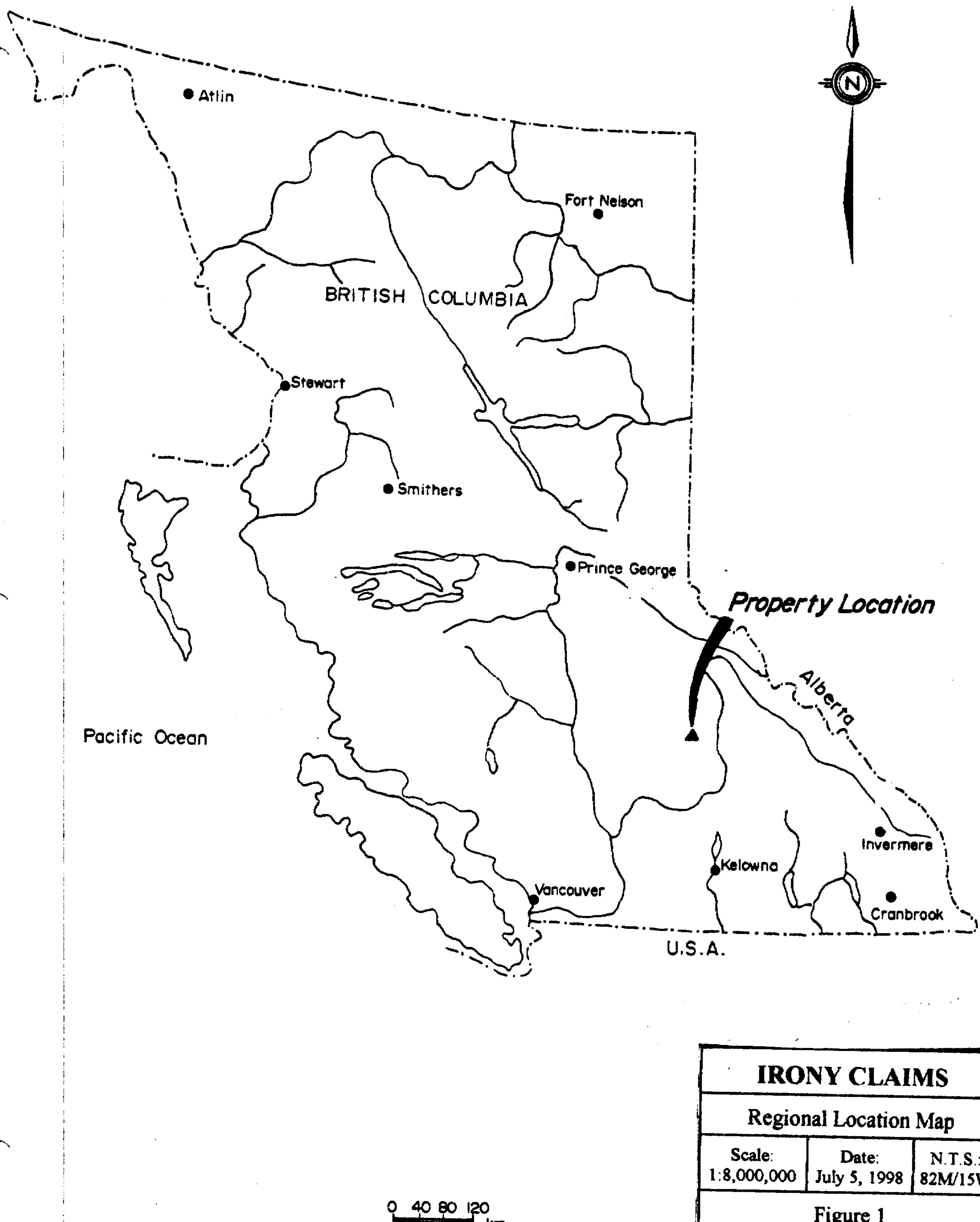
INTRODUCTION

A 5 million ton Zn-Pb deposit grading 7.5% Zn and 2.5% Pb had been previously documented at Ruddock Creek (Minfile 082M 084), located approximately 100 km north-northwest of Revelstoke and 15 km southwest of Mica Creek on the west side of McNaughton Reservoir / Lake Revelstoke (Fig. 1 and 2). The IRONY claims completely surround the previously identified deposit, located on Falconbridge claims. The property lies on N.T.S. mapsheet 82M/15W, east of the Adams Plateau at approximately 51° 45' 35 N Latitude, 118° 54' 00" W Longitude. The claims are located in the Monashee Mountains at the headwaters of Oliver Creek, immediately west of the headwaters of Ruddock Creek. Access to the property is by helicopter based in Revelstoke or alternatively Clearwater on the Yellowhead Highway.

The deposit is hosted by meta-sediments and meta-basalts (amphibolites) of the Upper Proterozoic Horsethief Creek Group. (Fig. 3a and 3b) The units which underlie the claims range from the semipelite-amphibolite (SPA) through the overlying middle marble to the upper pelite division. The entire stratigraphic package has been subjected to multiple phases of deformation and high grade, upper amphibolite grade metamorphism. Large scale fold structures (nappes) are the result of Phase 1 deformation, subsequently re-folded by coaxial Phase 2 deformation. The dominant foliation on the property is a composite surface arising from Phase 1 and Phase 2 deformation, producing an S_{1+2} fabric. A third phase of deformation has locally affected the strata, resulting in locally identified D_3 folds and a crenulation cleavage expressed regionally. A fourth phase of deformation, D_4, is only locally expressed. Upper amphibolite grade metamorphism has affected the entire stratigraphic package, with abundant granitic pegmatites present as a result of anatexis (partial melting). In strata of the appropriate bulk composition, sillimanite (±fibrolite) can be identified. The presence of granitic pegmatite (locally volumetrically significant) has not, apparently, disrupted the structural fabric of the property.

During the summer of 1998, prospecting, limited geological mapping and geochemical sampling were undertaken on the northwest portion of the claims. Four additional claims were staked (IRONY 3, 4, 24 and 25) to cover the possible northwest extension of two mineralized horizons mapped to the edge of the Falconbridge claims. The GLACIER NORTH claim was staked to cover the interpreted sub-surface mineral potential underlying the axial plane, the surface trace of which is interpreted to extend to the southwest from the "E" showing. Prospecting was undertaken to: 1) locate the extensions of one or both mineralized horizons at lower to mid-slope levels on the east side of Oliver Creek and 2) locate old Falconbridge claim posts and/or claim lines, particularly for the IF 4 and 5 claims. Prospecting attempted to determine the stratigraphy of the immediate area and to identify the structural position relative to mineralized horizons and the host fold. Limited geological mapping was completed in that most outcrops were examined and structural measurements taken as well as a brief description made of the lithologies. Evidence of high grade mineralization was found in outcrop in the core of a small parasitic fold, in outcrop in Avalanche Creek and in float in two high gradient watercourses. The rock samples have not been submitted for analysis at this time.

Several attempts were made to locate evidence of old Falconbridge claims, some of which are believed to have been staked in the 1960's. No old claim posts were identified, however, some posts for the previous IRONY claims were located and their location ascertained using a hand-held GPS. In addition, prospecting was undertaken to locate outcrop occurrences to determine the stratigraphy of the area and attempt to identify the structural position relative to the mineralized horizons and the host fold. Limited geological mapping was completed in that most



IRONY CLAIMS		
Regional Location Map		
Scale: 1:8,000,000	Date: July 5, 1998	N.T.S.: 82M/15W
Figure 1		
Drawn by: R. Walker		

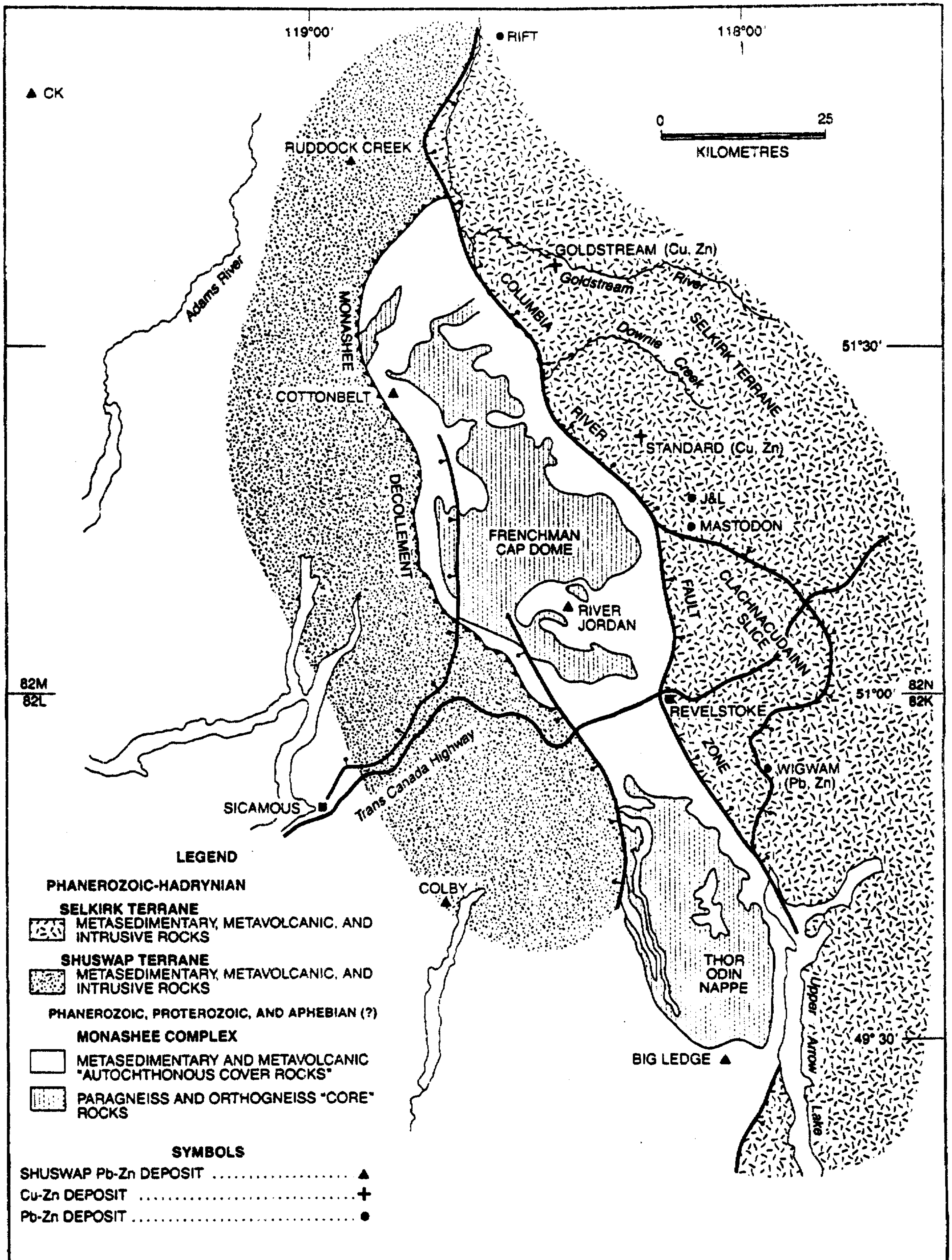


Figure 2. Tectonic setting and location of Shuswap deposits, southeastern British Columbia.

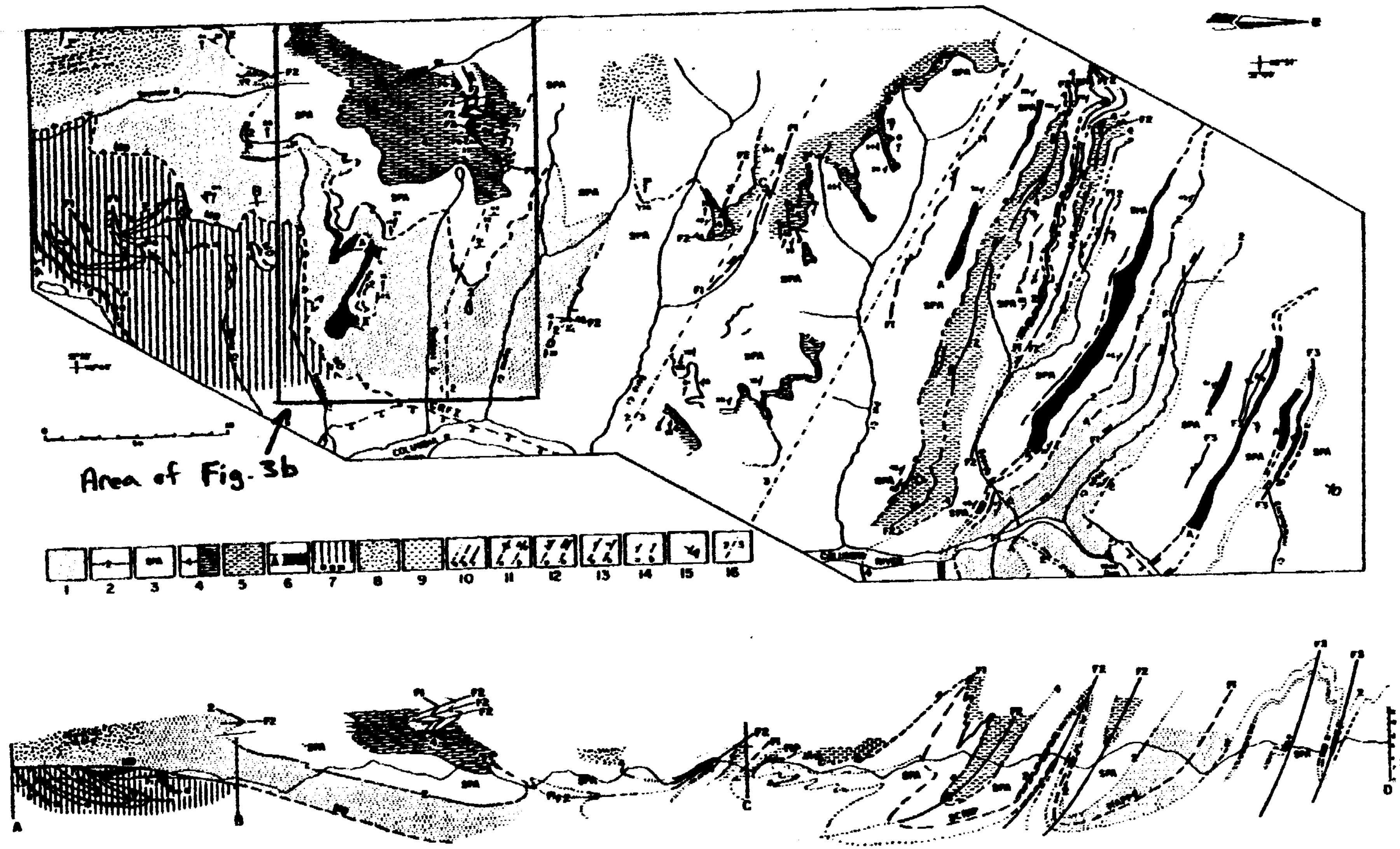


Figure 3a. Simplified geological map of the study area. See Figure 1 for location. 1-5 are Horsethief Creek Group subdivisions; 1 = Lower Clastic; 2 = Lower Marble; 3 = Semipelite-Amphibolite; 4 = Middle Marble; 5 = Upper Clastic; 6 = Amphibolite or strata where amphibolite dominates; 7 = Monashee Terrane (B = basement gneisses, Q and M, are quartzite and marble horizons of the cover gneiss sequence); 8 = 50% or greater leucogranite; 9 = lineated hornblende granodiorite; 10 = geological contacts (a-assumed, b- approximate, c-defined); 11 = axial surface traces (a-anticline, b-syncline); 12 = axial surface traces of overturned folds (a-anticline, b-syncline, notation on downdip side); 13 = faults (a-thrust, b- normal); 14 = fabrics (a-strike and dip of S_{1+2}, b- trend and plunge of Ls); 15 = location of cross- section; 16 = boundary between structural domains (note the north boundary of Domain 3 is Pat Creek and the south boundary of Domain 1 is the Monashee Décollement); Pb-Zn = Ruddock Creek Pb-Zn horizon (Fyles, 1970), MD = Monashee Décollement, CRFZ = Columbia River Fault Zone. Data in the footwall of Monashee Décollement is from Scammell (1986), and north of Pat Creek from Raeside (1982). See text for discussion.

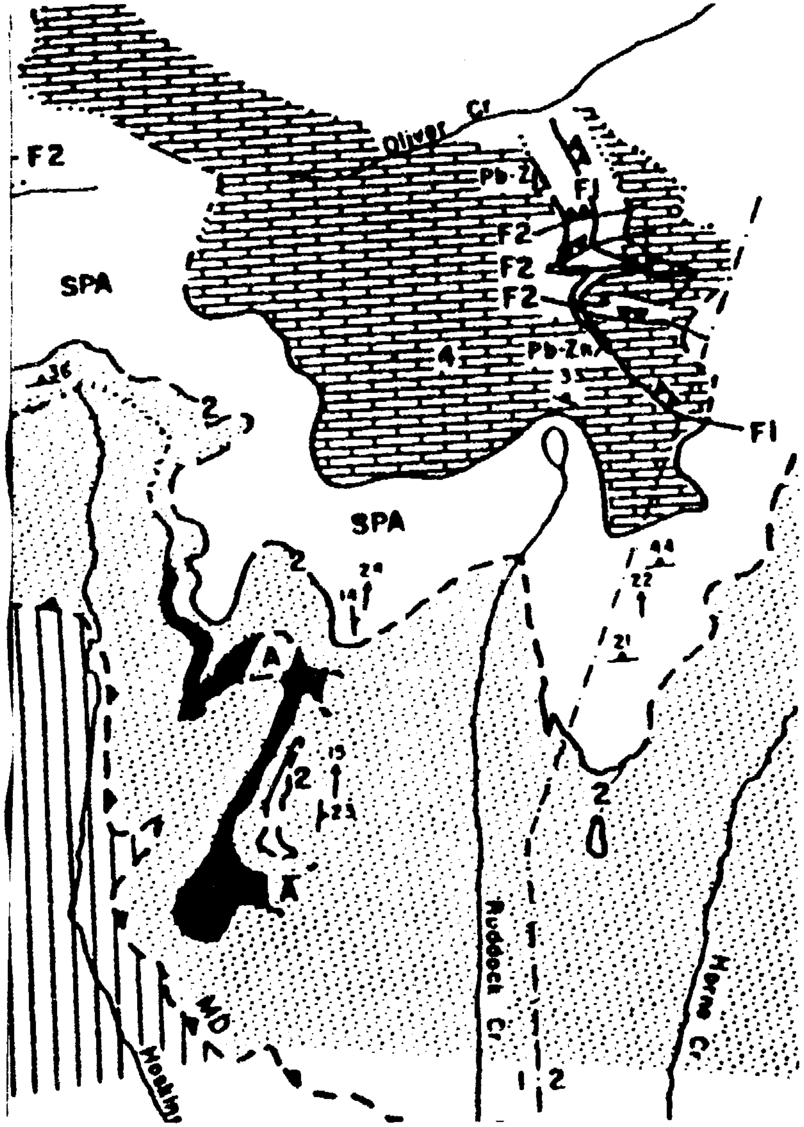


Figure 3b. Ruddock Creek project area, enlarged from Fig. 3a (from Scammell 1991)

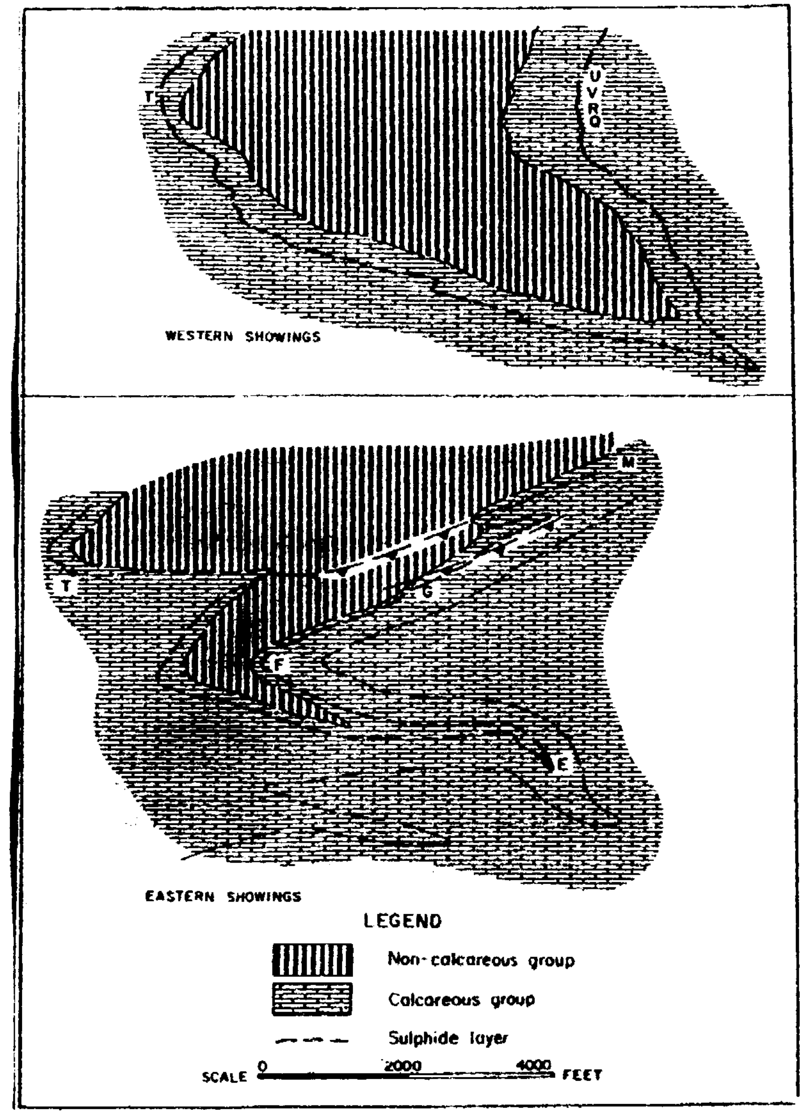


Figure 6 Interpretive cross-sections looking west. See sections on Fig. 5 for comparison + location (Fyles 1970)

outcrops were examined and several structural measurements taken as well as a brief description of the lithologies.

Preliminary results from the 1998 program are very encouraging in that strong geochemical anomalies were returned from analysis of soils and, together with visually anomalous rock samples, suggest the presence of one (or more) mineralized horizons where expected on the basis of structuring contouring Falconbridge data. A total of 102 soil samples (from 107 stations with 5 No Samples) and were taken on the property. Soil samples were taken along two lines, one at 1200 m and a second along the Oliver Creek Forest Service Road at approximately 1000 m. The soil samples were dried and subsequently submitted to Eco-Tech Laboratories in Kamloops for 28 element ICP analysis. Results document highly anomalous values for both lead and zinc south of Avalanche Creek. To the north, the proportion of anomalous values is substantially lower, with no lead values identified above a qualitative background value of 50 ppm and only a few scattered zinc values above a qualitative background of 150 ppm. A fault is interpreted along Avalanche Creek, juxtaposing strata of the structurally overlying SPA to the north of the fault against stratigraphically higher strata of the middle marble to the south, on the overturned limb of the Phase 1 fold. Therefore, the fault is interpreted to have north-side down dip-slip offset, with the strike-slip component unknown. Therefore, these mineralized horizons may be present at deeper levels north of the fault, where the middle marble unit should be present structurally below the SPA unit. In addition, on the basis of structure contouring, the mineralized horizons should also be present on the west side of Oliver Creek, on the IRONY 7 claim, and are expected to project to higher elevations to the south.

Finally, evaluation of Falconbridge data is interpreted to suggest high mineral potential elsewhere on the claims. The structural data presented by Fyles (1970) suggests the axial plane for the fold hosting the 5 million ton deposit projects to the southwest through the IRONY claims. Therefore, the mineralized horizons on the lower limb of the fold would be present in the sub-surface of the IRONY 2 and the GLACIER NORTH claims. This interpretation may explain why drilling undertaken by Cominco in 1982 failed to intersect significant thicknesses of potentially ore grade mineralization in their attempt to extend mineralization associated with the "E" showing westward into the sub-surface.

LOCATION AND ACCESS

The claims are located at the headwaters of Oliver Creek and Ruddock Creek on the west side of McNaughton Reservoir / Lake Revelstoke, located in the Monashee Mountains (Fig. 1 and 2). The claims lie on NTS mapsheet 082M/15W at approximately 118° 54' 00" Longitude, 51° 46' 35" Latitude. The UTM coordinates are 368916 E, 5737657 N on TRIM map 082M76. The property consists of 15 2-post claims and 7 4-post claims, totaling 114 claim units.

A Forest Service Road extends from Vavenby on the Yellowhead Highway approximately 92 km north to Tum Tum Lake, at which point a new Forest Service Road can be followed approximately 19 km south toward the headwaters of Oliver Creek. The road is in relatively good condition and can be driven in a vehicle with high ground clearance. In July, 1998, the Oliver Creek Forest Service Road was blocked at approximately 18 km by a recent washout of a very high gradient creek. The road extends south approximately 1100 metres beyond the washout.

PHYSIOGRAPHY AND CLIMATE

The claims are located east of the Adams Plateau, north of Shuswap Lake and west of McNaughton Reservoir / Lake Revelstoke in the Monashee Mountains. The topography of the region is very rugged, characterized by very steep slopes and cliff faces, particularly at middle elevations and in areas underlain by the semipelite - amphibolite unit.

The snowfall in the area is very heavy during the winter months, easily exceeding 1-2 metres in most years at high elevation. As a result, the field season available for exploration extends from mid-June to early October for the middle to upper elevations currently of interest. Vegetation in the area consists predominantly of coniferous trees over most of the claims with highly subordinate deciduous trees near lakes and streams. Undergrowth is locally very thick, particularly in avalanche chutes, and consists of slide alder and Devil's Club.

CLAIM STATUS

The IRONY 1-2, 5-7, and 11 to 22 claims were transferred from Chapleau Resources Ltd. to R. Walker following submission of a Bill of Sale on April 6, 1998. The IRONY 3, 4, 24, 25 and GLACIER NORTH were staked by, or on behalf of, R. Walker during the 1998 field season. The IRONY claim group was subsequently sold to Nihilist Corporation, following a Purchase Agreement dated November 1, 1998. The claims are being held on behalf of Nihilist Corporation by R. Walker.

The IRONY claims consist of 114 units (Fig. 4), comprised of fifteen 2-post claims and seven 4-post (MGS) claims, staked in accordance with existing government claim location regulations. Significant claim data are summarized below:

Claim Name	Units	Tenure #	Date of Record	Expiry Date*
Irony 1	12	355264	April 8, 1997	April 8, 2001
2	18	355265	April 8, 1997	April 8, 2001
3	1	364459	July 14, 1998	July 14, 2001
4	9	364469	July 14, 1998	July 14, 2001
5	9	357948	July 21, 1997	July 21, 2000
6	15	357949	July 21, 1997	July 22, 2001
7	20	357950	July 22, 1997	July 22, 2001
11	1	357920	July 20, 1997	July 20, 2001
12	1	357921	July 20, 1997	July 20, 2001
13	1	357922	July 20, 1997	July 20, 2001
14	1	357923	July 22, 1997	July 22, 2001
15	1	357924	July 22, 1997	July 22, 2001
16	1	357925	July 22, 1997	July 22, 2001
17	1	357926	July 22, 1997	July 22, 2001
18	1	357927	July 22, 1997	July 22, 2001
19	1	357928	July 22, 1997	July 22, 2001
20	1	357929	July 22, 1997	July 22, 2001
21	1	357930	July 22, 1997	July 22, 2001
22	1	357931	July 22, 1997	July 22, 2001
24	1	364467	July 14, 1998	July 14, 2001
25	1	364468	July 14, 1998	July 14, 2001
Glacier North	16	364470	July 15, 1998	July 15, 2001
Total	**114**			

* Subsequent to recording 1999 Assessment Work .

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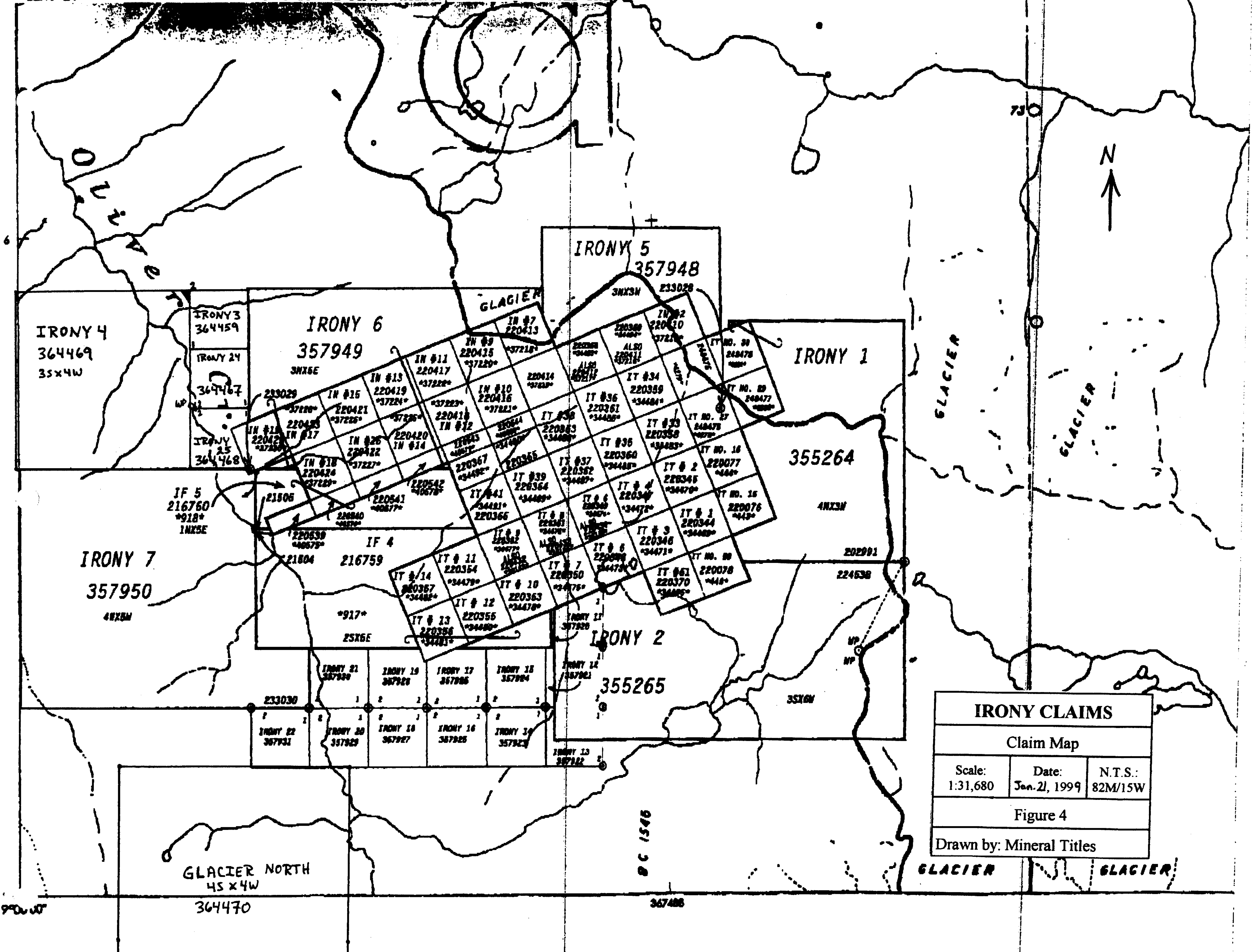

IRONY CLAIMS

Claim Map

Scale:	Date:	N.T.S.:
1:31,680	Jan. 21, 1999	82M/15W

Figure 4

Drawn by: Mineral Titles

HISTORY

"The showings were discovered in the summer of 1960 near the end of a season of systematic prospecting of this part of the Monashee Mountains by Falconbridge Nickel Mines Limited (then Ventures Limited), prospectors M. Donahue and T. Cross, under the supervision of E. Dodson.

They were drilled, sampled, and mapped in the summers of 1961, 1962, and 1963. Geological work was under the direction of H.R. Morris, who made detailed and accurate maps which formed the basis of deep drilling done in 1963. As a result of this work, several million tons of ore grading 10 per cent combined lead and zinc was discovered and the possibility of much more was indicated. No further exploratory work has been done" (Fyles 1970).

As part of his report, Fyles (1970) spent three weeks mapping and reviewing Falconbridge data to aid in his report. (Fig. 5 and 6)

In 1973, an airborne geophysical program was completed on the property by Aerodat Limited. A total of 69 line-miles was flown for Westrob Mines Limited with both EM and Magnetic data recovered (Brown and Fraser 1973).

Subsequently, Cominco Ltd, acting as operator under an option agreement with Falconbridge, undertook a series of programs between 1975 and 1982 (BC MEMPR Exploration in BC, 1975 - 1982) modified as follows:

1975 Surface diamond drilling, one hole totaling 683.1 m on claim IT4 (C-1-75).

1976 Surface diamond drilling, one NQ hole totaling 259.8 m (C-76-1) on claim IT27 (Hodgson 1976).

1977 Geological mapping (1:500) covering IT 3-7; drilling six BQ holes (UG-77-9 to 12, LG-77-7&8) totaling 812 m and 25 X-ray holes totaling 770 m on IT 3, 4, 8 & 10 (LG-77-3 to 6; F-77-1 to 5, UG-77-1 to 8, LG-77-1 & 2, T-77-1-6) (Nichols 1977).

1982 26.0 line kilometres of ground EM (UTEM), 9.2 line kilometres of ground magnetometer survey and 10.1 kilometre of line-cutting. Downhole pulse EM (PEM) survey (Lajoie 1982).

There are no Assessment Reports or other documentation known to the author pertaining to exploratory work subsequent to 1982.

In 1997, the author undertook a brief program to locate old Falconbridge claim posts, confirm stratigraphic correlations, examine the "E" showing and associated mineralization, locate old drill sites and determine if any recoverable core remained on the property.

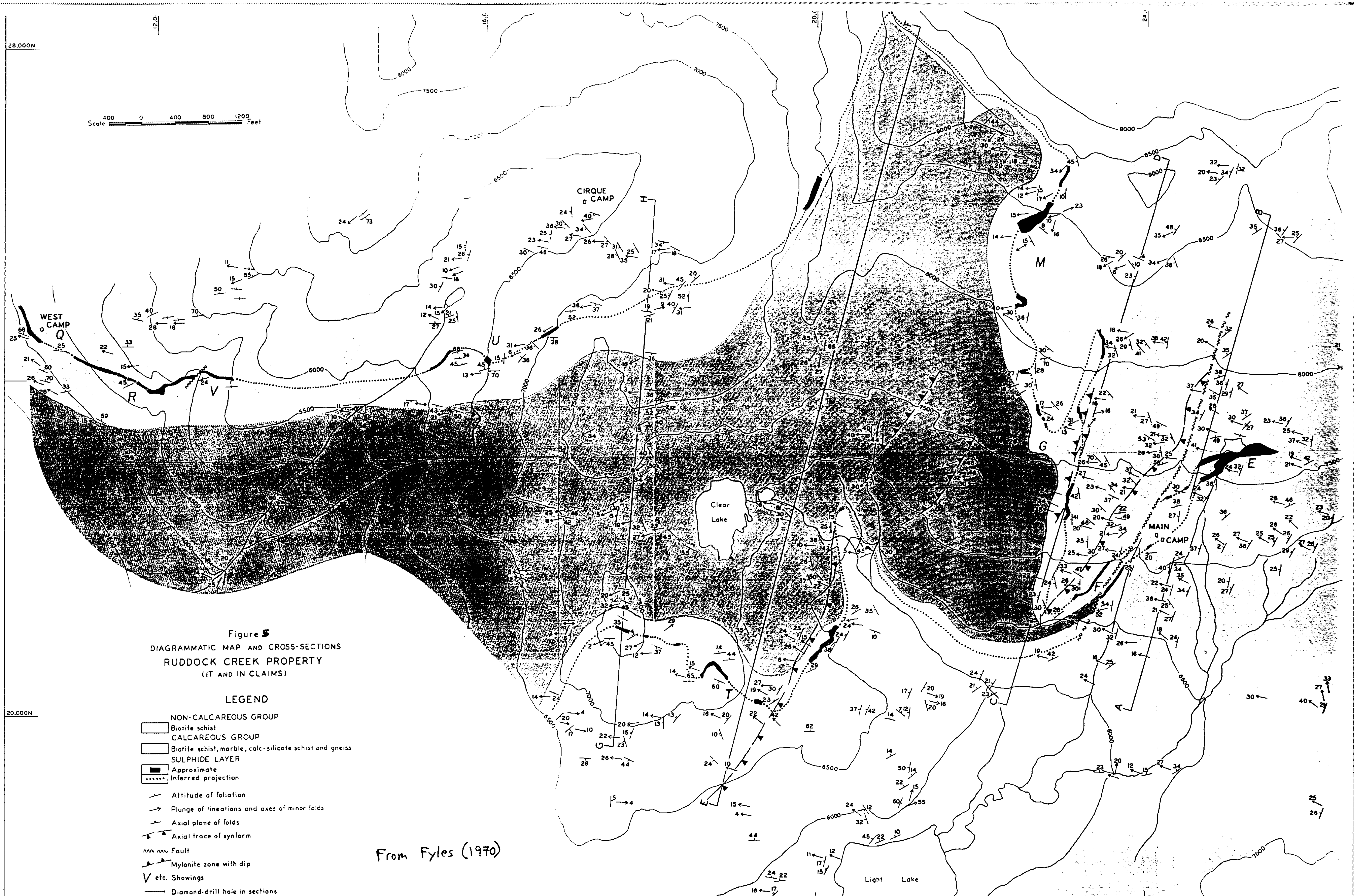

Figure 5
DIAGRAMMATIC MAP AND CROSS-SECTIONS
RUDDOCK CREEK PROPERTY
(IT AND IN CLAIMS)

REGIONAL GEOLOGY

The region containing the IRONY claims and Ruddock Creek deposit is comprised of the Selkirk Allochthon, lying east of the Columbia River fault, and the Kootenay Terrane separated by the Monashee Décollement.

The following has been modified from Scammell (1989):

"The Kootenay Terrane is a composite tectonic sheet in the hanging wall of the Monashee Décollement. It is composed of rocks ranging in age from Proterozoic to Middle Jurassic. Stratigraphic divisions of Late Proterozoic Horsethief Creek Group rocks, considered correlative with the Windermere Supergroup, have been traced ... through the Monashee Mountains ... to the Cariboo Mountains. Major southwest-verging nappes that predate Middle Jurassic regional metamorphism and east and west-verging second-phase folding have been documented (Scrip Nappe). These structures control the megascopic distribution of rock units in the terrane. High-pressure Barrovian-type assemblage zones and crustal anatexis characterize rocks ... in the vicinity of the map area".

> "Unit 3 (semipelite-amphibolite - SPA) is >1000 m thick and locally as thick as 2300 m. It is dominated by an interlayered succession of semipelitic schist, amphibolite, and hornblende gneiss. Subordinate rock types include pelitic schist, calc-silicate, quartzofeldspathic gneiss, quartzite, rare ultramafic pods, and quartz pebble to boulder paracoglomerate interlayered on a centimetre- to metre-scale. Quartzofeldspathic rocks commonly display biotite and biotite-garnet seams. Pelitic schist is generally relatively aluminosilicate-poor. Although commonly discontinuous, some subunits dominated by amphibolite and rusty pelitic schist can be traced for several kilometres. Amphibolite gneiss (garnet, biotite) ranges from a few millimetres up to five metres thick. ... Contacts are either sharp or gradational. Discordant amphibolite sheets have not been observed. Textures include finely layered to massive varieties. Thin interlayered marble and calc-silicate horizons occur near the top of unit 3. The unit is capped by a 5-30 m thick horizon of sillimanite-rich rusty pelitic schist.
>
> Unit 4, (middle marble subdivision) a distinctive unit ... is a second composite calcareous marker horizon in the region. It overlies rusty pelitic schist of unit 3 along an interlayered contact. The unit is 50-1000 thick and dominantly impure marble and calc-silicate with subordinate rusty pelitic schist, semipelitic schist, quartzofelspathic gneiss, quartzite and ultramafic boudins. Thickness and rock types vary along strike; consequently the internal stratigraphy of this horizon is not known in detail. A variety of 10 cm to 1 m thick marbles are present. Some can be traced along strike for several kilometres. They range from massive, pure, grey to white weathering marble, to impure grey-and buff-weathering fetid marble. Accessory phases in impure marble includes quartz, diopside, plagioclase, garnet, graphite, and epidote.
> The Ruddock Creek Pb-Zn sulphide horizon is inferred to be one of the structurally highest subunits of unit 4. This discontinuous, stratiform, sulphide-bearing subunit is generally 2-5 m thick, and is well described by Fyles (1970).

Ultramafic rocks are found above and below the sulphide-bearing subunit. These ultramafic rocks are typical of all ultramafic rocks found sporadically throughout the five mapped units. They are found as metre- to 10 metre scale, foliated to massive, and fine- to very coarse-grained layer-parallel pods. Ultramafic rocks are composed of orthopyroxene, clinoamphibole, olivine, chlorite, talc, and serpentine. Discontinuous, metre-scale marble horizons mark the top of unit 4" (Scammell 1990).

Mesoscopic structures

In the area north of the proposed project area, in drainages north and south of the region cored by the east flowing Scrip Creek, Raeside and Simony (1983) describe the following structural relationships:

"Three main phases of folding and a later broad warping can be recognized from macroscopic features in the Mica Creek area. The regional foliation is identified as schistosity of gneissic banding, depending on lithology and metamorphic grade. Schistosity is produced by the parallel orientation of micas and, in very aluminous rocks, especially above the K-feldspar-sillimanite isograd, by ellipsoidal sillimanite-quartz nodules, which are flattened ... in the foliation plane and elongated parallel to the F_2 fold axis.

Throughout the Scrip Range, S_1 and S_2 surfaces are generally inseparable and the combined foliation plane is referred to as S_{1+2}. The only exceptions to this occur in the hinge zones of major F_2 folds, where the intersection of S_1 and S_2 axial planar foliations is at a high angle, and a weak crenulation cleavage results. This is best displayed on high ridges, where a combination of pelitic lithologies, extensive outcrop and exfoliation weathering allow the easy measurement of the orientation of the S_1-S_2 intersection crenulation cleavage. The mean direction of this lineation, which is parallel to the F_2 fold axis, plunges gently to the east-southeast and corroborates the macroscopic observations of fold axis trend and plunge.

The style of the premetamorphic minor folds is variable from nearly isoclinal, with sharp to rounded fold hinges, to isoclinal, with sharp elongated fold hinges, sometimes rootless. The former may be considered as F_2 folds and rarely possess a crenulation cleavage, whereas the latter may represent F_1 folds and do not possess a crenulation cleavage. There is a gradational variation between the two forms and it is not usually possible to distinguish between F_1 and F_2 minor folds on one outcrop. ... (Nowhere) in the higher metamorphic grade parts of the Scrip Range were F_2 minor folds observed to refold F_1 minor folds ...
The third phase of deformation has not produced extensive minor structures in the mapped area. In the regions of F_3 folding, crenulation cleavage associated with S_3 superimposed on S_{1+2} is well developed in the hinge zones, and F_3 minor folds are common; these are usually disharmonic, with a substantial buckle component, and are more open than F_2 minor folds. They are devoid of an axial planar cleavage and typically fold preexisting foliation, as demonstrated by bent and broken mica flakes, sillimanite nodules and needles, and feldspar grains. The

third phase of deformation therefore postdates the metamorphic climax" (Raeside and Simony 1983).

To the west of the proposed project area, in the vicinity of the headwaters of the Adams River, Sevigny and Simony (1989) described similar structural relationships, as follows:

"The Scrip Nappe is delineated by a series of northwest-southeast-striking, southwest-dipping stratigraphic units repeated across the phase 1 axial surface. Folding of the F_1 axial surface by an F_2 synform causes further repetition of these stratigraphic units. A southeasterly regional plunge of about 20° and up to 1700 m of topographic relief exposes successively higher structural levels of the nappe to the west-southwest.

The fold geometry within the closure or nose of the Scrip Nappe is characterized by an isoclinally folded, southwest-dipping, outward facing sequence of units ...

... the regional foliation, ... was produced by synkinematic recrystallization and (or) transposition of phyllosillicates during coaxial folding of F_1 and F_2, (expressed) as S_{1+2}. S_{1+2} forms a composite foliation on the limbs of F_2 folds that is separable into S_1 and S_2 in the cores of F_2 folds. Throughout the study area, the regional foliation dips to the southwest. The partial girdle of S_{1+2} data can be explained by F_3 folding about an axis plunging 10° towards 270°. The solution is consistent with mesoscopic data from F_3 folds ...

Mesoscopic F_2 folds are isoclinal with a northeasterly vergence, a southwest-dipping axial plane, and fold axes plunging gently to the west-northwest and southeast. Some of the scatter in the data for F2 fold axes may be a result of F_3 folding about east-west fold axes. Sillimanite mineral lineations are coaxial with the maxima of the F_2 fold axes and indicate that sillimanite growth and F_2 folding were coeval ...

Mesoscopic F_3 structures are upright folds with axes plunging gently to the east or west, tight in pelites and open in psammites. No megascopic F_3 folds have been recognized in the study area".

LOCAL GEOLOGY

The following has been extracted from J.T. Fyles (1970) (see Fig. 5 and 6):

> **It, In** This property, known as the Ruddock Creek deposit, consists of 64 claims held by record by Falconbridge Nickel Mines Limited .... The property is on the southern slopes of a ridge west of Gordon Horne Peak, a 9,500-foot summit about 60 miles north of Revelstoke. The showings are northwest of the divide between Ruddock Creek, which flows east into the Columbia River, and Oliver Creek, which flows northwest into Adams River.
>
> The deposit is in metasedimentary rocks of the Shuswap Metamorphic Complex on the northwestern flank of the Frenchman Cap dome. The dome ... is elongate with the long axis trending north-northwest parallel to the Columbia River. On the northern end of the dome the core gneisses lie beneath gently north dipping metasedimentary rocks, which grade upward into metasedimentary rocks containing abundant pegmatite. This pegmatite-rich zone covers wide areas between the Columbia River and Oliver Creek. On the property, pegmatite and associated medium-grained granitic rocks make up more than 50 per cent of the outcrops. These rocks are mainly, if not entirely, replacements of the metasediments, and rock units and structures can be projected and traced among the pegmatite sheets without significant displacement ...
>
> The showings referred to as the E, F, G, M, T, U, V, R, and Q showings are scattered across alpine slopes which face south and west. The E showing, at an elevation of 7,600 feet, contains the outcrops of the largest orebody, which were recently washed clean by a sudden outflow of water from a small glacier lying to the north. The V, R, and Q showings are below tree-line, extending down to elevations of 3,100 feet on the steep-gullied slopes of Oliver Creek. The other showings are above tree-line in meadows, rocky crags, or steep cliffs. All the showings appear to be confined to a stratigraphic interval of not more than a few tens of feet, and their complex pattern of outcrop is caused by multiple folding.
>
> *Summary*
>
> The rocks of the area are a varied succession of mica schist, calc-silicate schist, and gneiss, with intercalated layers of marble. These rocks form highly folded discontinuous layers and lenses engulfed by granite-pegmatite and medium-grained granitic rocks.
>
> The dominant folds plunge 20 to 30 degrees to the west and are of two ages. The later or Phase 2 folds have rounded hinges, a modified concentric style, and vary from subisoclinal in the east to relatively open in the west. The axial planes strike north 20 to 30 degrees east and dip 20 to 30 degrees westward. One older, or Phase 1, fold has been mapped. The axis is almost parallel to the axes of the Phase 2 folds and the hinge zone near the E showing plunges 28 degrees toward 285 degrees. The fold is described as a syncline, although no evidence for the stratigraphic top of the sequence has been found. ... The G, M, Q, R, V, U, and part of the F showings are on one limb and the T and part of the F showings are on the other limb of the syncline.

The pegmatites are irregular lenticular sheets a few inches to more than 100 feet thick, which lie subparallel to the foliation and are commonly concentrated along the hinge zones of the Phase 2 folds.

A northerly trending normal fault, which dips steeply to the west, lies west of the E showings. Zones of mylonite dipping at low to moderate angles to the west transect the sulphide layer and the pegmatite near the G and M showings, but do not show significant offset.

Lithology

Because of the extensive pegmatite and the complexities of the folding, a detailed lithologic succession has not been determined. (On the property), ... the metasedimentary rocks have been divided into two general groups — a calcareous group and a non-calcareous group. The stratigraphic top is not known and the sequence is described with the calcareous group below the non-calcareous group, which results in the simplest structural interpretation. The calcareous group contains three or more marble layers each more than 10 feet thick, the sulphide layer, a wide variety of calc-silicate schists and gneisses, several types of biotite schist, and minor calcareous quartzite. The non-calcareous group is mainly biotite schist of various sorts and is not as widely exposed as the calcareous group. The general characteristics of the sequence are given in the following table:

Table III. - Table of Formations, Ruddock Creek Area

Group	Thickness (Feet)	Lithology
Non-Calcareous		Medium- and fine-grained biotite schist, biotite-feldspar gneiss, rare calc-silicate gneiss.
Calcareous	0-few hundred	Mica schist, calc-silicate gneiss, and marble.
	0-50	Sulphide layer: Interlayered calcareous quartzite, marble, and mica schist with one or more layers of sulphides and quartz, local lenses of fluorite and barite.
	50-200	Biotite schist and calc-silicate gneiss.
	10-50	Grey and white marble and calc-silicate gneiss.
	20-200	Biotite-sillimanite schist.
	10-50	Grey and white marble and calc-silicate gneiss.
	Several hundred	Interlayered marble, calc-silicate gneiss, and mica schist, in part structural repetitions of the units above.
	Several hundred	Mica schist, platy quartzite, thin marble, in beds a few feet thick.

Rocks of the non-calcareous group are exposed best near Clear Lake and along the ridge west of the lake. The rocks are medium- and fine-grained grey and brown biotite schist, with varying amounts of quartz and feldspar and locally garnet. No distinctive markers have been found within the group. The maximum thickness exposed in the core of the syncline is 2,500 to 3,000 feet, including pegmatite. Possibly it represents a stratigraphic thickness in the order of 1,000 feet.

The calcareous group outcrops widely, both in the area mapped and beyond it. It consists predominantly of calc-silicate gneiss and mica schist, with several interlayers of marble. The calc-silicate gneiss forms greenish-white or dark-green platy layers up to a few inches thick, interlayered with mica schist or marble. Highly siliceous creamy-white calc-silicate gneiss is described as quartzite. The silicates in general are fine-grained, but local clusters of coarse, bright green actinolite are found. In thin-sections, actinolite, diopside, clinozoisite, and scapolite occur with varying proportions of plagioclase (An_{45}-An_{70}) and quartz. Sphene and apatite are common accessories.

The first member in the calcareous group, which separates it from the non-calcareous group, is a poorly defined discontinuous layer of marble and calc-silicate gneiss. It grades downward through a few hundred feet of mica schist and calc-silicate gneiss into a varied succession of calc-silicate gneiss, quartzite, marble, and sulphides known as sulphide member. In detailed mapping near the E showing, Morris recognized two layers containing sulphides; a main layer 2 to 15 feet thick, separated by micaceous quartzite from a subsidiary layer as much as 5 feet thick, composed of calcareous quartzite containing sulphides. This subsidiary layer is below the main layer. Layers of marble and locally barite, fluorite, and micaceous and calc-silicate rocks with scattered galena occur within the syncline or above the main layer. The sulphide member, including all the sulphides and adjacent calcareous rocks, ranges from 5 to 15 feet thick without structural repetitions. Local folding has more than doubled the thickness.

The sulphide member is underlain by a few hundred feet of rusty biotite schist with minor calc-silicate lenses followed by two or more prominent layers of marble. These layers are blue-grey weathering, white, medium- to coarse-grained fetid calcite marble. Thin-bedded calc-silicate gneiss occurs in the marble, particularly along the margins, and biotite schist, which locally contains sillimanite, lies between them. Two layers, each as much as 40 feet thick, have been identified and several others have been mapped. They are found in the cirque near Cirque Camp and westward down the wooded slopes to the north of the V showing and are conspicuous on the shores of Light Lake, on the pass northeast of the lake, and on the slopes below and east of the E showing. Some of these exposures are clearly structural repetitions of the two layers closest to the sulphide member, but other marbles are exposed which are probably not repetitions.

The lower part of the succession beyond the marbles is not well known, but has been mapped in reconnaissance at the head of Ruddock Creek and on the ridges between the E showings and Gordon Horne Peak. It includes a sequence of biotite schist and calc-silicate gneiss with minor layers of marble and thin beds of platy, buff-weathering quartzite. A quartzite-mica-schist-marble sequence with repeated layers a few feet to a few tens of feet thick is well exposed in the cirque facing east at the head of Ruddock Creek.

Granitic pegmatite and associated medium-grained granitic rocks form more than half the outcrops in the area. In many places, as on the ridge north of Clear Lake, across the valley east of the lake, and on the ridge northeast of the E showings, they form thick, essentially continuous sheets, with only minor remnants of the metasediments. The principal constituents of these rocks are quartz and potash feldspar, with minor muscovite and biotite and scarce red garnet. The medium-grained granites have a vague foliation and lineation; the coarse-grained ones have quartz and feldspar intergrowths and scattered books of mica up to 2 inches across. Contacts between the granitic rocks and the metasediments are generally sharp, and between the granites and pegmatites are both sharp and gradational.

The granite and pegmatite bodies are extremely irregular. A few are tabular, crosscutting dykes, but most are lenticular, more or less concordant sheets which pass through the folded metasedimentary rocks without displacing them. Lineations and folds within remnants of metasediments within the pegmatites have the same orientation as those outside them. The pegmatites and granites appear to be dominantly, if not entirely, replacive.

Serpentinized dunite occurs in a few outcrops near the T showings south of Clear Lake and in a single outcrop a few hundred feet southwest of Main Camp. These are all rounded, brown outcrops of massive rock composed of brown olivine and greenish-white, fibrous serpentine. The outcrops near the T showings form a discontinuous northwesterly trending lenticular dyke 10 to 20 feet wide and a few hundred feet long.

Mineralization

The principal sulphides are sphalerite, pyrrhotite, galena, pyrite, and minor chalcopyrite. They occur as contorted layers and lenses associated with schist, siliceous calc-silicate gneiss, quartzite, marble, and locally barite and fluorite. Very fine-grained sphalerite and pyrrhotite with minor galena and rounded quartz eyes up to one-half inch in diameter are common. Equally common are layers containing medium-grained dark-brown sphalerite with interstitial quartz and scattered quartz augen. Much of the M showing and parts of the G showing contain banded and minutely folded extremely fine-grained sphalerite and pyrrhotite. Galena and sphalerite occur also as scattered grains in marble, calcareous quartzite, and fluorite.

In the sulphide layer, lenses of massive sulphides up to 5 feet thick are common. They are complexly folded within themselves on axes which plunge to the west parallel to the folds in the surrounding rocks. The folds in the sulphides, which are outlined by the banding and by discontinuous layers of schist, gneiss, and quartzite, are irregular in form and usually disharmonic.

It is difficult to estimate the average grade without extensive sampling. Grades estimated to be 20 per cent combined lead and zinc over widths of 5 to as much as 20 feet are found at many places in the E showings and over widths up to 8 feet in the other showings. Lead is less abundant than zinc, and silver amounts to less than 1 ounce per ton.

Structure

The structure of the area is dominated by repetitive folding, which took place during metamorphism. It was followed by faulting. The earliest folds, called

Phase 1, are isoclinal and obscure. One large, folded, isoclinal syncline with the E zone at the hinge is recognized. The later folds, called Phase 2, are more open, abundant on all scales, and are well displayed. They are described first and subsequently interpreted in relation to Phase 1 folds and the later faults.

All the metasedimentary rocks have a strong lineation consisting of trains of mica flakes, aligned amphiboles, elongate quartz-feldspar lenses, and clusters of calc-silicates. The mineral lineation is parallel to rodding in quartzite and calc-silicate gneisses and to crenulations in mica schists, and both sorts of lineations are parallel to the axes of minor folds. The micaceous rocks have a strong schistosity, which is essentially parallel to the compositional layering. This layering is the bedding which has been transposed in varying degrees during folding. The schistosity and bedding have been folded together into large and small folds seen in many outcrops and outlined in mapping. These are dominantly Phase 2 folds.

The Phase 2 folds mainly have rounded hinge zones and range in form from open to isoclinal. In only the tightest folds are the beds thickened at the hinge and only locally in the micaceous rocks is there a foliation crossing the beds more or less parallel to the axial planes. The folds are of a modified concentric form. Small folds parasitic on larger folds are true dragfolds in the classic sense. On the limbs of large folds the asymmetry indicates the position of the small fold with respect to the hinge of the large fold.

Four major Phase 2 folds have been mapped ... by following the hinge zone and by matching the attitudes of the layers and the asymmetry of the dragfolds on the limbs. These are recumbent folds with axes plunging to the west and axial planes dipping to the west at 20 to 30 degrees. Folds which close toward the south are regarded as synforms and are referred to as the F-G, T, and U-V synforms. One antiform closing to the north is called the Pass antiform and is exposed along the lower slopes north of the pass between Ruddock and Oliver Creeks. The geometry of these folds, as determined from stereoplots of measurements of the attitudes of lineations, foliations, and axial planes in the areas where the folds are best exposed, is shown in the following table:

Fold	Axes (Azimuth and Plunge)			
	Average from Lineations and Minor Folds	Calculated from Attitudes of Layers	Attitude of Axial Plane (Strike and Dip)	Angle between Limbs (Degrees)
Pass antiform	286 / 25	292 / 26	25 / 28W	0-10
F-G synform	285 / 22	288 / 25	10 / 25W	35
T synform	282 / 20	294 / 25	20 / 25W	45
U-V synform	264 / 20	260 / 20	5 / 25W	100

The T and F-G synforms almost certainly have a complementary antiform between them, but it was not seen on the ground because of the high proportion of pegmatite and talus west of the F and G showings. ...

The folds change in form, both along the axis and along the axial plane perpendicular to the axis. They become progressively more open from east to west as indicated by the estimated angle between the limbs ... There are more large plications in the east than in the west. The hinge of the U-V synform between the U and V showings is a zone of very steep dips with minor reversals, whereas the same fold to the east includes the F-G synform, the eastward projection of the T synform, and the inferred antiform between them.

A large Phase 1 fold is inferred from the distribution of the rock units and the exposures of the hinge in the area near the E showing. ... It is referred to as a syncline because the fold opens upward, but the stratigraphic top of the beds has not been determined. The gross structure is outlined by the rock units. The non-calcareous group occupies the trough of the fold, becoming thinner toward the east and terminating in the area near the F and E showings. The calcareous group occurs on the limbs and the sulphide member, and conspicuous marbles are repeated on the limbs and thickened on the hinge.

The axis of the Phase 1 fold is essentially parallel to the axes of the Phase 2 folds. Locally in quartzitic rocks and amphibolitic gneisses rodding or mineral lineation lies at an acute angle with the axes of minor folds, but in general Phase 1 and Phase 2 lineations and fold axes are indistinguishable. No Phase 1 minor folds have been recognized with certainty. Minor folds near the E showing have the same style, asymmetry, and attitude as Phase 2 folds. The fold outlined by the sulphide member in the E showings plunges 27 degrees toward 285 degrees essentially parallel to, but somewhat steeper than, the plunge of the Phase 2 folds in that area. The axial plane, judging from the outcrop and diamond-drill intersections, strikes 70 degrees and dips 45 degrees to the northwest, essentially parallel to the layers on the lower limb of the F-G synform. The hinge zone of the Phase 1 syncline has not been recognized within the non-calcareous group, but it has been traced within the calcareous group for more than half a mile eastward from the E showings. Farther east it is covered by talus and offset by a late fault, but repetitions of the marble layers are found more than a mile east of the E showings.

Several minor folds have been found which do not fit the patterns of Phase 1 and Phase 2 folding. In general they plunge southward with axial planes which dip at moderate angles to the east. Lineations are folded by these structures, indicating that they are superimposed on the Phase 1 and Phase 2 structures.

Folds on the ridges and walls of the cirque surrounding Cirque Camp plunge 10 to 20 toward 240 to 250 degrees. Though off trend, they have the same form and asymmetry as the Phase 2 folds. They occur where the major Phase 2 fold broadens rapidly toward the west and provide direct evidence for the non-cylindrical character of the Phase 2 folds.

Faults in the area belong to two general types. Those of the first type occur along the G and M showings and in the pegmatites west of the G showing. They consist of irregular but fairly continuous branching zones of mylonite, a few feet thick, which strike north and dip 20 to 50 degrees west. These zones pass through pegmatite, some mica schist, and calc-silicate gneiss as well as the sulphide member exposed at the G and M showings. Pegmatites within the mylonite zones are reduced to banded, cherty, crushed rocks in which many of the grains are 0.02

millimetre across. Sulphides are similarly comminuted and banded and are folded into microscopic isoclines; quartzitic rocks are dense, vitreous, and cherty. Most rocks in the mylonite zones have a pronounced lineation or rodding, essentially parallel to the lineation in surrounding non-mylonitized rocks, produced by minute folds and the long axes of rolled porphyroclasts.

Faults of the second type are late block faults, the most important of which lies west of the E showings and displaces the main orebody down on the west. It is exposed in a gully 1,000 feet southwest of the Main Camp and was encountered in drill holes. On the surface it is a zone of intense fracturing and shearing and in the drill holes it consists of several feet of breccia and mylonite. On the average the fault strikes north and dips 58 degrees west. Many subsidiary fractures curve downward in the footwall of the fault for several hundred feet. If the displacement has been perpendicular to the line of intersection of the fault plane and these subsidiary fractures, the displacement, measured on the fault plane, is in the order of 700 feet down on the west in a direction of 290 degrees.

This fault is one of several which form prominent lineaments visible on air photographs. A fault trending northwest, which produces a right-hand offset of northwesterly dipping layers, lies along the face of the 9,000 foot summit half a mile northeast of the E showing and joins the main fault in the pass north of the E showing. Another fault trending north and showing a right-hand offset occurs a little more than 1 mile east of the E showing. Northerly trending linears show on air photographs along the east side of Clear Lake and on the slopes west of the T showings, but significant offsets have not been found along them.

A sequence of folding and faulting is indicated by the structures just described. Phase 1 folds, which are isoclinal with thickened hinge zones and sheared-out limbs, were folded and probably tightened by Phase 2 folding. Phase 1 and Phase 2 folding produced the same axial directions and occurred during the intense regional metamorphism. The formation of granites probably began late in the Phase 2 deformation or after it, along with the development of the pegmatites. These rocks replaced the folded metasediments controlled crudely by the layers and the axial planes of the Phase 2 folds. Subsequent movement on west-dipping shear planes produced the mylonite zones, which, judging from the orientation of linear structures within them, was a continuation of the Phase 2 movement. Minor amounts of widespread chlorite and local sericite developed in part, if not entirely, after the formation of the mylonite zones. The block faults probably were the latest significant structures.

Economic Significance

The great continuity of the sulphide member and its restriction to a narrow stratigraphic range indicates that it developed in the sedimentary sequence before deformation. The structural evidence shows that it has been involved in the whole sequence of deformation and metamorphism. These conclusions have important implications in exploration and in the economic value of the lead-zinc mineralization.

The thickness of the sulphide layer, although dependent upon the original thickness, is controlled largely by the folding. The thickest sections are in the hinge zones of Phase 1 folds and the longest dimension of these thickened zones is parallel to the fold axes. The E showings are in such a zone. The axial plane of the Phase 1 fold is curved and the diamond-drill intersections suggest that this axis probably is not quite parallel to the axes of the Phase 2 folds. Consequently, it varies in plunge with its position on the Phase 2 folds. Another fold hinge on which the sulphide member may be abnormally thick should be present on surface about midway between the E showings and Light Lake. This is an area of talus and abundant pegmatite and no sulphides have been found there. No other Phase 1 hinge zones involving the sulphide layer are known in the area, but the hinge of the E showing should continue in depth on plunge to the west. Other Phase 1 fold hinges may be expected beyond the area to the west.

The sulphide layers are only locally thickened by the Phase 2 folds. Local contortions at the hinges of the large Phase 2 folds or along the limbs may produce small orebodies plunging to the west with the Phase 2 folds.

The sulphide member is replaced by pegmatite, the distribution of which cannot be anticipated. Although the structure and stratigraphy of the sulphide layer are fairly well known and can be projected, the difficulties of finding the layer are significantly reduced by the unpredictable character of the pegmatite.

Extremely fine-grained sulphides such as those in the area affected by the mylonite zones may require special treatment for the recovery of the lead and zinc".

Mapping by R. Scammell (1991, 1990, 1989) in the Horsethief Creek Group west of McNaughton Reservoir confirmed the presence of the semipelite-amphibolite unit (SPA, his unit 3) and the overlying middle marble (his unit 4 and host of the sulphide horizon(s)) in the Ruddock Creek area (Fig. 3a and 3b). Furthermore, on the basis of his mapping and that of Fyles (1970) the structural nature of the Ruddock Creek deposit appears to be controlled by the trend and plunge of F_2 folds, which gently plunge to the west-northwest. This interpretation suggests the sulphide layer, hosted by the middle marble within a refolded F_1 fold controlled by F_2, should extend across, and to the west side of, Oliver Creek.

"An upright stratigraphic sequence lies in the immediate hangingwall of the Monashee Décollement, and dips moderately west to northwest. Structures generally plunge moderately to the west.

At the headwaters of Ruddock Creek, Pb-Zn-bearing and calcareous horizons of unit 4 outline a kilometre-scale type-3 fold interference pattern ... The F_1 structure at Ruddock Creek is inferred to have been originally southwesterly-verging based on long limb - short limb relationships. It is refolded by several reclined F_2 folds which can have kilometre-scale wavelengths and amplitudes, and plunge gently to the west-northwest" (Scammell 1991) (Fig. 3a and 3b).

Furthermore, based on an interpretive cross section of Fyles (1970), included as Figure 6, the sulphide layer is interpreted to wrap the southern margin of an F_2 fold to a termination against a shallow to moderately south dipping fault. The sulphide horizon is interpreted to be offset and continue structurally above the fault. However, a possible marker horizon structurally below the fault appears to pass into a deeper F_2 fold and extends to deeper levels to the south.

1998-99 PROGRAM

During the summer of 1998, prospecting, limited geological mapping (see Fig. 9) and geochemical sampling were undertaken on the northwest portion of the claims. Four additional claims were staked (IRONY 3, 4, 24 and 25) to cover the possible northwest extension of two mineralized horizons mapped to the edge of the Falconbridge claims. The GLACIER NORTH claim was staked to cover the interpreted sub-surface mineral potential underlying the axial plane, the surface trace of which is interpreted to extend to the southwest from the "E" showing. Prospecting was undertaken to: 1) locate the extensions of one or both mineralized horizons at lower to mid-slope levels on the east side of Oliver Creek and 2) locate old Falconbridge claim posts and/or claim lines, particularly for the IF 4 and 5 claims. Prospecting attempted to determine the stratigraphy of the immediate area and to identify the structural position relative to mineralized horizons and the host fold. Limited geological mapping was completed in that most outcrops were examined and structural measurements taken as well as a brief description made of the lithologies. Evidence of high grade mineralization was found in outcrop in the core of a small parasitic fold, in outcrop in Avalanche Creek and in float in two high gradient watercourses. The rock samples have not been submitted for analysis at this time.

Several attempts were made to locate evidence of old Falconbridge claims, some of which are believed to have been staked in the 1960's. No old claim posts were identified, however, some posts for the previous IRONY claims were located and their location ascertained using a hand-held GPS. In addition, prospecting was undertaken to locate outcrop occurrences to determine the stratigraphy of the area and attempt to identify the structural position relative to the mineralized horizons and the host fold. Limited geological mapping was completed in that most outcrops were examined and several structural measurements taken as well as a brief description of the lithologies.

Preliminary results from the 1998 program are very encouraging in that strong geochemical anomalies were returned from analysis of soils and, together with visually anomalous rock samples, suggest the presence of one (or more) mineralized horizons where expected on the basis of structuring contouring Falconbridge data. A total of 102 soil samples (from 107 stations with 5 No Samples) and were taken on the property. Soil samples were taken along two lines, one at 1200 m and a second along the Oliver Creek Forest Service Road at approximately 1000 m. The soil samples were dried and subsequently submitted to Eco-Tech Laboratories in Kamloops for 28 element ICP analysis. Results document highly anomalous values for both lead and zinc south of Avalanche Creek. To the north, the proportion of anomalous values is substantially lower, with no lead values identified above a qualitative background value of 50 ppm and only a few scattered zinc values above a qualitative background of 150 ppm. A fault is interpreted along Avalanche Creek, juxtaposing strata of the structurally overlying SPA to the north of the fault against stratigraphically higher strata of the middle marble to the south, on the overturned limb of the Phase 1 fold. Therefore, the fault is interpreted to have north-side down dip-slip offset, with the strike-slip component unknown. Therefore, these mineralized horizons may be present at deeper levels north of the fault, where the middle marble unit should be present structurally below the SPA unit. In addition, on the basis of structure contouring, the mineralized horizons should also be present on the west side of Oliver Creek, on the IRONY 7 claim, and are expected to project to higher elevations to the south.

Finally, evaluation of Falconbridge data is interpreted to suggest high mineral potential elsewhere on the claims. The structural data presented by Fyles (1970) suggests the axial plane for the fold hosting the 5 million ton deposit projects to the southwest through the IRONY claims. Therefore, the mineralized horizons on the lower limb of the fold would be present in the sub-surface of the IRONY 2 and the GLACIER NORTH claims. This interpretation may explain why drilling undertaken by Cominco in 1982 failed to intersect significant thicknesses of potentially ore grade mineralization in their attempt to extend mineralization associated with the "E" showing westward into the sub-surface.

Note: Two days (July 14 and 15) were spent staking and were not included in the Statement of Expenditures nor claimed as Assessment Work.

RESULTS

On the mineral tenure map for mapsheet 82M/15W, the Falconbridge claims are plotted lying approximately 2 km west and at least 0.5 km north of their actual ground position. Therefore, the "E" showing (Minfile 082M 084 - 5 million tons grading 7.5% Zn and 2.5% Pb) appears to lie on "open" ground according to the mineral claim map for the area. However, work completed in the 1997 field season confirmed the location of a number of Falconbridge claims (Fig. 7). These claims appear to be accurately plotted in the Assessment Report of Lajoie (1982).

Structure contouring structural data from Fyles (1970) report, together with data from Lajoie (1982), suggested the mineralized horizons mapped by Cominco extended to the edge of the Falconbridge claims, as plotted. Prospecting, together with analytical results of the soil samples, appears to confirm the presence of these mineralized horizons extending northwest to lower topographic levels (Fig. 8). Highly anomalous levels in both lead and zinc were returned for the entirety of the upper (1100 m) soil line and the southern kilometre of the lower soil line along the Forestry Service Road (to Avalanche Creek, see Appendix C). Almost all zinc values were in excess of 200 ppm with most well above 500 ppm. One sample (IR-98-S-37) returned a lead value >10,000 (>1%) in soils.

No anomalous silver values were returned from any of the soil samples, consistent with previous analyses returning no or minor silver values. Arsenic is also present in minor to insignificant amounts, essentially at background values. Several anomalous copper values were returned, with a significant proportion above a qualitative background value of 30 ppm in soils. These results may suggest potential for copper as a by-product of Pb + Zn mineralization. Additional analysis of future soil and rock samples will be required for more meaningful interpretation.

One of the greatest uncertainties at this point is the exact location of the Falconbridge claims. The IT designated claims appear to have been plotted at least 1.5 km too far west and approximately 0.5 km too far north (see Fig. 7 with reference to Fig. 4) relative to the ground position as verified for a number of posts along a claim line and the map contained within the report of Lajoie (1982). Despite attempts on a number of days to locate former claim posts for the IF 4 and 5 claims of Falconbridge, none were found. Therefore, the author is not certain whether the IF claims are similarly incorrectly plotted on the mineral tenure maps.

DISCUSSION

A 5 million ton Zn-Pb deposit has been previously documented on Falconbridge's claims (Fyles 1970, Lajoie 1982), located at the "E" showing (Fig. 5). The Ruddock Creek deposit has been alternatively interpreted as a metamorphosed sedimentary exhalative, a carbonate hosted lead-zinc deposit and as a Broken Hill Type deposit. The deposit is a zinc-lead deposit hosted within predominantly sedimentary strata interpreted to be of Windermere age and deposited in a rift dominated environment. The SPA unit, which stratigraphically underlies the middle marble (host of the Ruddock Creek sulphide layer) contains a large proportion of amphibolite, interpreted to represent: (1) sills and transposed dykes, (2) flows and tuffs, and (3) reworked tuffaceous material (Sevigny 1987). Furthermore, the amphibolites (meta-basalts) "... may represent a comagmatic suite, derived from a single source, and related by a process of igneous differentiation" producing a high-iron tholeiite suite (Sevigny 1987). Finally, Sevigny (1987) postulates that a paleo-volcanic centre may be present in the northern Adams River area based on the observation that the proportion of amphibolite appears to decrease to the north and south of this region.

Therefore, the deposit identified to date can be assigned to a number of different categories, dependent upon the bias of the individual. For practical purposes, assignment as a Broken Hill type (Pb-Zn-Ag±Cu) deposit may be the most satisfactory, implying a deformed and/or metamorphosed massive sulphide deposit with little or no genetic implications.

In his report, Fyles (1970) interpreted the Ruddock Creek deposit to be hosted by sediments in the hinge zone of a syncline. More recent work on the stratigraphic and structural relations of the area (Raeside 1982; Raeside and Simony 1983; Scammel 1991, 1989, 1988) confirm the structure is a recumbent syncline (Fig. 3a). The exposed strata in the area have been correlated from the semipelite-amphibolite (SPA), stratigraphically upward to the upper pelite unit. The 5 million ton deposit is hosted by the middle marble unit which immediately underlies the upper pelite in the core of the large scale Phase 1 syncline. The author believes mineralization in the upper limb of the syncline extends westward from the "Q", "R" and "U" showings to the west side of Oliver Creek. Furthermore, the right-way-up lower limb of the syncline may similarly extend westward from the "T" showing. In addition, the fold axes of both F_1 and F_2 folds trend west (approx 22°/284°) and therefore a hinge zone correlatable to the "E" showing may also be present in the sub-surface of the IRONY 7 claims. (Fig. 3b and Fig. 7).

The presence of westward trending F_1 and F_2 fold axes and the surface trace of the mineralized horizons as mapped in previous programs on the property (discussed above) strongly suggest potential for additional mineralization to be identified to the west. Specifically, the horizon hosting the "T" showing on the southern margin of the Falconbridge claims would appear to have potential to continue to the southwest toward Oliver Creek (Fig. 7). The horizon hosting the "Q", "R", "V" and "U" showings is located within the claims forming the northern margin of the Falconbridge claims, and similarly may continue into the Oliver Creek valley (Fig. 7). Qualitative evaluation of these horizons using an average orientation and structure contouring the two horizons into and through Oliver Creek suggests they may be present in the steep ground west of Oliver Creek.

Two soil lines were completed on the east side of Oliver Creek. Two additional lines were proposed for the west side as well, however, Oliver Creek was running too deep and fast during the field program, better described as a relatively high gradient river swollen with recent heavy rains and meltwater. Therefore none of the proposed work west of Oliver Creek was completed as it was not considered safe to cross.

Based on structure contouring, both mineralized horizons identified and previously mapped (Fig. 5 and 7) were believed to extend into, and possibly through to, the west side of the Oliver Creek valley. Limited prospecting and geochemical analysis of soil samples collected along two separate lines (1200m and 1000m) confirmed the presence of highly anomalous values for lead and zinc (Fig. 8, Appendix C). The southern portion of both soil lines, approximately the first kilometre, document a high proportion of lead values above 200 ppm, many in excess of 500 ppm, with one returning a value in excess of 10,000 (1%). Zinc values are similarly highly anomalous, all above a qualitative background value of 150 ppm, with many of these on the lower soil line in excess of 1000 ppm.

Both soil lines have a sharp, northern termination against "Avalanche Creek", with a substantially lower proportion of anomalous zinc values further north (Fig. 8). No lead values above a qualitative background value of 50 ppm were identified north of the creek.

The abrupt northern termination of anomalous lead and zinc soil geochemical values, together with observations made in a short traverse eastward up Avalanche Creek, suggests the probable presence of a fault. Dip slip offset across the fault is interpreted to be relatively significant, juxtaposing strata of the stratigraphically underlying but structurally overlying strata of the SPA against strata of the calc-silicate and marble bearing middle marble unit on the overturned limb of a large scale, Phase 1 recumbent fold. The relative strike-slip component is unknown at this time. Therefore, Avalanche Creek would appear to be localized along a north-side down fault with an unknown strike-slip component.

On the basis of previous mapping on the Falconbridge claims (Lajoie 1982, Fyles 1970), one (or more) faults were interpreted to have displaced the "E" and "F" showings relative to possible sub-surface correlatives. However, limited preliminary field work and review of these data suggests considerable potential to identify additional near-surface mineralization, possibly increasing reserves documented to date.

There is considerable uncertainty regarding the actual location of Falconbridge claims, as plotted on the mineral tenure map (Fig. 4) relative to their actual location on the ground, (Fig. 7) as evidenced by the surveyed claim locations indicated on the map accompanying the report by Lajoie (1982). Several days were spent searching for Falconbridge claim posts for the IF 4 and 5 claims, located on the east side of Oliver Creek on the west facing slopes. Wire from (a) previous, unreported geophysical survey(s) (probably UTEM) was found on the west-facing slope, along with abundant flagging for probable future forestry cut-blocks, however, no old claim posts were located. Furthermore, no Falconbridge (or Cominco) maps are known to the author with the location of these claim posts. The only map showing the claim posts is the relatively inaccurate mineral claim map. Therefore, additional work must be undertaken to locate additional claims posts and/or obtain a suitable surveyed claim map from Falconbridge.

On the basis of initial prospecting results, 3 2-post and 2 4-post claims were staked. The IRONY 3, 4, 24 and 25 claims were added to the west of the IRONY 6 claim and north of the IRONY 7 claim to cover the possible westward extension of the mineralized horizons previously identified (Fig. 7). The GLACIER NORTH claim was added to the southwest of the IRONY 22 claims to cover ground west of the projected axial plane of the Phase 1 syncline which hosts the 5 million ton deposit at the "E" showing.

Furthermore, if the structural data presented by Fyles (1970) is correct, the axial planes of F_2 folds "... strike north 20 to 30 degrees east and dip 20 to 30 degrees westward ...". The axis (and presumably axial plane, at least locally) "... is almost parallel to the axes of the Phase 2 folds ...". Therefore, both mineralized horizons previously mapped (see Fig. 5 and 7) lie to the west of the projected surface trace of the axial plane and would therefore represent two separate and distinct mineralized horizons on the structurally higher, overturned limb of the Phase 1 syncline and would pass through the hinge area of the fold at the "E" and "F"showings into the sub-surface to the south. As a preliminary working hypothesis, if one assumes the folds are isoclinal to close, as mapped, then the mineralized horizons should have a complementary orientation in the sub-surface, extending south-southwest from the hinge area on the east side of the syncline. This interpretation was the basis of staking the GLACIER NORTH claim. In addition, it may explain the limited success of the 1982 drill program completed by Cominco immediately west of the "E" showing, intended to locate deeper mineralization of the "E" showing and/or additional mineralization in the core of an underlying anticline.

Finally, while preparing for the 1998 field program, the author discovered the existence of a Forest Service Road along Oliver Creek. The road was surveyed in while in the field using approximate coordinates from a stand alone, hand-held GPS unit and compass bearings with reference to the 1:20,000 TRIM map. The road was subsequently revised using a Forest Cover map with the road location plotted, obtained from the Ministry of Forests field office in Clearwater (Fig. 8). The road extends approximately 19 kilometres south from the turn off at Tum Tum Lake but was blocked in July, 1998 by avalanche debris at kilometre 18. The road has been flagged at least 3 kilometres further south to the creek draining Light Lake, strongly suggesting potential for road access for future programs in the core and at the south edge of the current claims.

Future work on the IRONY claims and immediate area will require much better control on the location of Falconbridge's claims on the ground and their relative position with respect to the IRONY claims. As such, acquisition of the surveyed location of Falconbridge's claims should be attempted. If not possible, another effort should be made to locate at least one claim post on the northwest portion of their claim holdings and obtain differential coordinates in order to position the IF claims. A field camp on the southeast portion of the IRONY claims would allow evaluation of the axial plane hypothesis presented above as well as acquisition of differential GPS data on Falconbridge claim posts previously identified.

CONCLUSIONS

The objectives of the 1998 program were to:

1) undertake initial evaluation of the hypothesis that mineralized horizons previously identified extend northwest onto the IRONY claims,
2) attempt to locate old Falconbridge claim posts and/or claim lines to determine the location of the IF 4 and 5 claims,
3) attempt to determine the stratigraphy and structural features of the northwestern portion of the IRONY claim block, and
4) undertake prospecting and/or geological mapping of IRONY claims accessible from the Forest Service Road.

The structure hosting the Ruddock Creek deposit, as previously interpreted by Fyles (1970), and subsequently confirmed by Scammell (1991) together with observations made by the author in 1997, is an east-verging, recumbent syncline. The author believes the lower, right-way-up limb of the syncline, as well as a possible deeper anticlinal closure, underlies the southern portion of the claims. In addition, the author interprets both limbs of the syncline may project westward, down the plunge of the F_1 and F_2 fold axes across Oliver Creek into the steep east facing slopes west of Oliver Creek. The results of both limited prospecting and two geochemical soil lines confirm the presence of highly anomalous values for lead and zinc, extending north to Avalanche Creek. Limited prospecting resulted in identification of visually anomalous lead and zinc mineralization in outcrop, as evidenced by four hand samples taken (but not yet submitted for analysis).

Although the mineral tenure map indicates the Falconbridge claims extend down to mid-slope elevations east of Oliver Creek and that the LCP for both the IF 4 and 5 claims are located immediately east of Oliver Creek, no evidence for old Falconbridge claims and/or claim lines was found. As a result, the exact location of the IF 4 and 5 claims remains uncertain, given that the IT claim block is plotted on the mineral tenure map approximately 1.5 km too far west and 0.5 km too far north of the actual ground position. The ground position of some Falconbridge claims was previously confirmed by the author in 1997 and agrees well with claim locations plotted on the map accompanying the Assessment Report of Lajoie (1982). Further work will be required to ascertain the location of the Falconbridge claims on the ground.

In addition, as discussed by Fyles (1970) and reproduced in Local Geology, F_2 fold hinges may produce local thickening of mineralized horizon(s) and, therefore, result in possible ore grade lenses. It is proposed that the sulphide layer may, in fact, undergo similar structural duplication at depth, underlying the southern block of claims, extending westward across Oliver Creek on the lower limb of the syncline. This is the basis for staking the GLACIER NORTH claim and proposed additional exploration on the IRONY claims south of the Ruddock Creek deposit.

Future work on the IRONY claims will benefit considerably from the presence of the relatively new Oliver Creek Forest Service Road. Currently, it extends approximately 19 km from the Tum Tum Lake turnoff into the northwest edge of the IRONY claims. However, the road will probably be extended in the next several years to at least the creek draining Light Lake and probably further. As a result, road access would be available for the west-central portion of the claims, facilitating truck based exploration of this area of the claims. In addition, it provides a proximal location from which to base future helicopter-supported exploration activity, previously proposed for the west side of Oliver Creek and extending west to the height of land. Two helicopter bases are available to utilize for helicopter supported activity, one at Revelstoke (having both an A-Star and a JetRanger) and a second at Clearwater (Jet Ranger), with the base at Clearwater slightly closer.

A program is proposed, intended to identify additional, potentially economic occurrences of lead and zinc ± silver ± copper ± gold. To date, no gold or copper has been reported from the Ruddock Creek area and only minor amounts of silver (reportedly less than 1 oz/ton). However, these elements can occur in both a sedimentary exhalative and/or volcanogenic massive sulphide environments. Minerals reported from the Ruddock Creek area include sphalerite, galena, chalcopyrite, pyrrhotite, pyrite, fluorite and barite

RECOMMENDATIONS

1. Undertake additional research on the Ruddock Creek area for any additional information regarding mineralization. Research should include locating any Regional Geochemical Survey (R.G.S.) results, Minister of Mines Reports, Geological Survey of Canada mapping and/or reports, etc.;

2. Re-plot the Falconbridge claims using all available information (initial prospecting sketch maps, if possible), to accurately locate the claims relative to known showings and suspected areas of additional mineralization;

3. Acquire any additional information which may assist in evaluating the mineral potential of the Ruddock Creek area, including airborne geophysical data from the Geophysical Data Centre, Air Photos (Black and White and/or Colour), and/or satellite imagery (Landsat, Radarsat and/or SPOT);

4. Attempt to locate additional claim posts in the field to accurately ascertain the ground position of the Falconbridge claims, relative to the IRONY claims and areas of additional suspected mineralization;

5. Attempt to obtain surveyed claim data from Falconbridge for their property and combine their claim information with claim location data from a GPS survey of the IRONY claims;

6. Monitor the status of the Falconbridge claims immediately following their 1999 anniversary dates, including the IT No. 15 and 16, 27 and 28; IT # 6 to 14 and IN # 2, 4, 6 to 19;

7. Attempt a helicopter supported, alpine camp on the GLACIER NORTH and/or IRONY 7 claims to examine and evaluate the mineral potential of the moderately to strongly iron stained exposures noted previously, immediately below the hanging glacier west of Oliver Creek;

8. Evaluate the possibility of additional mineralization in the area east of the "E" showing and west of Gordon Horne Peak, assuming an elongated, isoclinal anticlinal closure;

9. Evaluate the potential for near- to sub-surface mineralization along the mineralized horizons on the right-way-up lower limb of the syncline extending to the southwest from both the "E" and "F" showings, east of the projected surface trace of the axial plane;

10. Undertake geological mapping to determine the stratigraphy and structural features south and southwest of Light Lake; and

11. Undertake a series of geochemical soil lines south of Light Lake to evaluate the possibility that the mineralized horizons extend through these claims from the "E" and "F" showings to the GLACIER NORTH and/or IRONY 7 claims.

PROPOSED BUDGET

Geological Mapping

R. Walker - 30 days @ $450 / day:	$13,500.00
Assistant - 30 days at $200 / day:	$ 6,000.00

Soil Sampling

Two Assistants - 60 man-days at $150 / day		$ 9,000.00
Food and Accommodation - 120 man-days at $125 / day:		$15,000.00
Vehicle Rental - 2 trucks - 30 days at $75 / day:		$ 4,500.00
- Fuel:		$ 800.00
- mileage 4,000 km at $0.30 / km:		$ 1,200.00
GPS - 30 days at $50 / day:		$ 1,500.00
Field Supplies - 120 man-days at $20 / day:		$ 2,400.00
Analyses / Assay Costs - 1,000 soil samples at $10 / sample:		$10,000.00
Shipping:		$ 200.00
Travel: Helicopter - 4 hours at $1,000 / hour:		$ 4,000.00
Report Preparation / Drafting: 8 days at $450 / day:		$ 3,600.00
	Sub-Total	$71,700.00
	Contingency at 10%	$ 7,000.00
	Total	**$78,700.00**

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Brown, D.H. and Fraser, D.C. 1973. Report on Airborne Geophysical Surrey - TOP, IN and LIGHT Groups, Ruddock Creek Area. Assessment Report 4567 filed on behalf of Wesfrob Mines Limited, August 28, 1973.

Fyles, J.T. 1970. The Jordan River Area near Revelstoke, British Columbia: a preliminary study of lead-zinc deposits in the Shuswap Metamorphic Complex, British Columbia Department of Mines and Petroleum Resources Bulletin No. 57, 72 p.

Hodgson, G.P. 1976. Diamond Drill Report - C76-1- Mineral Claim IT 27, Record No. 4278, Ruddock Creek Property. Assessment Report 5990 filed by Cominco Ltd. on September 16, 1976.

Lajoie, J.J. 1982. Geophysical Report on Borehole Pulse EM, UTEM, and VLF Electromagnetic Surveys, and magnetometer Survey on the Ruddock Creek Property, Kamloops and Revelstoke Mining Divisions. Assessment Report 10,710 filed by Cominco Ltd. in November, 1982.

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.... and Simony, P.S. 1983. Stratigraphy and deformational history of the Scrip Nappe, Monashee Mountains, British Columbia. Canadian Journal of Earth Sciences, vol. 20, pp. 639-650.

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---------------- and Dixon, J.M. 1989. Stratigraphy along the north flank of Frenchman Cap Dome, southern Omineca Belt, British Columbia (82M/10, 15). British Columbia Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork, Paper 1989-1, pp. 55-60.

Sevigny, J.H 1987. Field and stratigraphic relations of amphibolites in the late Proterozoic Horsethief Creek Group, northern Adams River area, British Columbia. Current Research, Part A, Geological Survey of Canada, Paper 87-1A, pp. 751-756.

Sevigny, J.H. and Simony, P.S. 1989. Geometric relationship between the Scrip Nappe and metamorphic isograds in the northern Adams River area, Monashee Mountains, British Columbia. Canadian Journal of Earth Sciences, vol. 26, pp. 606-610.

Appendix A

Statement of Qualifications

STATEMENT OF QUALIFICATIONS

I, Richard T. Walker, of 656 Brookview Crescent, Cranbrook, BC, hereby certify that:

1) I am a graduate of the University of Calgary of Calgary, Alberta, having obtained a Bachelors of Science in 1986.

2) I obtained a Masters of Geology at the University of Calgary of Calgary, Alberta in 1989.

3) I am a member in good standing with the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

4) I am a member of good standing with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.

5) I am a consulting geologist with offices at 656 Brookview Crescent, Cranbrook, British Columbia.

6) I am the author of this report which is based on field work I personally performed between July 7 and 22, 1998 as owner of the claims.

7) I was personally involved in the acquisition of the IRONY 1 to 4, 24, 25 and GLACIER NORTH claims described herein.

Dated at Cranbrook, British Columbia this 13th day of September, 1999.

____

Richard T. Walker, P.Geo.

Appendix B

Statement of Expenditures

STATEMENT OF EXPENDITURES

The following expenses were incurred on the IRONY claim group for the purpose of geological exploration within the period June 1, 1998 to January 20, 1999.

PRE-FIELD PREPARATION - 2 days @ $450	$ 900.00
PERSONNEL	
R.T. Walker, P.Geo., 14 days @ $450 / day	$ 6,300.00
Assistant - 14 day @ $200 / day	$ 2,800.00
EQUIPMENT RENTAL	
4 WD truck with camper: 14 days @ $125 / day	$ 1,750.00
Mileage: 1,754 km @ $0.30 / km	$ 526.20
Fuel	$ 231.99
GPS field unit - 10 days @ $15 / day	$ 150.00
FIELD SUPPLIES (Flagging, KRAFT bags, claim tags, etc.)	
28 man-days @ $20 / day	$ 560.00
DISBURSEMENTS	
Airphotos	$ 151.99
Analyses	$ 758.52
Copying	$ 25.42
Digital Geophysics	$ 123.12
Food	$ 363.56
Maps	$ 42.00
Miscellaneous	$ 37.13
Shipping	$ 74.88
Sub-Total	$ 1,576.62
REPORT/REPRODUCTION	
R. T. Walker, P.Geo.: 2.0 days @ $450/day	$ 900.00
2.0 days plotting / drafting at $450 / day	$ 900.00
Photocopying / Binding	$ 50.00
	$ 1,850.00
Total:	**$16,644.81**

Appendix C

Geochemical Analyses

11-Aug-98

CO-TECH LABORATORIES LTD.
041 East Trans Canada Highway
MLOOPS, B.C.
C 6T4

hone: 604-573-5700
ax : 604-573-4557

ICP CERTIFICATE OF ANALYSIS AK98-397

RICK WALKER
856 BROOKVIEW CRES.
CRANBROOK, B.C.
V1C 4R5

ATTENTION: RICK WALKER

No. of samples received: 102
Sample type: Soil
PROJECT #: IRONY CLAIMS
SHIPMENT #: None Given
Samples submitted by: R. Walker

Values in ppm unless otherwise reported

Et #.	Tag #	Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Ti %	U	V	W	Y	Zn
1	IR-98-S-1	<0.2	0.23	<5	30	<5	0.06	<1	3	8	6	0.80	<10	0.03	41	<1	0.01	4	140	16	<5	<20	11	0.08	<10	30	<10	<1	65
2	IR-98-S-2	<0.2	2.29	5	180	<5	0.44	<1	18	43	28	3.09	<10	0.41	944	<1	0.02	69	880	42	<5	<20	24	0.15	<10	72	<10	1	305
3	IR-98-S-3	<0.2	4.86	10	185	15	1.01	1	23	32	32	4.23	<10	0.31	580	<1	0.04	78	2440	114	<5	<20	63	0.14	<10	53	<10	<1	580
4	IR-98-S-4	<0.2	2.43	<5	205	10	0.64	2	32	79	60	6.94	<10	0.78	807	6	0.04	116	1010	166	<5	<20	45	0.14	<10	82	<10	<1	1298
5	IR-98-S-5	<0.2	2.39	<5	120	5	0.89	<1	27	54	33	4.00	<10	0.81	650	<1	0.03	44	700	54	<5	<20	56	0.17	<10	50	<10	8	274
6	IR-98-S-6	<0.2	2.23	<5	170	10	1.57	3	33	62	39	3.82	<10	0.75	1204	<1	0.03	82	870	88	<5	<20	94	0.13	<10	47	<10	7	756
7	IR-98-S-7	<0.2	3.83	<5	140	20	1.32	2	81	67	71	7.98	<10	0.94	1413	3	0.11	95	1600	170	<5	<20	104	0.15	<10	64	<10	3	1558
8	IR-98-S-8	<0.2	3.39	<5	135	20	1.98	2	89	86	67	8.29	<10	0.90	1407	8	0.12	193	2070	228	<5	<20	166	0.11	<10	66	<10	<1	1733
9	IR-98-S-9	<0.2	1.71	<5	75	15	0.10	<1	13	120	16	3.13	<10	0.59	165	<1	0.02	45	290	40	<5	<20	8	0.16	<10	69	<10	<1	170
10	IR-98-S-10	<0.2	1.18	<5	85	10	0.09	<1	10	24	14	3.25	<10	0.22	177	<1	0.02	19	310	30	<5	<20	7	0.18	<10	76	<10	<1	203
11	IR-98-S-11	<0.2	1.15	<5	215	<5	0.47	<1	13	18	22	2.18	<10	0.16	2098	<1	0.02	20	700	30	<5	<20	38	0.11	<10	41	<10	<1	198
12	IR-98-S-14	<0.2	2.58	5	130	5	1.73	2	23	45	35	3.86	<10	0.83	711	<1	0.13	42	1210	462	<5	<20	200	0.14	<10	45	<10	6	1579
13	IR-98-S-15	<0.2	2.17	<5	130	15	0.82	<1	20	80	28	4.61	<10	0.61	339	<1	0.06	36	880	306	<5	<20	87	0.18	<10	66	<10	<1	1673
14	IR-98-S-16	<0.2	1.34	<5	70	10	0.26	<1	8	12	5	1.74	<10	0.13	245	<1	0.03	8	210	30	<5	<20	17	0.15	<10	36	<10	1	191
15	IR-98-S-17	<0.2	2.65	10	190	10	0.63	2	31	37	28	3.89	<10	0.51	1107	<1	0.04	35	620	84	<5	<20	52	0.18	<10	61	<10	3	544
16	IR-98-S-18	<0.2	3.05	<5	135	15	1.13	2	28	39	39	4.65	<10	0.59	824	<1	0.08	38	980	1564	<5	<20	93	0.16	<10	59	<10	7	2014
17	IR-98-S-19	<0.2	3.08	<5	105	10	0.49	<1	22	32	21	3.70	<10	0.47	997	<1	0.04	28	670	182	<5	<20	54	0.15	<10	62	<10	6	828
18	IR-98-S-20	<0.2	1.05	<5	80	5	0.19	<1	8	11	11	2.15	<10	0.12	602	<1	0.02	7	280	50	<5	<20	15	0.10	<10	40	<10	<1	193
19	IR-98-S-21	<0.2	3.10	10	130	10	1.11	1	25	48	28	4.45	<10	0.71	611	<1	0.06	36	930	420	<5	<20	99	0.20	<10	59	<10	3	1339
20	IR-98-S-22	<0.2	1.82	<5	95	15	0.81	1	19	33	23	3.16	<10	0.54	583	<1	0.05	29	910	306	<5	<20	58	0.12	<10	38	<10	7	1073
21	IR-98-S-23	<0.2	2.26	<5	80	15	1.16	1	24	41	28	4.38	<10	0.69	656	<1	0.09	32	1080	412	<5	<20	128	0.15	<10	62	<10	5	1651
22	IR-98-S-24	<0.2	2.03	<5	65	10	1.32	2	18	29	30	3.75	<10	0.59	474	<1	0.11	29	1580	810	<5	<20	148	0.11	<10	39	<10	8	2219
23	IR-98-S-25	<0.2	2.39	<5	85	5	0.74	1	16	30	28	3.54	<10	0.40	403	<1	0.05	25	910	644	<5	<20	82	0.13	<10	48	<10	3	1948
24	IR-98-S-26	<0.2	2.98	<5	95	10	1.28	4	27	44	44	5.01	<10	0.77	726	<1	0.10	51	1300	1804	<5	<20	124	0.18	<10	53	<10	10	6195
25	IR-98-S-27	<0.2	5.03	10	75	10	0.70	1	23	48	32	4.98	<10	0.83	766	<1	0.08	42	1270	1012	<5	<20	72	0.14	<10	48	<10	5	3371

NICK WALKER

ICP CERTIFICATE OF ANALYSIS AK00-357

ECO-TECH LABORATORIES LTD.

Et #.	Tag #	Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Ti %	U	V	W	Y	Zn
26	IR-00-S-28	<0.2	3.18	<5	125	20	1.02	7	29	40	40	5.85	<10	0.84	644	<1	0.09	54	1280	2780	<5	<20	103	0.20	<10	59	<10	4	8235
27	IR-00-S-29	<0.2	3.40	<5	140	20	0.81	2	30	52	44	6.46	<10	0.86	634	<1	0.08	40	1320	1730	<5	<20	79	0.21	<10	63	<10	4	4082
28	IR-00-S-30	<0.2	3.86	5	125	10	0.28	<1	15	48	28	5.86	<10	0.37	364	<1	0.03	28	880	786	<5	<20	30	0.18	<10	60	<10	<1	1811
29	IR-00-S-31	<0.2	4.17	10	165	15	0.58	1	27	42	33	4.90	<10	0.62	689	<1	0.05	30	1280	616	<5	<20	52	0.18	<10	65	<10	8	2709
30	IR-00-S-32	<0.2	3.25	10	180	10	0.52	1	20	38	24	4.02	<10	0.61	422	<1	0.04	36	1070	250	<5	<20	42	0.16	<10	47	<10	8	1985
31	IR-00-S-33	<0.2	3.41	5	136	10	0.63	1	20	37	24	4.02	<10	0.67	457	<1	0.06	35	1180	286	<5	<20	63	0.13	<10	44	<10	9	1984
32	IR-00-S-34	<0.2	2.56	5	180	10	0.54	1	14	28	20	3.09	<10	0.41	586	<1	0.02	17	800	76	<5	<20	37	0.13	<10	38	<10	6	451
33	IR-00-S-35	<0.2	2.40	<5	135	10	0.14	<1	13	29	14	3.86	<10	0.45	256	<1	0.02	15	400	80	<5	<20	9	0.18	<10	60	<10	3	840
34	IR-00-S-36	<0.2	3.66	5	175	15	0.24	<1	18	35	16	4.55	<10	0.53	443	<1	0.02	19	1020	154	<5	<20	17	0.20	<10	54	<10	4	1280
35	IR-00-S-37	<0.2	6.05	10	90	10	1.14	3	47	21	83	8.33	<10	0.23	1774	6	0.15	89	3200	>10000	<5	<20	161	0.10	<10	32	<10	9	2586
36	IR-00-S-38	<0.2	4.03	<5	120	10	0.39	<1	16	42	28	3.84	<10	0.55	314	2	0.03	32	970	802	<5	<20	30	0.16	10	41	<10	7	1886
37	IR-00-S-39	<0.2	1.85	<5	80	10	0.58	<1	16	30	28	3.29	<10	0.62	882	<1	0.03	20	1080	116	<5	<20	32	0.15	<10	46	<10	6	280
38	IR-00-S-40	<0.2	1.98	<5	85	10	0.58	<1	17	32	30	3.54	<10	0.66	629	<1	0.03	23	1030	78	<5	<20	37	0.15	<10	51	<10	7	209
39	IR-00-S-41	<0.2	1.52	<5	65	5	0.15	<1	12	40	25	3.46	<10	0.37	423	<1	0.02	14	830	66	<5	<20	10	0.11	<10	42	<10	5	90
40	IR-00-S-43	<0.2	1.75	<5	60	<5	0.10	<1	14	37	23	3.60	<10	0.37	461	2	0.02	15	970	40	<5	<20	12	0.09	<10	41	<10	4	77
41	IR-00-S-44	<0.2	1.27	<5	50	10	0.10	<1	12	26	14	2.70	10	0.35	375	<1	0.02	10	480	22	<5	<20	6	0.09	<10	30	<10	4	63
42	IR-00-S-45	<0.2	1.33	<5	45	<5	0.21	<1	16	25	18	2.87	20	0.58	592	1	0.01	16	780	34	<5	<20	7	0.08	<10	30	<10	8	84
43	IR-00-S-46	<0.2	1.19	<5	75	<5	0.18	<1	13	29	23	2.72	10	0.60	421	<1	0.02	15	450	26	<5	<20	8	0.09	<10	31	<10	11	85
44	IR-00-S-47	<0.2	0.86	<5	50	<5	0.16	<1	9	26	22	2.16	<10	0.42	286	<1	0.02	11	380	16	<5	<20	6	0.08	<10	25	<10	4	60
45	IR-00-S-48	<0.2	1.42	<5	45	5	0.14	<1	11	32	17	2.58	<10	0.38	368	<1	0.02	12	670	30	<5	<20	5	0.10	<10	32	<10	6	76
46	IR-00-S-49	<0.2	1.14	<5	55	5	0.14	<1	10	25	11	2.06	<10	0.35	294	<1	0.02	10	440	16	<5	<20	5	0.09	<10	26	<10	4	56
47	IR-00-S-50	<0.2	1.96	<5	105	10	0.36	<1	15	31	21	2.90	<10	0.61	373	<1	0.03	22	1230	30	<5	<20	13	0.18	<10	41	<10	5	166
48	IR-00-S-51	<0.2	2.88	<5	75	15	0.11	<1	12	24	19	3.31	<10	0.38	318	<1	0.02	9	720	36	<5	<20	9	0.18	<10	42	<10	6	113
49	IR-00-S-52	<0.2	3.12	15	75	<5	0.15	<1	15	34	22	3.59	<10	0.51	634	<1	0.02	16	880	42	<5	<20	7	0.16	<10	48	<10	6	142
50	IR-00-S-53	<0.2	2.91	10	90	10	0.16	<1	18	30	17	3.62	<10	0.47	858	<1	0.02	13	860	38	<5	<20	10	0.14	<10	43	<10	4	137
51	IR-00-S-54	<0.2	1.72	<5	90	5	0.25	<1	17	32	22	2.77	<10	0.66	385	<1	0.02	22	780	40	<5	<20	14	0.14	<10	37	<10	5	143
52	IR-00-S-55	<0.2	2.08	<5	80	10	0.28	<1	12	25	18	2.48	<10	0.51	285	<1	0.02	15	880	28	<5	<20	10	0.14	<10	33	<10	5	110
53	IR-00-S-56	<0.2	2.94	5	80	10	0.20	<1	13	25	15	2.78	<10	0.41	230	<1	0.02	15	400	42	<5	<20	16	0.12	<10	37	<10	5	122
54	IR-00-S-57	<0.2	2.00	5	65	5	0.35	<1	9	30	17	1.80	10	0.50	180	<1	0.02	15	470	62	<5	<20	19	0.14	<10	34	<10	4	207
55	IR-00-S-58	<0.2	3.18	<5	135	10	0.31	<1	26	48	23	4.21	20	0.86	753	<1	0.02	34	770	40	<5	<20	22	0.16	<10	88	<10	10	190
56	IR-00-S-59	<0.2	2.31	<5	125	5	0.17	<1	28	39	32	4.31	20	0.52	1084	<1	0.02	27	730	38	<5	<20	11	0.12	<10	57	<10	15	148
57	IR-00-S-60	<0.2	3.04	5	120	10	0.14	<1	21	38	25	3.91	10	0.47	987	<1	0.02	24	780	40	<5	<20	11	0.14	<10	49	<10	7	147
58	IR-00-S-61	<0.2	1.80	<5	80	10	0.24	<1	14	27	12	2.21	10	0.38	322	<1	0.03	13	730	24	<5	<20	14	0.11	<10	29	<10	5	87
59	IR-00-S-62A	<0.2	2.14	<5	80	10	0.16	<1	12	38	17	2.87	10	0.44	304	<1	0.02	14	680	26	<5	<20	6	0.13	<10	38	<10	10	86
60	IR-00-S-64	<0.2	2.04	<5	140	10	0.18	<1	18	41	25	3.08	10	0.65	388	<1	0.03	28	470	34	<5	<20	12	0.16	<10	42	<10	7	137

RICK WALKER

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Et #.	Tag #	Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Ti %	U	V	W	Y	Zn
61	IR-98-S-65	<0.2	1.98	<5	115	10	0.26	<1	16	37	23	3.04	10	0.52	375	<1	0.03	19	560	30	<5	<20	18	0.14	<10	41	<10	6	111
62	IR-98-S-66	<0.2	3.37	5	180	15	0.34	<1	23	55	26	4.86	10	0.67	580	2	0.03	33	580	42	<5	<20	37	0.16	<10	66	<10	8	173
63	IR-98-S-67	<0.2	2.44	<5	125	10	0.18	<1	19	44	19	3.20	<10	0.60	430	<1	0.03	24	420	34	<5	<20	12	0.16	<10	46	<10	7	108
64	IR-98-S-68	<0.2	1.84	<5	90	5	0.10	<1	14	25	15	2.87	<10	0.32	314	<1	0.02	14	480	28	<5	<20	5	0.10	<10	29	<10	2	91
65	IR-98-S-69	<0.2	2.84	<5	190	10	0.12	<1	19	66	27	3.66	<10	0.67	436	<1	0.02	33	270	38	<5	<20	18	0.18	<10	47	<10	6	151
66	IR-98-S-70	<0.2	2.82	5	160	10	0.17	<1	19	65	31	4.15	<10	0.63	322	<1	0.02	41	370	42	<5	<20	22	0.15	<10	46	<10	10	121
67	IR-98-S-71	<0.2	1.94	<5	135	5	0.17	<1	16	52	23	3.57	<10	0.61	327	<1	0.02	25	380	26	<5	<20	11	0.17	<10	42	<10	6	110
68	IR-98-S-72	<0.2	2.55	<5	95	10	0.15	<1	21	51	16	3.15	<10	0.46	913	<1	0.02	13	530	44	<5	<20	11	0.15	<10	44	<10	8	73
69	IR-98-S-73	<0.2	2.35	<5	60	5	0.06	<1	17	59	17	2.89	<10	0.31	455	<1	0.02	22	540	26	<5	<20	5	0.12	<10	39	<10	3	66
70	IR-98-S-74	<0.2	1.60	<5	50	5	0.06	<1	10	38	12	3.10	<10	0.20	546	<1	0.02	7	680	22	<5	<20	5	0.09	<10	45	<10	<1	37
71	IR-98-S-75	<0.2	1.67	<5	65	5	0.06	<1	9	37	15	3.13	<10	0.15	475	<1	0.02	7	770	18	<5	<20	6	0.09	<10	44	<10	<1	34
72	IR-98-S-76	<0.2	1.19	<5	40	<5	0.07	<1	7	49	16	2.89	<10	0.22	151	<1	0.02	9	620	20	<5	<20	2	0.10	<10	41	<10	1	33
73	IR-98-S-77	<0.2	0.86	<5	50	5	0.12	<1	14	57	9	1.78	<10	0.40	399	<1	0.02	22	210	14	<5	<20	6	0.08	<10	21	<10	2	46
74	IR-98-S-78	<0.2	1.29	<5	95	10	0.20	<1	25	36	24	3.41	10	0.44	1187	2	0.02	21	630	44	<5	<20	15	0.09	<10	35	<10	7	103
75	IR-98-S-79	<0.2	1.16	<5	75	<5	0.07	<1	10	28	22	3.28	10	0.35	319	1	0.02	14	730	30	<5	<20	8	0.09	<10	44	<10	1	77
76	IR-98-S-80	<0.2	1.20	<5	110	5	0.31	<1	17	34	21	3.27	<10	0.36	1014	<1	0.02	13	460	26	<5	<20	30	0.11	<10	48	<10	2	89
77	IR-98-S-81	<0.2	3.03	<5	155	15	0.24	<1	12	15	13	3.91	<10	0.28	401	<1	0.02	7	1210	32	<5	<20	16	0.18	<10	44	<10	<1	112
78	IR-98-S-82	<0.2	1.54	<5	80	10	0.12	<1	10	6	8	2.18	<10	0.10	406	<1	0.02	3	700	26	<5	<20	6	0.17	<10	38	<10	<1	71
79	IR-98-S-83	<0.2	1.66	<5	105	15	0.31	<1	13	15	12	3.16	<10	0.25	581	<1	0.03	8	750	28	<5	<20	26	0.15	<10	51	<10	<1	105
80	IR-98-S-84	<0.2	1.25	<5	80	5	0.26	<1	5	2	6	1.79	<10	0.06	355	<1	0.02	<1	960	28	<5	<20	14	0.10	<10	26	<10	<1	40
81	IR-98-S-85	<0.2	3.45	5	170	10	0.50	<1	21	47	29	4.58	<10	0.71	558	<1	0.03	32	1130	44	<5	<20	33	0.25	<10	63	<10	2	188
82	IR-98-S-86	<0.2	1.75	<5	95	10	0.07	<1	10	17	13	2.70	<10	0.20	1002	<1	0.02	8	990	30	<5	<20	6	0.12	<10	42	<10	<1	79
83	IR-98-S-87	<0.2	2.58	5	80	10	0.08	<1	8	12	10	2.82	<10	0.24	172	<1	0.02	6	670	42	<5	<20	3	0.14	<10	41	<10	<1	83
84	IR-98-S-88	<0.2	0.86	<5	60	5	0.11	<1	7	6	9	1.95	<10	0.16	202	<1	0.02	4	340	20	<5	<20	5	0.17	<10	42	<10	<1	51
85	IR-98-S-89	<0.2	1.15	<5	65	<5	0.09	<1	12	6	9	2.06	<10	0.17	1399	<1	0.02	4	360	22	<5	<20	6	0.13	<10	35	<10	<1	53
86	IR-98-S-90	<0.2	1.44	<5	50	10	0.04	<1	7	6	10	2.17	<10	0.06	362	<1	0.02	2	480	18	<5	<20	<1	0.11	<10	34	<10	<1	38
87	IR-98-S-91	<0.2	0.41	<5	30	5	0.04	<1	5	5	4	1.44	<10	0.04	99	<1	0.02	2	140	12	<5	<20	6	0.13	<10	39	<10	<1	28
88	IR-98-S-92	<0.2	0.55	<5	30	<5	0.03	<1	4	4	4	1.43	<10	0.03	47	<1	0.02	1	200	14	<5	<20	<1	0.08	<10	30	<10	<1	20
89	IR-98-S-93	<0.2	2.22	5	150	5	0.22	<1	31	50	59	5.51	<10	0.78	563	<1	0.02	50	420	36	<5	<20	19	0.18	<10	65	<10	2	132
90	IR-98-S-94	<0.2	2.53	5	85	15	0.05	<1	10	11	12	2.78	<10	0.14	202	<1	0.02	8	510	32	<5	<20	4	0.19	<10	46	<10	<1	92
91	IR-98-S-95	<0.2	3.04	5	245	10	0.90	<1	24	56	28	3.96	<10	0.68	1774	<1	0.03	29	610	34	<5	<20	85	0.18	<10	65	<10	<1	189
92	IR-98-S-96	<0.2	3.31	5	215	15	0.44	<1	26	68	40	4.79	10	0.87	654	<1	0.03	51	370	46	<5	<20	55	0.25	<10	60	<10	21	213
93	IR-98-S-97	<0.2	2.51	<5	90	10	0.21	<1	15	22	14	2.92	<10	0.19	385	<1	0.02	13	400	26	<5	<20	14	0.13	<10	40	<10	<1	95
94	IR-98-S-98	<0.2	2.48	<5	105	10	0.10	<1	15	25	17	3.85	<10	0.27	946	2	0.02	16	450	34	<5	<20	11	0.08	<10	52	<10	2	121
95	IR-98-S-99	<0.2	0.29	<5	30	5	0.05	<1	3	<1	3	0.90	<10	0.03	61	<1	0.02	<1	120	10	<5	<20	3	0.09	<10	27	<10	<1	20

RICK WALKER

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Et #.	Tag #	Ag	Al %	As	Ba	Bi	Ca %	Cd	Co	Cr	Cu	Fe %	La	Mg %	Mn	Mo	Na %	Ni	P	Pb	Sb	Sn	Sr	Tl %	U	V	W	Y	Zn
96	IR-98-S-100	<0.2	1.06	<5	80	10	0.08	<1	8	7	7	2.22	<10	0.08	463	<1	0.02	3	770	18	<5	<20	10	0.14	<10	40	<10	<1	56
97	IR-98-S-101	<0.2	0.29	<5	35	<5	0.02	<1	4	3	4	1.29	<10	0.02	94	<1	0.02	<1	210	10	<5	<20	2	0.09	<10	33	<10	<1	21
98	IR-98-S-102	<0.2	2.04	<5	75	10	0.07	<1	9	8	7	2.23	<10	0.09	721	<1	0.02	3	690	22	<5	<20	5	0.13	<10	36	<10	<1	98
99	IR-98-S-104	<0.2	2.32	<5	190	15	0.31	<1	14	37	16	3.81	<10	0.47	161	<1	0.02	20	370	26	<5	<20	28	0.19	<10	54	<10	<1	111
100	IR-98-S-105	<0.2	4.53	5	205	25	0.86	<1	37	125	30	7.00	<10	2.20	587	<1	0.06	60	800	40	<5	<20	54	0.34	<10	121	<10	2	287
101	IR-98-S-106	<0.2	0.94	<5	60	15	0.13	<1	10	39	11	3.34	<10	0.23	111	<1	0.02	14	240	18	<5	<20	8	0.18	<10	47	<10	<1	59
102	IR-98-S-107	<0.2	0.76	<5	30	<5	0.05	<1	6	114	21	1.92	<10	0.42	63	<1	0.02	15	180	10	<5	<20	2	0.07	<10	19	<10	<1	23
103	IR-98-S-628	<0.2	2.48	5	90	10	0.16	<1	16	34	17	3.06	10	0.48	513	<1	0.02	15	500	30	<5	<20	9	0.14	<10	41	<10	10	128
QC/DATA:																													
Repeat:																													
1	IR-98-S-1	<0.2	0.25	<5	20	<5	0.06	<1	3	5	3	0.80	<10	0.03	44	<1	0.01	3	180	12	<5	<20	5	0.08	<10	30	<10	<1	55
10	IR-98-S-10	<0.2	1.18	<5	90	10	0.09	<1	10	24	14	3.22	<10	0.22	181	<1	0.02	20	310	32	<5	<20	7	0.18	<10	75	<10	<1	204
19	IR-98-S-21	<0.2	3.20	<5	140	10	1.14	1	26	44	27	4.54	<10	0.72	624	<1	0.08	37	920	440	<5	<20	104	0.20	<10	60	<10	2	1403
28	IR-98-S-30	<0.2	3.95	<5	125	15	0.28	<1	15	49	29	5.98	<10	0.37	366	<1	0.03	28	880	782	<5	<20	30	0.19	<10	70	<10	<1	1846
36	IR-98-S-38	<0.2	4.18	15	115	15	0.38	<1	16	42	29	3.95	<10	0.57	327	3	0.03	32	980	620	<5	<20	24	0.16	<10	42	<10	7	1624
45	IR-98-S-48	<0.2	1.45	<5	56	5	0.14	<1	12	32	18	2.62	<10	0.39	368	<1	0.02	12	570	26	<5	<20	9	0.10	<10	33	<10	5	63
54	IR-98-S-57	<0.2	2.01	10	65	5	0.35	<1	9	28	17	1.80	10	0.49	179	<1	0.02	14	450	60	<5	<20	18	0.14	<10	34	<10	5	204
63	IR-98-S-67	<0.2	2.38	<5	125	10	0.18	<1	18	44	19	3.13	<10	0.57	420	<1	0.03	27	430	32	<5	<20	10	0.15	<10	44	<10	6	104
71	IR-98-S-75	<0.2	1.58	<5	50	10	0.06	<1	9	33	15	3.14	<10	0.15	475	1	0.02	5	800	20	<5	<20	4	0.09	<10	44	<10	<1	35
80	IR-98-S-84	<0.2	1.22	5	70	5	0.25	<1	5	4	5	1.75	<10	0.05	351	<1	0.02	2	970	26	<5	<20	9	0.10	<10	26	<10	<1	39
89	IR-98-S-93	<0.2	2.16	<5	145	15	0.21	<1	30	40	58	5.45	<10	0.77	563	1	0.02	50	400	34	<5	<20	17	0.17	<10	84	<10	2	131
98	IR-98-S-102	<0.2	2.04	5	70	10	0.07	<1	9	9	6	2.24	<10	0.09	713	<1	0.02	4	670	22	<5	<20	2	0.13	<10	37	<10	<1	95
Standard:																													
GEO'98		1.0	1.80	60	160	<5	1.74	<1	20	61	79	4.11	<10	0.95	691	<1	0.03	26	660	24	<5	<20	63	0.13	<10	80	<10	4	82
GEO'98		0.8	1.77	60	160	5	1.70	<1	20	61	78	4.02	<10	0.93	679	<1	0.03	26	630	22	<5	<20	59	0.12	<10	79	<10	4	68
GEO'98		1.0	1.80	66	160	<5	1.73	<1	20	58	79	4.11	<10	0.95	693	<1	0.03	23	660	22	5	<20	59	0.13	<10	80	<10	4	70

ECO-TECH LABORATORIES LTD.
Frank J. Pezzotti, A.Sc.T.
B.C. Certified Assayer

df/402
XLS/98
fax: 250-428-8755

Appendix D

Field Notes

July 7, 1998 - Left Cranbrook, drove to Sicamous

July 8 - Left Sicamous for Oliver Creek.

Vavenby to Tum-Tum Lake turnoff	approx. 37 km
to Oliver Creek turnoff	approx. 55 km
to washout on Oliver Creek	approx. 18 km
	approx. 110 km

Set up camp. Evaluated washout and walked beyond washout to end of road. Not worth digging through as end of road only 1 km or so farther south. Local prospecting in and around camp.

GPS	363973	5738373	363963	5738387941 ± 125 M
	363954	5738394	363926	5738394
	363885	5738413		

July 9

Walked to end of Oliver Creek road beyond washout debris approximately 1100 metres.

GPS	364300	5737972	151 mt	Elev. 948±?
	364472	5737701	161 mt	

1) Intersected creek at south end of road and southern logging block. Set altimeter at 975 m at confluence of unnamed creek immediately south of cliff lined creek and Oliver Creek. Abundant talus/alluvial material in creek bed. High proportion of pegmatitic leuco-granite. Other lithologies include psammite, amphibolite, calc-silicate, marble and subordinate pelite in variable proportions. 30-40 metre cliff directly opposite, on west side of Oliver Creek.

GPS 364555 5737603 Elev. 948±?

2) Walked back up creek to end of logging road/cut block. Float similar to that described below. Periodic strongly iron-stained boulders, consisting of pyrite-bearing psammite. Sulfide content approximately 5% or less, fine-grained and appears to be pyrite, however may include galena.

GPS 364645 5737590 67mt Elev. 948±? Alt. 1007 m.

3) Crossed over wide slide chute (approximately 300 m wide) and then into second slide chute approximately 150 m further south. Forestry flagging for "Forest Service Road" at 1070 m at north end of second chute - future road access? No outcrop noted. Minor to abundant float in creek beds and active alluvial fans.

4) 1008 m. Approximately 30 m east of Oliver Creek. Claim line for IRONY claims. Azimuth approximately 75° (+ declination 21.5°). Followed claim line west to post.

GPS 364581 5736751 54 mt

	632811M	632810M
Claim name	IRONY 21	IRONY 20
Agent For	D. Calder	D. Calder
Dist. From I.P.	Chapleau Res. Ltd.	Chapleau Res. Ltd.
Date Completed	July 22/97	July 22/97
Time Completed	14:00	14:00

	632812M
Claim name	IRONY 22
Locator	J. Blair
Agent For	Chapleau Res. Ltd.
Date Commenced	July 22/97
Time Commenced	14:00
Dir. To F.P.	Az. 270°
Metres Left	500
Metres Right	---

	233030 LCP
Claim name	IRONY 7
Locator	D. Calder
FMC #	103940
Agent For	Chapleau Res. Ltd.
FMC #	104666
Date Commenced	July 22/97
Time Commenced	14:00
Date Completed	July 22/97
Time Completed	16:30
N_4_ S __ E __ W _5_	

5) Walking back up claim line to east. Intersected "Forest Service Road" flagging at 1050 m.

6) 1150 m. Walked up claim line to next post. Could not get GPS location.

	632811M	632810
Claim name	IRONY 21	IRONY 20
Locator	D. Calder	D. Calder
Agent For	Chapleau Res. Ltd.	Chapleau Res. Ltd.
Date Commenced	July 22/97	July 22/97
Time Commenced	14:00	14:00
Dir. To F.P.	Az. 270°	Az. 270°
Metres Left	500	---
Metres Right	---	500

	632808M	632809M
Claim name	IRONY 18	IRONY 19
Locator	D. Calder	D. Calder
Agent For	Chapleau Res. Ltd.	Chapleau Res. Ltd.
Dist from I.P.	500 m	500 m
Date Completed	July 22/97	July 22/97
Time Completed	13:00	13:00

7) 1118 m. Crossed over two steep sided ravines with small gully between.

8) 1072 m. On south side of ravine described above. Flagging for road.

9) 1031 m. 1N intermediate post for IRONY 7 claim. 1017 m.

IRONY 7
233030
1 N
July 22/97

10) Back at creek at end of logging road. Alt. 15 m high (1022 m). Reset to 1007 m.

11) Back at camp on road. Alt. 966 m.

July 10/98

12) 1145 m. Traversing up washout creek on north edge of Falconbridge claims. First outcrop in creek. Green and white banded (compositional layers) calc-silicate of variable thickness (deformed against pegmatite-bearing calc-silicate) between 20 cm and 70 cm. Calc-silicate overlies at least 40 cm of grey weathering marble. 1-2 cm galena-bearing band (15-20%) at contact between marble and calc-silicates.
S_{1+2} 275°/61°
Compositional layers outline a fold having a "z" type asymmetry looking south.
Calc-silicate has numerous hairline fractures with minor cross-cutting pegmatite. Ca-rich calc-silicates. More siliceous, structurally overlying calc-silicate has 10-15% cross-cutting pegmatite with no apparent preferred orientation.

SAMPLE IR-RW-98-1 - Galena-bearing marble

13) 1160 m. Alternating calc-silicates and marble bands. Calc-silicates are more resistant, more siliceous and less calcium rich than described at 1145 m. Interlayered bands range between 15 cm and 0.75 m. Marble is white to grey-blue weathering with interval banding defined by biotite-bearing to biotite absent bands. Folds outline a "z" type asymmetry looking north.

PHOTO - "z" type fold described above, taken looking obliquely down fold axis.

PHOTO - looking south across creek toward fold. North side of creek appears to have different composition and has strongly foliated (shattered) texture - possibly a fault along the creek.

14) Compositional bands on north side of creek are well defined but discontinuous with sharp, abrupt terminations.
Foliation 204°/87°, 202°/84°, 012°/67°
S_{1+2} 267°/52°

PHOTO - 1167 m. View to north of pegmatite and compositional layering south of fault and lack of correlations north of fault. Also significantly different orientation to compositional layering.

15) 1193 m. Passing upward through small cliffs along creek. Calc-silicate and marble no longer evident above last station. Lithologies here consist of biotite psammite with cross-cutting pegmatite and highly subordinate amphibolite.
S_{1+2} 271°/36°
Many of the green coloured bands are siliceous calc-silicate, however no marble apparent. Compositional layer range between <1 cm to approximately 1 m.

Cliffed out and could proceed no higher.

July 11

16) Climbed up through forest to creek at 1109 m.

S_{1+2} 232°/45°

17) 1141 m. North side of creek has shattered appearance. Numerous small discontinuous steps with fine powdered rock between, probable (brittle) fault gouge.
Gouge planes 217°/45°, 221°/48° in pegmatite

18) 1238 m. Most of the creek debris from the last station to this elevation probably slumped from this outcrop.
S_{1+2} 193°/25°
Outcrop consists of boudinaged amphibolite and pods of pegmatite hosted by calcareous semi-pelite. The calcareous semi-pelite may, alternatively, be cataclastically deformed semi-pelite in which the grain to grain cohesion has been lost. It has a recessive weathering character and has up to 50% or more biotite. The pegmatite is composed predominantly of feldspar with subordinate quartz. Biotite flakes up to 3 cm across and up to ½ cm thick are present, interspersed randomly throughout the pegmatite or along preferred zones.

Back in camp 993 m (gained 27 m).

Heavy rain in early morning of July 11, 1998, tapered off to steady light to medium rain in early afternoon; stopped raining late afternoon.

July 12

Surveyed road onto map using compass. GPS not effective, probably due to heavy clouds and rain.

Heavy rain began July 11 at approximately 8:30 pm, continued through night to noon. Noon to 4pm - periodic showers, light to medium. 4-5 pm - Clouds broke, sunshine & blue sky. 5 pm - Heavy rain & cloud set back in, particularly to the south.

July 13

Another rain day. Plotted road survey data onto map for subsequent reference. Explored different assumptions in structure contouring mineralized horizons from Falconbridge claims onto my claims. Several interesting possibilities to test, probably best with soil geochemical lines along topography.

Rained periodically through the night until 10:30 am. Clouds broke and blue sky over 60% of the sky visible from valley until 11am, began clouding over again. Periodic periods of broken cloud following by showers/rain throughout afternoon. 8pm - heavy cloud moved in with heavy rain until 9:30, slacked off to steady light rain.

July 14

Dawned blue, cold and cloudless

19) 1095 m in creek approximately above road. Noted iron-stained boulders in creek bed, predominantly amphibolite (biotitic) with subordinate psammite. Did not note any calc-silicate and/or marble lithologies => upper pelite?
Outcrop along north side of creek, approximately 10 m high and extending upward along creek to at least 1150m.
Outcrop consists of gneissic bands of biotitic amphibolite biotite, biotite-bearing psammite and both concordant and obliquely cross-cutting quartzofeldspathic pegmatite.

20) 1116 m. Moderately abundant iron stained float in creek bed, none noted yet in creek sides therefore, float from above. One large piece of weakly foliated garnet amphibolite with composite garnet aggregates up to 2 cm in diameter.

21) Sample IR-RW-98-2 Pyrrhotite (approximately 1%) bearing, biotite-rich semi-pelite.

Came back down to 1082m on top of creek bank immediately north of creek.

Tag No	637936M	623182M
Claim Name	IRONY24	IRONY25
Locator	Rick Walker	Rick Walker
Agent For:	Self	Self
Date Commenced	July 14/98	July 14/98
Time Commenced	10:01 am	10:00am
Dir to FP	Az 270°	Az 270°
Metres Right	500	0
Left	0	500

Unable to get GPS fix on Location

GPS location on road/claim line: 363612 5739258 977±?
912 m, approximately 40 m east of Oliver Creek

Witness Post
F.P. 110M @Az 270°

623182	637936
IRONY25	IRONY24
Rick Walker	Rick Walker
Self	Self
500m	500m
July 14, 1998	July 14, 1998
11:31 am	11:30am

Walked north along road to next claim post. I.P. for IRONY 3 and 1S I.P. for IRONY 4.

Tag No.	641674M
Claim Name:	IRONY 3
Locator	Rick Walker
Agent For:	SELF
Date Commenced	July 14, 1998
Time Commenced	11:55 am
Dir to F.P.	Az 000°
Metres Right	500
Left	0

Took photo of claim post then added 1S I.P. info

16m north to road

Crossed creek at 940 m, predominantly muscovite-biotite-pelite, biotite-psammite, semipelite and amphibolite (in decreasing order of abundance).

End of claim line at 542 m and 1005m elevation.

Claim Name: IRONY 3

Locator	Rick Walker
Agent For:	SELF
Dist from I.P.	500 m
Date Completed	July 14, 1998
Time Completed	2:15 am

IRONY 4, 4-post claims shares common post with IRONY 3 Final Post.

Tag No.	211699
Claim Name	IRONY 4
Locator	Rick Walker
FMC No	130328
Agent For	Self
FMC No	130328
Date Commenced	July 14/98
Time Commenced	2:15 p.m.
Date Completed	July 14/98
Time Completed	5:00 p.m.
Number of Claim Units	

N ____ S_3_ E ____ W_3_

Post Not Placed - 2S, 3S, 3S1W, 3S2W, 3S3W, 2W, 3W, 3W1S, 3W2S - Oliver Creek, not a creek but a small river with a deep thalweg, running fast after recent rains with melt

1W I.P. approximately 15 m west of road. Altimeter reads 900 m. GPS - claim line crossing road
363167 5740245 43 mt 815 m ± 101 m

Back at IRONY 3 LCP / IRONY 4 1S I.P.
GPS 363395 5739679 42 mt 1027 ± 99 m

back at camp - altimeter reads 959 m (lost 7 m over day).

<u>July 15</u>

Walked south to claim line then 443 m south. On east edge of grassy meadow / swamp east of Oliver Creek.
GPS 364684 5736419 42 mt 1084± ? Altimeter reads 1006 m

Tag No.	211700
Claim Name	Glacier North
Locator	K. Wasylowich
FMC No	141100
Agent For	R. Walker
FMC No	130328
Date Commenced	July 15/98
Time Commenced	10:15 a.m.
Date Completed	July 15/98
Time Completed	11:30 a.m.
Number of Claim Units	

N ____ S_4_ E ____ W_4_

Posts Not Placed 1S, 2S, 3S, 4S, 1W, 2W, 3W, 4W, 4W1S, 4W2S, 4W3S, 4W4S, 4S2W, 4S3W, 4S4W - Oliver Creek, not a creek but a small river with a deep thalweg, running fast after recent rains with melt

Cut claim post on east side of clearing and blazed line 120 m west to alders on edge of Oliver Creek. Blazed line approximately 200 m south into swampy ground east of Oliver Creek.

Rained all morning from initial light drizzle to heavy rain (10:30 to 12 noon). Rain lightened during afternoon. Periodic rain showers all afternoon.

July 16 - Rain Day

Plotted claim locations

July 17

Traversing up along creek at south end of southern logging block.

22) 1141 m. Outcrop along north margin of creek, approximately 2 m high and 20 m along creek.
Slickensurface 146°/68°
Slickenlines 35° 165°
Associated with brittle gouge zone approximately 15-20 cm thick.

Rock consists of blue-grey weathering biotite-bearing semi-pelite with thin pelitic partings. Quartzofeldspathic lenses and lozenges up to 1.5 cm thick and 15 cm long.
S_{1+2} 217°/20°Compositional Layering
247°/32°

23) Started geochemical soil line at 1184 m, approximately 7 m above and 12 m north of creek. First reasonable clearing (2 ft wide) in trees and undergrowth. This location has organic debris overlying boulders/cobbles. Could not get sample, probably still in old slide chute debris.

Note: Did not note any strongly iron-stained float above 1100 m. There were poorly to moderately iron-stained boulders/cobbles => possibly above a mineralized horizon.

24) Sample IR-98-S-1 - 1201 m. 32 m on hip-chain, essentially straight up slope to north. Soil consists of grey sandy soil underlain by deep yellow-brown clayey soil. Too difficult with roots and organic debris to dig hole deeper into yellow-brown soil. Reset hip chain to zero at this station.

25) Sample IR-98-S-2 - 1203 m. 50 m. Sample taken immediately below outcrop (moss covered) or float. Soil is deep orange-brown, approximately 4 cm beneath organic cover. Sample contains thin rootlets.

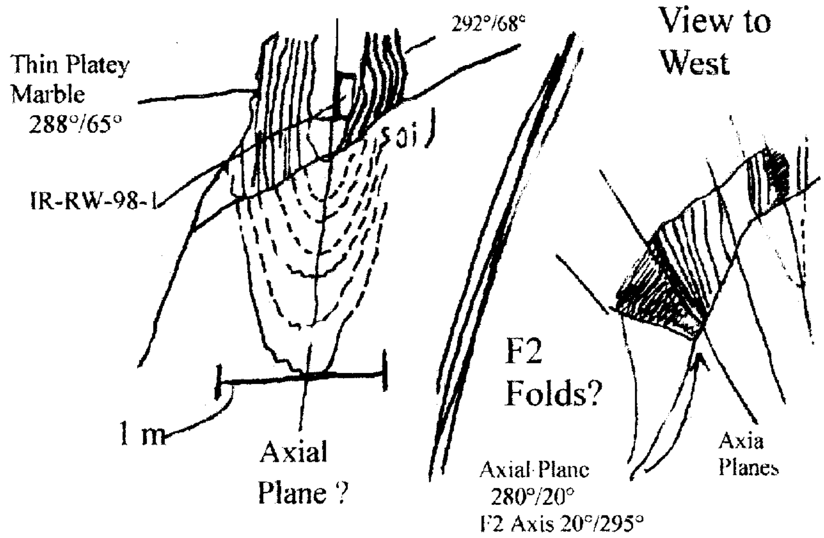
26) Sample IR-98-S-3 - 1206 m. 100 m. Sample is deep orange (brown) in colour. Moderate rootlet content. Soil contains small pebbles to cobbles 15 cm of dark organic cover. Thin 1-2 cm interval of yellow-grey material.

27) Sample IR-98-S-4 - 1208 m. 160 m. Orange-brown soil with small rock fragments. Organic cover approximately 25 cm thick.

28) Sample IR-98-S-5 - 1190 m. 225 m. 200 m in middle of vegetated boulder field. No soil, boulder with decayed wood in between. Sample taken from roots of blown down tree approximately 10 m below line. Moderately abundant cobbles/pebbles to boulders bound in roots. Soil is brown coloured.

29) Sample IR-98-S-6 - 1201 m. 250 m. Sample taken approximately 20 m vertical metres below large band of outcrop, mineralized approximately 25 m to north of line. Soil taken approximately 20 cm below surface, through thick system of roots. Soil is sandy to silty in nature with up to 30% rock fragments by volume. Note: Outcrop approximately 100 m north of southern edge of southern logging cut.

30) 288.7 m. 10 m high band of outcrop extending approximately 100 m at azimuth 100° (i.e. up slope to the south).



Cannot follow a single marker around outcrop but there appears to be a sulphide "rod" coring a synform with an approximately vertical axial plane. Thin plated units (bedding or compositional layering) immediately adjacent to sulphide rod on each side. Outcrop appears to be mainly siliceous with pegmatite-bearing psammite and coarse recrystallized psammite however, may be calc-silicates above.

31) Sample IR-98-S-7 - 1196 m. 300 m. On trend but probably topographically and structurally higher than sulphide horizon, probably extends into air above this location, however, stratigraphy in area is sulphide-bearing. Soil dark brown and damp, below 20 cm of abundant roots. Approximately 35-40% rock fragments. Located approximately 7 m below 50 m cliff band. Outcrop takes a 10 m step up at this location, trends down to north below soil contour.

32) Sample IR-98-S-8 - 1187 m. 350 m. Had to drop down off line to avoid cliff band. Soil sample taken on steep ground. Soil is brown with approximately 5% rock fragments, moderately abundant rootlets.

33) Sample IR-98-S-9 - 1200 m. 395 m. Steep ground, probably on bench above series of small cliffs. Difficult going on this ground. Soil is medium to dark tan in colour with up to 5% rock fragments (by volume).

34) Sample IR-98-S-10 - 1204 m. 450 m. 25-30 cm of organics (abundant roots) to deep orange-brown soil with 10% rock fragments/cobbles.

35) Sample IR-98-S-11 - 1209 m. 518 m. Nothing but rock at 500-513 m. Soil is under 15-20 cm of organics and roots. Dark brown soil with 10-15% cobbles.

36) Sample IR-98-S-12 - 1207 m. 550 m. No sample taken, on south edge of watercourse (dry) with abundant mineralized float. Sample IR-RW-98-4 Possible ore grade Pb-rich (possible blackjack sphalerite) comprising 50% of sample. 566 m in watercourse.

37) No Sample IR-98-S-13. On northern side of slide chute in thick slide alder. Simply the vegetated portion of slide chute consisting of boulders, slide alder and infilling black organic soil.

38) Sample IR-98-S-14 - 1204 m. 650 m. Out of slide chute at 630 m, continued on to next station. Organic

layer approximately 25 cm thick. Soil brown with very minor component of rock fragments.

39) Sample IR-98-S-15 - 1207 m. 700 m. Approximately 20 cm of organic material. Soil is dark yellow-brown with approximately 40% rock fragments cobble (to boulder) sized, predominantly cobbles.

41) Sample IR-98-S-16 - 1204 m. 751 m. Approximately 15-20 cm of organic material. Soil is dark yellow-brown with approximately 50% rock fragments.

42) Sample IR-98-S-17 - 1202 m. Hip-chain thread broke at approximately 800 m. Soil is deep yellow-brown with 70% rock fragments as large cobbles/small boulders.

43) Sample IR-98-S-18 - 1200 m. 850 m. 15 cm of organic material. Rocks up to 30% (by volume) up to cobble sized. Brown coloured soil. Geophysics wire at approximately 830 m.

44) Sample IR-98-S-19 - 1200 m. 895 m. Sample taken in narrow slide chute. 15 cm of organic material. Rocks up to 20% (by volume) - cobbles. Soil is brown coloured.

45) Sample IR-98-S-20 - 1201 m. 950 m. Sample approximately 7 m below cliff band. Poor sample location, abundant roots with up to 10% pebble sized rocks. Soil is dark brown.

46) Sample IR-98-S-21 - 1199 m. 1000 m. Soil is dark yellow-brown. Organics approximately 20 cm deep. Rocks up to small boulder sized comprise up to 15% by volume (predominantly small pebbles comprising <5% by volume)

End of day - altimeter reads 970 m at camp (gained 4 m).

July 18

Walked south up logging road to intersection with creek at 1007 m. Will continue with soil sampling program with soil line at approximately 1000 m along logging road. Took hip-chain measurements and additional compass bearings to tighten up road location relative to July 12.

47) Sample IR-98-S-22 - 1007 m. 0m. Sample taken on east side of road in road bank. Sample consists of 5-10 cm of organic material above a clast-supported array of boulders with pebbles to cobbles in the interstices. Soil is dark yellow to orange-brown with moderately abundant (15%) grit sized material between larger clasts. Probably alluvial fan material.

48) Sample IR-98-S-23 - 1002 m. 52 m. Sample taken approximately 1 m east of preliminary road to end of logging cut, south of logging cut. Organics approximately 15-20 cm thick with clast-supported, verging toward matrix-supported, substrate. Boulders predominate. Soil is deep yellow brown.

49) Sample IR-98-S-24 - 997 m. 100 m. Sample taken out of bank of road cut. Predominantly matrix, no grains larger than 1 cm. Soil is dark orange brown.

Note: 110 m from south end of logging landing to creek on azimuth 124.5°/304.5°.

50) Sample IR-98-S-25 - 989 m. 150 m. Sample taken from road bank east of road at north end of logging landing. Rocks comprise 80% of sample site, clast supported with sample in matrix. 30 cm of organic cover. Soil was brown. North end of southern logging cut.

Note: Logging landing was approximately 40 m along road and 30 m perpendicular to road.

51) Sample IR-98-S-26 - 985 m. 202 m. Sample taken from road cut on east side of road. 40% clasts, matrix

supported up to 4 cm in long dimension, weak imbrication. Soil is medium chocolate brown.

Note: 230 m bend in road. Azimuth to logging landing 137.5°, toward camp 341.5°.

52) Sample IR-98-S-27 - 980 m. 250 m. Sample in road cut on east side of road. Rock content approximately 30-40%, up to 30 cm, average 3-6 cm. Soil is deep orange brown.

53) Sample IR-98-S-28 - 977 m. 310 m. Sample taken from road cut on east side of road. Rocks comprise 25% of material, up to 6 cm. Soil is medium chocolate brown.

Note: 315 m bend in road. Azimuth 161.5° to south, azimuth 000.5° to north.

54) Sample IR-98-S-29 - 975 m. 350 m. Road bank sample. Matrix supported with rocks forming 10-15% of material. Organics 6-10 cm. Soil is milk chocolate brown. At south end of cut block at sample 28.

55) Sample IR-98-S-30 - 972 m. 400 m. Sample taken approximately 15 m off road to east. <5% rocks. Deep orange soil. 10 cm organics. Ash layer at approximately 20 cm (old fire?)

Note: Bend in road at 400 m. Az. 180.5° to south, 323.5° to north.

56) Sample IR-98-S-31 - 965 m. 465 m. Road cut sample. Dark orange brown soil with <10% rock clasts up to 10 cm, average 2-4 cm. Organics approximately 10 cm thick.

57) Sample IR-98-S-32 - 963 m. 500 m. Road cut sample. Organics variable at approximately 10 cm. Rocks approximately 30% and predominantly pebble to cobble sized, up to 8 cm in long dimension. Soil is dark orange-brown.

58) Sample IR-98-S-33 - 965 m. 550 m. Road cut sample. Organics approximately 10 cm. Rock content approximately 10-15%, cobble sized. Soil is medium chocolate brown.

59) Sample IR-98-S-34 - 964 m. 600 m. Road cut sample. Organics approximately 15 cm. Rocks approximately 40%, up to 15 cm in long dimension. Soil is deep yellow-brown. Organics approximately 15 cm underlain by reddish-brown horizon approximately 50 cm thick.

60) Sample IR-98-S-35 - 965 m. 650 m. Road cut sample. Organics 5-10 cm. Soil has minor large boulders (<10% by volume) and approximately 25% pebble to cobble size rocks. Soil is dark orange-brown.

61) Sample IR-98-S-36 - 965 m. 690 m. Road cut sample. Organics approximately 5-10 cm, underlain by reddish brown layer approximately 30 cm thick. Sample a mix of reddish brown layer and underlying dirty yellow layer. Rocks approximately 30% comprised predominantly of pebble to cobble sized material and subordinate small boulders to 8 cm.

62) Sample IR-98-S-37 - 963 m. 765 m. Road cut sample. Organics approximately 5-10 cm thick underlain by 25-30 cm dark reddish-brown horizon. Rocks approximately 20% cobbles to small boulder size. Sample taken from mix of reddish brown material (20-30%) and underlying medium to dark brown material.

Note: 800 m bend in road. Az. 285° to wash out on road at creek just south of camp.

63) Sample IR-98-S-38 - 963 m. 800 m. Road cut sample. Organics approximately 5-10 cm thick. Large boulders (20-40 cm in long dimension) subordinate. Reddish brown to dark yellow soil horizon with 20% pebbles to cobbles.

64) Sample IR-98-S-39 - 957 m. 850 m. Road cut sample. Organics 5-10 cm immediately overlies dark yellow brown layer with 60-70% small boulders (matrix to clast supported).

Note: northern end of northern cut-block.

65) Sample IR-98-S-40 - 957 m. 900 m. Road cut sample. Organics 5-10 cm. Soil sample taken from medium yellow-brown horizon with 20-30% pebble to cobble sized material.

66) Sample IR-98-S-41 - 957 m. 950 m. Road cut sample. Organics <5 cm thick underlain by dark yellow brown horizon 20 cm thick underlain by dark brown layer 5 cm thick. Sample taken from dark yellow layer subsequent to dark brown layer. Rocks pebble sized and approximately 30%.

Note: 990 m washed out portion of road due to slide debris. Az. 302.5° to camp.

67) Sample IR-98-S-42 - on alluvial fan. No sample taken at 1000 m.

68) Sample IR-98-S-43 - 951 m. 1050 m. Road cut sample. Organics approximately 5 cm thick. Sample taken from medium reddish brown horizon with 25% pebble sized rock fragments.

69) Sample IR-98-S-44 - 949 m. 1100 m. Road cut sample immediately adjacent to camp. Organics approximately 5 cm thick. Sample taken from deep orange-brown horizon with approximately 20% pebble sized rocks.

Note: reset altimeter to 966 m and hip-chain to 000m.

70) Sample IR-98-S-45 - 967 m. 050 m. Road cut sample. Located in alluvial fan material. Abundant gravel to small boulders (up to 15 cm in long dimension). No organic layer. 15 cm of reddish brown sand with sample taken in underlying dark yellow brown sand, rocks 30-40%.

Note: 69 m bend in road to az. 331.5°.

71) Sample IR-98-S-46 - 967m. 102m. Sample taken from eastern edge of borrow pit by road. Finer material on edge of alluvial fan with abundant gravel (50 - 60%). Thin layer of organics (<5cm) with sample taken from underlying dark yellow gravel-rich horizon.

72) Sample IR-98-S-47 - 965m. 151 m. Road cut sample. Organics approximately 10 cm. Sample taken from gritty material underlying 10-15cm thick medium brown horizon. Grit comprises 90% of the material.

73) Sample IR-98-S-48 - 960 m. 200 m. Road cut sample taken on southern edge of another alluvial fan. Organics approximately 10-15 cm thick. Sample taken from dark orange brown soil with 15% cobbles.

74) Sample IR-98-S-49 - 956 m. 250 m. Road cut. Organics 25-30cm thick. Sample on north margin of alluvial fan. Medium yellow gritty sand.

Note: 281 m Bend in road to az. 348.5°

75) Sample IR-98-S-50 - 956 m. 300 m. Road cut. Organics approximately 10 cm. Hardpan. Ground very hard packed with 60-70% rock as pebbles to cobbles (old vegetated alluvial fan?). Soil is dark yellow brown in colour.

76) Sample IR-98-S-51 - 954 m. 352 m. Road cut. Organics 10 - 15 cm. Soil is dark reddish brown to chocolate brown with 40% cobbles to small boulders.

77) Sample IR-98-S-52 - 953 m. 403 m. 6 m from edge of road. Organics approx 5-10 cm. Soil is medium brown and clay rich. Rocks comprise approximately 15-20%.

78) Sample IR-98-S-53 - 945 m. 450 m. 4 m from edge of road. Same as 52.

79) Sample IR-98-S-54 - 939 m. 500 m. Eastern edge of borrow pit, approximately 15 m from edge of road. Organics approximately 5 - 10 m thick. Sample consists of dark yellow brown sandy clay with 10-15% gravel and subordinate boulders.

80) Sample IR-98-S-55 - 935 m. 550 m. Road cut. Soil is medium to dark brown with 30 - 40% matrix supported boulders.

81) Sample IR-98-S-56 - 934 m. 600 m. Road cut. Organics approximately 5 cm thick, underlain by 5 cm of dark yellow silty clay and 5 cm of dark brown clay. Sample taken from underlying dark orange-brown sand. Grit to pebble sized rocks approximately 5%.

82) Sample IR-98-S-57 - 927 m. 658 m. Road cut. Swampy, wet ground. Sample consists of medium to dark brown sandy clay with 5-10% pebbles.

Note: 700 m Bend in road to az. 316.5°

83) Sample IR-98-S-58 - 930 m. 700 m. Road cut. Organics 5-10 cm. Soil is medium to dark orange-brown with 10% pebbles.

84) Sample IR-98-S-59 - 928 m. 750 m. Road cut. Steep bank to Road cut. Sample taken 1.2 m below projected surface of organics approximately 5cm thick. Sample taken in medium to dark brown silty sand with 10-15% pebbles.

Note: 762 m. Bend in road az. 341.5°

85) Sample IR-98-S-60 - 923 m. 801 m. Road cut. Sample taken in dark orange-brown sandy silt with 10% pebbles and highly subordinate boulders.

86) Sample IR-98-S-61 - 926 m. 850 m. Road cut. Sample taken below kilometer 17 sign post. 3.5 m high Road cut. Sample taken 2 m below projected surface of organic layer. Soil consists of dark yellow-brown sand with 20% pebbles.

87) Sample IR-98-S-62 - 923 m. 900 m. Road cut. Similar to 61.

Note: Road bends to az. 351.5°

88) Sample IR-98-S-63 - 924 m. 951 m. Road cut. Similar to IR-61. Medium brown silty sand with 10% pebbles and highly subordinate boulders.

89) Sample IR-98-S-64 - 919 m. 1.00 km. Road cut. Similar to 61 except 30 cm below projected organic surface. Soil is medium yellow-brown to brown comprised of 20% grit to pebbles with subordinate cobbles to small boulders.

Note: Claim line for IRONY 24 and 25 claims crosses road 4 m north of IR-98-S-64.

July 19

Continued sampling along road to ensure geochem soil line is far enough north to detect mineralized horizon if it passes through Oliver Creek as suggested by structure contouring hypothesis.

90) Sample IR-98-S-65 - 922 m. 1050 km. Approximately 4 m off road in small borrow pit. Sample taken in medium yellow brown silty sand with approximately 20% pebbles to cobbles. Subordinate small boulders.

91) Sample IR-98-S-66 - 917 m. 1100 m. Road cut. Medium brown soil with 15% pebbles. Organics approximately 15 cm thick. Sample taken 35 cm below surface.

92) Sample IR-98-S-67 - 914 m. 1163 m. Road cut. Ground too wet with seepage at 1150 m. Sample medium brown with 10-15% pebbles to cobbles. Organics 10 cm. Sample 1 m deep.

93) Sample IR-98-S-68 - 918 m. 1200 m. Eastern edge of borrow pit approximately 10 m from edge of road. Sample taken approximately 4 m below projected surface of organics. Sample consists of medium brown silty sand with 10-15% pebbles. Moderately abundant strongly iron stained boulders.

Note: Bend in Road to az. 331.5° at 1190 m

94) Sample IR-RW-98-69 - 913 m. 1250 m. Road cut. Sample taken approximately 40 cm below organics (10 cm thick). Medium to dark yellow-brown clayey sand with 15-20% pebbles. Strongly ironed stained boulders in 68 appear to be associated with 1 - 2 % sulfides in amphibolite.

Note: Bend in road to az. 346.5° at 1284 m

95) Sample IR-98-S-70 - 920 m. 1300 m. Road cut. Sample approximately 35 cm below organic surface (5-10 cm thick). Silty sand, dark orange-brown in colour with 10% pebbles.

96) Sample IR-98-S-71 - 917 m. 1363 m. Road cut. Ground too wet with seepage at 1350 m. Sample taken approximately 35 cm below surface of organic layer (approximately 20 cm thick). Sample comprised of medium yellow-brown clayey sand with 10-15% pebbles to cobbles.

Note: Road Bends at 1350 m to 324.5° for approximately 250 m.

97) Sample IR-98-S-72 - 918 m. 1400 m. Road cut. Sample taken approximately 20 cm below surface of organics (<5 cm thick). Sample consists of chocolate brown clayey sand to sandy clay with <5% pebbles.

98) IR-98-S-73 - 897 m. 050 m. Immediately across from claim post for IRONY 3 I.P. Road cut. 20 cm below surface of organics. Medium brown colour. Sample taken around $\geq$15 cm rounded boulder. Minor rootlets and <10% pebbles.

Note: Crossed claim line at 73 m.

99) IR-98-S-74 - 896 m. 100 m. Road cut. Abundant pegmatite in Road cut (proximal float?) with relatively abundant amphibolite boulders. Approximately 20 cm below organic surface. Medium brown soil horizon with 15-20% large cobbles to small boulders and <10% pebbles.

100) IR-98-S-75 - 894 m. 150 m. Road cut. Approximately 35 cm below organic surface. Matrix supported medium size boulder. Soil is dark orange brown with 10% rock fragments and pebbles.

101) IR-98-S-76 - 894 m. 205 m. Road cut. 25 cm below organic surface. Medium to dark brown soil horizon

with matrix supported small boulders to 20 cm long dimension. Soil is silty sand with 10% pebbles.

102) IR-98-S-77 - 897 m. 257 m. Road cut. Crossed creek at 244 m. Soil taken 40 cm below organic surface in vegetated stream bed. Matrix supported small boulders with matrix composed of sand to grit sized material. Approximately 30-40% grit to pebble sized material. Rusty coloured float in creek.

Note: 980 m back at camp (altimeter +14 m)

Notes: Moderately abundant float of iron-stained material (including some strongly iron-stained) between sample sites 51 and 55.

July 20

Walked up along creek sub-parallel to IRONY / Falconbridge claim line to 1100 m. Crossed up and over bank onto soil geochem line at 1102 m.

103) IR-98-S-78 - 1102 m. 0 m. Approximately 5 m north of creek. Sample taken approximately 20 cm below organic surface on vegetated, stabilized portion of alluvial fan. Abundant matrix supported boulders comprised of 30-40% of volume with medium brown sandy to gritty matrix with 10% pebbles.

104) IR-98-S-79 - 1098 m. 50 m. At transition from slide chute to forest. Vegetated alluvial material 5-8 cm of dark organic cover. Hole 15 cm deep beside and below large angular boulder of unknown size. Soil horizon is medium brown with 10% pebbles.

105) IR-98-S-80 - 1094 m. 100 m. Organic layer 5-10 cm thick. Hole approximately 20 cm deep. Removed single large equant 20-25 cm boulder for hole. Remainder of sample consists of medium brown horizon with 5-10% pebbles.

106) IR-98-S-81 - 1099 m. 150 m. Organic layer 10-15 cm thick. Sample taken in material exposed in roots of overturned tree. Sample taken approximately 30 cm deep. Dark orange brown with <10% pebbles and <5% cobbles.

107) IR-98-S-82 - 1104 m. 197 m. In boulder field, partially vegetated organic cover approximately 5 cm thick overlying clast supported boulders up to 1 m in diameter (predominantly pegmatite). Sample taken approximately 20 cm below surface in medium orange brown soil with <10 % pebbles.

108) IR-98-S-83 - 1105 m. 250 m. On south edge of moderately abundant blow down. Organic layer approximately 5-10 cm with thick network of roots. Soil taken approximately 20 cm deep in medium orange brown soil with approximately 10% pebbles.

109) IR-98-S-84 - 1125 m. 297 m. On north edge of very tough section of blow down. Soil taken from hole left from mobilized boulder. Organics approximately 5-10 cm thick. Hole approximately 20 cm deep. Medium orange-brown soil with approximately 10% pebbles.

110) IR-98-S-85 - 1097 m. 352 m. Organic layer approximately 5 cm thick. Sample taken in roots of blown down tree. Sample taken approximately 20 cm below surface in medium orange brown sandy soil with <5% pebbles.

111) IR-98-S-86 - 1098 m. 400 m. Organic layer approximately 5-7 cm thick. Sample taken approximately 25 cm below surface. Medium orange brown soil with <5% pebbles. Vegetated boulder field.

112) 434 m. 1115 m. Outcrop of psammite (biotitic) 1.5 m parallel to slope and 4 m perpendicular to slope.

S_{1-2} 019°/73°
Minor iron staining along compositional layers.

113) IR-98-S-87 - 1104 m. 447 m. Sample taken from within roots of blown down tree. Soil is medium orange brown.

114) IR-98-S-88 - 1102 m. 503 m. Noticed string was broken at 473 m, therefore interval uncertain. Organics approximately 5-10 cm thick. Hole approximately 20 cm deep. Sample taken in soil light to medium brown with 50% grit to pebble sized material.

115) IR-98-S-89 - 1105 m. 555 m. Sample taken below line flagged with yellow ribbon, no blazing at az. 092°==> Forestry? Followed upward to approximately 1130 m to yellow with purple flagging and marked trees - probable cut-block boundary? Organics approximately 5-10 cm thick. Sample taken approximately 25 cm deep in medium brown coloured soil.

116) IR-98-S-90 - 1113 m. 600 m. Organics approximately 10-15 cm thick with thick network of roots and rootlets. Pulled out large 60 cm long dimension boulder to get soil, taken approximately 40 cm deep. Soil is deep yellow-orange brown with 60% cobbles to boulders and <10% pebbles.

117) IR-98-S-91 - 1107 m. 650 m. Sample taken in vegetated boulder field. Clast supported boulders up to 60 cm in long dimension. Sample taken approximately 30 cm deep in dark yellow-brown soil. Boulder partially covered by organics up to 15 cm thick.

118) IR-98-S-92 - 1105 m. 704 m. Approximately 40 m south of creek. Sample taken out of roots of blown down tree. Soil medium to dark orange brown.

119) IR-98-S-93 - 1085 m. Approximately 745 m. Cliffed out against creek. Sample taken in creek bank on north side of creek. No significant organic layer but plant roots and rootlets extend 10-15 cm below surface. Sample taken approximately 20 cm below surface in dark orange-brown soil horizon with approximately 10% pebbles (to cobbles).

Note: Claim post below cliffs at 1083 m. Reset hip chain to zero to continue north.

120) IR-98-S-94 - 1090 m. 040 m. On south edge of boulder field. Sample taken in soil exposed by blown down tree. Soil is dark orange brown with 5% pebbles and approximately 40 cm below organic surface (5-10 cm thick).

121) IR-98-S-95 - 1102 m. 090 m. On south edge of boulder field. Sample taken between roots of large tree. Organics 1-3 cm thick. Sample taken approximately 10-15 cm below surface. Medium brown in colour with approximately 5% pebbles.

122) IR-98-S-95 - 1110 m. NO SAMPLE. Possibly still in boulder field comprised of biotitic semi-pelite and amphibolite with highly subordinate pegmatite and psammite ==> SPA?

123) IR-98-S-96 - 1106 m. 196 m. In very thick bush north of boulder field. Sample taken out of roots of blown down tree. Sample is medium brown in colour with <10% pebbles.

124) IR-98-S-97 - 1098 m. 254 m. Passing between and through small exposures of platey, lightly to moderately iron-stained biotite semi-pelite. Organics approximately 3-5 cm thick. Sample taken approximately 15-20 cm below surface in dark orange brown soil with 10% pebbles.

125) IR-98-S-98 - 1098 m. 326 m. Had to push on to take sample as 300 m in middle of deadfall and boulders.

Sample taken approximately 15 cm below organic surface. Organics approximately 5-7 cm thick with underlying 5-10 cm interval of platey rocks. Sample taken from medium orange brown soil with 10% pebbles.

Note: Dropped down to 1050 m on approximate bearing of 103°, down and through boulder field to north side at 1048 m.

126) IR-98-S-99 - 1048 m. 349 m. 19 m from north edge of boulder field. Vegetated portion of boulder field. 5-10 cm of organics. Sample taken approximately 20 cm deep in medium grey soil with 10% pebbles.

127) IR-98-S-100 - 1044 m. 410 m. Vegetated boulder field. Organic layer approximately 5-10 cm thick with roots and rootlets to 20 cm. Sample taken at 25 cm in medium brown soil with 5-10% pebbles.

128) IR-98-S-101 - 1044 m. 446 m. Organic layer approximately 5-10 cm thick with thick root network. Sample taken approximately 15-20 cm deep in deep yellow-grey soil with <5% pebbles.

129) IR-98-S-102 - 1049 m. 505 m. Organic layer approximately 5 cm thick. Sample taken in roots of tree. Silty sand soil sample with no pebbles, medium orange brown in colour.

120) IR-98-S-103 - NO SAMPLE. Boulder field from 539 to 591 m. Vegetated boulder field (moss covered) to 619 m.

131) IR-98-S-104 - 1057 m. 619 m. At edge of vegetated boulder field. Sample taken in exposed roots of tree approximately 30 cm below surface. Organic layer approximately 5-10 cm thick. Soil is dark orange brown with approximately 10% pebbles to cobbles.

132) IR-98-S-105 - 1054 m. 655 m. At base of small outcrop of platey semi-pelite. Sample taken approximately 25 cm below organic surface (5-10 cm thick). Sample in medium brown clayey sand.

133) IR-98-S-106 - 1047 m. 703 m. In moderately thick bush, predominantly deciduous shrubs. Organics approximately 3-5 cm thick. Sample taken from medium to dark orange brown horizon with 5-10% pebbles.

134) IR-98-S-107 - 1049 m. 744 m. Approximately 25 m south of creek at edge of steep ground. Organics approximately 3-5 cm thick in thick undergrowth. Sample taken approximately 10-15 cm deep in medium to dark orange brown sandy soil.

Walked approximate bearing of 034.5° to road. Came onto road between sample IR-71 and 72 (approximately 20 m from 71).

Back at camp - 979 m (gained 13 m).

Notes: 1) Structure contouring the mineralized horizons as mapped by Cominco / Falconbridge using an average of 270°/30° orientation relative to the axial plane orientation (205°/35° W) suggests the two horizons are both on the same limb as they both lie above and northwest of the surface trace of the axial plane. The two horizons, as structure contoured, agree well with the projected/mapped surface trace, except for the fold at/near Clear Lake and near the "F" showing. These features can be explained by folds and faults, respectively. Furthermore, structure contouring the horizons into Oliver Creek, off the Falconbridge claims appears to agree reasonably well with the locations of <u>strongly</u> iron-stained float. Ideally, these will be confirmed by analysis of geochemical soil samples.

2) There is a fold closure apparent in the north face of the peak due south of Light Lake and further west (closer to Oliver Creek). Review photos taken from last years camp for clarification. In addition, note its

position relative to the projected surface trace of the axial plane from the "E" showing and strong iron-staining noted on the flight out last year.

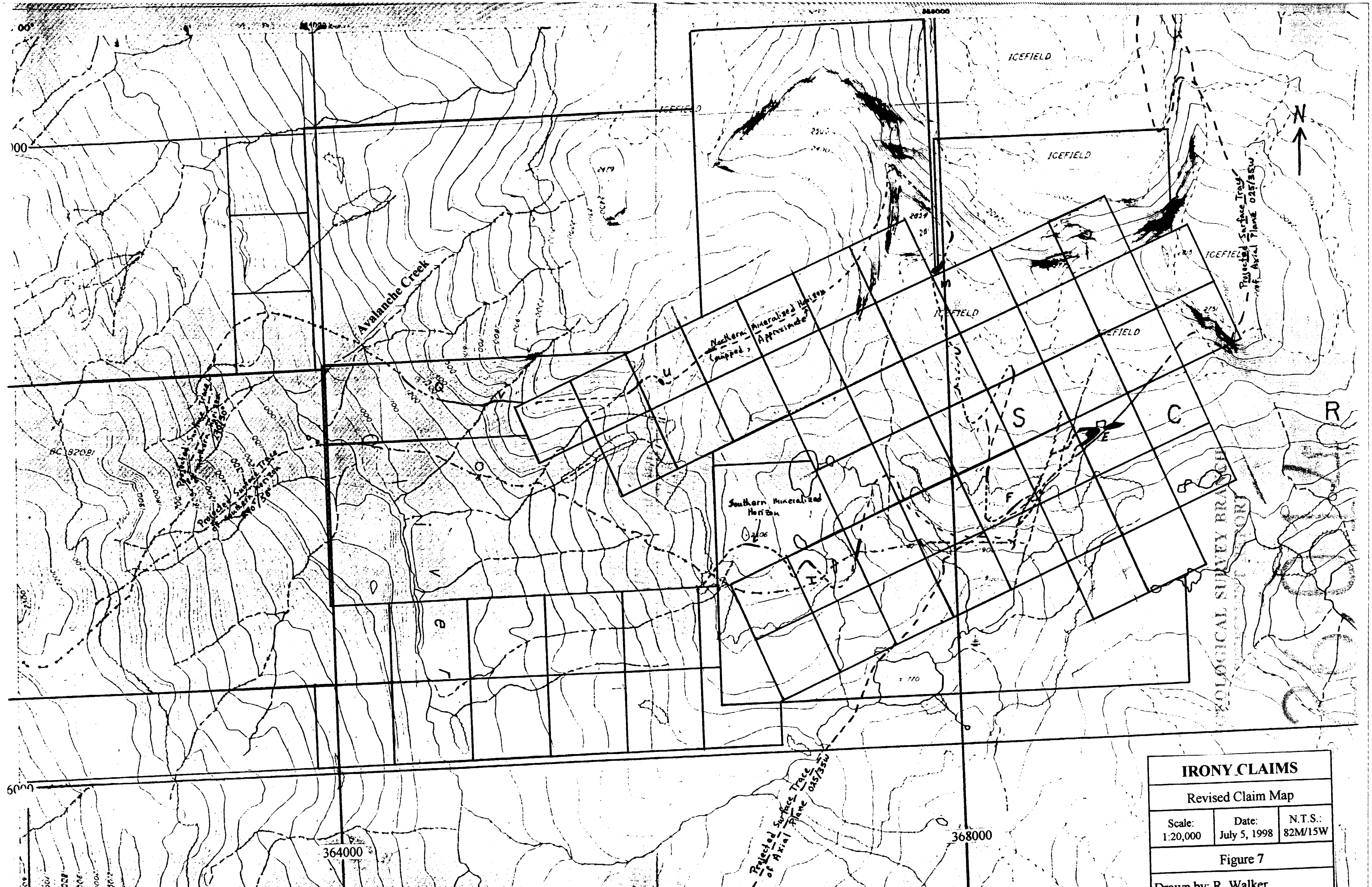
3) Texturally, the area below the glacier west of Oliver Creek and the "E" showing are similar (i.e. abundant pegmatite). Perhaps outcrops characterized by abundant pegmatite are the hinge zones of F2 folds and pegmatite was localized along axial planar fractures.

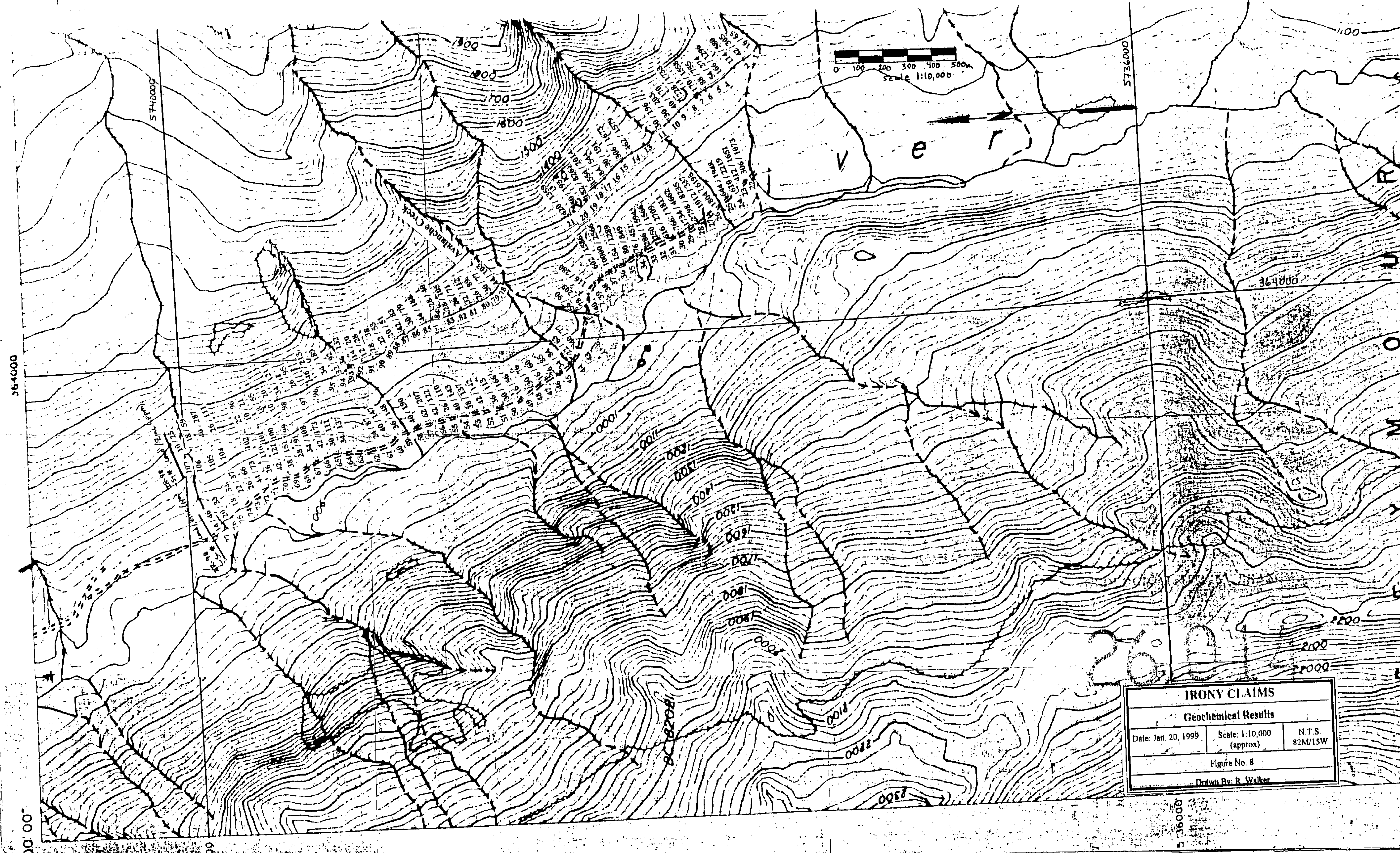
4) Given silt geochemical anomalies documented along Hoskins Creek, perhaps there are additional exposures of the mineralized horizons.

5) The best way to coarsely map the possible location of the mineralized horizons in the middle marble may be to work stratigraphically upward from the SPA. This may work north of the lake at the headwaters of Ruddock Creek and in the northern portion of the Oliver Creek drainage. This may prove feasible on a Landsat photo.

6) Given the relative abundance of iron-stained amphibolite in the northern creek, perhaps the northern mineralized horizon lies within the upper SPA, therefore check SPA north of headwaters of Ruddock Creek.

7) Regarding (3), the surface trace of the axial plane for the "E" showing lies so far east and the fold south of Light Lake (2) suggests it is a separate fold (if it is, in fact, an area of fold closure), most likely structurally above the "E" showing, or, given the structure contouring of the mineralized horizons to the north on Oliver Creek, the structurally underlying syncline.


IRONY CLAIMS
Revised Claim Map
Scale: 1:20,000
Date: July 5, 1998
N.T.S.: 82M/15W
Figure 7
Drawn by: R. Walker
Avalanche Creek
ICEFIELD
ICEFIELD
ICEFIELD
ICEFIELD
ICEFIELD
Northern Mineralized Horizon (mapped, Approximate)
Southern Mineralized Horizon
Projected Surface Trace of Axial Plane 025/35W
Projected Surface Trace of Axial Plane 025/35W
N
364000
368000
BC 92021



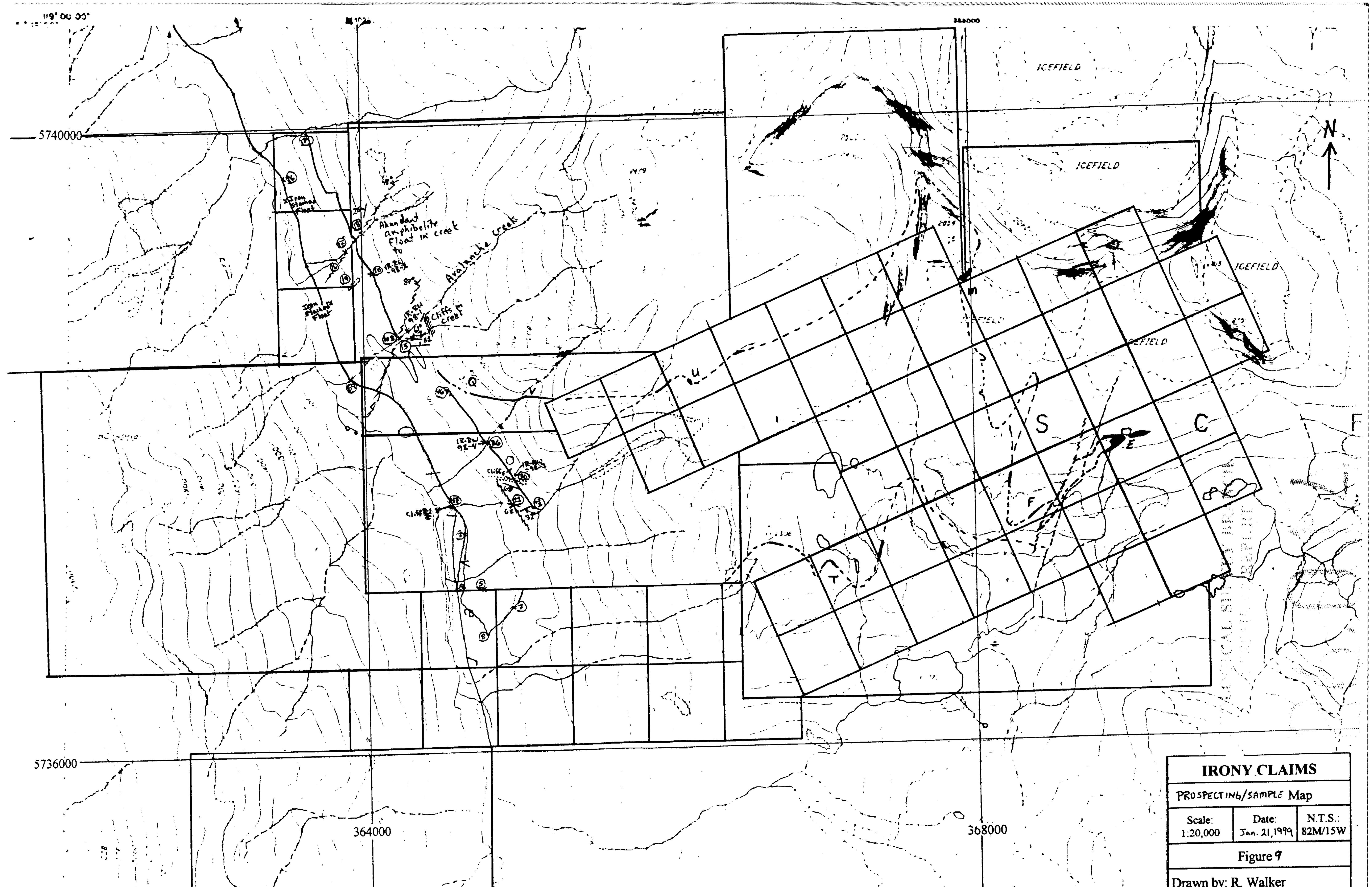
IRONY CLAIMS

Geochemical Results

Date: Jan. 20, 1999	Scale: 1:10,000 (approx)	N.T.S. 82M/15W

Figure No. 8

Drawn By: R. Walker


119° 00' 00"
5740000
5736000
364000
368000
N
ICEFIELD
ICEFIELD
ICEFIELD
ICEFIELD
Abundant amphibolite float in creek
Avalanche creek
Iron Stained Float
Iron Stained Float
Cliffs in creek
IR-RW 98-1
IR-RW 98-2
IR-RW 98-3
IR-RW 98-4
Cliffs
Q
V
U
S
C
E
F
T
IRONY CLAIMS
PROSPECTING/SAMPLE Map
Scale: 1:20,000
Date: Jan. 21, 1999
N.T.S.: 82M/15W
Figure 9
Drawn by: R. Walker