LOG NO: DEC 15 1993 RD.
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FILE NO:

GEOLOGICAL, AIR PHOTO
AND GEOPHYSICAL
INTERPRETATION REPORT
ON THE NED CLAIM

1. Located 25 km. west of Kamloops, B.C.
2. Kamloops Mining Division
3. NTS Map 92I/10
4. UTM Grid Reference:
   10U CK 672000 5613000
5. Latitude: 50 Deg. 38.5 Min. N
   Longitude: 120 Deg. 34 Min. W
6. Work done during May to Sept., 1993
7. Owner/Operator: Rhino Resources Inc.

By

Dr.A.B.L.Whittles, P.Eng.
Geonics Consulting Services Ltd.
1993

GEOLOGICAL BRANCH
ASSESSMENT REPORT

23,111

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ASSESSMENT REPORT SUMMARY

This report is a summary of an extensive air photo interpretation, along with geological field work, completed during the past summer. The air photo analysis involved a study of the area from Savona to Kamloops and south to Dominic Lake. This was complemented by geological field spot checks, and the collection and study of more than 120 samples over the same area, including the NED claim. A detailed suite of rocks was assembled in order to assist in the classification of the rocks found on the NED claim. The detailed study of air magnetic maps was blended into these surveys, to provide a comprehensive understanding of mineral potential of the NED claim.

Similar air photo, air magnetic, and geological techniques were then applied to a detailed study of the NED claim. Along with a review of earlier assessment reports and maps, the production of topographical, geological, magnetic, S.P., I.P., and VLF-EM maps on a 1:2500 scale then followed.

The NED claim is divided roughly into two halves, marked diagonally by the Greenstone Mountain Road. The south is noted for its mountainous topography, and nonmagnetic Nicola greenstone rocks. The northern half is situated in a excellent environment for intrusive hydrothermal deposits related to the Iron Mask Batholith rocks. Most of the unaltered rocks in the north were very different from the greenstones, being dark grey to black feldspar porphyries, but intrusive rocks similar to the Sugarloaf microdiorites were found in the center of the claim. A large intrusive plug is inferred on the northern edge of the claim. An area of about 500 m by 500 m surveyed in the northern part of the claim showed extensive carbonate to chalcedonic alteration, ranging up to intense argillic alteration with almost complete silicification of the host rock. Over half of the rock examined in the northeastern part of the NED claim was altered in some manner. On the air photos this northern area is inferred to be in an extensional fracture system, bounded by a large fault system running along the shores of Ned Roberts Lake, another along Cherry Creek, and a third east trending system from Beaton Creek over to just north of the Afton Mine open pit. Several northerly trending fractures can be seen on the air photo in this extensional zone, and these correspond to S.P. lows, I.P. chargeability highs, and resistivity highs, centered in the large alteration zone. Primary azurite and malachite have been found in the same location (giving 0.8% copper, and 0.02G/Tonne gold assays). The geochemical results indicate anomalous As, Sb, Bi, Ba, Ag, and Au. It should be noted that gold is a common commodity in deposits all around the NED claim, ranging up to 0.3 oz./ton in the nearby Copper King mine.

The NED deposit fits the epithermal profile very closely on the basis of: rock type (volcanic flows), structural controls (extensional), pathfinder minerals (Cu, Hg, Sb, As, Ag, Au), alteration (to intense argillic and silicification), hosts (veins and stockworks), and gangue minerals (silica and carbonate minerals). Gold and silver are the usual economic minerals in such deposits.

PART 1: INTRODUCTION

1.1 PROPERTY LOCATION, ACCESS AND DESCRIPTION

The NED Claim Group is located approximately 25 km. west of the town of Kamloops, and consists of 12 mineral claim units (see Figures 1 and 2).

Access is attained by driving west of Kamloops on the Cocahalla Highway, branching off on Highway 1 to Greenstone Mountain Road, and driving 3 km. south to enter the claim group. Refer to Figure 2.

The topography consists of pleasant low rolling hills with intermixed open fields and draws with sparse tree cover in the northeastern half, rising fairly steeply to the southwest. Here the tree cover is heavier but still moderate, and the bush is fairly open. Small open meadows are common.

1.2 OWNERSHIP

The NED Claim Group is owned by Rhino Resources Inc. and consists of one metric claim of 12 mineral claim units. The record number is 8863 (see Figures 2, and 3). Upon acceptance of this report, the expiry date will be Sept. 22, 1997.

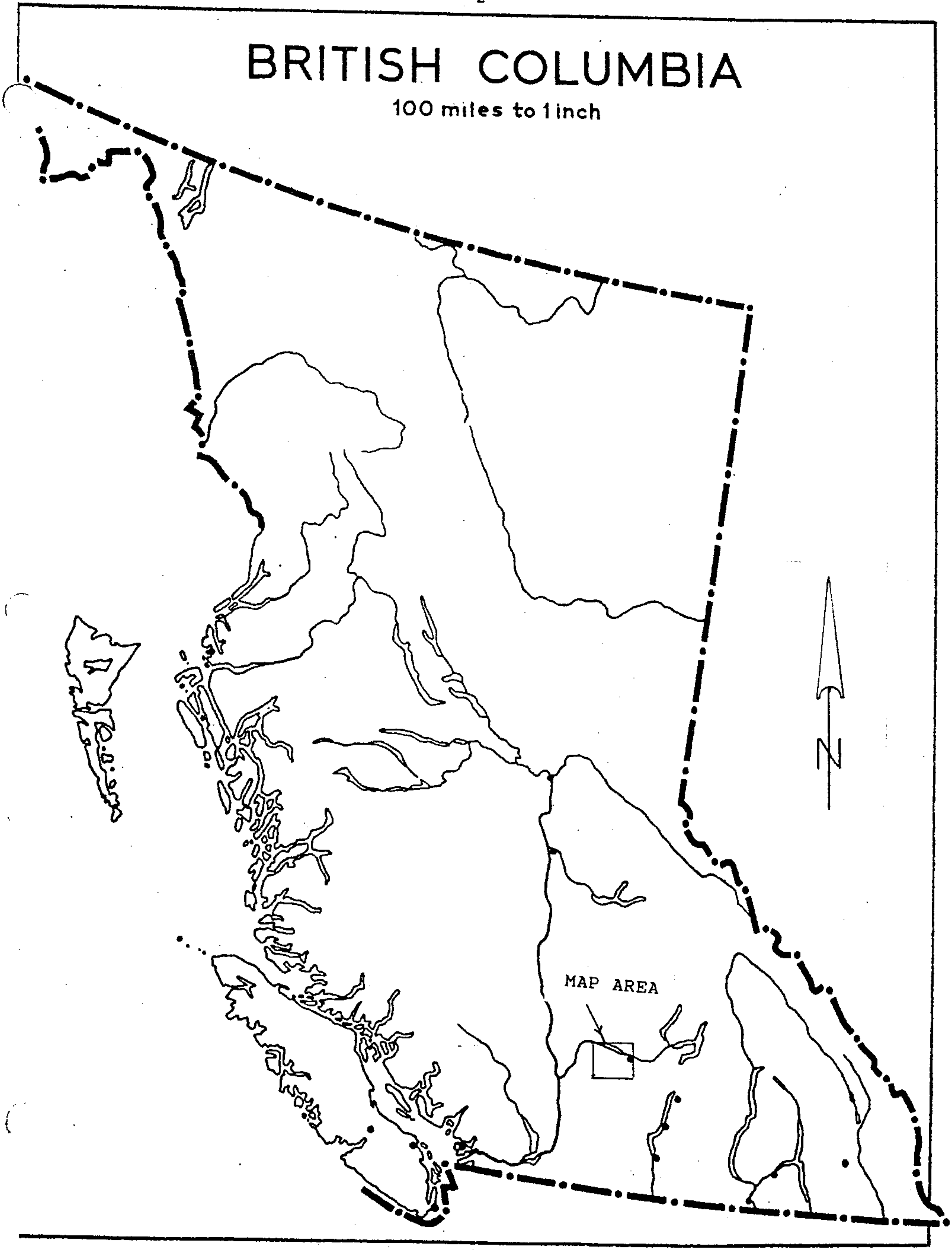


Figure 1: Map of British Columbia

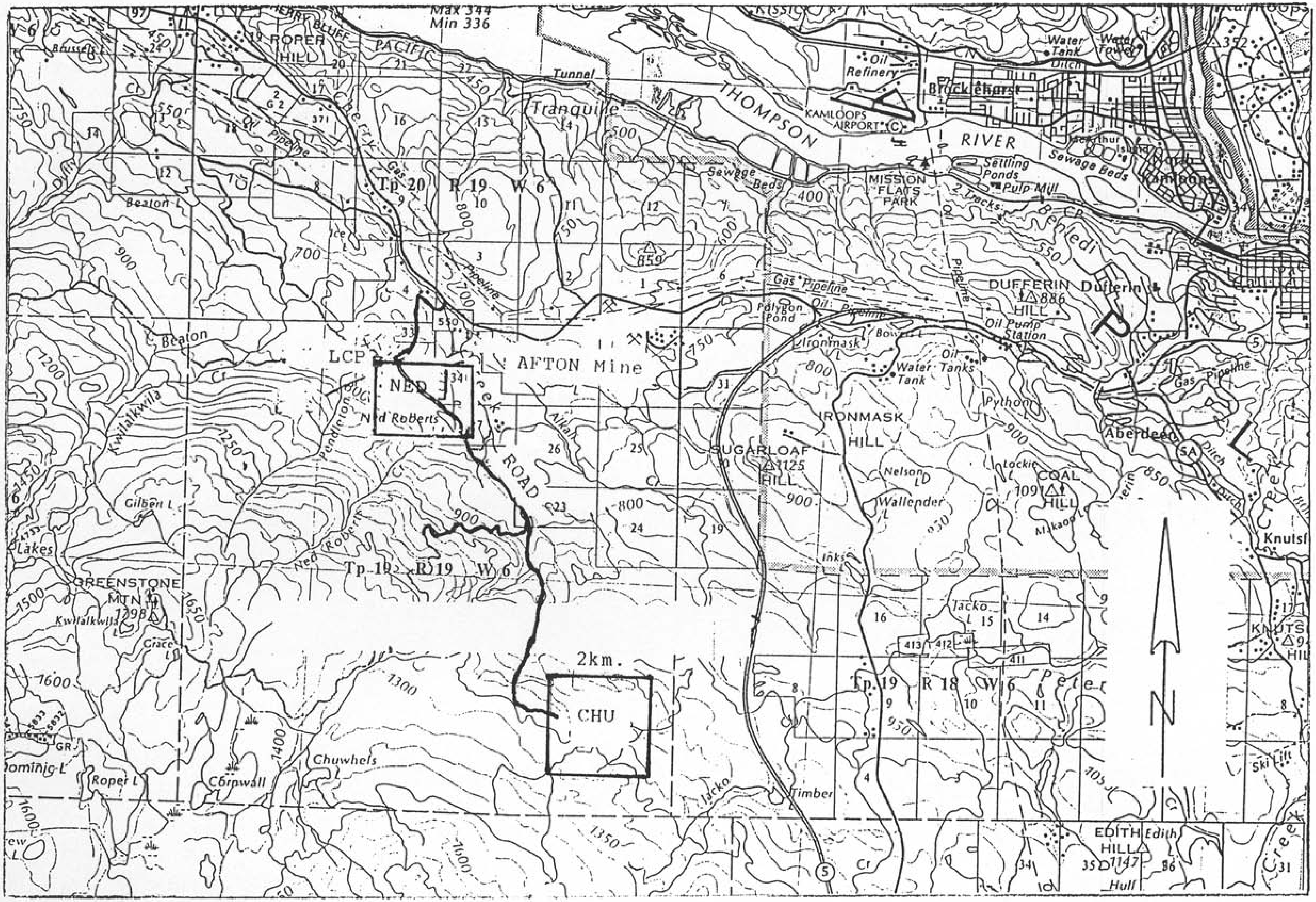
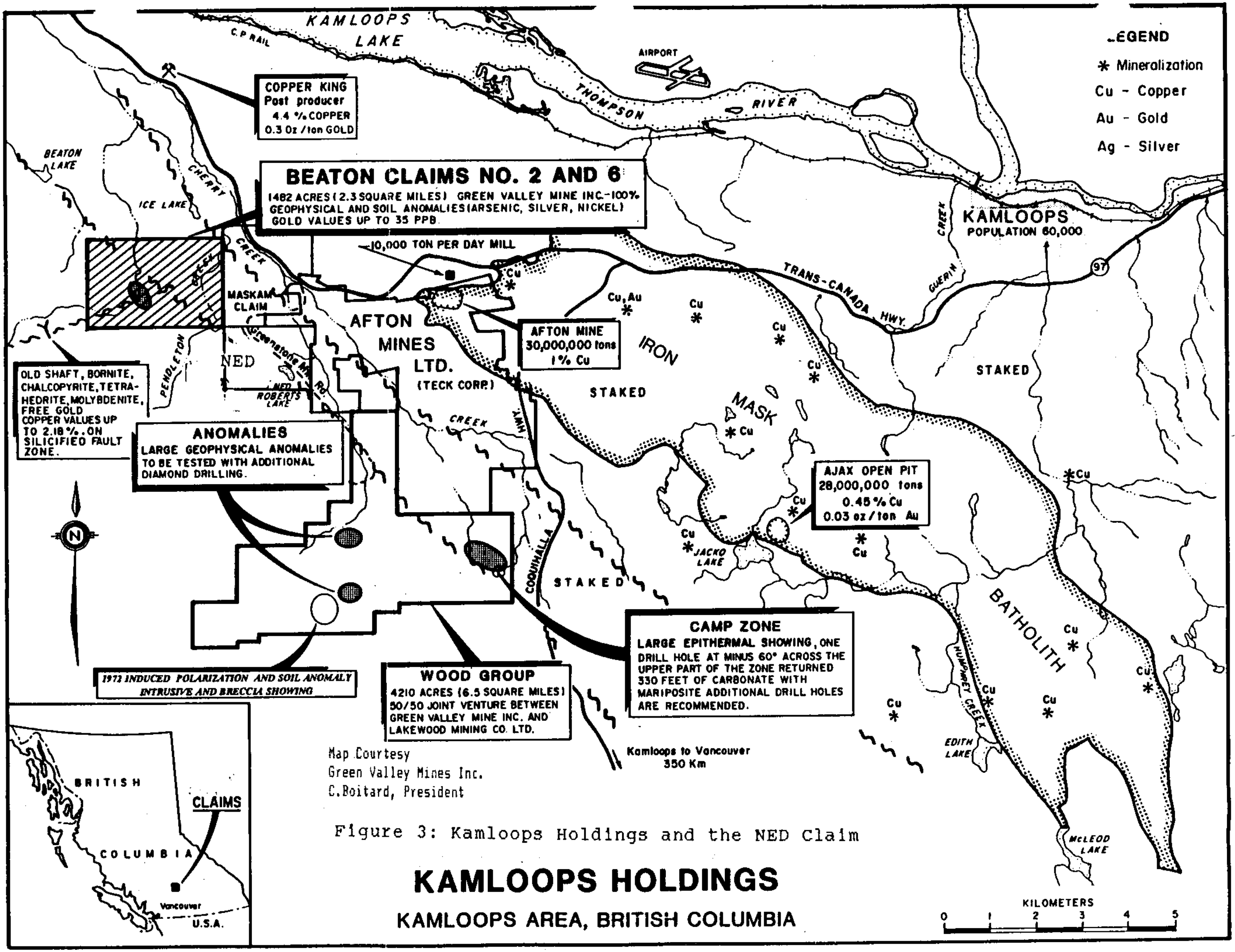


Figure 2: Map of the Kamloops Area



LEGEND
- * Mineralization
- Cu - Copper
- Au - Gold
- Ag - Silver

COPPER KING
Past producer
4.4 % COPPER
0.3 Oz / ton GOLD

BEATON CLAIMS NO. 2 AND 6
1482 ACRES (2.3 SQUARE MILES) GREEN VALLEY MINE INC.-100%
GEOPHYSICAL AND SOIL ANOMALIES (ARSENIC, SILVER, NICKEL)
GOLD VALUES UP TO 35 PPB

KAMLOOPS
POPULATION 60,000

AFTON MINE
30,000,000 tons
1% Cu

OLD SHAFT, BORNITE, CHALCOPYRITE, TETRAHEDRITE, MOLYBDENITE, FREE GOLD
COPPER VALUES UP TO 2.18 %. ON SILICIFIED FAULT ZONE.

ANOMALIES
LARGE GEOPHYSICAL ANOMALIES TO BE TESTED WITH ADDITIONAL DIAMOND DRILLING.

AJAX OPEN PIT
28,000,000 tons
0.45 % Cu
0.03 oz / ton Au

1972 INDUCED POLARIZATION AND SOIL ANOMALY
INTRUSIVE AND BRECCIA SHOWING

WOOD GROUP
4210 ACRES (6.5 SQUARE MILES)
50/50 JOINT VENTURE BETWEEN GREEN VALLEY MINE INC. AND LAKEWOOD MINING CO. LTD.

CAMP ZONE
LARGE EPITHERMAL SHOWING, ONE DRILL HOLE AT MINUS 60° ACROSS THE UPPER PART OF THE ZONE RETURNED 330 FEET OF CARBONATE WITH MARIPOSITE ADDITIONAL DRILL HOLES ARE RECOMMENDED.

Kamloops to Vancouver
350 Km

Map Courtesy
Green Valley Mines Inc.
C.Boitard, President

Figure 3: Kamloops Holdings and the NED Claim

KAMLOOPS HOLDINGS

KAMLOOPS AREA, BRITISH COLUMBIA

PART 2: SUMMARY OF PREVIOUS WORK

PART 2: SUMMARY OF PREVIOUS WORK

2.1 HISTORICAL OVERVIEW

Work in this area started before the turn of the century, and has continued until the present.

Minor production was recorded on several properties prior to the opening of the Afton Mine. The Iron Mask and Frin orebodies produced over 180,000 tons averaging 1.5% copper (plus silver and gold) between 1904 and 1928. The Copper King Mine produced 7500 tons averaging 3% copper and 0.14 oz./ton gold (see Figure 3).

The Afton orebody was discovered in 1971 and developed into a major open pit mine in 1977. This mining has continued until recently. Start up reserves (Kwong, 1987) were about 31 million tons of 1% copper, 0.6 gram/tonne gold, and 4.2 grams/tonne silver.

Exploration work has continued all around the Iron Mask Batholith, with numerous assessment reports being available.

A dozen or so gold-silver properties have been explored in the Cache Creek Group rocks (Cockfield, 1961), and some production was reported. Gold assays of over 1 oz. per ton, and silver assays of over 30 oz. per ton were reported.

2.2 OVERVIEW OF PREVIOUS EXPLORATION ACTIVITY ON THE NED CLAIM

A variety of publications and reports are available for the area in which the NED Claim Group is staked.

Kwong (1987), recently published a detailed study of the geology of the Iron Mask Batholith.

The Federal Government released aeromagnetic maps of the area in 1968.

A number of B.C. Assessment Reports covering ground near the NED Claim Group were reviewed. A brief discussion of a number of these reports follows.

Assessment Report #2262 (Holcapek, 1970)

The magnetic surveys in this report show a NW/SE trend parallel to the trend of the mineralized Iron Mask Batholith. The level of magnetization is reduced in the south.

The geological mapping is fairly complete in the southeast corner of the NED claim, and in general agrees with the field work of this report; however, there appear to be a much wider variety of Nicola volcanic rocks than are discussed in this earlier report. Also the present writer's current work suggests the Holcapek identification of Kamloops volcanic rocks on the northern half of the claim is not correct.

The geochemical data covers the NE part of the NED group. One very strong anomaly (561 ppm copper over a background of approximately 60 ppm) was reported. A subsequent survey was unable to relocate this anomaly (Whittles, 1990), but the site is in a heavily altered zone and may indeed carry copper mineralization as is found a few 100 meters to the east, in some old trenching/pits. The trend of the geochemical anomalies is NW/SE, which agrees with the magnetic survey. The irregular "bulls-eye" pattern of the geochemical data plot was originally thought to cast doubt on the reliability of these results; however, current work indicates that the geochemical pattern fits both with the new geological mapping and the previous magnetic mapping. Together these results indicate the existence of irregular, isolated, blocks of unaltered Nicola volcanic rocks that are copper rich compared to the surrounding epithermal alteration zones.

Assessment Report #3593 (Sander, 1972)

This report was concerned with the results of an I.P. survey (chargeability, apparent resistivity, and S.P.) covering the NE half of the NED claim. Some general trends are suggested. An anomalous (4 to 6 times background) chargeability zone run NW/SE in the vicinity of the NW end of Ned Roberts Lake, then swings directly north for several 1000 feet.

Apparent resistivity results suggest a similar high anomaly somewhat displaced. Near Ned Roberts Lake this high zone is south of the chargeability high. About 2000 feet north of the west end of the lake, a resistivity high coincides with a chargeability high.

One might expect that a resistivity low would correspond to a more mineralized zone (eg. possible disseminated sulfides indicated by a chargeability high zone). Since this is not the case, it is possible there is a northerly running mineralized zone which is silicified (giving the higher resistivity values).

As noted earlier in Whittles (1990), the S.P. results could not be interpreted with any certainty.

Assessment Report #5852 (Reed, 1976)

The information in this particular report was for ground now covered by the NE part of the NED claim.

This report refers to the old "adit" located on this claim (probably just a deep incline), and suggests that a set of calcite veins were being followed. This author apparently did not see the azurite and malachite mineralization, the carbonate alteration, the argillic alteration, and the presence of chalcedony veins.

This report's geological mapping was more detailed than the preceding, and indicates the presence of Nicola Group rocks to the north of Ned Roberts Lake. This is in agreement with the geological mapping discussed in this report. The report does, however, still place Kamloops Group rocks around the old workings, an interpretation the present report does not agree with. For some reason, no outcrops or mapping is given for the old Hughes 2 claim, covering the northwest end of Ned Roberts Lake, where more Nicola rocks, as well as intrusive rocks, may be present.

Assessment Report (Whittles, 1990)

This is the earlier report of the present writer.
The geophysical portion of this report indicated the possible presence of mineralization between the LCP and Ned Roberts Lake, and the field work confirmed the presence of copper mineralization (0.8% copper, and 0.02G/TONNE gold) around the old workings.
Also suggested for the first time was the possibility of epithermal type deposits around the old workings. The evidences suggesting this were as follows.

(1) Good As, Sb, Bi, Ba, Cu, and Ag I.C.P. results were obtained from rock samples collected over an area of approximately 1000 feet by 1000 feet, centered around the old workings.

(2) Pervasive carbonate and silica alteration, including massive chalcedony veins.

(3) Epithermal textures are common and included silica and carbonate cemented breccias, vuggy quartz and calcite veining, and cockscomb textures.

(4) The copper mineralization included both azurite and malachite as primary, and not secondary weathered, occurrences, as might be expected in a carbonate rich epithermal environment.

At that time the present writer was following the earlier authors designation of Kamloops rocks in this area, and it was difficult to account for a source of this epithermal mineralization, because the Kamloops rocks are much younger than the Nicola or the Iron Mask Batholith. Tertiary intrusive rocks were hypothesized, but none were observed on the claim and none have ever been reported in the area (it is possible these occur at depth). If, however, as is proposed in the present report, these are not Kamloops rocks but Nicola rocks, the observed epithermal alteration can be more logically be understood to be the result of mineralizing solutions from the Iron Mask Batholith intrusions which are, after all, only a short distance away to the northeast. In fact, these intrusive rocks have been tentatively identified on the NED claim itself.

PART 3: GENERAL GEOLOGY

4km

PART 3: GENERAL GEOLOGY

3.1 REGIONAL GEOLOGY

There are a variety of geological information sources available, many of which may found in the bibliography of Kwong (1987). Additional information was obtained from Duffell and McTaggart (1952), Cockfield (1961), Holcapek (1970) and Reed (1976). Leitch (1961) produced a one page map and rock description that summarizes the geology from Cache Creek, to the Highland Valley, to Merritt, and to Kamloops, with particular reference to the many copper deposits in the mapped area.

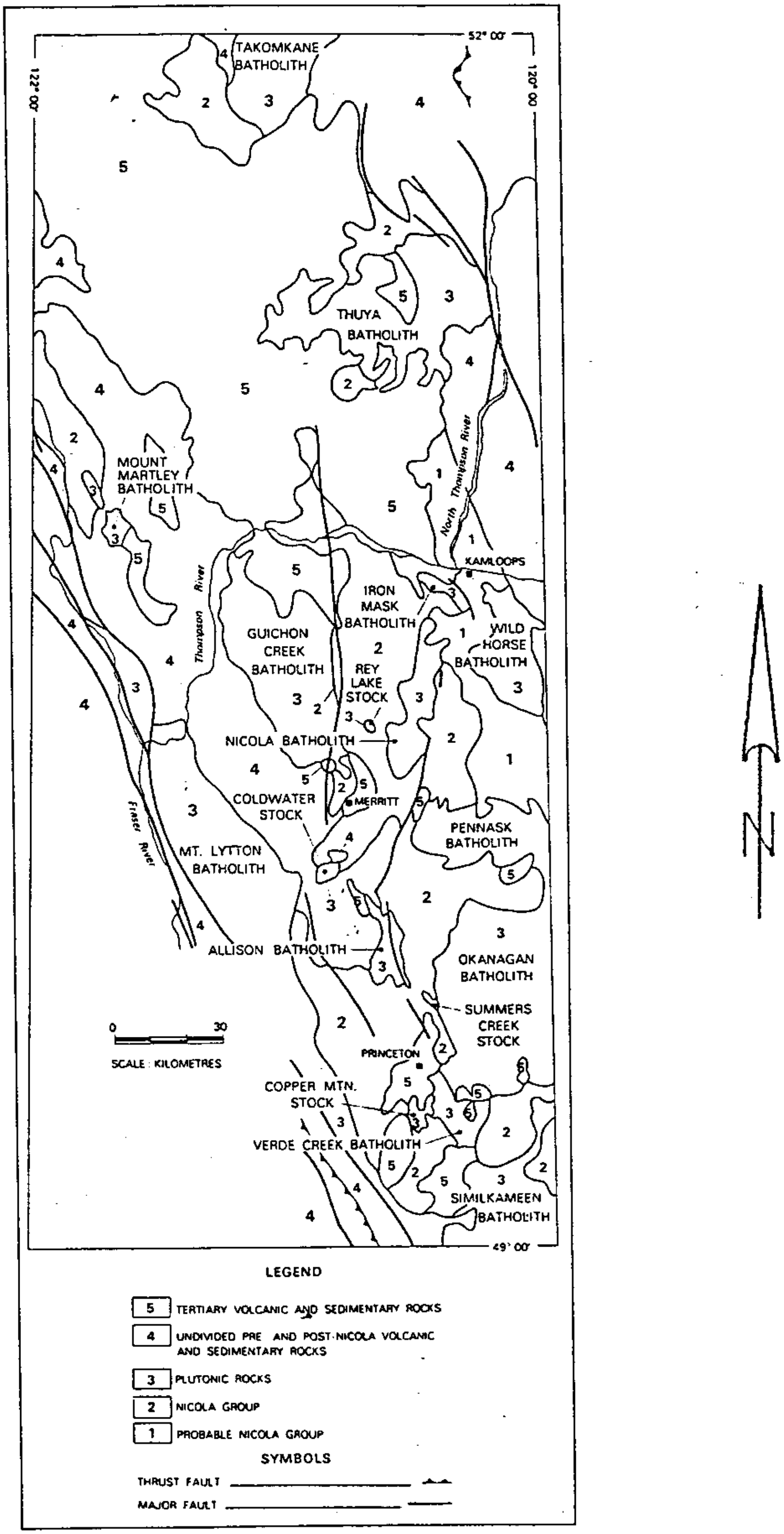
The NED Claim lies in the southern part of the Quesnel Trough, which is also known as the Nicola Belt (see Figure 4). As Kwong (1987) notes "The Quesnel Trough, located in the Intermontaine structural belt of British Columbia, is 1200 kilometers long, 30 to 60 kilometers wide and consists of Lower Mesozoic volcanic and related rocks enclosed between older rocks. It is much invaded by batholiths and smaller intrusions and is copper rich."

The Nicola Belt of the Quesnel Trough extends 200 km south of Lake Kamloops to the International Boundary. The most important pre-Tertiary rocks in this belt are Late Triassic volcanic and sedimentary rocks of the Nicola Group. Structurally the Nicola Belt is divided into a number of northerly trending blocks by several large, high-angle, northerly trending faults (Figure 4). These faults are believed to be related to the docking of exotic terranes, resulting from the plate tectonic activity of the west coast of North America, and are interpreted to be basement structures which controlled the distribution of volcanic centers and flanking sedimentary basins. Four major plutonic events have occurred in the belt, at 200 million years ago (Ma), 160 Ma, 100 Ma, and 50-70 Ma. See Figure 4.

Cockfield (1961) has provided a regional geological map (Figure 5).The following general observations can be made for this area.

(1)The Cenozoic era is represented by both sedimentary and volcanic rocks (see Figures 4, and 5), with the Valley Basalt and Kamloops Group volcanic rocks occurring most recently.

(2)The Mesozoic era is represented by thick accumulations of volcanic rocks, extensive areas of intrusive rocks, together with minor amounts of interbedded sedimentary rocks. The Iron Mask Batholith, the nearest major intrusive feature in the vicinity of the NED Claim, is one of the larger alkaline plutons of the 200 Ma age group. It is situated



Geological Survey of Canada, Map 232A

Figure 4: Generalized Geology of South Central B.C.

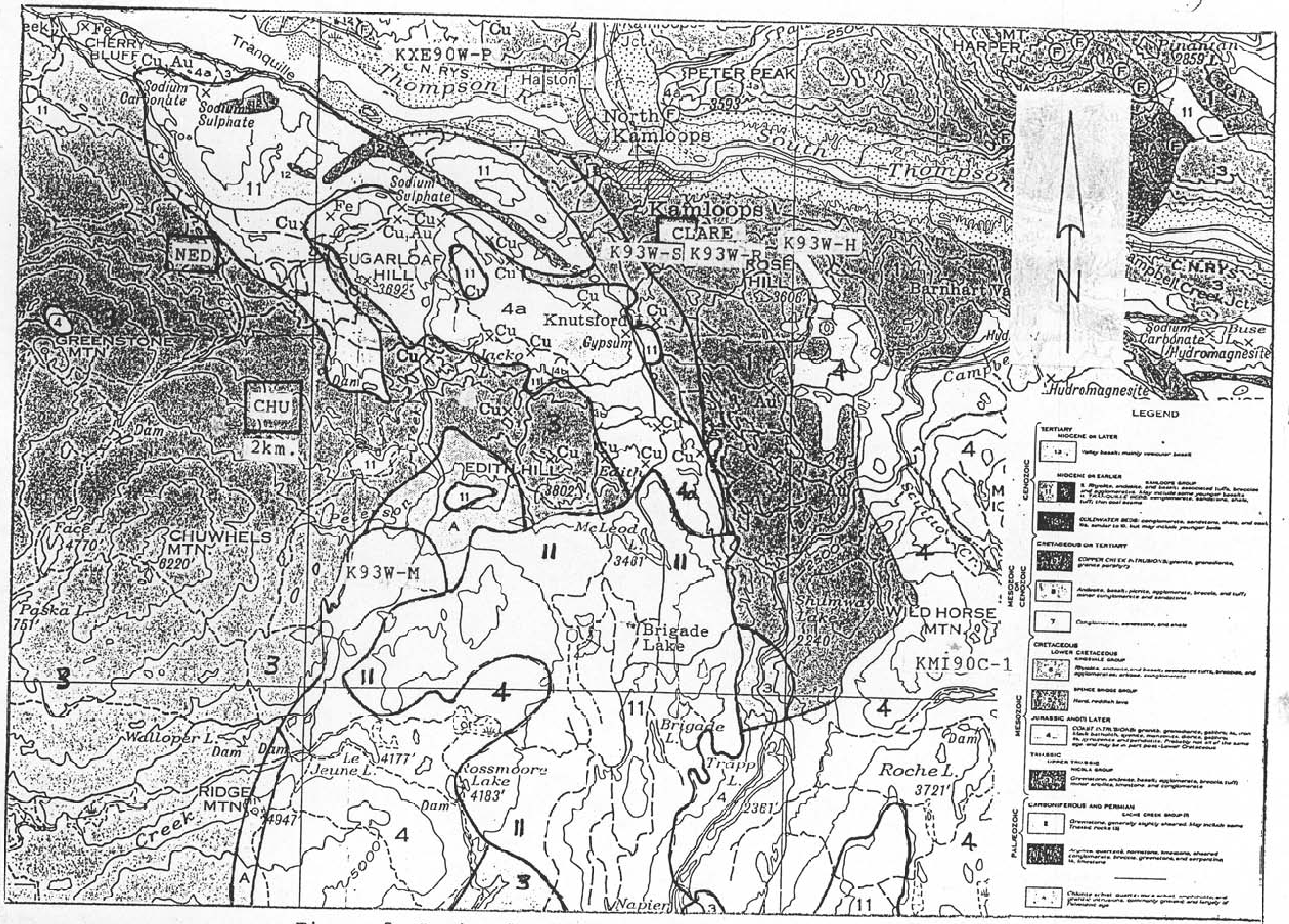


Figure 5: Regional Geological Map (Part of Nicola Map Area)

along the southwest side of a regional northwest trending fracture zone, and is itself cut by numerous northwesterly faults. This batholith, and other alkaline plutons in the same group, are the likely centers of the Nicola volcanism. (3)The Paleozoic era rocks consist of a group of sedimentary, igneous intrusive and igneous extrusive varieties, that outcrop chiefly in the northeast and southeast parts of the Nicola Map Area. These rocks are part of the Cache Creek Group and have not been found on the NED Claim area. Cache Creek Group rocks are found just to the east of Kamloops, and some metamorphosed varieties are shown to be directly south of Kamloops and the east of the NED Claim.

Figure 6 represents a simplified summary of the various rock units identified in this region.

Cockfield (1961) gives complete descriptions of the various rock formations, and the reader is referred there for the details. In the following sections of this report only those formations likely to be encountered in the NED Claim area are discussed in more detail. These formations include the Valley Basalts, Kamloops Group, Coast Intrusions, the Nicola Group, and the Cache Creek Group.

The reader should be aware that the present writer is using a simplified igneous rock classification scheme (given in Section 7.6), and microscopic, but not thin section, observations to label the rock samples collected during the field work.

3.2 VALLEY BASALTS

These rocks are described as generally grey to black, fresh appearing, and vesicular, but in places are dense. The composition is essentially plagioclase feldspar and augite with small amounts of brown interstitial glass. The texture is aphanitic. The flows seem to be essentially horizontal.

There is one outcrop of this formation just to the southeast of the NED Claim, that is easily seen on the air photos, and easily confused as a mine dump! Ground examination was required to make this differentiation.

One sample was collected and examined in detail (sample number K93W-Q, see Section 7.5 of this report, and Figures 5 and 7). This sample was very magnetic, with 5 mm. masses and occasional phenocrysts of pyroxene (augite) and what has been tentatively identified as forsterite (olivine group).

FIGURE 6. SIMPLIFIED KAMLOOPS AREA STRATIGRAPHY

AGE	ROCK TYPES	FORMATION NAMES	GROUP NAMES
Q	Unconsolidated stream, delta, and glacial sediments		
Unconformity (Uplift and Erosion)			
mT-uT	Vesicular Olivine Basalt	Valley Basalts	
Angular Unconformity			
eT	Rhyolite,Andesite, Basalt,Tuffs, Breccias, Agglomerates	Kamloops Volcanics	Kamloops
	Sandstone,Shale, Coal,TUFFS, Conglomerate	Tranquille	Kamloops
Angular Unconfromity ?			
	Sandstone,Shale, Coal,Conglomerate	Coldwater	Kamloops
Angular Unconformity with the Nicola Group			
K	Rhyolite,Andesite Basalt,Agglomerate, Breccia,Tuff,Arkose, Conglomerate		Kingsvale
Angular Unconformity with the Nicola Group			
J-lK?	Granodiotite, Quartz Monzonite	Coast Intrusions	(Wild Horse &) (Nicola Batholiths)
uTr-lJ	Syenite,Monzonite, Granodiorite, Diorite,Gabbro, Pyroxinite	Coast Intrusions	(Guichon Creek &) (Iron Mask) (Batholiths)
Nonconformity			
uTr	Greenstone,Andesite, Basalt,Agglomerate, Breccia,Tuff,minor Argillite,Limestone, and Conglomerate		Nicola
Disconformity to Paraconformity			
Carb-Perm	Greenstone,slightly sheared Argillite, Quartzite,Serpentinite, Limestone,Conglomerate, and Breccia		Cache Creek
?			
Paleozoic?	Chlorite Schist, Quartz Mica Schist, Amphobolite,and Granitic Intrusions		Cache Creek ?

3.3 KAMLOOPS GROUP

3.3.1 General

Early Tertiary volcanic rocks of the Kamloops Group unconformably overlie the Nicola rocks and the Iron Mask Batholith north of the NED Claim area.

There are also other types of rocks in the Kamloops Group, including the strictly sedimentary rocks of the Coldwater Formation, and the mixed tuffaceous/sedimentary rocks of the Tranquille Formation.

No strictly sedimentary rocks were found on the NED Claim, although there are some tuffs that may have been deposited in water.

No clearly identifiable Kamloops Group rocks have been found on the NED claim by the present writer, and certainly none like those examined only 3 km. to the north. This is a point of contention with earlier authors (for example, Holcapek (1970), or Reed (1976)), but is in agreement with Cockfield (1961) and Kwong (1987).

3.3.2 Volcanic Rock Descriptions

As can be seen on Figure 6 there are a variety of volcanic rocks in the Kamloops Group. In other areas these have a wide range of colors: from white, through various shades of red, pink, mauve, brown, buff, grey, and green to black.

The textures are usually fine grained, but can range to coarsely porphyritic, and occasionally may resemble fine grained plutonic rocks, although when examined under the microscope will exhibit a fine grained interstitial groundmass which commonly has marked flow lines. The phenocrysts are feldspar, feldspathoids, hornblende, or biotite.

Breccias, agglomerates, and grey to buff colored tuffs, vesicular and non vesicular lavas are less common. In places amygdules and masses of agate or chalcedony occur with the flows.

Holcapek (1970) gave a more detailed description of the layers within what he considered to be Kamloops volcanic rocks, as observed on the NED Claim. He proposed a sequence of basalt-rhyolite-basalt. As discussed in Section 3.9, it appears that the rhyolite is in fact an extensive carbonate-chalcedony alteration zone that grades from a magnetic, slightly altered Nicola porphyritic andesite to an advanced argillic form showing extensive silicification, as well as primary copper carbonate mineralization. The "basalt" in this interpretation is the surrounding dark grey Nicola volcanic rock, and is more closely related to rocks found north of the east end of Saltwort pond on the Iron Mask Batholith (samples K93W-AR-1,2,3 and, -O-1, in Section 7). This will be discussed in more detail in Section 3.6.

Rocks of the Kamloops Group were examined in areas where all authors agree (samples K93W-B,I,J,K, and N). These appear to be fairly uniformly dark brown when fresh, quite porphyritic with poikilitic patches of a feldspathoid, possibly nepheline. Calcite is abundant, as are disseminated limonite patches. The rock is strongly magnetic. In contrast, the rock suggested by Holcapek (1970) and Reed (1976) to belong to the Kamloops Group on the NED claim, is nonmagnetic, and mostly composed of carbonates. This is noted in Reed (1976) in the use of such terms as "yellow-brown calcite agglomerate".

If the interpretation suggested in this report - that the rocks in question on the NED claim are Nicola and not Kamloops - is not correct, then drilling would probably encounter Nicola at depth instead of further alteration.

3.4 KINGSVALE GROUP

These rocks are rare in the map area, but are reported in the vicinity of Kamloops Lake. These rocks may be practically indistinguishable from the Nicola greenstones, but they can carry fragments believed to be derived from the Iron Mask Batholith.

3.5 COAST INTRUSIONS

3.5.1 General

Several large batholiths are found in the Kamloops map area, including the Iron Mask Batholith just to the north of the NED Claim. Numerous smaller plutonic bodies are also found in various locations.

The composition is generally granodiorite to quartz diorite, but locally gabbro or even ultrabasic rocks occur. Small amounts of orthoclase may occur, but most of the feldspars are plagioclase. The ferromagnesian minerals are biotite, hornblende, or pyroxene.

3.5.2 Iron Mask Batholith

3.5.2.1 General

This pluton is the closest one to the NED Claim identified on the various geological maps (see Figure 7).

The rocks of this pluton are medium grained, grey or greenish grey, in some places red and in others very dark in color, marked by phases that are rich in ferromagnesian minerals.

The rocks show considerable alteration.

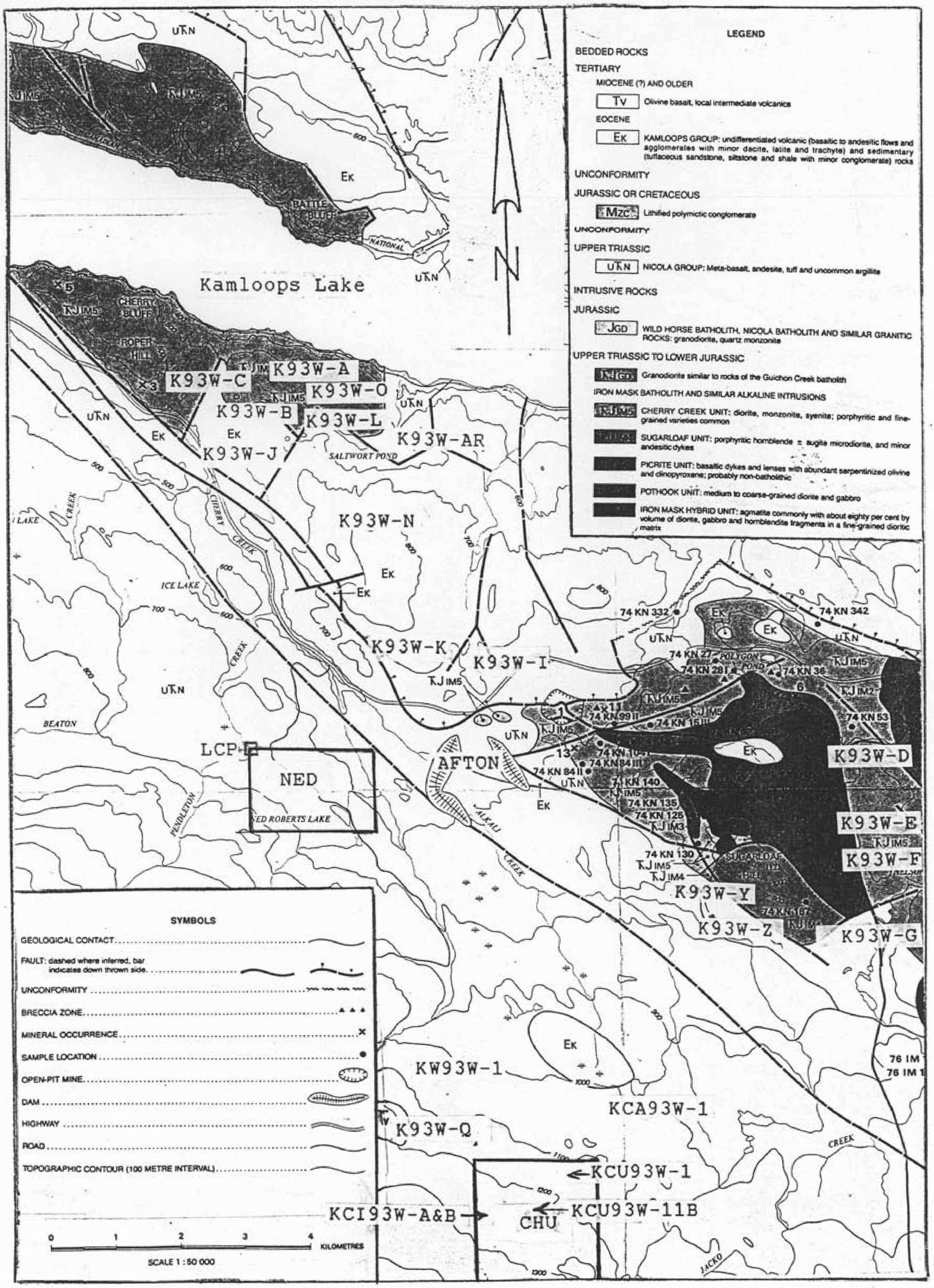


Figure 7: Geological Map of the Iron Mask Batholith

The composition ranges from syenite to ultrabasic types. An intermediate type make up most of the batholith, but an acidic type, a basic type, and a hydrothermally altered type also occur. All are deficient in quartz (Cockfield ,1961, reported quartz in only one of 22 samples). Magnetite and apatite are present in most of the rocks, which are diorites and gabbros. Augite and hornblende are common. The acidic type contains 30 to 45 % orthoclase, quartz is generally absent (syenites and monzonites). The basic rocks are pyroxenites (approximately 85% augite, 5% hornblende, 10% magnetite), or peridotite (approximately 25% pyroxene, the rest mostly serpentine, magnetite, and kaolin).

According to Kwong (1987):

> "The multiphase batholith is believed to have been emplaced in a subvolcanic environment. All components except the Picrite unit are thought to be genetically related. Their distribution is largely controlled by major systems of northwesterly, northerly, and northeasterly trending fractures and faults. Most units show some degree of alteration and/or contamination which may be intense locally. Weak to moderate saussuritization is ubiquitous in all batholithic rocks while potassium feldpathization is more prominent in rock of the Cherry Creek unit. Rock units and varieties are mainly distinguished in the field by original textures which, in most cases, are still visible despite alteration."

> "The Iron Mask Batholith consists of two related plutons, namely the Iron Mask pluton and the Cherry Creek pluton, formerly believed to be a single connected body. The Iron Mask pluton comprises four major, successively emplaced units designated as the Iron Mask Hybrid (first), Pothook, Sugarloaf, and Cherry Creek units (last emplaced). Locally, an additional Picrite unit also occurs which is probably not genetically related to the batholith. The smaller Cherry Creek pluton consists entirely of the Cherry Creek unit. Isotopic dates (194 to 204+/-6 Ma) indicate that all of these units are of Late Triassic or earliest Jurrasic age."

3.5.2.2 Pluton Units Structures, Compositions and Relationships

Kwong (1987) describes the features of the Iron Mask Batholith rocks as follows.

(1) Cherry Creek Unit (Youngest)

The Cherry Creek unit is the most widely distributed phase of the batholith, constituting the entire Cherry Creek pluton and about 50% of the exposure of the Iron Mask pluton. The unit consists of rocks with range in composition from diorite, monzonite, syenite, to their porphyritic and fine grained equivalents, and breccias. These rocks are believed to represent small, localized, differentiating offshoots intruded into widely varied physical and chemical environments during the latest stages of evolution of the batholith.

(2) Sugarloaf Unit

The Sugarloaf unit occurs mainly along the southwest side of the Iron Mask pluton and as small enclosed bodies in the southern half. Rocks of this unit are mainly porphyritic with hornblende, minor clinopyroxene, and plagioclase in a greyish green matrix. They have a fairly uniform diorite - andesite composition. Note that THE FINE GRAINED VARIETIES ARE NOT READILY DISTINGUISHED FROM THE NICOLA VOLCANIC FLOWS.
Samples K93W-Y, and -Z (p. I-10) were obtained from Sugarloaf Mountain. These were found to be magnetic, very fine grained microdiorites. The feldspars seem to dominate in the samples collected, and the ferromagnesian minerals seem to have been mostly converted to chlorite; there was some aphanitic matrix. (Hatch et al (1980, p. 313) suggests that one should perhaps call this type of rock a porphyritic microdiorite). Some calcite was present. The color was green on the weathered surface, and a greenish grey of a fresh surface.

(3) Picrite Unit (Age Uncertain)

The Picrite unit consists of rocks of basaltic composition with abundant clinopyroxene and serpentinized olivine phenocrysts up to 5 mm, and is appreciably magnetized. Because this rock has been observed far from the Iron Mask it is probable that it is not part of the batholith (a Valley Basalt ?).

(4) Pothook Unit

This unit occurs mainly in the northwestern half of the Iron Mask pluton, appearing frequently as narrow, gradational zones between the Iron Mask Hybrid and Cherry Creek units. Rocks of this unit are uniformly of dioritic composition, and of medium to coarse grained texture.

(5) Iron Mask Hybrid Unit (oldest)

This unit forms the spine of the Iron Mask pluton, accounts for 40% of its exposures, and consists of fragments of diorite, gabbro, hornblendite, and xenoliths of Nicola volcanic rocks in a dioritic matrix.

To the south of the Iron Mask Batholith another batholith occurs.

3.5.3 Central Nicola Batholith

The present writer examined a site on the Central Nicola Batholith (see Cockfield, 1961, p. 16), and collected samples for comparison to outcrops to the south of the NED claim (on the CHU and WOOD claims). These are quite coarse grained, and largely granodiorite and quartz diorite (samples K93W-M, KCI93W-A & B, and KW93W-1).

3.5.4 Rock Descriptions

According to Holcapek (1970), and Cockfield (1961), the descriptions of the most important units in this vicinity are as follows.

(1) Coarse Grained Batholithic Rocks

(a) Pyroxenite

This is found in the Edith Lake Area, and is a heavy grey green rock of crystalline appearance that is strongly magnetic. Pyroxene, hornblende, and magnetite are the main minerals. Dioritic and gabbroic rocks rich in pyroxene are present in the same region.

(b) Gabbro and Diorite

These are not readily differentiated except under a microscope. The rocks have a variable appearance due to changes in grain size and mafic mineral content. Weathering is dark brown to light grey. The fresh surface is a uniform dark grey green or white and dark speckled. Biotite shows as glistening flakes. The rock is commonly magnetic. An inconsistent banding is developed in places and inclusions are common.

(c) Monzonite

This rock type is more uniform than diorite and has a distinct pink color which is due to the feldspars, including orthoclase. The monzonite is in part an alteration product of the diorite. It is relatively non-magnetic.

(2) Fine Grained Batholithic Rocks

(a) Cherry Creek Rocks

These rocks are of dioritic and monzonitic composition and are named microdiorite or micromonzonite or microgranodiorite to distinguish them from their coarser grained counterparts. All the rocks are grey, white to pink in color. The mean grain size is 1 mm but a porphyritic tendency is present. A perceptible foliation is common and marked by bladed crystals of pyroxene and hornblende. Inclusions of chloritic rock fragments may be present (up to 2 cm in size).

Several samples of this rock type was collected and examined by the present writer (samples K93W - A1, C1, C2, D1, D2, E, F). Most of the samples are magnetic, with 0.2mm crystals of magnetite visible with a microscope. D2 is the exception, and appears to be altered, with the introduction of abundant calcite, a slight illite clay smell, chlorite and possibly ankerite. Most of the samples contain carbonate veinlets, but otherwise fit the description in the foregoing paragraph. Some quartz may also be present.

(b) Sugarloaf Diorite

These rocks are dark to light green, well crystallized, containing approximately 15% quartz, euhedral plagioclase, up to 10% euhedral augite, less than 1% sugary light green transparent olivine.

The present writer collected rocks from this region and examined them microscopically (samples K93W-Y & Z). These are essentially as described preceding, but also appear to contain K-feldspar, some calcite, magnetite, hematite, and chlorite. The rock is strongly to weakly magnetic.

Rocks similar to this have been found on the NED claim (see Section 4.2.4 (2), samples KN93W-180,-192). Sample 192 is very similar to K93W-Y,-Z discussed in Section 3.5.2.2, but slightly softer, and greener in color. Sample 180 has some aphanitic matrix and some microdiorite sections with brecciated clasts. It appears to be an intrusive breccia. Although the outcrop area is quite good (10 m by 10 m), and the hand specimens are strongly magnetic, the magnetic surveys which partly overlap into this area do not appear to affected (see Section 4.5.2 (3)). This could indicate that only a large piece of float is present.

On the other hand, Holcapek (1970), reports a microdiorite at location KN93W-700N, where the present writer found a basically porphyritic andesite/basalt with some microdiorite sections (see p. I-26).

3.6 NICOLA GROUP

3.6.1 General

These volcanic rocks comprise a number of diverse types, but may largely be termed greenstones.

According to Cockfield (1961):

> "The Nicola rocks vary from fine-grained or nearly aphanitic types to very coarsely porphyritic rocks. Green or greenish grey types predominate, but various shades of purple, red, or brown, also occur, together with rocks that are dark or nearly black. Associated with the lavas are tuffs, breccias, and agglomerates that also vary in color and appearance. Among the lavas the most common type is a grey-green to bright green fine grained rock that shows much alteration to chlorite, calcite, and epidote. A very similar rock carries phenocrysts of hornblende, which in many instances has developed by uralitic alteration of augite, and is now partly altered to chlorite. The feldspars usually show advanced alteration, but where determinable are generally andesine. Secondary calcite and quartz are common, and epidote is commonly abundant. The rocks are presumably altered from hornblende and augite andesites. Grey, purple, and red types show little variation in composition from the others, but the groundmass of the purple and red rocks is impregnated with iron oxide."
>
> "The group also includes a number of feldspar porphyries, with feldspar crystals ranging from minute size to others with ragged crystals nearly half an inch long."
>
> "Amygdaloidal types are common in both fine-grained and porphyritic rocks, the amygdules being composed of chlorite calcite, quartz and chalcedony."
>
> "The breccias also vary widely in appearance.------- A very common type of breccia consists of a fine-grained rock carrying widely scattered, small, angular fragments of red or purple lavas."

> "Bed of tuff occur at several localities in the rocks of the Nicola group, and it is chiefly on these, and on intercalations of sedimentary beds, that data were obtained on the attitudes of the rocks. The tuffs appear to be more prevalent in the upper parts of the section, and are exceptionally well developed in the vicinity of Meander Hills. ------- They are fine-grained, well-bedded rocks, that are generally grey, green, or black."

> "Only minor amounts of sedimentary rocks occur with the volcanic rocks of the group within the map area. The most prominent of these is limestone, which occurs at a number of widely scattered localities."

Leitch (1961) also comments on these limestones:

> "The limestones are not highly developed or widespread, but they are believed to be important as favorable locations for concentrations of minerals."

According to Kwong(1987):

> "The two plutons of the Iron Mask Batholith are emplaced in the Upper Triassic strata of the Nicola Group. In the vicinity of the batholith, the Nicola Group is dominated by volcanic and volcanoclastic sedimentary rocks. They are generally recognized by albitization of feldspars, occurrence of patchy epidote, and/or rare hematite alteration."

> "On the southwestern flank of the Iron Mask pluton, well-indurated, massive and bedded tuff, breccia, and interbedded flows and flow breccia are prominent. All of these rocks are weakly metamorphosed and most of them show a fairly uniform green-grey colour. On the northeast flank, less well-indurated and less altered tuff and tuff breccia predominate. However, adjacent to the intrusive contact, these rocks are also well-indurated and epidotized and are locally mineralized with sulfides. Fragments found in the tuff breccia include some belonging to the intrusive Cherry Creek unit. This apparently contradictory observation is readily explained if the batholithic rocks and the Nicola volcanic rocks are comagmatic and coeval, such that during the evolution of the common parent magma, the prevalence of an intrusive phase or its volcanic equivalent is dependent on whether or not the magma reached the surface."

> "At the southeastern tip of the Iron Mask pluton and locally along the southwestern flank, the Nicola rocks comprise distinctive porphyritic augite-hornblende basalt, very similar to varieties of the Sugarloaf unit that occur along

the southwest flank of the pluton. Locally, basaltic breccia that is porphyritic with 10 to 25 % olivine and augite phenocrysts is also prominent. North of Hughes Lake near the northwestern end of the pluton, the volcanic breccia contains occasional argillite and limestone blocks. Adjacent to the Cherry Creek pluton•farther north, rocks of the Nicola Group consist mainly of porphyritic plagioclase andesite with occasional interbedded tuffs."

It is not clear whether or not the argillite and limestone mentioned in the foregoing paragraph belongs to the Cache Creek Group.

3.6.2 Descriptions of Nicola Group Rocks Near the NED Claims

According to Holcapek (1970), in the vicinity of Ned Roberts Lake one can distinguish three layers within the Nicola Group volcanic rocks:

(a) Andesite:	upper bed, fine grained sugary texture containing up to 60% epidote and minor pyroxene.
(b) Andesite:	grey to dark green, strongly serpentinized and chloritized pyroxene more abundant, epidote less than 10%.
(c) Andesite:	lower bed, light green to dark , containing dark grey fragments, chloritized and serpentinized, but less strongly, up to 30% epidote present.

The present writer has encountered a much wider variety of Nicola volcanic rocks in this area. These are briefly summarized in the following paragraphs. (See Sections 4.2 and 7.5 of this report for a more complete description of the samples).

The reader should again note that the present writer is using a simplified igneous rock classification scheme (given in Section 7.6), and microscopic, but not thin section, observations to label the rock samples collected during the field work.

(1) Basalts

KCU93W-1: an amygdaloidal basalt, the amygdules being composed of calcite, quartz, and epidote. Not magnetic.
K93W-H: a black, somewhat porphyritic, basalt with some plagioclase and pyroxene phenocrysts. Not magnetic. A trace of sulfides.

(2) Andesite

KXE90W-P-2: a medium to dark green, non-magnetic, very fine grained andesite. Some calcite present.
KN93W-16: a light green, non-magnetic, very fine grained andesite. Some calcite present.

(3) Green Porphyritic (Amphibole) Andesite

KN93W-5,-7,-17A,-22,-23,-183,-188A: nonmagnetic rocks with 10-20% amphibole (?) phenocrysts, and only occasional feldspar phenocrysts. The amphiboles may be partially or completely converted to chlorite, and there is abundant calcite and epidote. Some minor sulfides.
KN93W-6B,-13,-17B,-24,-25,-26,-183,-OC1A: these rocks are the same as those in the preceding paragraph but do not have any calcite. Some minor sulfides.

(4) Grey Porphyritic (Amphibole) Andesite or Basalt

K93W-AR-2: this sample is very similar to those preceding. No calcite or epidote is present, but 0.1mm crystals of magnetite are common (the sample is strongly magnetic).

(5) Pinkish Porphyritic (Amphibole) Andesite or Basalt

K93W-AR-2: this sample may be an altered version of the preceding one. It contains some calcite. Hematite gives it an overall pinkish color, and appears to have replaced some feldspar phenocrysts. It is strongly magnetic.

(6) Green Porphyritic (Feldspar) Andesite

KN93W-102A: a dyke-like or layered rock, microdiorite in appearance in some sections. The rock is nonmagnetic, and contains 5 to 15% white feldspars. Rock alteration is evident in the indistinct appearance of both the feldspar grains and the ferromagnesian mineral (chlorite?), a definite illite clay smell, and the presence of epidote; there is, however, only minor calcite present.

(7) Grey Porphyritic (Feldspar) Andesite or Basalt

K93W-AR-1,-0; KN93W-104A,-107A,-122B,-123,-230,-700N: these are strongly magnetic, with some calcite. White feldspar phenocrysts make up 15-20% of the rock, although occasionally these are indistinct and brownish (ankerite?). There are some reddish breccia fragments, and sample -700N showed some distinctly microdiorite sections.

(8) Green Porphyritic (Feldspar,Amphibole,Pyroxene) Andesite

KN93W-14,-184: The rock is nonmagnetic, contains about 15% feldspars, and 5-20% amphiboles and pyroxene. No calcite is present, but there is abundant epidote in the matrix. Disseminated pyrite is present in both samples, and chalcopyrite in sample -184.

(9) Grey Porphyritic (Pyroxene) Flow Breccia

KM90C-1: a medium grey rock with about 15% pyroxene phenocrysts, and up to 10% grey, white, and brown brecciated clasts, which range up to 1cm. in size. Abundant sulfides (approximately 3%) occur as 0.1mm grains in clusters up to 4mm in size. This sample is from an area well to the west of the NED claim, north of Walker Lake.

(10) Black Feldspar-Amphibole Porphyry

KN93W-137: a mafic rock, strongly magnetic. Calcite is common, and one calcite vein with siderite walls was observed. The matrix is very fine grained, having a near glassy appearance. There are about 15-20% dark grey, translucent, feldspar phenocrysts, with many crystals zoned. Amphiboles make up 5-10% of the rock, but may be partially converted to chlorite. This sample is strongly magnetic.

(11) Grey Feldspar-Amphibole-Pyroxene Porphyry

K93W-O-1: this is a sample of a strongly magnetic dyke rock, found in the Cherry Creek pluton. White feldspar phenocrysts make up 25%, with amphiboles 5%, and pyroxenes 5%. Some flow band orientation of the phenocrysts was observed.

(12) Felsic Feldspar Porphyry

KN93W-21A: this light green sample was composed of about 30% white to clear, mostly K-feldspar, phenocrysts. Feldspathic minerals (?) made up 5%. Minor secondary quartz was present in veinlets. There was a trace of pyrite. A very fine grained epidote matrix made up the remaining 65% of the rock. Possibly an intrusive.

(13) Rhyolite

KN93W-20: a white, very fine grained, rock with occasional 1mm quartz grains. Although this was near a contact of (12) (possibly an intrusive) and (3), and has a slight illite clay smell, it does not appear to be an alteration zone because no relic structures could be found in the sample.

(14) Tuffs

KXE93W-P-1; KN93W-182,-102C: a nonmagnetic rock with calcite and epidote. Traces of sulfides. Layering is evident. 102C has 2-3mm clasts showing impact crater structures. 182 has a sandy texture.

3.6.3 Metamorphosed Nicola Rocks

Several examples of metamorphosed Nicola rocks were found on the NED claim (KN93W-18,-100,-193,-OC1B,-OC1D). The foliation in all of these rocks appears to be the result of shearing. The type range from a meta- porphyritic andesites, meta rhyolites, to chlorite-sericite mylonites. Chlorite, calcite, sericite, and quartz seem common, in addition to the usual Nicola minerals: feldspars, epidote, amphibole, and pyroxene.

These rocks are probably not very extensive. As Holcapek (1970) notes: "Foliation was observed along most of the shears and can extend up to four feet on either side of the shear. The strike of the foliation is northwesterly and dips are vertical. These attitudes are parallel to the main shearing direction."

3.6.4 Sedimentary Nicola Rocks

Two float (?) boulders of a sedimentary rock were also found on the NED claim (KN93W-190). This rock is a conglomerate very similar to that observed to the SE of Knudsford. The clasts are well rounded pebbles and cobbles 1 to 10cm in size, consisting of argillite and a distinctive reddish feldspar porphyry. The matrix is a very angular mix of various rock and mineral fragments, including some amphiboles. This is probably the basal member of the Nicola Group (see Cockfield, 1961, p.8 and 13), and the sample is probably glacial float.

Another sample of a rock having a sedimentary appearance is K93W-S, a tuffaceous sandstone. This was found to the south of Kamloops on the CLARE claim, and appears to be another variety of the Nicola basal conglomerate/sandstone. It contains some amphibole crystals, numerous small (1mm) rounded quartz, quartzite, and chert grains. Larger angular to subangular 3-4mm grains of chert and limestone are also present.

3.7 CACHE CREEK GROUP

According to Cockfield (1961), the Cache Creek Group rocks consist of argillite, quartzite, hornstone, limestone, conglomerate and breccia, greenstone and tuff, amphibolite, gneiss, and schist.

Much of this group is composed of hard, dark grey to black argillites that in places are silicified into dense rocks similar to hornfels.

Limestone occurs in a number of localities, and is generally grey to white, with obscure bedding.

Biotite slates, and mica and chlorite schists, are in places closely associated with the Cache Creek Group rocks and are considered by Cockfield (1961) to be part of this group.

Some detailed comments follow.

(1) Argillites

These rocks make up most of this group and are hard, dark grey to black, silicified in places to dense rocks similar to hornsfels. Some argillites are well bedded, and show slaty cleavage; some are so cut by jointing as to produce angular, rubbly, slopes.

Sample K93W-R: was obtained from the CLARE claim south of Kamloops, and is as described above; it also contains minor breccia, sandstone, as well as numerous small quartz veins. Hematite and limonite stains are common along the fractures.

(2) Conglomerates and Sedimentary Breccias

These rocks contain pebbles of argillite, chert, quartzite, and feldspar porphyry in a silicous matrix. The pebbles are generally 2 to 5cm in diameter but locally cobbles up to 20cm may be found.

(3) Volcanic Rocks

Fragmental greenstones, tuffs, agglomerates and amygdaloidal volcanics occur in dark to light green bands in the Cache Creek Group sedimentary sequence.

(4) Limestone

These grey to white rocks occur at many points, with generally obscure bedding and scarce, poorly preserved, fossils.

(5) Amphibolites

Amphiboles are also part of the Cache Creek Group and are dark green to nearly black, with some of the amphibole altered to quartz. Biotite is common in some sections. Cockfield(1961) notes: "The amphibole shows ragged ends penetrating the fine grained matrix, and much of the ground mass is recrystallized so that the original character of the rock is in doubt". It is probable that the amphibolite represents a fragmental volcanic rock that has been metamorphosed.

(6) Slates and Schists

Biotite slates, and mica and chlorite schists are found in sheared Cache Creek Group rocks.

(7) Structure

Much folding and faulting has occurred in this Group, making internal structural relationships very complex.

3.8 A SUMMARY OF THE GEOLOGY ADJACENT TO THE NED CLAIM

All the published maps place the NED Claim in an area completely covered by (undifferentiated) Nicola Group greenstones; however, Coast Intrusive rocks (similar to the Iron Mask Batholith rocks) have been found and still others are possible: Valley Basalts, and Kamloops Group rocks.

Of the Nicola Group as discussed in Section 3.6.2, the main types found on the NED claim are the black and green andesites - (2) ; the black and green porphyritic andesites with amphibole, feldspar, and pyroxene phenocrysts - (3), (6), (7), and (8); and the feldspar, amphibole, and pyroxene porphyries - (10) and (12). Rhyolite - (13), and various tuffs - (14) - are present but rare.

Metamorphic varieties of these rocks are also found on the NED (Section 3.6.3). For more details on current findings refer to Section 4.2.

3.9 ALTERATION

3.9.1 General

According to Holcapek (1970), alteration minerals appear to be epidote , calcite, white albite, pink K-feldspar, biotite, and magnetite. Calcite and epidote are the most common and at least a trace of chalcopyrite usually accompanies them.

According to Cockfield (1961):

> "Although the alteration is in certain instances intense in the general vicinity of the orebodies, it does not appear to be confined to the immediate wall-rocks, and some intensely altered rock occurs at considerable distances from known orebodies. The alteration involves the albitization of plagioclase feldspar, with the development of carbonates, chlorite, and epidote. The altered rocks are associated with bands of albite that are more probably the result of the albitization of the wall-rocks with the leaching of the dark minerals rather than the intrusion as dykes. The amount of albite in the slides of altered rock examined by Matthews'

> ranged from 67 to 86 %. Calcite and siderite are common, and form as much as 6% of the rock. Chlorite and epidote make up from 8 to 26%, the former replacing augite and hornblende and the latter occurring in the same manner but usually irregularly distributed with no apparent relationships to the earlier minerals. Apatite also appears in small quantities in the altered rocks."

> "Although the alteration is not invariably closely related to the orebodies, it is sufficiently diagnostic to be used to some extent as an indicator that orebodies are near by, and thus in prospecting and development work would afford a somewhat larger target than the orebodies themselves."

3.9.2 Carbonate/Chalcedony Alteration Related to Mercury Deposits

There is a type of alteration associated with mercury deposits farther to the northwest that reads like a description of the rocks to the north of Ned Roberts Lake, where the earlier authors placed the Kamloops Group rocks that the present writer interprets to be an extensive alteration zone. Cockfield (1961, p.82) has this to say:

> "The deposits are mostly in volcanic rocks of differing ages, and are accompanied in some instances by silicification with chalcedonic quartz, intense alteration of the rock to ankeritic carbonates, and the development of dolomite veins or stringers in shear zones and fracture zones."

And on p.101:

> "Specimens of the rocks from near the mineral deposits showed considerable silicification by chalcedonic quartz, and the feldspars are too altered for determination. The volcanic rock was evidently porphyritic, for in some sections the ghosts of the feldspar crystals are preserved, surrounded by chalcedonic quartz, which is replacing part of the groundmass, but preserving unreplaced patches of the groundmass within it. Narrow stringers and irregular masses of chalcedony occur together with narrow stringers of dolomite. The cinnabar in general occurs as small grains within the silicified rock, but locally occurs as finely divided grains that color the chalcedony a pale pink."

These are almost exact descriptions of the mineralized zone immediately to the north of Ned Roberts Lake. Silicified volcanic rocks are a common feature of the mercury deposits examined by Cockfield, and on the NED claim. Cinnabar was not considered by the present writer, and therefore not looked carefully for; however, pink chalcedony has also been observed on the NED claim.

Cockfield (1961 p.83-104) goes on to note that azurite and malachite are found in these deposits, a comment that describes the NED claim situation. Specular hematite was also found by Cockfield, and on the NED claim. Tetrahedrite was noted on a number of the mercury deposits, and may be present on the NED claim.

The age of these deposits is not clear from Cockfield's comments, but in one statement he notes that the deposit is found below the base of the Tertiary contact. No mention is made of deposits within Kamloops Group rocks and the implication is that these may be preTertiary deposits.

No mercury assays were obtained (the present writer was not aware that this element might be a factor, since he was initially following the direction of the earlier writers who considered the rock to be simply heavily weathered Kamloops Group rocks); however, 0.003% mercury (and 0.043 oz./ton of gold) have been reported on the BEATON claim which is adjacent to the NED claim on the west (Boitard, 1993, see Figure 3).

The present writer has examined the samples from the alteration zone on the NED claim and developed a alteration classification scheme for these rocks. This will be discussed in Section 4.2.3.

The mercury deposits described in the foregoing paragraphs would in modern parlance be considered epithermal deposits, and targets for gold exploration. Earlier work by the present writer (Whittles, 1990) noted that anomalous As, Sb, Bi, Ba, Cu, and Ag values were obtained in several I.C.P. analysis, and two assays returned 0.02 G/TONNE gold; these also support the idea of an epithermal alteration zone on the NED claim, that has a potential for an epithermal gold deposit.

3.9.3 Intermediate Argillic Alteration on the Camp Claim

A rather unusual alteration zone was observed along strike to the southeast of the NED claim, on the CAMP claim. (See Figure 3 and sample KCA93W-1). This rock is believed to represent an advanced intermediate argillic alteration zone. Drilling (Boitard, 1993) has returned extensive carbonate alteration, with mariposite. On the surface the rock has an unusual blue-green color, is well brecciated, with the clasts surrounded by calcite, quartz and ankerite veinlets, and other carbonate alteration. The original texture is almost completely destroyed, but gives the impression of porphyritic (amphibole) andesite. An attempt was made evaluate the mineralization to see how it compared to the alteration found on the NED claim. Samples were treated in dilute HCL for several days, and initially reacted strongly. The suspected clay minerals did not swell in water. Judging by the odor and the color, the main clay mineral is probably illite. Quartz, sericite, ankerite, calcite, and possibly albite are the major minerals. Other carbonates such as dolomite may be common. Minor magnetite, and malachite were observed, and an occasional flake of specular hematite. Montmorillonite does not appear to be a major component, nor kaolinite. Chlorite and epidote likewise seem to be very minor.

3.10 STRUCTURAL GEOLOGY

3.10.1 Regional Trends

The most dominant structural trend in the vicinity of the Iron Mask Batholith is northwesterly, a trend that shows in the exposure of the Iron Mask Batholith, geochemical data and geophysical data (Whittles,1990); however, this shifts to a more dominant north/south trend as one goes to the south.

A structural point of interest is noted in Cockfield (1961):

> "A few miles to the south of Kamloops the trend of the folds in the Triassic rocks swings to the northwest. The Iron Mask batholith is apparently intruded into one limb of a syncline in the rocks of the Nicola group, the axis of which runs northwesterly towards Kamloops Lake."

The exact location of this syncline is not spelled out but an examination of the Cockfield (1961) geological map suggests a syncline exists immediately to the southwest of the town of Kamloops, with a much larger anticline adjacent, and to the southwest, of this syncline. This pattern is also supported by the measurements of bedding in the Nicola Group just to the north of the NED Claim (Holcapek, 1970 - see Section 3.10.2 following). Another anticline can be inferred on the other side of the syncline (to the northeast) extending to the east of Kamloops. The whole pattern is, however, much disturbed by the Coast Intrusive rocks.

Large regional faults are also known to control regional trends. As noted on Figure 4, and Section 3.1, north trending faults are very prominent.

More locally, but still part of a large scale pattern, strongly expressed northwest trending faults are inferred adjacent to the Iron Mask Batholith (Kwong, 1987). It is suggested that these faults may have exercised considerable control on the intrusion of the plutons making up the batholith.

3.10.2 More Localized Features

According to Holcapek (1970), near Ned Roberts Lake to the north of the NED Claim, the following local features were noted:

(1) Bedding

"The bedding within the Nicola Group trends nearly east/west and dips at 60 degrees north."

(2) Foliation

"Foliation was observed along most of the shears and can extend up to four feet on either side of the shear. The strike of the foliation is northwesterly and dips are vertical. These attitudes are parallel to the main shearing direction."

(3) Jointing

"The most pronounced jointing directions are north 20 to 0 degrees east and vertical."

(4) Shearing and Faulting

"The rhyolites are in general strongly brecciated and sheared, but outcrops are too small and too weathered to obtain directions."

"A strong shear up to 50 feet wide is exposed in the eastern part of the property. It strikes S40W, vertical. This trend is about parallel to the shear exposed on the Afton Mines property to the east of the old workings."

Very pronounced north/south faults, with dips to the east, were observed on air photos in the vicinity of Ned Roberts Lake (see Whittles, 1990).

3.11 MINERALIZATION

3.11.1 General

Deposits of gold, silver, lead, zinc, copper, mercury, tungsten, iron, industrial minerals (such as gypsum and salt), and coal have been found in the Kamloops map area.

Figure 8 provides a classification of these deposits (from Cockfield, 1961).

3.11.2 Types and Forms of Mineralization

There are a variety of different types of mineral deposits that could occur on the NED claim.

FIGURE 8

CLASSIFICATION OF MINERAL DEPOSITS OF THE KAMLOOPS AREA

Metalliferous Deposits

- Placer gold deposits
- Hardrock gold and silver deposits
  - Stump Lake area
  - Swakum Mountain area
  - Vein deposits in the rocks of the Nicola Group surrounding the Iron Mask Batholith
  - Gold-silver deposits in rocks of the Cache Creek Group
  - Gold-silver deposits in and around small bodies of intrusive rocks
- Silver-lead-zinc deposits
- Mercury deposits
- Copper deposits
  - Associated with the Iron Mask Batholith
  - Highland Valley camp
  - Other copper deposits
- Iron deposits
  - Vein deposits
  - Bog-iron deposits
  - Contact metamorphic deposits

Industrial Mineral Deposits

Coal Deposits

(1) Copper Deposits

In a regional sense, porphyry copper mines in the Quesnel trough include, from north to south, the Bell, Granisle, Gibratar, Afton, the Highland Valley deposits, Brenda, Ingerbelle, and Copper Mountain.

Cockfield (1961) has summarized those characteristics of the deposits associated with the Iron Mask Batholith just to the north of the NED Claim:

"Copper deposits are found around the periphery of the Iron Mask Batholith from Edith Lake to Sugarloaf Hill on the one side and from Separation Lake (about two miles northeast of Edith Lake) to near Cherry Bluff on the other. A few occur in the central part of the batholith. Many are situated in the batholithic rocks, and some in the intruded rocks at the borders of the plutonic mass. They are impregnations, veins, stockworks, and mineralized shear zones in the country rock, and some of the impregnation deposits appear to have no solution channels. The principal copper minerals are chalcopyrite and bornite, with some chalocite, cuprite, azurite, and malachite. Chrysocolla and lead minerals have also been reported. Magnetite and pyrite are common; hematite is less common. Quartz is generally present only in minor amounts, but calcite is common. Gold values are generally low, but a few of the deposits carry good gold values."

"---- these deposits ---- occur within the hydrothermally altered rocks of the batholith, however, would suggest that they are connected with the very late phases of the intrusion and consolidation of this rock, or that they come from a deep-seated magmatic source not exposed at the locality."

(2) Gold-Silver Deposits

The gold-silver deposits within the Cache Creek Group rocks are similar to those in the Nicola volcanic rocks surrounding he Iron Mask Batholith (Cockfield, 1961). They are quartz veins and mineralized shear veins carrying gold, silver, pyrite, chalcopyrite, arsenopyrite, pyrrhotite, tetrahedrite, galena, sphalerite, and molybdenite. Several deposits occur in close association with small intrusive bodies,-occurring as wide veins in the intrusive rock as well as the surrounding host rocks.

(3) Gold Bearing Epithermal Deposits

Gold is a common commodity around the NED (see Figure 3). Five mines or prospects nearby the NED report the presence of gold, with the largest average value in the range of 0.15 to 0.3 oz/ton at the Copper King.

These have been briefly discussed in the preceding Section. Roberts and Sheahan (1988) summarize the features of epithermal deposits. (This is an very close description of the NED claim environment).

(i) Rock types: commonly volcanic flows, and subaerial pyroclastic rocks, with numerous small intrusions.
(ii) Structural controls: epithermal deposits form in extensional tectonic settings, with well developed tensional fracture systems, and normal faults.
(iii) Ore depths: the deposit form from the surface down to a maximum depth of 1000m. The average vertical range of the ore zone is 350m, rarely exceeding 600m.
(iv) Ore host: veins are the most common hosts, but these can include breccia zones and stockworks.
(v) Ore textures: the ore is deposited mainly in open spaces and the resulting textures are banded, vuggy, drusy, colloform and cockscomb. The ore minerals are usually fine grained. The gangue minerals are usually coarse grained, and pseudomorphs of quartz after calcite are common.
(vi) Ore minerals and elements: gold and silver are the main economic minerals. Galena (Pb), sphalerite (Zn), chalcopyrite (Cu), cinnabar (Hg), stibnite (Sb), tetrahedrite (Cu), and arsenopyrite (As), are important in various epithermal deposits.
(vii) Gangue minerals: The main gangue mineral is silica (as quartz, amethyst, opal, chalcedony, and cristobalite). Calcite and other carbonates are abundant at several levels in an epithermal system. Lesser amounts of fluorite, barite, and pyrite may be present. More rarely chlorite, hematite, rhodenite, and rhodochrosite are present.
(viii) Alteration: hydrothermal alteration is pronounced, primarily as silicification; but is often quite complex. Alteration zoning ideally may be represented as the following.
  (a) High grade ore zone often showing silicification.
  (b) Potassic zone, also often showing silicification.
  (c) Advanced argillic zone, also often showing silicification.
  (d) Sericitic or phyllic zone.
  (e) Intermediate argillic zone.
  (f) Propylitic zone.

3.11.3 Alteration and Mineralization

Intense rock alteration is a general guide to the likelihood of strong or widespread mineralization. Refer to Section 3.9.

3.11.4 Mineralization and Structure

Structural conditions undoubtedly play a major role in the localization of sulfides, particularly along northerly and northeasterly-trending zones according to various authors.

3.11.5 Mineralization and Rock Type

According to Kwong (1987):

> "Mineralization, particularly of iron and copper, is almost ubiquitous in the Iron Mask Hybrid unit. In fact, except where Nicola xenoliths are predominant, all rock varieties in the unit contain magnetite which is often more than 10 percent by volume. The Iron Mask mine, a former copper producer, is located in this unit, but is also associated with picrite."
>
> "The Pothook unit is locally mineralized with copper and iron. Magnetite occurring in uniformly dipping veins is prominent south and southeast of the Afton deposit."
>
> "Several copper occurrences are hosted by the Sugarloaf rocks. For example, the Ajax property east of Jacko Lake is located within brecciated and albitized Sugarloaf rocks."
>
> "Copper and minor iron mineralization is prominent in the Cherry Creek unit, particularly in zones of intense brecciation associated with alkali metasomatism. Afton Mine, for example, lies at the western termination of a narrow 4km long, easterly trending zone of intense intrusive brecciation that is located at the northern edge of the Iron Mask pluton. The brecciation is considered to have resulted from high-level venting events. Similar breccia, consisting largely of Cherry Creek fragments, has also been observed on the Kimberly copper property northwest of Knutsford and at the extreme southeastern tip of the Iron Mask pluton."

PART 4: CURRENT WORK AND RESULTS

PART 4: CURRENT WORK AND RESULTS

4.1 AIR PHOTO ANALYSIS OF THE KAMLOOPS AREA

4.1.1 Instrumentation

A Sokkisha MS-27 Mirror Stereoviewer with 1.8 power lenses was used to view the complete overlapping stereo photo pair. 3 power and 8 power binocular attachments were used for much more detailed examinations of certain features, and to confirm the continuation of some of the longer structural features.

4.1.2 Procedures

The analysis for the NED claim was based primarily upon the High Altitude Photos (HAP) BC flight lines BC87048 (photos 178, 179, and 180). The Low Altitude Photos (LAP) were BC86021 (photos 44, 45, and 46).

The general principles involved in air photo analysis and interpretation may be found in Ray (1960), Miller and Miller (1961), Lottman and Ray (1965), Avery (1970), Sabine (1978), Swain and Davis (1983), or Seigel and Gillespie (1983).

Whittles (1984 and 1987) provides a summary of the techniques used.

4.1.3 Glacial Geomorphology and Air Photo Analysis

In an air photo analysis one needs to determine the effect of glacial geomorphology on the actual nature of many air photo lineaments. When the follow up field work is done one needs to have an clear idea of the movement of the ancient glaciers, and of those areas where the drift cover is light, and where it is heavy. This is particularly true of the shear zone discussed in Section 4.5.2. Part of this zone is considered (GSC, 1963) to be "drumlinized till" - 3a on the GSC map - "marked by an abundance of streamlined landforms developed by the movement of the ice sheet". The direction of ice movement is considered to be to the southeast on the map. This interpretation does not agree with the field examinations of the present writer who would like to suggest the following different conclusions.

(1) The direction of ice flow was more likely to have been in the opposite direction, from southeast to northwest.
(2) The " drumlinized till" does not appear to be an important factor around the NED claim.

(3) The linear features evident on the air photos, as well as the glacial geomorphology, primarily reflect the underlying structural geology and the rock types, rather than loose till.

The evidence for these conclusions is as follows.

(a) No clear examples of "drumlinized till" were observed in this area. The nature of drumlins is somewhat unclear, but Shaw and Kvill (1984), have found these land forms to be primarily composed of water sorted sediments, deposited by melt water on the underside of a glacier. None of the many landforms examined during the fieldwork were found to consist of sorted, water worn, sediments; all were either roche moutonnee or, where completely covered with overburden, had a soil cover containing very angular rock fragments not showing signs of rounding in a stream flow.
(b) Several "roche moutonnee" glacial landforms have been found. These are steepest (the lee side that results from plucking) on their northwest ends, with a gently sloping stross side to the southeast. This indicates an ice flow to the northwest, and minimal till cover.
(c) The overall topography slopes down from the southeast to the Thompson River, then to the Fraser River. The ice flow direction would be to the northwest, if the ice followed the natural gradient.
(d) The piece of conglomerate float found on the NED is very similar to that observed to the east near Knutsford.
(e) There are a number of strong crosscutting fractures found in the shear zone that strike northeast (directly across the ice flow direction) which would probably be masked if glacial till predominated. Fractures with a variety of directions may also be seen southeast of Kamloops (Whittles 1993a), which, consists mainly of Coast Intrusion rocks with a negligible till cover. In contrast, there are very few such fractures in some areas (for example, directly to the south of Kamloops); these areas seem to be more deeply covered with till and such areas are more likely to have drumlinized till. The existence of many observed fractures in the shear zone would suggest a very thin overburden in that area.
(f) The direction of the glacial flow that gave rise to the "drumlinized" effect, was possibly controlled by an underlying shear zone direction, and it's relative softness because of rock alteration, particularly right in the faults themselves. That is, it is suggested here that the ice flow location and direction was controlled by the underlying structural geology and rock types, rather than a pre-existing valley topography.

4.1.4 Results of the Regional Air Photo Analysis.

The entire region from Savona to Kamloops and south past Dominic Lake, were analysed for major and minor lineaments, and indications of intrusive activity. This was integrated with the regional collection of samples discussed in Section 4.2, and the air magnetic analysis. Some of the results are noted in Section 4.4, but only those features of importance to the NED claim are discussed here (the High Altitude Photos - HAP - discussion that follow).

There was the possibility that intrusive rocks of the Central Nicola Batholith variety (see Section 4.2.4.1) underlie the southwestern half of the NED claim; however, both the air photo analysis and the field work make it unlikely that intrusive rock would be very close to the surface (unlike other areas in the region).

The northeastern half of the NED lies in a long shear zone well marked by faults. Some of these will be discussed in the following paragraphs.

Whittles (1994) has produced a complete analysis of the entire region.

4.1.5 Air Photo Analysis Around The NED Claim

Several different maps were produced from the study of the air photos. Note that HAP = High Altitude Photos, and LAP = Low Altitude Photos.

(1) Physical Features (HAP)

Figure 9 shows the location and main features of the area around the NED claim. Note in particular the proximity of the Afton Mine, and its nearby mill; facilities which would greatly reduce the cost of processing any ore from the NED claim. Road access is very good and the site is only a few kilometers from Kamloops.

(2) Major Lineaments and an Inferred Intrusive (HAP)

The trends of the major lineaments on Figure 10 are NW, NE with some nearly east-west. All the features shown are strongly expressed topographically, with the exception of AMEF as it crosses between SNRL and ANWF. The SNRL fault bisects the NED claim, effectively separating the greenstones in the south from the altered rocks to the north. AMEF, SNRL, and CCF (occupied by Cherry Creek) are inferred to set up extensional shearing forces in the triangle occupied by the northeastern half of the NED claim, making it a favorable location for mineralized deposits.

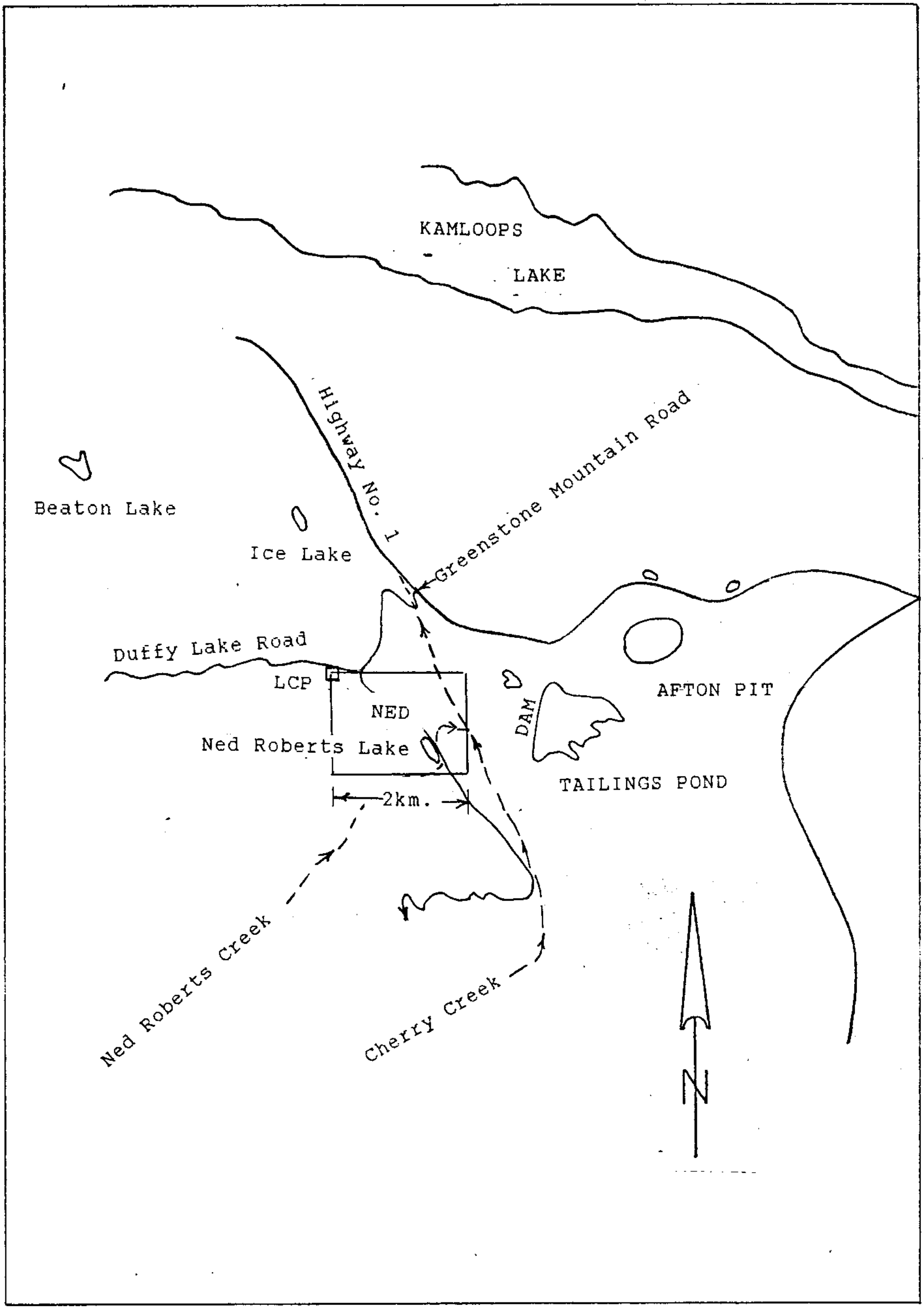


Figure 9: Physical Feature References from High Altitude Air Photo Analysis

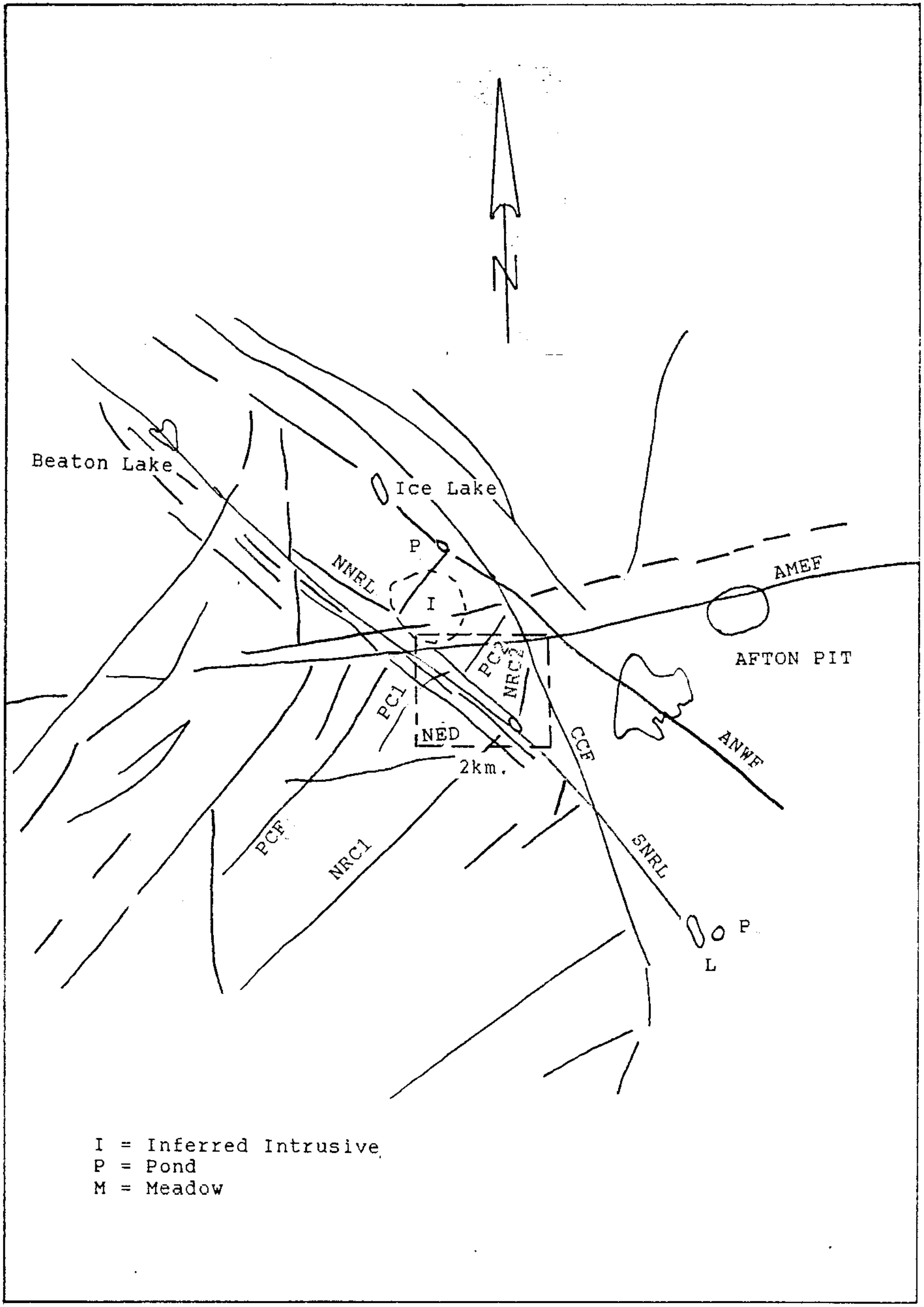


Figure 10: Major Lineaments and Inferred Intrusive Near the NED Claim from the High Altitude Air Photo Analysis

A circular feature is observed on the northern edge of the NED, just above the LCP. For the reasons discussed in Section 4.5.2, this is inferred to be the expression of an intrusive body of Iron Mask Batholith rocks covered lightly by Nicola volcanics.

(3) Combined Major and Minor Lineaments (HAP)

Figure 11 shows the numerous minor fractures that accompany the major faults. Overall, the minor fractures parallel the directions of the major faults, except in the triangle formed by AMEF, CCF, and SNRL. This will be discussed more fully in the following section dealing with LAP.

(4) Physical Features (LAP)

The LAP provide more detail of the physical features (Figure 12). At this scale several meadows are apparent, some of which may have a geological significance as grabens. Also evident on this scale are the old workings north of Ned Roberts Lake, which consist of a trench about 10 m long, and an incline 5 m deep. Other old working have been found in the southwest corner of the claim, a pit or short adit exploring a large quartz vein in a 3 to 4 m shear zone. This is visible on the air photos as part of a large rock fall.

Note the proximity of the Afton Mine.

(5) Topographical Map for the NED Claim

A transparency of the government topographical map (Figure 2) was prepared a the scale of the air photos and superimposed on the air photos. A topographical map was then made for the NED claim, expanded to 1:2500, plotted as Figure 13, and used during the geological field mapping.

(6) Major Lineaments and an Inferred Intrusive (LAP)

The different nature of the southwest and northeast halves of the NED claim are evident on this scale (Figure 14). In the southwest the SNRL fault is paralleled by the NNRL fault which seems to terminate abruptly on NRC2 at Ned Roberts Lake. Note that in Section 4.4.2 the magnetic results show that the fault must continue to the southeast, but is hidden under overburden. Two faults to the south of SNRL (NRMF, and NRSF) are also parallel; NRMF may be interrupted by the north trending PC1 fault, but all of these four parallel northwest trending faults are very definite topographical features. The land between these features is mostly solid rock, well exposed, so it is clear that this is structurally determined, and not the result of glacial geomorphology (see paragraph (6) above).

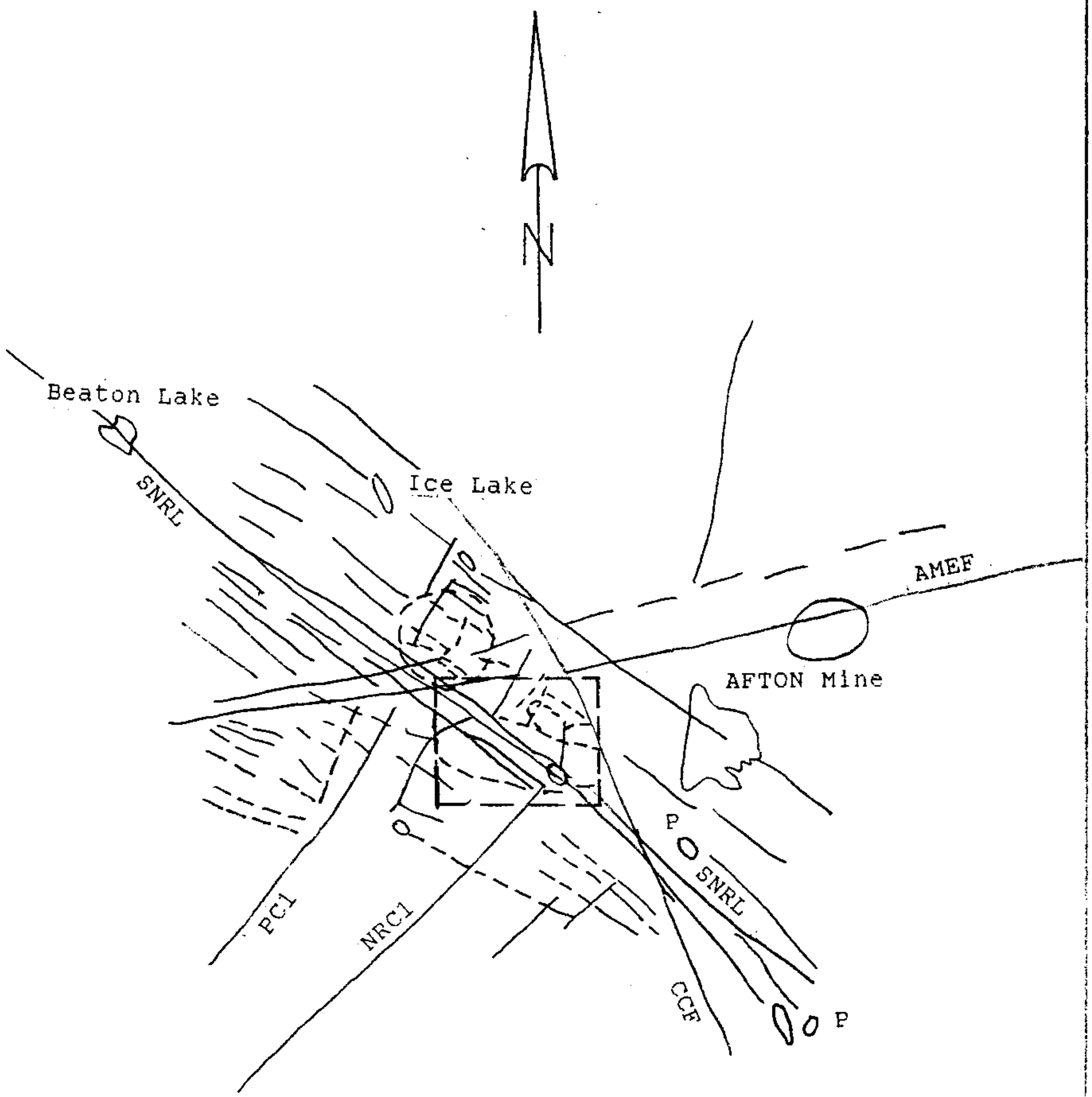


Figure 11:Major and Minor Lineaments
Near the NED Claim from the
High Altitude Air Photo Analysis

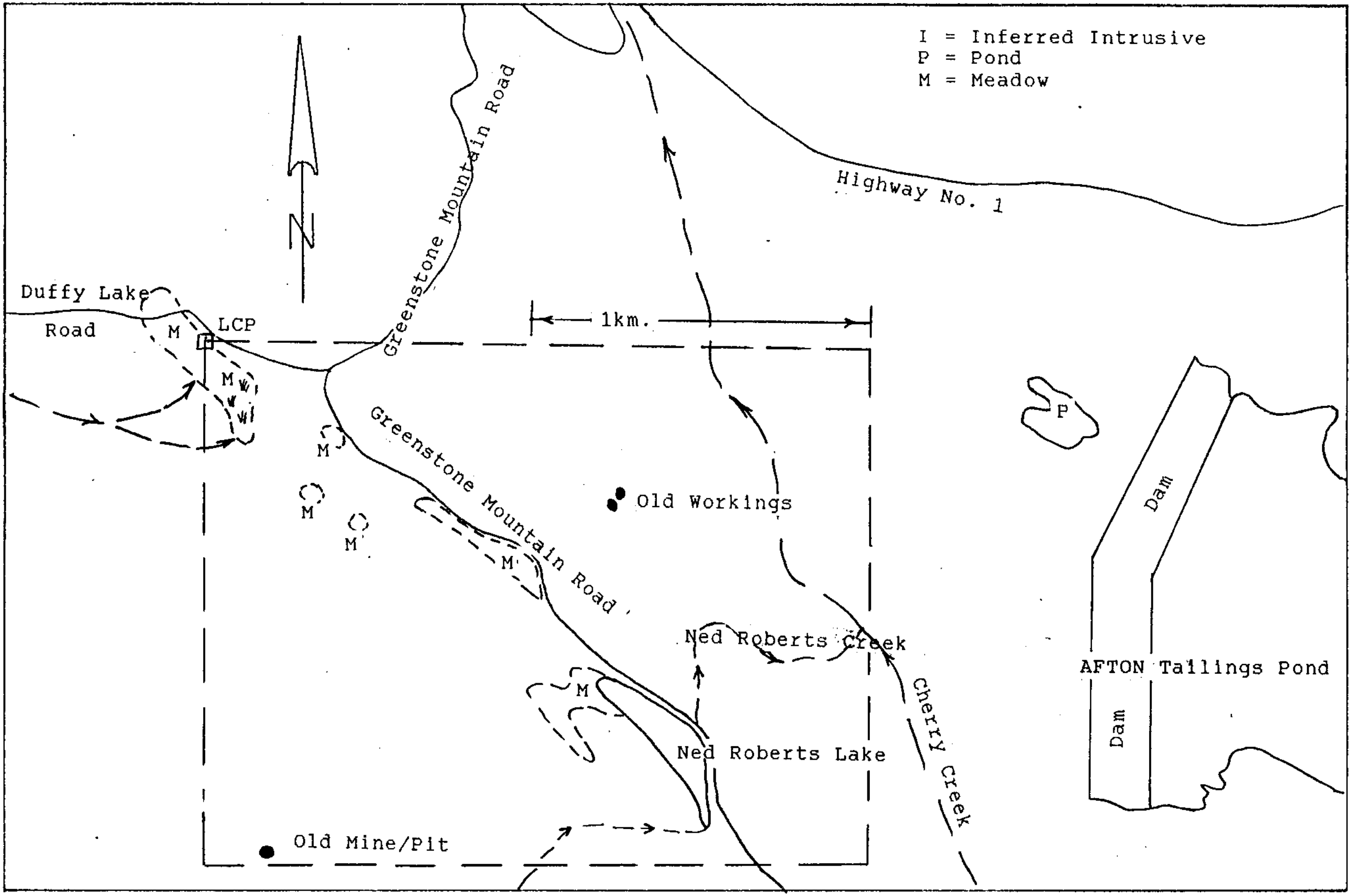


Figure 12:Physical Feature References
On the NED Claim from the
Low Altitude Air Photo Analysis

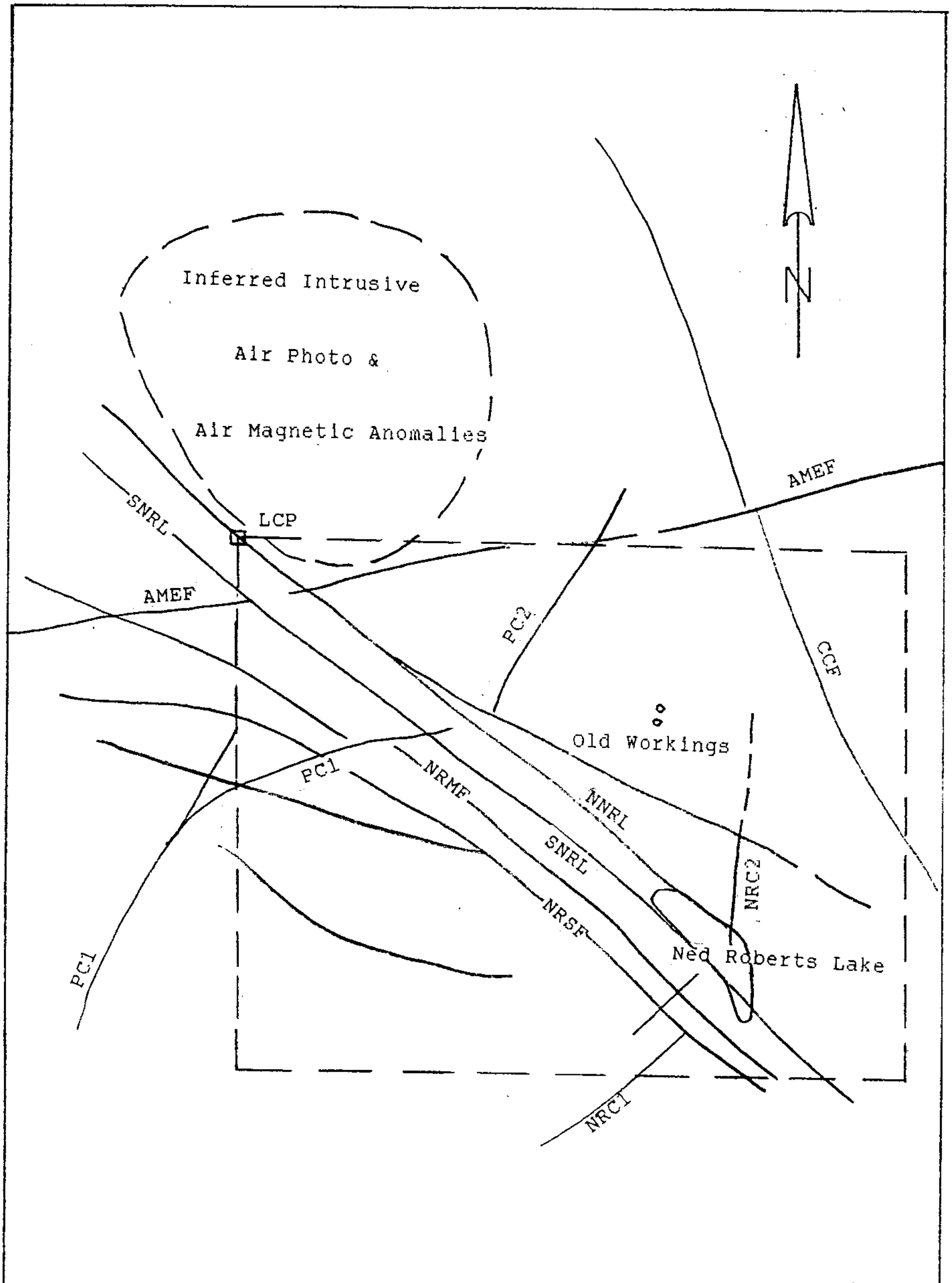


Figure 14:Major Lineaments and Inferred Intrusive
On the NED Claim from the
Low Altitude Air Photo Analysis

The northeast half of the NED has few major fractures, and is bounded by AMEF, CCF, and, SNRL. No series of fractures parallel to NNRL etc., has developed, suggesting different rock types, and/or different stress forces than are found in the bottom half.

(7) Combined Major and Minor Lineaments (LAP)

Figure 15 shows further evidence of the different natures of the two halves of the NED claim. The minor fractures are related to the AMEF and CCF faults, and not the northwest trending faults. The curved fracture traces also suggest shallow fractures striking north and dipping to the east. Most other fractures appear to be vertical. The fracture pattern is more intense (more fractures per unit surface area). It is possible that the mineralizing solutions that formed the Afton deposits could migrate along AMEF to the vicinity of the NED claim, then permeate the many fractures on the northeastern half of the NED.

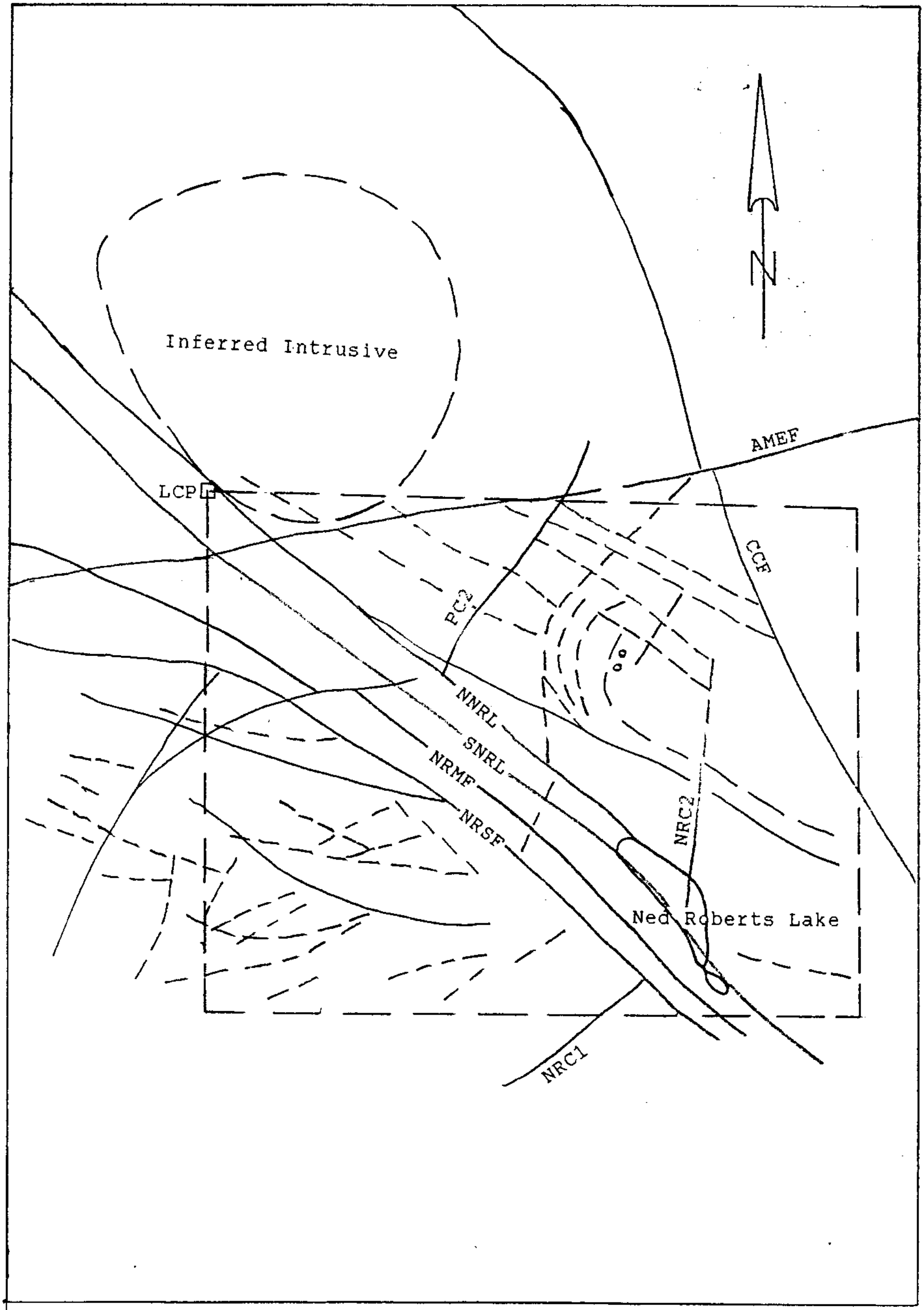


Figure 15:Major and Minor Lineaments
On the NED Claim from the
Low Altitude Air Photo Analysis

4.2 SAMPLE PREPARATION, EXAMINATION AND DESCRIPTION

4.2.1 General Procedures

Summaries of detailed visual, physical property, and field observations are provided in Section 7.5 for more than 120 samples collected during the current field work.

All samples were closely examined with a hand lens, hardness testers, etc., and a zoom microscope using 6 to 60 magnification. Several samples were slabbed on a diamond saw so that the structure could be more easily examined at the higher powers.

The samples were then divided into three groups:

4.2.2 Samples with Metallic Mineralization
4.2.3 Highly Altered Rock Samples
4.2.4 Unmineralized, Unaltered to Weakly Altered Rock Samples

The reader should once again note that the present writer is using a simplified igneous rock classification scheme (given in Section 7.6), and microscopic, but not thin section, observations to label the rock samples collected during the field work.

4.2.2 Samples with Metallic Mineralization

Rocks of this type found on the NED claim may be summarized as follows (page numbers refer to the rock identification sheets in Section 7.5). These included vein samples and rocks with disseminated sulfides.

(1) Vein Samples

Sample Number	Page	Vein Type	Mineralization
KN93W-124&141	MIN-1	Carbonate Chalcedony	Primary Azurite, Malachite, (0.8% copper) (.02 G/TONNE Gold)
KN93W-OC2A	MIN-2	Quartz Carbonate	Chalcopyrite,Pyrite Secondary Azurite, Malachite
KN93W-OC1C	MIN-3	Quartz Carbonate	Chalcopyrite
KN93W-18	MIN-4	Quartz-Sericite Carbonate	Hematite
KN93W-13	MIN-5	Quartz Carbonate	Hematite
KN93W-8B,15,17,19	MIN-6	Quartz	Hematite

The last samples (p. MIN-5,-6) are typical of the many small barren quartz veins on the southwestern half of the NED claim.

The first samples are from the epithermal alteration zone north of Ned Roberts Lake, and appear to be primary mineralization formed in a carbonate hydrothermal system, and not the result of sulfide weathering.

Sample -OC2A is from a large 1 meter wide vein in Nicola volcanics. The copper carbonates appear to be secondary. The chalcopyrite masses are up to 30 mm in size. Sample -OC1C is a smaller version of -OC2A.

Sample -18 was obtained from an old workings/mine high up on the mountainous southern edge of the NED claim. This working was either a shallow adit or a extensive pit in a 3 to 4 m wide northwest trending shear zone in Nicola volcanics. The width of the vein itself could not be determined, but could occupy the whole of the shear zone as a mass or as irregular stockworks. This should be channel sampled and assayed for gold and copper.

(2) Rocks With Disseminated Sulfides

Sample Number	Page	Rock Type	Sulfide Content
KN93W-194	MI-1	Porphyritic Andesite	few %
KN93W-188B&C	MI-2&3	Porphyritic Andesite	few %
KN93W-21B	MI-4	Porphyritic Andesite	up to 5%
KN93W-6B	MI-5	Felsic Feldspar Porphyry	few %

Sample -194 was adjacent to the major fracture zone running through Ned Roberts Lake, as inferred from the air photos. It was somewhat brecciated, and contained pyrite to a few percent in one location. Chalcopyrite and specular hematite may also be present, but are minor. There was abundant epidote and some calcite.

Samples -188B & C were from the southwest of Ned Roberts Lake and contained some pyrite, mostly disseminated, but making up one 25 by 5 mm mass.

Sample -21B was adjacent to the unusual felsic feldspar porphyry (sample KN93W-21A), and showed small striated pyrite cubes comprising about 5% of a fracture face, as well as being disseminated in the rock mass. Some chalcopyrite may also be present. The epidote seems to be partially recrystallized. This sample might indicate that the felsic porphyry is an intrusive, but more field work would be needed to decide upon such a model.

Sample -6B contains pyrite in a thin band, and is similar to sample -21A.

These rocks do not in themselves indicate a major mineralized zone; however, together they indicate nearby intrusive/hydrothermal activity. The more proximal mineralization occurs as one proceeds to the north to Ned Roberts Lake from the southern boundary of the NED claim.

4.2.3 Highly Altered Rock Samples

Most of the rocks in this area are altered to some extent, resulting in the introduction of chlorite and epidote, but there is one zone on the NED claim north of Ned Roberts Lake which shows a wide variety of alteration types over a relatively short distance that are typical of an epithermal system. These may be summarized as follows.

Sample Number	Page	Rock Type	Alteration Type
KN93W-107,195, & 230	AR-1	Porphyritic Andesite (grey) (lightly altered)	ALT-1
KN93W-119,130	AR-2	Porphyritic Andesite (brown) (heavily altered)	ALT-2
KN93W-103,106, & 120,124, & 125,136, & 138,151	AR-3	Porphyritic Andesite (red) (heavily altered)	ALT-3
KN93W-3,23,24, & 111,118, & 136,146	AR-4	Carbonate Breccia	ALT-4
KN93W-103,105	AR-5	Carbonate Alteration Zone	ALT-5
KN93W-4,37,103,	AR-6	Chalcedony Alteration Zone	ALT-6
KN93W-140	AR-7	Advanced Intermediate Argillic (with Chalcedony) Alteration Zone	ALT-7
KN93W-139	AR-7	Intense Argillic with Silicification Alteration Zone	ALT-8

(Two samples were obtained outside of the NED claim to help in the air photo interpretation part of this report).

KCA93W-1	AR-8	Intermediate Argillic Alteration Zone	Epithermal to Mesothermal
K93W-G	AR-9	Carbonate Alteration Zone	

ALT-1

These rocks were lightly altered grey Nicola porphyritic (feldspar) andesites. There was a slight illite clay smell, the amphiboles are altered to chlorite, the feldspars to ankerite (?) accompanied by some calcite veinlets. The matrix remained a typical dark grey. These rocks are found on the edges of the main alteration zone north of Ned Roberts Lake (that is, at the contact between the isolated blocks of unaltered Nicola volcanics, and the epithermal alteration) and seem to represent the lowest temperature stage of alteration.

ALT-2

These rocks were well altered grey Nicola porphyritic (feldspar) andesites. The feldspars were altered to ankerite (?); the matrix to ankerite and/or limonite (?).

ALT-3

These rocks were similar to those of the ALT-2 group, but the matrix appears to be hematite stained. Vuggy, crystalline, carbonate veinlets were also present in some samples.

ALT-4

This breccia consists of about 20% reddish clasts (ALT-3 rock fragments) with the remainder being carbonates: calcite, ankerite and dolomite (?).

ALT-5

These are massive to crystalline carbonate vein materials, vuggy,with cockscomb textures. Minor quartz, chalcedony, and sericite can be seen. The original rock texture is completely destroyed.

ALT-6

These are chalcedony vein material and come in various colors: red, pink, brown, and translucent grey. One brown vein shows an explosive, resealed, breccia pattern. Two other samples have highly altered red Nicola rock breccia clasts. The pink chalcedony probably indicates cinnabar mineralization (see Section 3.9).

ALT-7

These samples show intense argillic alteration with some silicification. The alteration in sample -140 is not widespread, most of the clasts and phenocrysts are brownish (carbonate?), and only a limited amount of kaolinite is present. This is the same location where azurite and malachite is fairly common.

ALT-8

Sample -139 is a typical epithermal jasperoid rock. It is intensely altered. All phenocrysts/clasts are completely altered to kaolinite. The matrix is almost completely altered to a translucent grey silica, and contains rounded, vuggy grains of chalcedony.

Unlike the intense carbonation to the north of Ned Roberts Lake, in the south, calcite seems to be only lightly and irregularly distributed in the Nicola greenstones.

The two sample from outside of the NED claim do not provide enough of a textural contrast to be visible on the air photos.

KCA93W-1 was collected on the CAMP claim for comparison with the altered rocks of the NED. The CAMP claim rock is believed to represent an advanced intermediate argillic alteration zone. Drilling (Boitard, 1993) has returned extensive carbonate alteration, with mariposite. On the surface the rock has an unusual blue-green color, is well brecciated, with the clasts surrounded by calcite, quartz and ankerite veinlets, and other carbonate alteration. The original texture is almost completely destroyed, but gives the impression of porphyritic (amphibole) andesite. An attempt was made evaluate the mineralization to see how it compared to the alteration minerals found on the NED claim. Samples were treated in dilute HCL for several days, and initially reacted strongly. The suspected clay minerals did not swell in water. Judging by the odor and the color, the main clay mineral is probably illite. Quartz, sericite, ankerite, calcite, and possibly albite are the major minerals. Other carbonates such as dolomite may be common. Minor magnetite, and malachite were observed, and an occasional flake of specular hematite. Montmorillonite does not appear to be a major component, nor kaolinite. Chlorite and epidote likewise seem to be very minor.

4.2.4 Unmineralized, Unaltered to Weakly Altered Rock

(1) Rocks Outside The NED Used For Air Photo Identification

Sample Number	Page	Rock Name	Magnetic?	Rock Type
K93W-A1,C1,C2	I-1	Syenite	Strongly	Igneous Intrusive
K93W-D1	I-2	Microdiorite	Strongly	Igneous Intrusive
K93W-D2	I-3	Microdiorite	Strongly	Igneous Intrusive
K93W-E	I-4	Microsyenite	Weakly	Igneous Intrusive

Sample Number	Page	Rock Name	Magnetic?	Rock Type
K93W-F	I-5	Microsyenite	Strongly	Igneous Intrusive
K93W-M	I-6	Quartz Diorite	No	Igneous Intrusive
KW93W-1	I-7	Quartz Diorite Porphyry	No	Igneous Intrusive
KCI93W-A,B	I-8	Mineralized Quartz Diorite Porphyry	No	Igneous Intrusive
KCU93W-11B	I-9	Leucocratic Dyke	No	Igneous Intrusive
K93W-Y,Z	I-10	Microdiorite	Strongly	Igneous Intrusive
K93W-B,I,J & K,N	I-11	Feldspathic Andesite	Strongly	Igneous Extrusive
K93W-Q	I-12	Basalt	Strongly	Igneous Extrusive
KCU93W-1	I-15	Amygdaloidal Basalt	Strongly	Igneous Extrusive
K93W-H	I-16	Porphyritic Basalt	Strongly	Igneous Extrusive
K93W-G	I-17	Altered Andesite	No	Igneous Extrusive
KXE93W-P-2	I-18	Andesite	No	Igneous Extrusive
K93W-AR-2	I-21	Pinkish Porphyritic (Amphibole) Andesite	Strongly	Igneous Extrusive
K93W-AR-3	I-22	Grey Porphyritic (Amphibole) Andesite	Strongly	Igneous Extrusive
KN93W-AR-1,O	I-25	Grey Porphyritic (Feldspar) Andesite	Strongly	Igneous Extrusive
K93W-O-1	I-29	Grey Feldspar-Amphibole-Pyroxene Porphyry	Strongly	Igneous Intrusive
KXE93W-P-1	I-32	Green Ash Tuff	No	Igneous Extrusive
K93W-S	S-1	Tuffaceous Sandstone	No	Sedimentary
K93W-R	S-2	Argillite	No	Sedimentary

Sample KCU93W-11B (p. I-9) was collected on the CHU Claim. It is a very sugary dyke 10 - 20 cm wide and exposed for 5 - 10 m. It fits the description of a leucocratic dyke rock very closely related to a granitic intrusion, and supports the air photo interpretation that places an underlying quartz diorite intrusive in this location, as do the samples on p. I-6,-7,-8.

The rocks described on pages I-1 to I-5, and I-10, have been discussed in Section 3.5 of this report.

The rocks described on page I-11, have been discussed in Section 3.3.2 of this report.

The rock described on page I-12, has been discussed in Section 3.2 of this report.

The rocks described on page I-15 to I-18 and I-21, I-22, I-25, I-29, I-32, and S-1, have been discussed in Sections 3.6.2 and 3.6.4 of this report.

The rock described on page S-2, has been discussed in Section 3.7 of this report.

(2) Rocks On The NED Claim

Sample Number	Page	Rock Name	Magnetic?	Rock Type
KN93W-192	I-13	Microdiorite	Strongly	Igneous Intrusive
KN93W-180	I-14	Microdiorite Intrusive Breccia	Strongly	Igneous Intrusive
KN93W-16	I-19	Light Green Andesite	No	Igneous Extrusive
KN93W-5,7,17, & 22,23, & 183,188	I-20	Green Porphyritic (Amphibole) (Calcitic) Andesite	No	Igneous Extrusive
KN93W-6,13,17, & 24,25,26, & 183,OC1A	I-23	Green Porphyritic (Amphibole) Andesite (No Calcite)	No	Igneous Extrusive
KN93W-102A,	I-24	Green Porphyritic (Feldspar) Andesite	No	Igneous Extrusive
KN93W-104,107, & 122,123, & 230, 700N	I-26	Grey Porphyritic (Feldspar) Andesite	Strongly	Igneous Extrusive
KN93W-8,14,184	I-27	Green Porphyritic (Feldspar, Amphibole, Pyroxene) Andesite	No	Igneous Extrusive

Sample Number	Page	Rock Name	Magnetic?	Rock Type
KN93W-137	I-28	Black Feldspar-Amphibole Porphyry	Strongly	Igneous Extrusive
KN93W-21A	I-30	Felsic Feldspar Porphyry	No	Igneous Extrusive? Intrusive?
KN93W-20	I-31	Quartz-Eye Rhyolite	No	Igneous Extrusive
KN93W-102C	I-33	Green Lapilli Ash Fall Tuff	No	Igneous Extrusive
KN93W-182	I-34	Grey Sandy Tuff	No	Igneous Extrusive & Sedimentary
KN93W-OC1D,18	M-1	Chlorite Sericite Schist	Moderately	Metamorphic
KN93W-OC1B	M-2	Meta-Rhyolite	No	Metamorphic
KN93W-100,193	M-3	Meta-Porphyritic Andesite	No	Metamorphic
KN93W-190	S-3	Nicola Basal Conglomerate	No	Sedimentary

Some general comments can be made about this collection of samples. There is a distinct change in the geology as one crosses the fault zone running through Ned Roberts Lake. South of this line one finds the various types of Nicola greenstones, to the north there are black and grey intrusive and porphyritic (feldspar) andesites/basalts, intermixed with the altered rocks. There may be some fine grained intrusive rocks in between these two groups. The northern unaltered rocks are also distinctive in being strongly magnetic. Only one southern rock (p. M-1 - a metamorphic rock) showed any magnetism and this was quite weak.

A detailed discussion of the various samples follows.

(a) Intrusive Rocks on the NED

(i) Microdiorites

There is some question as to the extent of the intrusive rocks found on the NED. Although the outcrop area of KN93W-180 is quite good (10 m by 10 m), and the hand specimens are strongly magnetic, the magnetic surveys which partly overlap into this area do not appear to affected (see

Section 4.5.2 (3)). This could indicate that only a large piece of float is present. The outcrop of KN93W-192 was very limited but appeared very angular, and showed no signs of glacial transport; however, the magnetic map also does not indicate the presence of this very magnetic rock.

Sample 192 (p. I-13) is very similar to K93W-Y,-Z discussed in Section 3.5.2.2, which are intrusive Sugarloaf microdiorite rocks, but 192 is slightly softer, and greener in color.

Sample 180 (p. I-14) has some aphanitic matrix and some microdiorite sections (similar to sample 192) with brecciated clasts. It appears to be an intrusive breccia.

(ii) Possible Intrusive Porphyries

Samples collected by Holcapek (1970) at the same site as KN93W-700N were reported as microdiorites, whereas KN93W-700N is called a grey porphyritic (feldspar) andesite/basalt in this report. The present writer did, however, find some microdiorite sections in the samples collected at this location (see p. I-26). The magnetic map is anomalous at this location.

KN93W-21A (p. I-30) is possibly an intrusive as well, but occurs in the southwestern half of the NED and is a greenstone. The area has not been examined closely enough to reach any definite conclusions. It is described in paragraph (c) (v) following.

(b) Nicola Volcanic Rocks on the Northeastern Half of the NED

(i) Grey Porphyritic (Feldspar) Andesite or Basalt

KN93W-104A,-107A,-122B,-123,-230,-700N (p. I-26) are strongly magnetic, with some calcite. White feldspar phenocrysts make up 15-20% of the rock, although occasionally these are indistinct and brownish (ankerite?). There are some reddish breccia fragments, and sample -700N showed some distinctly microdiorite sections.

(ii) Black Feldspar-Amphibole Porphyry

KN93W-137 (p.I- 28) is a mafic rock, strongly magnetic. Calcite is common, and one calcite vein with siderite walls was observed. The matrix is very fine grained, having a near glassy appearance. There are about 15-20% dark grey, translucent, feldspar phenocrysts, with many crystals zoned. Amphiboles make up 5-10% of the rock, but may be partially converted to chlorite. This sample is strongly magnetic.

(c) Nicola Greenstones on the Southwestern Half of the NED

(i) Green Andesite

KN93W-16 (p. I-19) is a light green, non-magnetic, very fine grained andesite. Some calcite present.

(ii) Green Porphyritic (Amphibole) Andesites

KN93W-5,-7,-17A,-22,-23,-183,-188A (p. I-20) are nonmagnetic rocks with 10-20% amphibole (?) phenocrysts, and only occasional feldspar phenocrysts. The amphiboles may be partially or completely converted to chlorite, and there is abundant calcite and epidote. Some minor sulfides.

KN93W-6B,-13,-17B,-24,-25,-26,-183,-OC1A (p. I-23). These rocks are the same as those in the preceding paragraph but do not have any calcite. Some minor sulfides.

(iii) Green Porphyritic (Feldspar) Andesite

KN93W-102A (p. I-24) is a dyke-like or layered rock, microdiorite in appearance in some sections. The rock is nonmagnetic, and contains 5 to 15% white feldspars. Rock alteration is evident in the indistinct appearance of both the feldspar grains and the ferromagnesian mineral (chlorite?), a definite illite clay smell, and the presence of epidote; there is, however, only minor calcite present.

(iv)Green Porphyritic (Feldspar,Amphibole,Pyroxene) Andesite

KN93W-8,-14,-184 (p. I-27) are nonmagnetic, contains about 15% feldspars, and 5-20% amphiboles and pyroxene. No calcite is present, but there is abundant epidote in the matrix. Disseminated pyrite is present in both samples, and chalcopyrite in sample -184.

(v) Green Felsic Feldspar Porphyry

KN93W-21A (p. I-30) is a light green sample composed of about 30% white to clear, mostly K-feldspar, phenocrysts. Feldspathic minerals (?) made up 5%. Minor secondary quartz was present in veinlets. There was a trace of pyrite. A very fine grained epidote matrix made up the remaining 65% of the rock. Possibly an intrusive.

(vi) Greenstone Tuffs

KN93W-182,-102C (p. I-33,-34) are nonmagnetic rocks with calcite and epidote. Traces of sulfides are present and layering is evident. 102C has 2-3 mm clasts showing impact crater structures. 182 has a sandy texture.

(d) Other Nicola Rocks on the Southwestern Half of the NED

(a) Rhyolite

KN93W-20 (p. I-31) is a white, aphanitic, rock with occasional 1 mm quartz grains. Although this was near a contact of the green felsic feldspar porphyry - which is possibly an intrusive - (see paragraph (c) (v) preceeding) and (3), and has a slight illite clay smell, it does not appear to be an alteration zone because no relic structures could be found in the sample.

(b) Metamorphic Rocks

The foliation in KN93W-18,-100,-193,-OC1B,-OC1D (p. M-1, M-2, M-3) appears to be the result of shearing. The types range from meta- porphyritic andesites, and meta rhyolites, to chlorite-sericite mylonites. Chlorite, calcite, sericite, and quartz seem common, in addition to the usual Nicola minerals: feldspars, epidote, amphibole, and pyroxene. These are probably very localized around shear zones.

(c) Sedimentary Nicola Rocks

Two well rounded float (?) boulders of a sedimentary rock were also found on the NED claim (KN93W-190, p. S-1). This rock is a conglomerate very similar to that observed to the SE of Knudsford. The clasts are well rounded pebbles and cobbles 1 to 10cm in size, consisting of argillite and a distinctive reddish feldspar porphyry. The matrix is a very angular mix of various rock and mineral fragments, including some amphiboles. This is probably the basal member of the Nicola Group (see Cockfield, 1961, p.8 and 13), and the sample is probably glacial float.

4.3 GEOCHEMICAL ANALYSIS

4.3.1 General

No new analysis were obtained during the current field work. Previous data was, however, revaluated in the context of the new field information. The results quoted by Whittles (1990) are now seen to be consistent with the epithermal zone proposed. As, Ag, Cu, and Bi were anomalous in soil and rock samples at scattered locations in the western protrusion of the epithermal zone on the northeastern half of the NED.

As, Cu, and Sb were observed around the old workings, with the best assay giving about 0.8% copper and 0.02 G/TONNE gold, in the same location primary azurite and malachite were found.

A detailed alteration classification scheme has been set up for the NED claim, and will be discussed in the following Section 4.3.3.

4.3.2 Earlier Geochemical Maps

The geochemical surveys of Holcapek (1970) and Reed (1976) are the only published maps covering the current NED claim.

As noted in Whittles (1990), the Holcapek map was a soil copper survey and showed an erratic "bulls-eye" pattern typical of surveys improperly carried out; however, it is possible that the erratic nature of epithermal deposits could produce this pattern with the copper values (copper, alone, is not the best choice to evaluate an epithermal deposit; in any case, the 1970 survey did not have this objective in mind). A comparison of Holcapek's copper geochemistry and magnetic maps do indicate that most of the copper anomalies coincide with the magnetic highs, or with the unaltered Nicola rocks in the epithermal zone (see Section 4.4). This suggests that either the Nicola rocks are richer in copper than the epithermal carbonate mineralization, or that the Nicola rocks have partially reacted with the epithermal solutions in such a way as to cause the deposition of copper. The first alternative is well supported by two previous analysis of unaltered Nicola rocks (Whittles, 1990; Samples KN90W-1 and -22) which were anomalous in copper. Most of the altered (epithermal) samples were not anomalous in copper but were in other epithermal elements. Those altered (epithermal) samples that were anomalous in copper were from the region right around the azurite and malachite showings at the old workings.

The Reed map had very few copper anomalies on it, and on the NED claim only a low level one just west of the old workings (adjacent to the azurite and malachite veinlets).

A proper soil epithermal ICP survey should be considered in future work aimed at providing a more detailed exploration model (after some preliminary drilling).

4.3.3 Geochemical Alteration Classification for the NED

Alteration on the northeastern half of the NED was extensive, and appears to have occurred along fracture zones that originally existed in the grey to black Nicola rocks. The alteration has been so extensive that only isolated blocks of the original rock remains. The following alteration types were identified during the current study. Note that those identified by the abbreviations ALT-1, etc., were collected on the northeastern half of the NED claim and have been discussed in Section 4.2.3. The sericitic alteration type has not been found as a clearly discernible separate type on the NED, but seems to be a major component on the CAMP claim. It may also exist on the NED, because intermediate argillic and advanced argillic zones have been noted; sericitic alteration is usually considered to be between these two in terms of intensity.

(1) Propylitic Alteration

Many of the rocks in the Kamloops area show widespread propylitic alteration, with the formation of epidote, chlorite, and also calcite which occurs as veinlets and disseminated grains. Particularly affected are some of the Nicola volcanics with the extensive greenstone formation that one finds in the southwestern half of the NED claim.

(2) Alteration Type ALT-1

The rocks on the northeastern half of the NED that fit this classification are lightly altered grey Nicola porphyritic (feldspar) andesites. There is a slight illite clay smell, the amphiboles are altered to chlorite, the feldspars to ankerite (?) accompanied by some calcite veinlets. The matrix remained a typical dark grey. These rocks are found on the edges of the main alteration zone north of Ned Roberts Lake; that is, at the contact between the isolated blocks of unaltered Nicola volcanics, and the epithermal alteration zones. This alteration type seems to represent the lowest temperature stage.

(3) Alteration Type ALT-2

These rocks were well altered grey Nicola porphyritic (feldspar) andesites. The feldspars were altered to ankerite (?); the matrix to ankerite and/or limonite (?).

(4) Alteration Type ALT-3

These rocks were similar to those of the ALT-2 group, but the matrix appears to be hematite stained. Vuggy, crystalline, carbonate veinlets were also present in some samples.

(5) Alteration Type ALT-4

This breccia consists of about 20% reddish clasts (ALT-3 rock fragments) with the remainder being carbonates: calcite, ankerite and dolomite (?).

(6) Alteration Type ALT-5

These are massive to crystalline carbonate vein materials, vuggy, with cockscomb textures. Minor quartz, chalcedony, and sericite can be seen. The original rock texture is completely destroyed.

(7) Alteration Type ALT-6

These are chalcedony vein material and come in various colors: red, pink, brown, and translucent grey. One brown vein shows an explosive, resealed, breccia pattern. Two other samples have highly altered red Nicola rock breccia clasts. The pink chalcedony probably indicates cinnabar mineralization (see Section 3.9).

(8) Alteration Type ALT-7 (Intermediate Argillic)

Some samples on the NED show argillic alteration with the formation of some chalcedony. The alteration is not widespread, most of the clasts and phenocrysts are brownish (carbonate?), and only a limited amount of kaolinite is present. This is the same location where azurite and malachite is fairly common.

(9) Intermediate Argillic to Sericitic Alteration

The rocks found on the CAMP claim are believed to represent an intermediate argillic to sericitic alteration zone. On the surface the rock has an unusual blue - green color, is well brecciated, with the clasts surrounded by vuggy, crystalline calcite, quartz and ankerite veinlets, and other carbonate alteration. The original texture is almost completely destroyed, but gives the impression of porphyritic (amphibole) andesite. The main clay mineral is probably illite. Quartz, sericite, ankerite, calcite, and possibly albite are the major minerals. Other carbonates such as dolomite may be common. Minor magnetite, and malachite were observed, and occasional flakes of specular hematite and possibly mariposite.

(10) Alteration Type ALT-8(Advanced Argillic/Silicification)

These rocks are typical epithermal jasperoid rocks. All phenocrysts/clasts are completely altered to kaolinite, which makes up about 40% of the sample. The matrix (approximately 55% of the sample) is almost completely altered to a translucent grey silica, and contains rounded, vuggy grains of other forms of chalcedony. Calcite is minor. Some quartz, sericite, and pyrite are present.

4.4 GEOPHYSICAL ANALYSIS

4.4.1 Air Magnetic Maps

4.4.1.1 Regional Considerations

Portions of two air magnetic maps (GSC Maps 5217G, Cherry Creek and 5216G, Kamloops) were analyzed to give additional information in the process of choosing exploration models for the NED claim. These maps were discussed in detail in Whittles (1992) and show the following features.

(1) Intrusive Rocks

The nearby Iron Mask Coast Intrusive zones are marked by strong magnetic highs (3000 to 5000 gammas), and are strongly oriented in a northwesterly direction, which parallels the outcrops of these rocks.
The Coast Intrusive Rocks shown on Cockfield's (1961) geological map in the southeast corner of air magnetic map 5217G (120 deg. 50 min. to 121.00 deg., and 50 deg. 30 min. to 50 deg. 35 min.) have a magnetic signature very similar to that of the volcanic rocks discussed in (3) following.
The Central Nicola Batholith is, however, quite nonmagnetic both on the air photos and in hand specimens (Sample K93W-M). Samples with the same characteristics as this (KW93W-1, and KCU93W-A & B), found to the west of the NED claim on the CHU and WOOD claims were also nonmagnetic. This area is also nonmagnetic on the air magnetic maps.

(2) Metamorphic Rocks

Immediately to the west of McLeod Lake, an irregular series of highs (2000-3000 gammas) and lows are found in the same location as metamorphic Paleozoic rocks on Cockfield's (1961) geological map. These rocks may be metamorphosed Cache Creek Group sedimentary rocks.

(3) Volcanic Rocks

The magnetic signatures of the Nicola Group Volcanic rocks are very subdued to the south and east of the NED claim. This is not surprising since most hand specimens are nonmagnetic.
The Kamloops Group volcanic rocks are strongly magnetic, as are volcanic rocks of uncertain age (rock type 8 of Cockfield, 1961); all show the usual irregular bull's-eye patterns (with highs of 4000 gammas, and lows of 2000 gammas). The trends are mostly northerly, but some show north-northwest, and others northeast tendencies.
Most of the Valley Basalt outcrops are strongly magnetic and show as target - like anomalies.

(4) Structural Features

These features were inferred from the air photos, magnetic maps (using trends and lows), topographical features (creek bed trends, spring fed? lakes), and some structural features of Kwong (1987). Maps are available in Whittles (1992).
The most northerly of the northwest trending features is made up by joining two of Kwong's (1987) inferred fault lines, but ignoring his more southerly continuation at the location marked by (--?--?--). Kwong's inferred continuation is not supported by either magnetic or topographical features.
The south central, north trending fault of Kwong (1987) is likewise not expressed magnetically, nor topographically.
Three more northwest trending faults can be inferred from magnetic trends and lows, as well as the locations of lakes.
Three northeast trending features, along with the northwestern trending features seem to mark off a magnetic (low) basin, extending from the north end of the Central Nicola Batholith, over across the south end of the NED claim.
Two north trending features are present to the northwest of the CHU Claim-one penetrating the west edge of the claim as inferred from the air photos, the other further to the northwest, faulted into two segments. Fault movements can be inferred as the east sides of the faults being the upthrown sides. This type of movement would be help to bring the Central Nicola Batholith rocks near to the surface under the CHU Claim.

(5) Summary of Magnetic Map Features Around the NED Claim

(a) South of the Shear Zone

As can be seen on the magnetic map (Whittles, 1992) the area from the north end of the Central Nicola Batholith, over across the south end of the NED claim, is significantly different from most of the surrounding map area (particularly that to the west, north, and south). The magnetic map is essentially flat from Beaton Creek on the west to the Stake and McConnell Lakes to the east. There is a slight low on Cherry Creek, and a slight east-west high trend across the CHU Claim.
The only comparable magnetic signatures are found in the Cache Creek Group outcrop zones to the east of Kamloops (Cockfield, 1961, and GSC Magnetic Map 5216G), and the Central Nicola Batholith stretching to the south. While the metamorphic rocks to the southeast of the CHU Claim magnetic basin are possibly metamorphosed Cache Creek Group rocks, no Cache Creek rocks have been found to the west. On the other hand, rock very similar to the Central Nicola Batholith rocks have been found both on the CHU and WOOD claims (see

Figures 3 and 5). These features strongly suggest that the magnetic low basin to the south and southeast of the NED claim is the result of Central Nicola Batholith intrusive rocks beneath a thin mantle of Nicola Group volcanics.

(b) North of the Shear Zone

North of the NED claim the magnetic field is marked by the strong magnetic highs (3000 to 5000 gammas) of the nearby Iron Mask Coast Intrusive zones which are in a northwesterly direction.

(c) Transition Zone

The shear zone marks a transition between the Iron Mask Batholith magnetic highs and the lows of the magnetic basin south of the NED. The magnetic intensity drops by about 1000 gammas over this zone (see Figure 16). The ground magnetometer survey discussed in the following Section 4.4.2 shows that the zone is not a simple smooth decline as appears on the air magnetic map, but is a zone of irregular, and highly variable, changes that seem to mark off isolated unaltered blocks of magnetic, grey to black, Nicola rocks, from the highly altered rocks surrounding them.

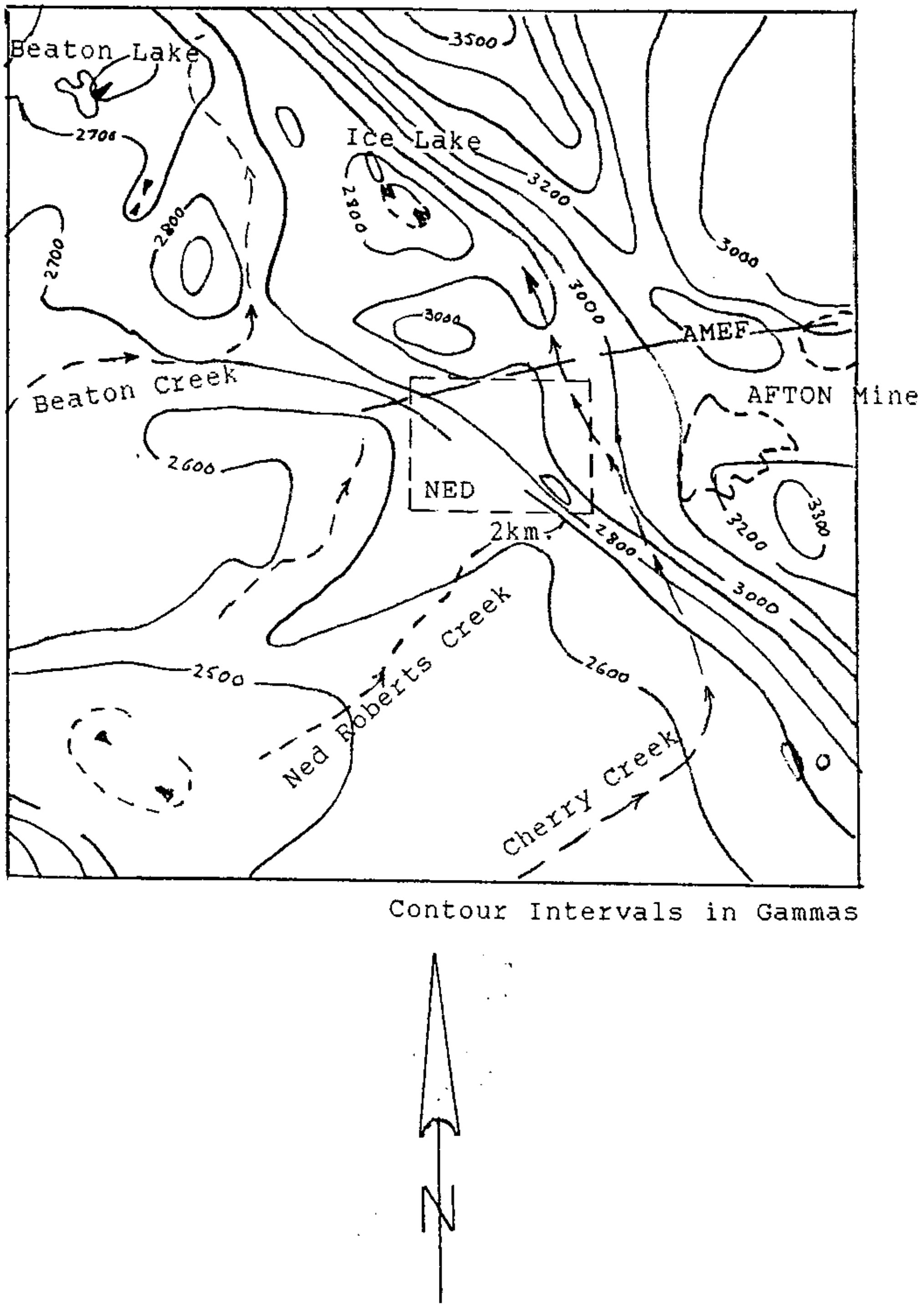
4.4.1.2 Local Air Magnetic Map Considerations

One of the magnetic anomalies shown on GSC Map 5217G coincides with a circular air photo feature situated just on the western side of the northern edge of the NED claim above the LCP (see Figure 16), and extending into the south part of the MASKAM claim (see Figure 3). This anomaly is over 3000 gammas in intensity, and is interpreted to be an intrusive body (see Figure 10) similar in composition to the Iron Mask rocks. Since the intrusive is buried under overburden and some volcanic flows, the magnetic field intensity of the inferred intrusive is well within the range of 3000 to 5000 gammas found over the Iron Mask Batholith.

Note also that the shape of the anomaly appears to be connected to the Iron Mask Batholith anomalies, and to be shaped by the AMEF fault that cuts across the top of the NED claim on its way to the Afton Mine pit (see Figure 10). The AMEF fault appears to truncate the southern side of the anomaly.

Sanders (1972) has also suggested this possibility. He notes:

> " A marked magnetic high and general broadening of the gradient coincident with the location of the ground I.P. anomaly supports the possibility of a local near surface intrusive condition."



Contour Intervals in Gammas

Figure 16:Air Magnetic Map Altered to the same Scale
As the High Altitude Air Photos

4.4.2 Local Ground Magnetic Map Considerations

Although no new magnetic ground surveys have been completed by the present writer, older information may now be rescaled to match the detailed geological map produced in this report. The data was obtained from Holcapek (1970), whose original map is reproduced, with the NED claim outlined, as Figure 17 in this report (note that 400 feet = 122 m). The Holcapek map was also expanded to a scale of 1:2500 to match the topographical and geological map scales (Figure 18).

The results are most interesting. On Figure 18, one finds that the magnetic high values help to define the unaltered Nicola porphyries in areas under soil cover, the less magnetic values coincide with the epithermal zones, and the lowest with the greenstones, south of the NNRL fault. The unaltered porphyries and magnetic highs also lie in between the fractures inferred from the air photos, supporting the idea that epithermal mineralizing solutions penetrated along these fractures and altered the nearby rock, leaving some unaltered rocks which were farther away.

Figure 17 is also most useful when used in conjunction with the air photo results. It is evident that to the northwest the nature of the geology does not change greatly, from what is observed on the northeastern half of the NED; that is, in the position of the inferred intrusive stock above the LCP, the covering rocks are a mixture of epithermal alteration and unaltered Nicola porphyries. The magnetic nature of the deeper intrusive would not show up on the ground survey which emphasizes near surface rock magnetism; however, it is possible that some of the magnetic high values are the result of intrusive rocks reaching the surface, and it is at those locations one should search for such rocks. It is also interesting to note that the southeast of the magnetic map is more consistently high in value, suggesting that the farther away from the inferred intrusive, the less altered the Nicola volcanics.

The magnetic map also helps to clarify the nature of the NNRL fault. This fault appears to terminate abruptly on the east side of Ned Roberts Lake on the air photos, but clearly continues on the magnetic map. There is a very faint trace on the air photos, but glacial drift does seem to have obscured its location. Farther to the southeast the trace reappears clearly on the air photos.

4.4.3 VLF-EM Information

One should point out that surveys which use the Seattle Washington VLF transmitter station, located to the southwest, will favor the northerly to northeasterly features. If the Cutler, Maine station is used the northwesterly trending fractures will be emphasized. Ideally both stations should be used to get a complete picture. Only one author has published VLF-EM data that covers the NED claim.

The VLF-EM map of Reed (1976) was expanded in scale and plotted as Figure 19. A Crone Radem unit was used at a frequency of 17.8 KHz from Cutler Maine (NNA). The data was Fraser Filtered (Fraser 1969, and 1971). The results largely coincide with certain of the inferred air photo fractures, showing several northwest trending ones and one northeast fracture. The largest northwest anomaly marks a contact with unaltered Nicola rocks and a very silicified portion of the epithermal alteration zone (Reed interpreted this as a contact with Kamloops rocks).

One stronger anomaly (250 m northwest of the west end of Ned Roberts Lake), and one very weak northeast trending VLF-EM anomaly, are found on Reed's map. These do not agree with any of the air photo inferred northeastern fractures, but as was pointed out above the VLF-EM station used is blind to all but the strongest of the northeastern features. The northeastern fractures plotted on the geological map (Figure 25) were inferred from both the air photos and the magnetic map, Figure 18.

4.4.4 Induced Polarization Information

Sander (1972) has reported some I.P., S.P., and apparent resistivity data that cover part of the NED claim. This map has been rescaled and plotted as Figure 20. The procedures etc., are given in Assessment Report 3593; Sander considers chargeability values of 8 to 12 to be significantly. Some general trends are suggested. A chargeability zone runs NW/SE in the vicinity of the NW end of Ned Roberts Lake, then swings directly north for several 1000 feet.

The anomalous readings near Ned Roberts Lake are somewhat puzzling, as this occurs on the crest of a knoll, is the site of an S.P. high (rather than an expected negative value), and does not correspond with any apparent resistivity, air photo, magnetic, geological, or geochemical data.

The next more northerly I.P. anomaly seems to be very significant, and will be discussed in the next section.

One very elongated, somewhat distorted anomaly exists at the north end of Sander's surveyed area, north of the northern NED claim boundary. The distortion coincides with the inferred location of the AMEF fault. The air photo trace of this fault is very obscure in this vicinity, but its presence seems to be reinforced by the I.P. survey.

The 1989 I.P. survey (Whittles, 1990) suggested possible mineralized zones in two locations southeast of the NED LCP. This is now though to be unlikely, and these anomalies are more probably related to clay in the SNRL, and NNRL faults. Other geophysical surveys may help to clarify this.

4.4.5 Apparent Resistivity Information

Apparent resistivity results (Figure 21) suggest a high (not a low as suggested in Sander's report summary) anomaly in one location matching an I.P. chargeability high. About 2000 feet north of the west end of the lake, a resistivity high coincides with the chargeability high that is adjacent to the old workings, the extensive carbonate and chalcedonic alteration, and the primary copper carbonate mineralization.

One might expect that a resistivity low would correspond to a more mineralized zone (eg. possible disseminated sulfides indicated by a chargeability high zone). Since sulfides do not seem to be a factor on the surface, it is possible there is a deeper, northerly running mineralized zone, which is silicified (giving the higher resistivity values), as are the rocks on the surface.

4.4.6 Self Potential Information

Two reports have provided some S.P. data. Sanders (1972) report data has been rescaled as Figure 22. As noted earlier, the exact method of plotting of the data is unclear, but seems to be consistent with the other data. Only negative values are considered important, and again an anomaly coincides with the chargeability high that is adjacent to the old workings, the apparent resistivity high, the extensive carbonate and chalcedonic alteration, and the primary copper carbonate mineralization.

A second S.P. anomaly coincides with the south end of the most northerly I.P. anomaly, and a second S.P. anomaly with the north end. The two S.P. anomalies seem to be split by the AMEF fault.

The positive S.P. values are generally considered to be the result of certain organic conditions, or the setting of the base level of the voltage. If one were to reset the base level so that all S.P. value were 0 volts or less, the three northerly anomalies would have values in the -60 range, which would be a good indication of mineralization. The positive anomaly near Ned Roberts Lake would become a -20 millivolt value. This is not a large anomaly, but since there is an I.P. anomaly also present, it make this area worthy of further work.

4.5 GEOLOGICAL MAPPING

4.5.1 Regional Mapping

A general geological map of the area south and southwest of Kamloops was obtained by use of high altitude air photos, coupled with geological field work in selected locations. The objectives were the following.

(1) To determine if the Ned claim was in a special geological structural environment. Current published maps suggest it is in a unbroken sequence of Nicola volcanics.
(2) To determine the possibility of intrusive bodies on or around the NED claim, but south of the Iron Mask Batholith. Current published maps indicate that the nearest mapped intrusives to the south are at Dominic Lake directly to the south of the NED, or the Central Nicola Batholith to the southeast. (The Iron Mask intrusive rocks are, of course, just a short distance to the north of the NED claim).

Three geological maps were produced in the present work:

(1) Generalized Inferred Geology, High Altitude Air Photos. (Approximately 1:70,000-see Figure 23)
(2) Generalized Inferred Geology, Low Altitude Photos. (Figure 24).
(3) Detailed Geology of the NED Claim on a Scale of 1:2500 (Figure 25).

Part of the regional map (1) can be seen on Figure 23. To the northeast lie the Cherry Creek and Iron Mask Batholith rocks, separated by Kamloops volcanic rocks. To the southwest, one finds greenstones (at least to the south of the AMEF fault; the present writer has not examined the area to the north of AMEF, and the west of SNRL fault). The area in between SNRL and ANWF faults has been interpreted as a shear fracture zone, caused by right lateral fault movements, resulting from plate tectonic movements off the coast of B.C. The degree of crushing is uncertain since most of this area is under cover, with few outcrops; however, crushing may be common and, as is the case on the NED claim, this may be accompanied by alteration, along the fractures.

4.5.2 Geological Mapping on the NED

This mapping is referred to in (2) and (3) above. (2) (Figure 24) was obtained from air photos, and (3) (Figure 25) from field work and the examination of collected samples (Section 4.2). There are several zones that can be distinguished.

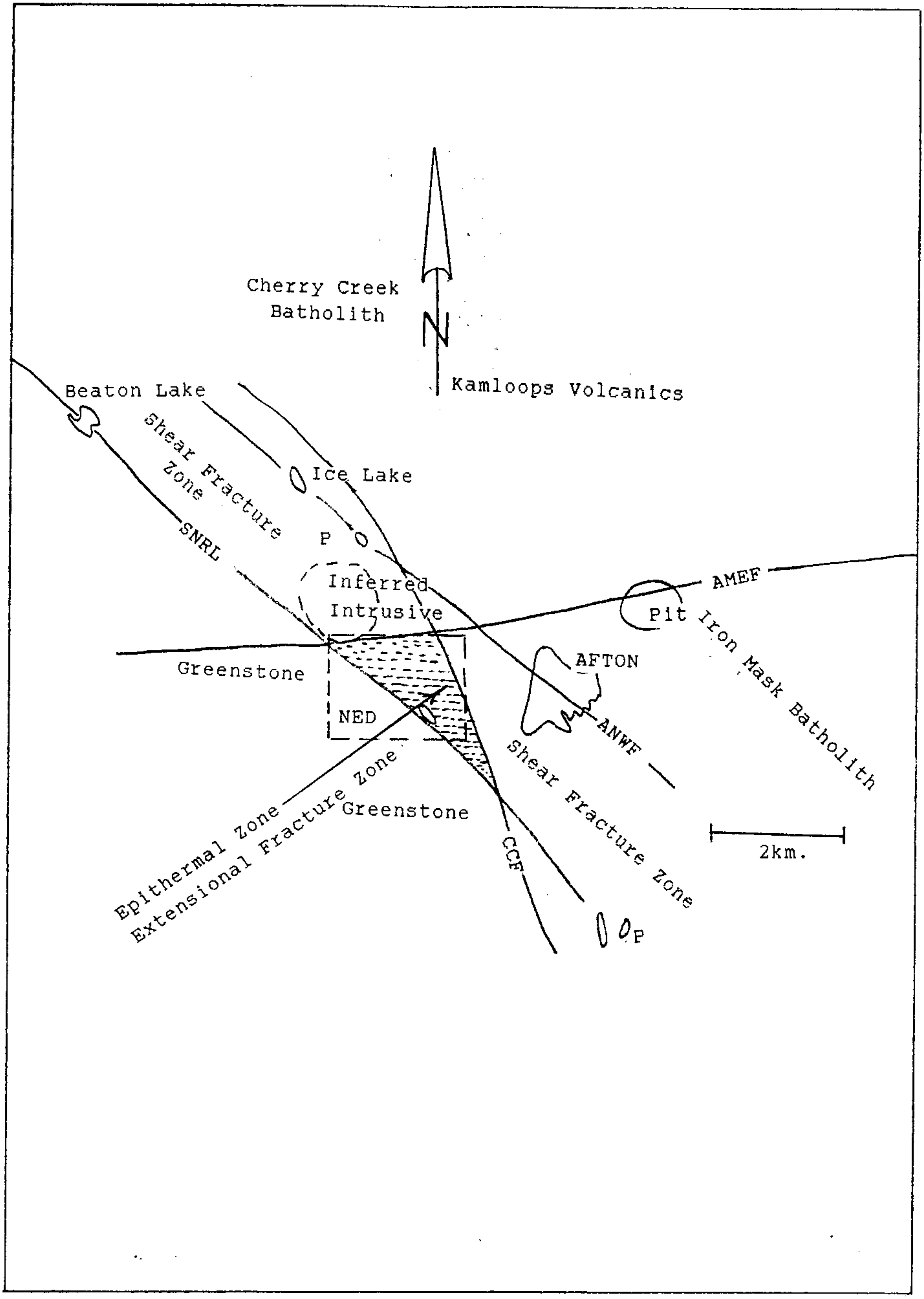


Figure 23:Generalized Inferred Geology
High Altitude Air Photo Scale

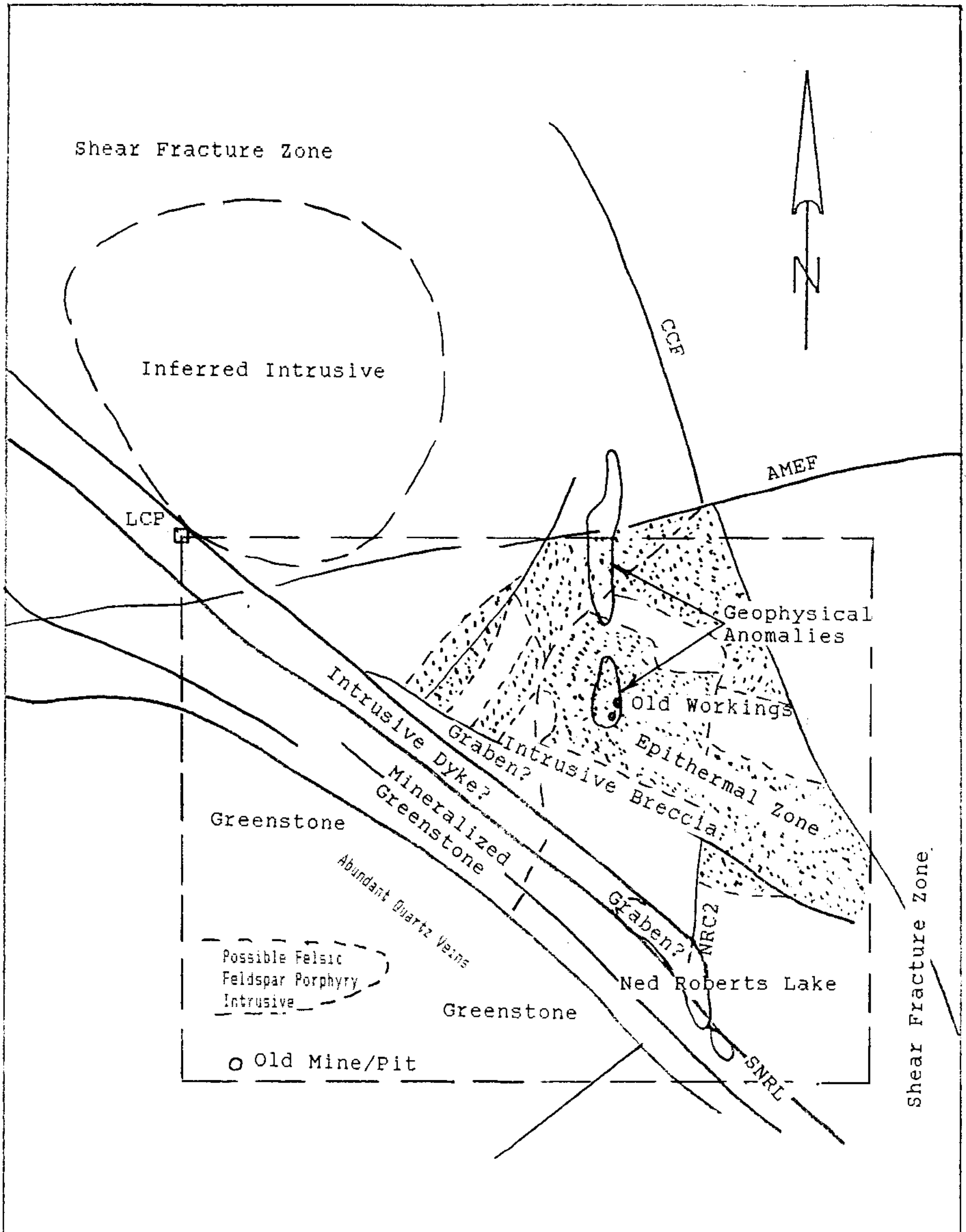


Figure 24:Generalized Inferred Geology
Low Altitude Air Photo Scale

(1) Shear Zone

In the area examined on the NED claim, in the shear zone noted earlier, many cross fractures were observed on the air photos, and on the ground, and considerable brecciation was also noted. This is interpreted to be the result of extensional movements between the major inferred faults SNRL, AMEF, and CCF. These movement appeared to have opened up the minor fractures (Figures 15 and 25), and allowed hydrothermal solutions to enter and extensively alter the country rock (mostly grey to black porphyries and porphyritic andesites or basalts). As noted earlier, this is a very attractive mineral exploration target area.

(2) Greenstones

Although parallel faults have developed in the greenstones to the south of SNRL, no extensively altered zones were found, and the mineralization appears to be a more a distal, cooler, quartz veining, with minor hematite.

(3) Mineralized Greenstone

Only as one nears the SNRL fault does copper mineralization become more common. Samples KN93W-OC1C and OC2A were quartz carbonate veins with appreciable chalcopyrite mineralization. KN93W-194, and 188 contained sulfides as disseminated grains in the rock matrix, not in veins. Two other samples which contained significant sulfides (KN93W- 21B, and 6B), were farther south into the greenstones, and may be related to an intrusion of felsic feldspar porphyry (KN93W-21A). This area has not been examined closely enough to reach any definite conclusions.

(4) Intrusive Rocks

Intrusive rocks have been found in several locations. Because of the fault structure in this area, it is possible that this indicates there is an intrusive dyke as shown in Figure 25. The supporting evidence is as follows.

(a) Sample KN93W-192, found along a low ridge in the position of the inferred dyke is almost identical to microdiorite samples collected from Sugarloaf Mountain on the Iron Mask Batholith.
(b) Immediately to the north of -192, in a low meadow (a graben-like structure) a large outcrop was found (sample KN93W-180) which, in part, contained the same type of intrusive microdiorite as -192.
(c) The inferred presence of the dyke is also supported by its relationship to the inferred circular intrusive rock structure adjacent to the NED LCP.

(d) Holcapek (1970), reported a microdiorite at location KN93W-700N, which is just a short distance northeast of -180. The present writer identified this rock as a porphyritic andesite/basalt with some microdiorite sections (see p. I-26).

On the other hand, some of the evidence does not support this interpretation of an intrusive dyke.

(a) Only a small outcrop of sample -192 was exposed, and it is possible that it only represents a large piece of float.
(b) Both samples -180, and -192 are very magnetic rocks yet they do not appear on the ground magnetic maps (Figure 17). One can, however, point out that the equally magnetic rocks in the northeastern half of the NED have been so altered that they are in most areas no longer magnetic; the same could have happened to the intrusive rocks.
(c) There are some greenstone rock outcrops on the same strike, and also in between the NNRL and SNRL faults, farther to the east. This factor, along with the magnetic maps, suggest that one might only find greenstones south of the NNRL fault.

The large intrusive (?) stock shown on Figure 15 was not examined on the ground since it was not noticed until after the fieldwork was completed. Its possible existence is supported by three observations.

(a) This area stands out as a slightly raised circular structure on the air photos.
(b) A significant air magnetic anomaly of more than 3000 gammas is located on exactly the same ground. As noted in Section 4.4.1.2, this fits exactly with the magnetic values found over the Iron Mask Batholith.
(c) Considerable diamond drilling has been carried out on the northern end of the MASKAM claim (see Figure 3), which is adjacent to the northern boundary of the NED claim, and just north of the inferred intrusive. Extensive alteration and some copper mineralization has been found, as would be expected in the vicinity of an intrusive.

In addition to the two possible intrusive bodies noted above, there may be an intrusion of a felsic feldspar porphyry (KN93W-21A) as was noted earlier. This area has not been examined closely enough to reach any definite conclusions, but the rock is unusual, and seems to be associated with sulfide mineralization at its contact with the more typical amphibole rich porphyritic andesites in this area.

(5) Soil Types on the NED Claim

Two types of soils were noted during the current work.

(1) The soil over the unaltered Nicola volcanics in the northeastern half of the NED, or the greenstones in the south, is a silty chocolate colored material containing angular fragments of the same rock types.
(2) The soil cover over the clearly identified epithermal zone is a silty orange tinted material that is easy to distinguish from type (1). If one observes the area around the old workings on the north half of the NED, from the hills in the south, an ankerite colored gossan is very apparent.

This difference in soil types can be used in the geological mapping of the property.

PART 5: INTERPRETATION

PART 5: INTERPRETATION

5.1 EXPLORATION MODEL

At this time it is assumed that the geology described on Figures 24 and 25 is correct. Figure 26 is then an exploration model that fits most of the information presently available. Figure 27 is a more extensive, hypothetical, cross section of this area. The pros and cons of this model are summarized as follows.

(1) Intrusive Stock near the NED LCP

The presence of this intrusive body, believed to be a microdiorite to diorite similar to the Sugarloaf rocks in composition, is supported by the following information.

(a) There is a magnetic high at this location, with the same intensity as is found on the Iron Mask rocks.
See Section 4.4.1.2.
(b) An air photo circular topographical feature occupies the same location as the air magnetic anomaly.
See Sections 4.1.5 (2), and 4.5.2.
(c) Intrusive rocks similar to the Iron Mask Batholith rocks have been found on the ground in several locations.
See Sections 4.2.4.(2)(a) and 4.5.2.
(d) Hydrothermal alteration is widespread on the NED, MASKAM, and BEATON claims, as one would expect if an intrusive were located nearby. This is supported by both surface samples on the NED and by diamond drilling on the MASKAM and BEATON claims.
See Sections 4.2.3, 4.3.3, 4.5.2, and Figure 3.

The following contrary points do, however, apply.

(a) No intrusive rocks have been found at the site of the inferred intrusive stock (although to the present writer's knowledge, no systematic attempt - using the ground magnetic map as a guide - has been made).
See section 4.4.2.
(b) No intrusive rocks are noted at that location on any of the published maps (although some are nearby).

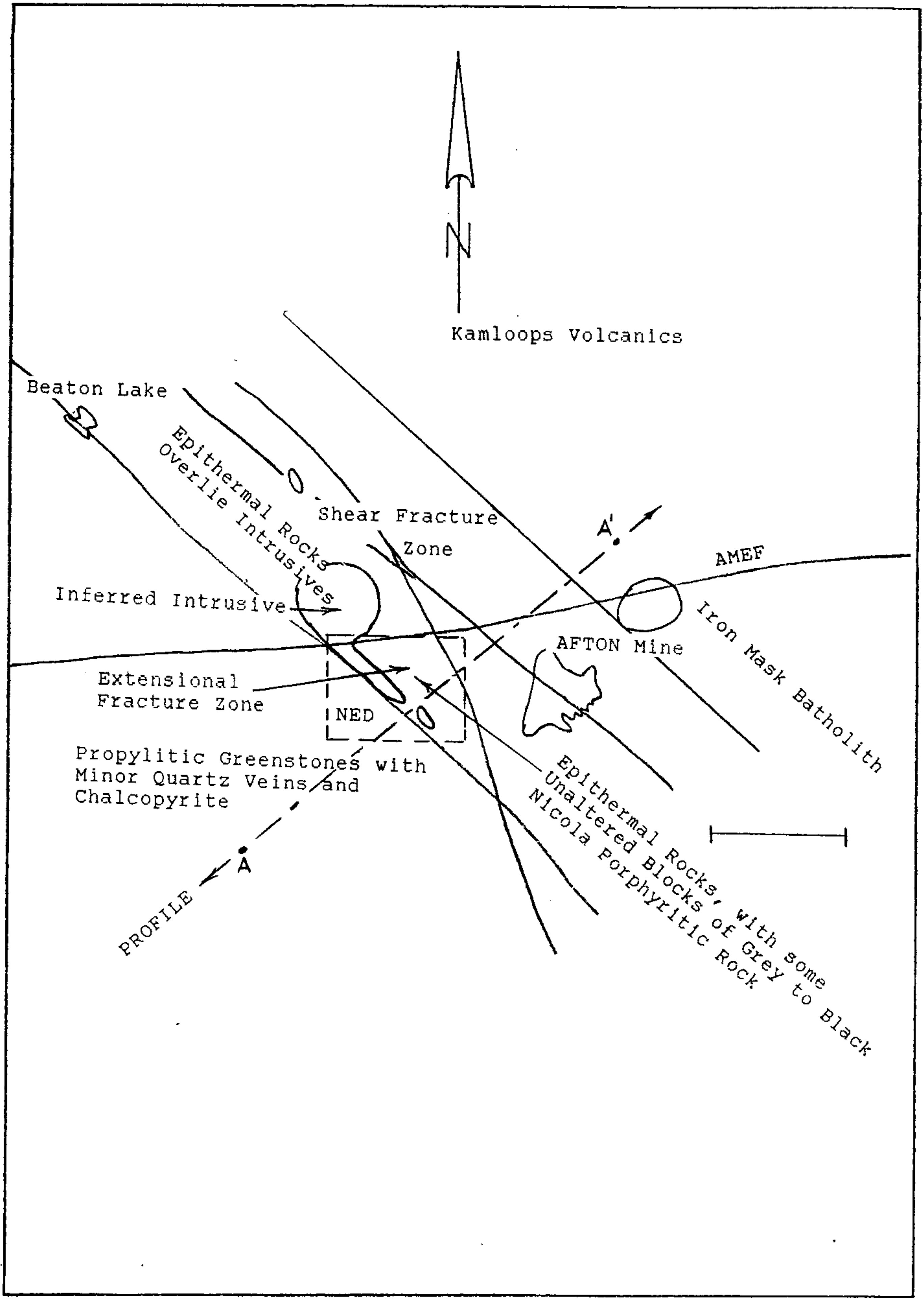


Figure 26:Exploration Model Plan View

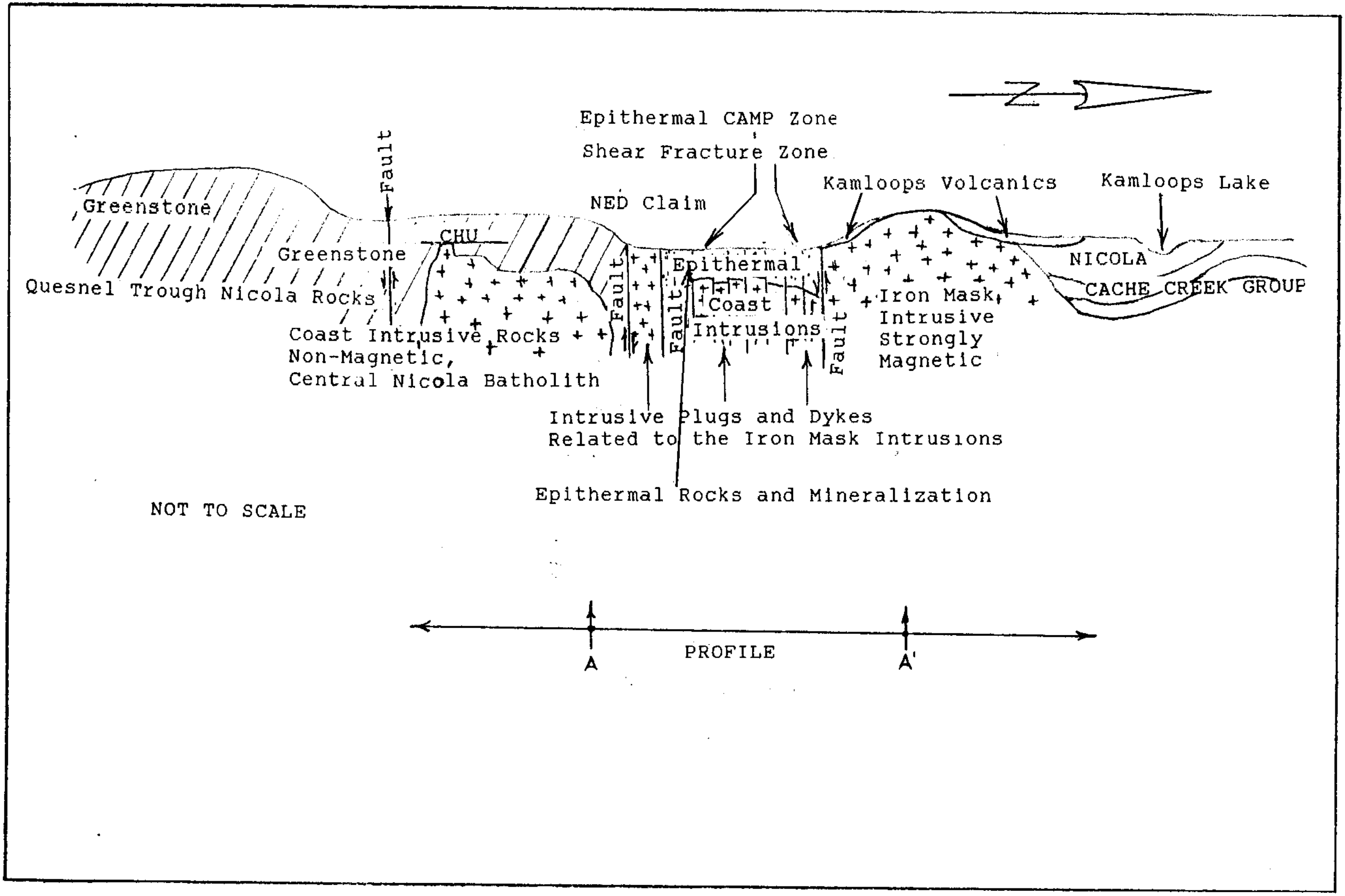


Figure 27;Hypothetical Geological Cross Section in the Vicinity of the NED Claim

(2) Intrusive Dyke

The presence of this intrusive body, believed to be a microdiorite to diorite similar to the Sugarloaf rocks in composition, is supported by the following information.

(a) Intrusive rocks similar to the Sugarloaf microdiorite rocks have been found on the NED claim in three locations, at the proposed location of the dyke, or adjacent to it. See Sections 3.5.4 (2)(b), 4.2.4 (2)(a), and 4.5.2 (4).
(b) Air photo analysis places the dyke between two large faults, where one might expect such a igneous structure. See Sections 4.1.5 (2)(a), and 4.5.2 (4).
(c) The inferred presence of the dyke is also supported by its relationship to the inferred circular intrusive rock structure adjacent to the NED LCP.
See Section 4.5.2 (4).
(d) Mineralized greenstones are found adjacent to this location on the south and extensive alteration to the north. See Sections 4.2.2, and 4.2.3.

The following contrary points do, however, apply.

(a) The microdiorite outcrops found on the NED are small and could be large glacial float blocks.
(b) The rocks from the outcrops are very magnetic, yet do not appear to have registered on the ground magnetic surveys.
It could be pointed out, however, that these magnetic survey results were obtained only on the very edge of the location of the inferred dyke, and that also there may be extensive alteration resulting in non-magnetic carbonate rocks as is found just to the north.
(c) Greenstones are found, in line, between the same fault lines, to the southeast, around Ned Roberts Lake. This would mean that the dyke would have to terminate before reaching Ned Roberts Lake, and that an abrupt change occurs to greenstones (unlike most of the geology between the major faults).
An alternative possibility is that the lake occupies a graben and the dyke material is covered in this area. Sample KN93W-102A (p. I-24) is from the greenstone area around the lake and does contain some microdiorite sections.

(3) Shear Zone

The existence of the shear zone is supported by the following evidence.

(a) The zone stands out as a distinctive air photo feature separating the Iron Mask rocks to the north from the Nicola greenstones to the south. There is a clear northwest trend. See Whittles (1993a, and 1994).
(b) The two sides of the shear zone are marked by strings of lakes, along the proposed boundary faults.
See Whittles (1992, 1993a, and 1994).
(c) The magnetic gradient drops fairly consistently by about 1000 gammas across the inferred shear zone.
See Section 4.4.1.1 (5), and Whittles (1992).
(d) The glacial geomorphology as seen on the air photos and on the ground (in the roche moutonnee, and lack of drumlin drift), supports the location of the shear zone.
See Section 4.1.3.

The following contrary point does, however, apply.

(a) Very few outcrops are found in the area, (making up perhaps only 2 to 5 % of the surface), so it is difficult to confirm the shear zone's existence on the ground. This is probably the result of extensive alteration in the shear zone.

(4) Greenstone Belt Underlain by Nonmagnetic Coast Intrusions

This situation is proposed to exist to the south of the SNRL fault, on the NED claim. The nonmagnetic Coast Intrusive rocks appear to be related to the Central Nicola Batholith, and not the Iron Mask Batholith rocks. The supporting evidence is given following.

(a) A large magnetic basin can be seen on the magnetic maps, which is 1000 to 3000 gammas less intense than the Iron mask rocks.
See Whittles (1992).
(b) All published geological maps show this area covered with Nicola greenstones.
See Sections 3.1, and 3.6.
(c) Field work by the present writer has found most of the south of the NED, CHU and WOOD claims to be covered with Nicola greenstones, although there is a large variety of types within this group.
See Sections 3.6.2, and 4.2.4.

(d) Cockfield's geological map does show some outcrops of Type 4 (as the Central Nicola Batholith rocks are labeled), around Greenstone Mountain summit.
See Section 3.1, and Figure 5.
(e) Outcrops of the Central Nicola Batholith (and a possibly related dyke) rocks have been observed on the CHU and WOOD claims by the present writer, and are noted in some assessment reports for the same area.
See Whittles (1992), Sections 3.5.3, and 4.2.4 (p.I-8, I-9).
(f) Fracture patterns, and circular igneous plutonic stock patterns observed on the air photos are indicative of near surface intrusive rocks, particularly under the CHU claim. Coast Intrusions, however, do not appear to be near to the surface on the southwestern half of the NED.
See Whittles (1992).
(g) Only propylitic alteration with minor quartz veining (and minor wallrock alteration), have been found on the southeastern half of the NED, south of the SNRL fault.
See Sections 4.2.4, and 4.3.3.

(5) Inferred Faults

See Sections 4.1.5 for the various air photo features found on and around the NE.

The inferred faults are supported by the techniques outlined in Whittles (1984), and (1987). These include the following.

(a) Topographical lows.
(b) Lines of trees in line with the topographical lows, in the overburden covered areas.
(c) Lines of lakes and swamps along all along the inferred features.
(d) Fault type offsets, including the displacement of creeks, at the intersections with the faults.
(e) Truncation of magnetic anomalies. See Section 4.4.1.2.
(f) Displacement of the I.P. anomaly on the northern edge of the NED claim. See Section 4.4.4.
(g) Distinctive changes of geology across the inferred faults. See Section 4.5.
(h) Other air photo analysis techniques as discussed in Whittles (1984), and (1987).
(i) Other authors confirm the general structural trends.
See Section 3.10, and Whittles (1992).

(6) Hydrothermal Alteration in the Shear Zone

The evidence is as follows. (General references are Sections 3.11.2, and 4.3.3).

(a) Extensive carbonate/chalcedony rocks on the NED claim.
(b) Epithermal textures on the NED. See Section 4.2.3.
(c) Alteration grades up to intense argillic with almost complete silicification of the rock's ground mass.
See Sections 3.9.2, and 4.2.3.
(d) Similar rock types are found on the surface on the NED Claim, around Savona, and in drill cores from the MASKAM, BEATON, and CAMP claims.
See Sections 3.9.2, and 3.9.3.
(e) The geochemistry fits the epithermal model in terms of pathfinder elements, gangue materials, alteration, and possible economic commodities (such as gold).
See Section 3.11.2 (3).
(f) The overburden is extensive in the shear zone as one would expect in a highly altered area, very susceptible to weathering.
(g) There appears to be a pattern of unaltered Nicola rocks between fractures but surrounded by epithermal rocks that lie in, and adjacent to, the fractures.
See Section 4.5.2.
(h) From a distance, the altered area around the old workings on the northeastern half of the NED is a typical (ankerite) gossan. See Section 4.5.2 (5).

5.2 Mineral Potential on the NED Claim.

There is a good potential of economic mineralization on the NED, both as possible copper - gold deposits in intrusive rocks similar to the adjacent Afton Mine, and as possible epithermal gold - silver deposits at some depth below the surface, in a hydrothermally brecciated zone. See Section 3.11 for a general discussion of the mineral deposits in the area. The supporting evidence is as follows.

(a) Primary azurite and malachite have been found on the surface on the NED in at least two locations. One assay reached 0.8% copper.
See Sections 2.2, and 4.4.2.
(b) Anomalous copper values were noted in several ICP results. See Sections 2.2, and 4.4.2.
(c) The two gold assays obtained were both anomalous.
See Sections 2.2, and 4.4.2.
(d) I.P., S.P., and apparent resistivity, anomalies coincide with the highly altered zone on the NED.
See Sections 4.4.4, 4.4.5, and 4.4.6.

PART 6: RECOMMENDATIONS

PART 6: RECOMMENDATIONS

6.1 DRILLING RECOMMENDATIONS

This property is now at a stage where drilling is strongly recommended. Although there are a number of other areas on the NED claim that need further work, the integration of the present knowledge of the alteration around the old workings on the northeastern half of the NED, provide an excellent target for several exploratory diamond drill holes. Sufficient budget must be provided for an ICP analysis every 3 m of drill core. Figure 28 is provided to show the cross-sectional relationships of some of the drill holes. The recommendations are as follows.

6.1.1 A 150 m vertical hole should be placed as shown on Figure 13 (location DDH 1; the hole would be designated DDH 1A). This hole is aimed to penetrate into the zone that is outlined by the geophysical results just northwest of the old workings. The depth should, of course, be extended if the drill core remains in the alteration zone.

6.1.2 A 250 m hole should be placed at location DDH 2, Figure 13. This hole should be oriented at 45 deg. dip, and drilled due west, to intersect the most intensely altered rock found on the property to date. See Figure 28.

6.1.3 A 200 m vertical hole should be placed as shown on Figure 13 (DDH 3). See Figure 28.

6.1.4 Two short holes of 25 m should be located at stations KN93W-180, and -192, to determine the nature of the apparently igneous rocks at those locations.

6.1.5 A 200 m hole should be placed at location DDH 1, (DDH 1B), Figure 13. This hole should be oriented at 60 deg. dip, and drilled due south. (There is some question about the uncertainty of the location of the old grid upon which the 1970 I.P. data was based. Clearly the I.P. anomalies lie due north of NED Roberts Lake, but there is some uncertainty about the distance from the lake).

6.1.6 A 200 m hole should be placed at location DDH 1, (DDH 1C), Figure 13. This hole should be oriented at 60 deg. dip, and drilled due north.

6.1.7 Depending on the results of the above holes, A 250 m hole should be placed at location DDH 4, Figure 13. This hole should be oriented at 45 deg. dip, and drilled due east, to intersect the intensely altered rock zone. See Figure 28.

6.1.8 Follow up drilling should of course be budgeted for to explore any anomalous geophysical and geochemical zones discovered in the surveys recommended in the following sections.

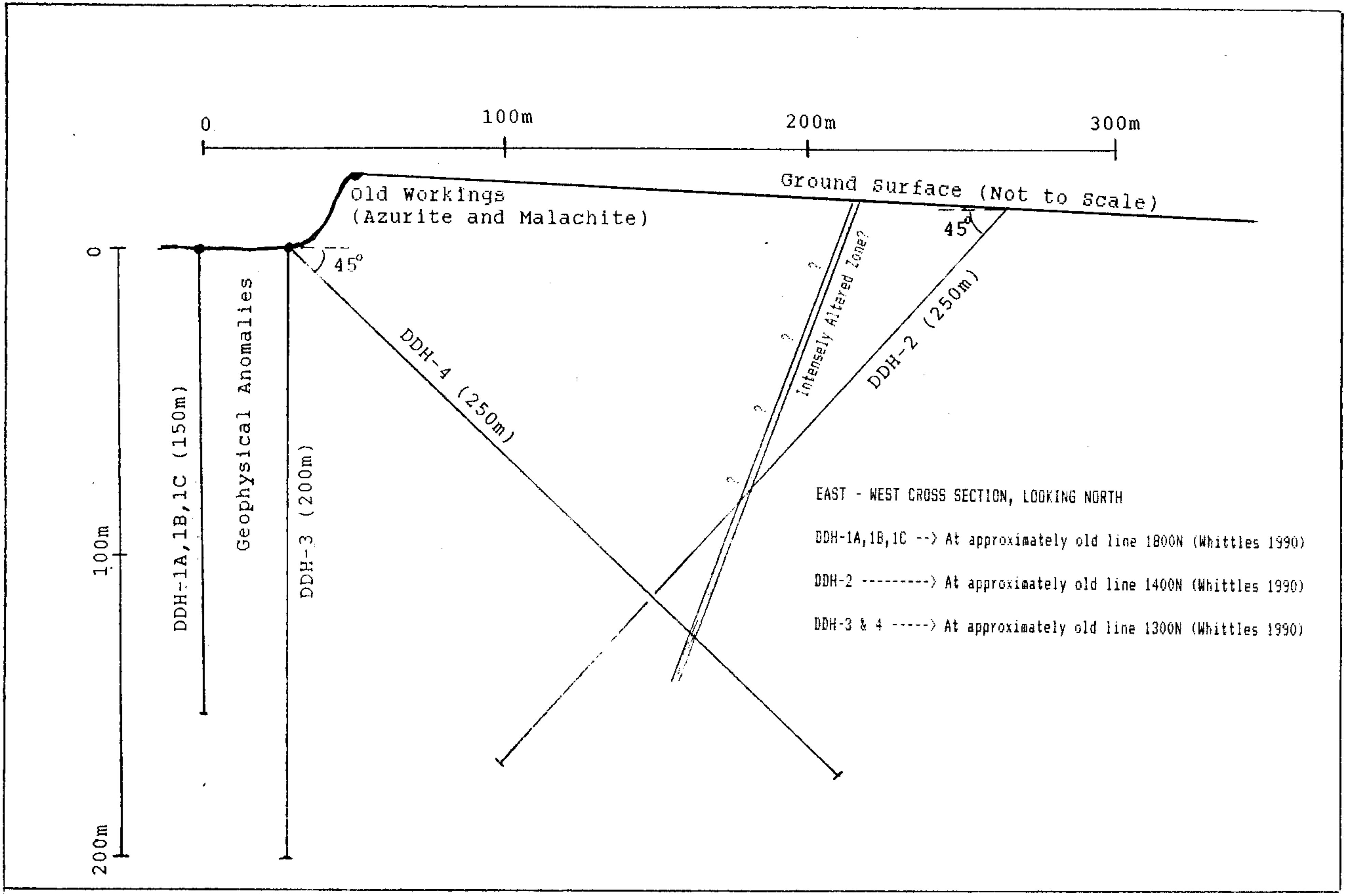


Figure 28:Cross Section of Proposed Drill Holes

6.2 SURVEY RECOMMENDATIONS

6.2.1 A survey grid (50 m spacing between lines, with 50 m stations) should be established across the northeastern half of the property with the lines running south to north,

6.2.2 The grid should start from NRMF (see Figure 14), and go north.

6.3 AIR PHOTO RECOMMENDATIONS

6.3.1 No further air photo analysis is recommended at this time.

6.4 GEOLOGICAL RECOMMENDATIONS

6.4.1 More geological field work could be carried out over the northeastern half of the NED, in conjunction with the new grid recommended in 6.2.1, and the proposed geochemical surveys recommended in 6.5. The lack of outcrops could be compensated for by digging into the soil and observing the different soil types discussed in Section 4.3.4.

6.4.2 More geological field work should be carried out adjacent to the LCP and across the inferred intrusive of Figure 15.

6.4.3 More geological field work should be carried out on the western claim boundary.

6.4.4 The area around the felsic feldspar porphyry, and the nearby rhyolite showing, needs to be examined to see if the porphyry is an intrusive body.

6.4.5 Sample KN93W-6B was very similar to the felsic feldspar porphyry, so that area should also be reexamined.

6.5 GEOCHEMICAL RECOMMENDATIONS

6.5.1 A complete rock geochemical survey (31 element ICP) should be carried out over the entire northeastern half of the claim area, and appropriate geochemical maps prepared. Mercury and gold values should also be determined.

6.5.2 A complete soil geochemical survey (31 element ICP) should be carried out over the entire northeastern half of the claim area, and appropriate geochemical maps prepared. Mercury and gold values should also be determined.

6.5.3 A channel sample should be taken across the face of the shear zone located at the old workings (Figure 12) in the southwestern corner of the NED, and assayed for gold and copper.

6.5.4 Rock and soil samples should be taken around the large 1 m quartz - carbonate veins found at station OCR-2 (in the central part of the NED claim) since considerable masses of chalcopyrite were found at that location.

6.6 GEOPHYSICAL RECOMMENDATIONS

6.6.1 An new I.P. survey should be considered for the entire northeastern half of the claim area, north of the NRMF fault (see Figure 14).

6.6.2 S.P. data should also be obtained in conjunction with the I.P. surveys to help separate out the glacial clay effects, and outline those areas with the more massive sulfide content.

6.6.3 A magnetometer survey should be considered for the area between the NRMF and NNRL faults, to see if the inferred intrusive dyke exists to the northwest of NED Roberts Lake.

6.6.4 An S.P. or EM low frequency survey should be considered for the area just southeast of the LCP, to reevaluate the earlier 1989 I.P. results.

PART 7: SUPPORTING INFORMATION

7.1 REFERENCES

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7.2 COST STATEMENT

7.2.1 Field Work

(1) Field Engineer (June 25 to 29, July 28 to 31, Aug. 1 and 2, Sept 9 to 12 ,1993 @ $500/day)	7500.00
(2) Field Helper (1/2 day)	50.00
(3) Accommodation and meals (15 days @ 50/day)	750.00
	8300.00

7.2.2 Study, Preparation, and Report Writing

(1) Study of the geology, preparation of samples (5 days)	2500.00
(2) Air photo analysis (5 days)	2500.00
(3) Geophysical analysis (1/2 day)	250.00
(4) Interpretation and report writing (5 days)	2500.00
(5) Preparation of maps and diagrams (5 days)	2500.00
	10250.00

7.2.3 Other Costs

(1) Travel (including ferry)	600.00
(2) Word processing	250.00
(3) Duplicating, blueprints	100.00
(4) Recording fees (12 claim units @ $10 for 3 years)	480.00
(5) Equipment rental	300.00
(6) Air photos and maps	100.00
	1830.00

TOTAL	20380.00
CLAIMED FOR ASSESSMENT	9600.00

7.3 RESUME OF TECHNICAL AND FIELD EXPERIENCE OF DR.A.B.L.WHITTLES

(1) University training at the University of B.C. and the University of Toronto, with the completion of a PhD in Physics (Geophysics Section) in 1964, from the University of B.C.

(2) 26 years teaching at the B.C. Institute of Technology, Malaspina University College, and the University of B.C., of a variety of geological, geophysical, prospecting, physics, and electronics courses.

(3) Consulting experience during the past 28 years with companies in Canada and the U.S., including field supervision and interpretation.

(4) Currently Head, Department of Geology, Malaspina University College, Nanaimo, B.C.

(5) Registered with the Association of Professional Engineers and Geoscientists of B.C., since 1986.

7.4 ENGINEERS' DECLARATION

The reader of this report should be aware that the writer, Dr.A.B.L.Whittles, was formerly a Director of Rhino Resources Inc. and holds shares in that company. Rhino Resources Inc. is the owner of the NED Claim, the subject of this report.

Signed
ABL. Whittles, P.Eng.
(Dr.A.B.L.Whittles, P.Eng.)

7.5 Visual Examination Summary Sheets of Rock and Mineral Samples

ALTERED ROCK SAMPLE SUMMARY SHEET

ALT,

PROJECT: NED, KAMLOOPS

PAGE: AR – 1

SAMPLE REFERENCE NUMBER: KN93W – 107, 230, 195

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: △107, △230 (2300N, 200E, OLD 1990 GRID) △195 (BEND OF NED ROBERTS CREEK, NORTH OF NED ROBERTS LAKE. FIG. 25

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED BROWN

COLOUR (FRESH): MED GRAY

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

ORIGINAL ROCK TYPE: (IGNEOUS) INTRUSIVE [✓ (IGNEOUS) EXTRUSIVE] SEDIMENTARY METAMORPHIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5 [✓ 4] SOFT (-3)

IS ORIGINAL ROCK TEXTURE PRESERVED? [✓ YES] NO

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: DISSEMINATED

HAS ANOTHER ROCK SHEET BEEN FILLED OUT? YES [✓ NO]

IF YES, GIVE PAGE: I ____ S ____ M ____

ALTERATION MINERALS:	QUARTZ	[✓ FELDSPAR] ⊗	ALBITE	PYRITE
AMOUNT:		10%		
GRAIN SIZE:	mm	<1 mm	mm	mm
HABIT:		D..		

{HABITS: DISSEMINATED(D), ENVELOPE [HALO](E), PERVASIVE(P), VEIN(V), SELVEGE(S).}

ALTERATION MINERALS:	SERICITE	PHLOGOPITE	BIOTITE	[✓ CHLORITE] ⊗⊗
AMOUNT:				2%?
GRAIN SIZE:	mm	mm	mm	<1 mm
HABIT:				D.
ALTERATION MINERALS:	[✓ CLAYS]	[✓ CARBONATES]	EPIDOTE	ZEOLITES
AMOUNT:	✓	MINOR		
GRAIN SIZE:	? mm	? mm	mm	mm
HABIT:	P	D		
TYPE:	ILLITE	CALCITE		
ALTERATION MINERALS:	[✓ ANKERITE]			
AMOUNT:	MINOR			
GRAIN SIZE:	<1 mm	mm	mm	mm
HABIT:	D			

OVERALL ALTERATION TYPE: SILICIFICATION POTASSIC ALBITIZATION ADVANCED ARGILLIC SERICITIC (PHYLLIC) INTERMEDIATE ARGILLIC [✓ PROPYLITIC/OR CHLORITIC] ZEOLITIC ALTERATION

OTHER FEATURES: ⊗⊗ AMPHIBOLES → CHLORITE ; ⊗ FELDSPARS → ANKERITE MATRIX IS GREY. SOME CARBONATE VEINING IN 195.

PROBABLE FORMATION OF ORIGINAL ROCK: PORPHYRITIC (FELDSPAR) NICOLA

AGE: UTR

POSSIBLE TYPE [redacted] ALT.: LIGHTLY ALTERED GRAY NICOLA

ALTERED ROCK SAMPLE SUMMARY SHEET

ALT$_2$

PROJECT: NED, KAMLOOPS

PAGE: AR

SAMPLE REFERENCE NUMBER: KN93W - 119, 130.

DATE: SEPT

SPECIFIC LOCATION OF SAMPLE: Δ 119, 130, F16.25

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED BROWN

COLOUR (FRESH): MED BROWN

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

ORIGINAL ROCK TYPE: (IGNEOUS) INTRUSIVE [✓ (IGNEOUS) EXTRUSIVE] SEDIMENTARY METAMORPHIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ SOFT (~3)]

IS ORIGINAL ROCK TEXTURE PRESERVED? [✓ YES] NO

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: DISSEMINATED

HAS ANOTHER ROCK SHEET BEEN FILLED OUT? YES NO

IF YES, GIVE PAGE: I S M

ALTERATION MINERALS:	QUARTZ	[✓ -FELDSPAR] ⊗	ALBITE	PYRITE
AMOUNT:		10%		
GRAIN SIZE:	mm	<1 mm	mm	mm
HABIT:		D		

(HABITS: DISSEMINATED(D), ENVELOPE [HALO](E), PERVASIVE(P), VEIN(V), SELVEGE(S).)

ALTERATION MINERALS:	SERICITE	PHLOGOPITE	BIOTITE	CHLORITE
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
HABIT:				

ALTERATION MINERALS:	[✓ CLAYS]	[✓ CARBONATES]	EPIDOTE	ZEOLITES
AMOUNT:	MINOR	MINOR		
GRAIN SIZE:	mm	? mm	mm	mm
HABIT:		D		
TYPE:		CALCITE		

ALTERATION MINERALS:	[✓ ANKERITE]	[✓ LIMONITE?]		
AMOUNT:	FELDSPARS	(MATRIX [illegible])		
GRAIN SIZE:	? mm	<1 mm	mm	mm
HABIT:	D	D		

OVERALL ALTERATION TYPE: SILICIFICATION POTASSIC ALBITIZATION ADVANCED ARGILLIC SERICITIC (PHYLLIC) INTERMEDIATE ARGILLIC PROPYLITIC/OR CHLORITIC ZEOLITIC ALTERATION

OTHER FEATURES: ⊗ FELDSPAR ↔ ANKERITE? MATRIX ALTERED TO ANKERITE?/LIMONITE? BROWN.

PROBABLE FORMATION OF ORIGINAL ROCK: PORPHYRITIC (FELDSPAR) NICOLA

AGE: u/k

POSSIBLE TYPE [redacted]: WELL ALTERED NICOLA (BROWN)

ALT$_2$

ALTERED ROCK SAMPLE SUMMARY SHEET

ALT₃

PROJECT: NED, KAMLOUPS

PAGE: AR -3

SAMPLE REFERENCE NUMBER: KN93W-103C, 103E, 124, 125A, 120, 150, 136, 138

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: Δ 103, 124, 125, , 120, 151, 136, 138 FIG. 25

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED RED/BROWN. COLOUR (FRESH): MED RED.

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

ORIGINAL ROCK TYPE: (IGNEOUS) INTRUSIVE [✓ (IGNEOUS) EXTRUSIVE] SEDIMENTARY METAMORPHIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ SOFT (~3)]

IS ORIGINAL ROCK TEXTURE PRESERVED? [✓ YES] NO

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: NEAR CARBONATE VEINS

HAS ANOTHER ROCK SHEET BEEN FILLED OUT? YES [✓ NO]

IF YES, GIVE PAGE: I S M

ALTERATION MINERALS:	QUARTZ	[✓ -FELDSPAR] ②	ALBITE	PYRITE
AMOUNT:		10%		
GRAIN SIZE:	mm	<1 mm	mm	mm
HABIT:		D		

{HABITS: DISSEMINATED(D), ENVELOPE [HALO](E), PERVASIVE(P), VEIN(V), SELVEGE(S).}

ALTERATION MINERALS:	SERICITE	PHLOGOPITE	BIOTITE	CHLORITE
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
HABIT:				
ALTERATION MINERALS:	CLAYS	[✓ CARBONATES]	EPIDOTE	ZEOLITES
AMOUNT:		MINOR		
GRAIN SIZE:	mm	? mm	mm	mm
HABIT:		V, D.		
TYPE:		CALCITE		
ALTERATION MINERALS:	[✓ ANKERITE]	[✓ HEMATITE]		
AMOUNT:	MINOR	MATRIX.		
GRAIN SIZE:	<1 mm	? mm	mm	mm
HABIT:	D	D.		

OVERALL ALTERATION TYPE: SILICIFICATION POTASSIC ALBITIZATION ADVANCED ARGILLIC SERICITIC (PHYLLIC) INTERMEDIATE ARGILLIC PROPYLITIC/OR CHLORITIC ZEOLITIC ALTERATION

OTHER FEATURES: ② FELDSPARS -> ANKERITE? MATRIX ALTERED TO HEMATITE RED. CARBONATE VEIN VUGGY, CRYSTALLINE. PROBSIBLY CINNIBAR

PROBABLE FORMATION OF ORIGINAL ROCK: PORPHYRITIC (FELDSPAR) NICOLA AGE: uTR

POSSIBLE TYPE [redacted]: WELL ALTERED NICOLA (RED)

ALT₃

ALTERED ROCK SAMPLE SUMMARY SHEET

ALT4

PROJECT: NED, KAMLOOPS

PAGE: AR-4

SAMPLE REFERENCE NUMBER: KN93W - 118, 111B, 136, 141.
KN90W - 7, 23A, 241

DATE: SEPT /93

SPECIFIC LOCATION OF SAMPLE: VARIOUS, SEE MAP: FIG 25
FOR KN90W SEE WHITTLES (1990)

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): ORANGY BROWN

COLOUR (FRESH): RED / WHITE/YELLO

DOMINANT GRAIN SIZE: GLASSY APHANITIC FINE(S) [✓ MEDIUM] COARSE(P) V. COARSE

ORIGINAL ROCK TYPE: [✓ (IGNEOUS) INTRUSIVE] (IGNEOUS) EXTRUSIVE SEDIMENTARY METAMORPHIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ SOFT (~3)]

IS ORIGINAL ROCK TEXTURE PRESERVED? YES NO

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE

HAS ANOTHER ROCK SHEET BEEN FILLED OUT? YES [✓ NO]

IF YES, GIVE PAGE: I S M

ALTERATION MINERALS:	QUARTZ	K-FELDSPAR	ALBITE	PYRITE
AMOUNT:		⊛		
GRAIN SIZE:	mm	mm	mm	mm
HABIT:				

(HABITS: DISSEMINATED(D), ENVELOPE [HALO](E), PERVASIVE(P), VEIN(V), SELVEGE(S).)

ALTERATION MINERALS:	SERICITE	PHLOGOPITE	BIOTITE	CHLORITE
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
HABIT:				

ALTERATION MINERALS:	CLAYS	[✓ CARBONATES]	EPIDOTE	ZEOLITES
AMOUNT:		86% ⊛		
GRAIN SIZE:	mm	UP TO 5 mm	mm	mm
HABIT:		MASSIVE		
TYPE:		⊛⊛		

ALTERATION MINERALS:	[✓ HEMATITE]			
AMOUNT:	MATRIX OF ⊛ CLASTS			
GRAIN SIZE:	mm	mm	mm	mm
HABIT:				

OVERALL ALTERATION TYPE: SILICIFICATION POTASSIC ALBITIZATION ADVANCED ARGILLIC SERICITIC (PHYLLIC) INTERMEDIATE ARGILLIC PROPYLITIC/OR CHLORITIC ZEOLITIC ALTERATION

OTHER FEATURES: ⊛ NICOLA CLAST AS FOR ALT3. (20%). ⊛ ⊛ MOST (80%) OF SAMPLES ARE MASSIVE CRYSTALLINE, CALCITE, DOLOMITE, AND ANKERITE.

PROBABLE FORMATION OF ORIGINAL ROCK: PORPHYRITIC (FELDSPAR) NICOLA

AGE: J ?

POSSIBLE TYPE [redacted]: WELL ALTERED NICOLA BRECCIA

ALT4

ALTERED ROCK SAMPLE SUMMARY SHEET

ALT5

PROJECT: NED, KAMLOOPS

PAGE: AR -5

SAMPLE REFERENCE NUMBER: KN93W – 103 A, B+C; 105;

DATE:

SPECIFIC LOCATION OF SAMPLE: VARIOUS, SEE FIG 25

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): ORANGY BROWN

COLOUR (FRESH): WHITE/YELLOW

DOMINANT GRAIN SIZE: GLASSY APHANITIC [✓ FINE(S)] [✓ MEDIUM] COARSE(P) V. COARSE

ORIGINAL ROCK TYPE: [✓ (IGNEOUS) INTRUSIVE] (IGNEOUS) EXTRUSIVE SEDIMENTARY METAMORPHIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ SOFT (~3)]

IS ORIGINAL ROCK TEXTURE PRESERVED? YES [✓ NO] ORIGINAL ROCK TEXTURE COMPLETELY GONE.

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE

HAS ANOTHER ROCK SHEET BEEN FILLED OUT? YES [✓ NO]

IF YES, GIVE PAGE: I S M

ALTERATION MINERALS:	QUARTZ	K-FELDSPAR	ALBITE	PYRITE
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
HABIT:				

(HABITS: DISSEMINATED(D), ENVELOPE [HALO](E), PERVASIVE(P), VEIN(V), SELVEGE(S).)

ALTERATION MINERALS:	SERICITE	PHLOGOPITE	BIOTITE	CHLORITE
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
HABIT:				
ALTERATION MINERALS:	[✓ CLAYS]	[✓ CARBONATES]	EPIDOTE	ZEOLITES
AMOUNT:	MINOR	MAJOR		
GRAIN SIZE:	? mm	To 5 mm	mm	mm
HABIT:	POWDER	P		
TYPE:	KAOLINITE	CALCITE		
ALTERATION MINERALS:	[✓ DOLOMITE]	[✓ ANKERITE]	[✓ CHALCEDONY]	
AMOUNT:	MAJOR	MAJOR	MINOR	
GRAIN SIZE:	To 5 mm	To 5 mm	mm	mm
HABIT:	P	P	V	

OVERALL ALTERATION TYPE: SILICIFICATION POTASSIC ALBITIZATION ADVANCED ARGILLIC SERICITIC (PHYLLIC) INTERMEDIATE ARGILLIC PROPYLITIC/OR CHLORITIC ZEOLITIC ALTERATION

OTHER FEATURES: MASSIVE TO CRYSTALLINE VEINS, VUGGY, CALCITE XTALS COCKSCOMB TEXTURES. MINOR QUARTZ/CHALCEDONY, AND SERICITE.

PROBABLE FORMATION OF ORIGINAL ROCK: NICOLA

AGE: J

POSSIBLE TYPE [redacted]T: CARBONATE ALTERATION ZONE

ALT

ALTERED ROCK SAMPLE SUMMARY SHEET

ALT6

PROJECT: NED, KAMLOOPS

PAGE: AR -6

SAMPLE REFERENCE NUMBER: KN90W -37 KN93W - 41, 103 129, 140,

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: SEE FIG 25 FOR KN93W, SEE WHITTLES (1990) FOR KN90W

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): VARIOUS

COLOUR (FRESH): VARIOUS

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

ORIGINAL ROCK TYPE: [✓ (IGNEOUS) INTRUSIVE] (IGNEOUS) EXTRUSIVE SEDIMENTARY METAMORPHIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] SOFT (~3)

IS ORIGINAL ROCK TEXTURE PRESERVED? YES [✓ NO]

HCl REACTION: [✓ STRONG WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: ONLY ON CARBONATE SECTIONS

HAS ANOTHER ROCK SHEET BEEN FILLED OUT? YES [✓ NO]

IF YES, GIVE PAGE: I ____ S ____ M ____

ALTERATION MINERALS:	QUARTZ	K-FELDSPAR	ALBITE	PYRITE
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
HABIT:				

{HABITS: DISSEMINATED(D), ENVELOPE [HALO](E), PERVASIVE(P), VEIN(V), SELVEGE(S).}

ALTERATION MINERALS:	SERICITE	PHLOGOPITE	BIOTITE	CHLORITE
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
HABIT:				

ALTERATION MINERALS:	CLAYS	[✓ CARBONATES]	EPIDOTE	ZEOLITES
AMOUNT:		minor		
GRAIN SIZE:	mm	SEE mm	mm	mm
HABIT:		ALT5		
TYPE:				

ALTERATION MINERALS:	[✓ CHALCEDONY,]	[✓ JASPER]		
AMOUNT:	MAJOR	MAJOR		
GRAIN SIZE:	? mm	? mm	mm	mm
HABIT:	V	V		

OVERALL ALTERATION TYPE: [✓ SILICIFICATION] POTASSIC ALBITIZATION ADVANCED ARGILLIC SERICITIC (PHYLLIC) INTERMEDIATE ARGILLIC PROPYLITIC/OR CHLORITIC ZEOLITIC ALTERATION

OTHER FEATURES: 1 VARIOUS COLORS: RED, BROWN, TRANSLUCENT GREY, PINKISH. ONE BROWN VEIN (N/S, VERT, 10CM WIDE) SHOWS EXPLOSIVE BRECCIA, RESEALED, PATTERN. 2 OTHER SAMPLE HAVE BRECCIA CLASTS.

PROBABLE FORMATION OF ORIGINAL ROCK: NICOLA

AGE: J

POSSIBLE TYPE [redacted]: CHALCEDONY ALTERATION ZONE

ALT6

ALT 8
ALT 7

ALTERED ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: AR - 7

SAMPLE REFERENCE NUMBER: KN93W - 139, 140 DATE: AUG/93

SPECIFIC LOCATION OF SAMPLE: 139: 1350N, 600E OLD GRID; 140: OLD WORKINGS, FIG 25

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT BROWN COLOUR (FRESH): PINKISH WHITE

DOMINANT GRAIN SIZE: [✓ GLASSY] [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

ORIGINAL ROCK TYPE: [✓ (IGNEOUS) INTRUSIVE] (IGNEOUS) EXTRUSIVE SEDIMENTARY METAMORPHIC

ROCK STRENGTH: LOOSE FRIABLE WEAK STRONG [✓ VERY STRONG]

ROCK HARDNESS: [✓ HARD (≥5)] SOFT (-3)

IS ORIGINAL ROCK TEXTURE PRESERVED? YES [✓ NO] COMPLETLY BLEACHED.

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: AT CALCITE SITES

HAS ANOTHER ROCK SHEET BEEN FILLED OUT? YES NO

IF YES, GIVE PAGE: I S M

ALTERATION MINERALS:	[✓ QUARTZ]	K-FELDSPAR	ALBITE	PYRITE
AMOUNT:	MINOR			
GRAIN SIZE:	2 mm	mm	mm	mm
HABIT:	D- BLEBS			

(HABITS: DISSEMINATED(D), ENVELOPE [HALO](E), PERVASIVE(P), VEIN(V), SELVEGE(S).)

ALTERATION MINERALS:	[✓ SERICITE]	PHLOGOPITE	BIOTITE	CHLORITE
AMOUNT:	MINOR			
GRAIN SIZE:	0.5 mm	mm	mm	mm
HABIT:	D			

ALTERATION MINERALS:	[✓ CLAYS]	[✓ CARBONATES]	EPIDOTE	ZEOLITES
AMOUNT:	40%	MINOR		
GRAIN SIZE:	? mm	? mm	mm	mm
HABIT:	D-CLASTS/PHENO,	D		
TYPE:	KAOLINITE	CALCITE		

ALTERATION MINERALS:	CHALCEDONY	PYRITE		
AMOUNT:	55% (GREY) (TRANSLUCENT)	MINOR		
GRAIN SIZE:	? mm	? mm	mm	mm
HABIT:	P	D		

OVERALL ALTERATION TYPE: [✓ SILICIFICATION] POTASSIC ALBITIZATION [✓ ADVANCED ARGILLIC] SERICITIC (PHYLLIC) INTERMEDIATE ARGILLIC PROPYLITIC/OR CHLORITIC ZEOLITIC ALTERATION

OTHER FEATURES: 139: IS VERY INTENSLY ALTERED. [140 IS NOT WIDESPREAD, SOME KAOLINITE IS PRESENT, BUT MOST CLASTS/PHENOCRYSTS ARE BROWNISH (CARBONATE?)]. 139 CLASTS/PHENO. ARE ALL KAOLINITE. MATRIX IS ALL GREY TRANSLUCENT

ALSO VUGS WITH SPHEROIDAL
[illegible]

PROBABLE FORMATION OF ORIGINAL ROCK: NICOLA AGE: J ?

POSSIBLE TYPE OF MINERAL DEPOSIT: HYDROTHERMAL: INTENSE ARGILLIC TO SILICIFICATION

ALT 7, 8

ALTERED ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: AR – 8

SAMPLE REFERENCE NUMBER: KCA93W-1 DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: ON THE CAMP CLAIM, WEST SIDE OF DAM LAKE, FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BRIGHT GREENISH BLUE COLOUR (FRESH): ←

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

ORIGINAL ROCK TYPE: (IGNEOUS) INTRUSIVE [✓ (IGNEOUS) EXTRUSIVE] SEDIMENTARY METAMORPHIC

ROCK STRENGTH: LOOSE [✓ FRIABLE] [✓ WEAK] STRONG VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ <1.5]

IS ORIGINAL ROCK TEXTURE PRESERVED? YES [✓ NO] BUT TEXTURE REMINDS ONE OF A PORPHYRITIC ANDESITE,

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE, AND ON CARBONATE VEINS

HAS ANOTHER ROCK SHEET BEEN FILLED OUT? YES [✓ NO] MAGNETIC IN SPOTS

IF YES, GIVE PAGE: I S M

ALTERATION MINERALS:	QUARTZ	K-FELDSPAR	[✓ ALBITE]	PYRITE
AMOUNT:	ABUN		ABUN?	
GRAIN SIZE:	? mm	mm	mm	mm
HABIT:	V, D.			

(HABITS: DISSEMINATED(D), ENVELOPE [HALO](E), PERVASIVE(P), VEIN(V), SELVEGE(S).)

ALTERATION MINERALS:	SERICITE	PHLOGOPITE	BIOTITE	CHLORITE
AMOUNT:	ABUN			
GRAIN SIZE:	<1 mm	mm	mm	mm
HABIT:	D			

ALTERATION MINERALS:	[✓ CLAYS]	CARBONATES	~~[illegible]~~ MALACHITE	ZEOLITES
AMOUNT:	ILLITE?	ABUN.	MINOR	
GRAIN SIZE:	? mm	<1 mm	? mm	mm
HABIT:	?	V, D.	ONE LOCATION	
TYPE:	GREEN/BLUE	CALCITE		

ALTERATION MINERALS:	ANKERITE	DOLOMITE?	HEMATITE	MAGNETITE
AMOUNT:	10%	?	VERY MINOR	MINOR
GRAIN SIZE:	<1 mm	<1 mm	<0.1 mm	<1 mm
HABIT:	V, D 4 mms	V, D.	SPECULAR FLAKES	IRREG MASSES

OVERALL ALTERATION TYPE: SILICIFICATION POTASSIC ALBITIZATION ADVANCED ARGILLIC SERICITIC (PHYLLIC) [✓ INTERMEDIATE ARGILLIC] PROPYLITIC/OR CHLORITIC ZEOLITIC ALTERATION

OTHER FEATURES: BRECCIATE; CALCITE, QUARTZ, AND ANKERITE VEINLETS BETWEEN CLASTS, ROCK DOES NOT SWELL IN WATER.

PROBABLE FORMATION OF ORIGINAL ROCK: NICOLA AGE: uTR

POSSIBLE TYPE OF MINERAL DEPOSIT: EPITHERMAL / MESOTHERMAL

ALTERED ROCK SAMPLE SUMMARY SHEET

PROJECT: KAMLOOPS GEOLOGY PAGE: AR -9

SAMPLE REFERENCE NUMBER: K93W - G DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: ON LAC LE JEUNE ROAD SOUTH OF IRON MASK BATHOLITH, WEST OF WALLENDER LAKE AND ROAD. FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): VARIOUS COLOUR (FRESH): MED. BROWNISH GREY

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

ORIGINAL ROCK TYPE: (IGNEOUS) INTRUSIVE [✓ (IGNEOUS) EXTRUSIVE] SEDIMENTARY METAMORPHIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5) SOFT (~3)]

IS ORIGINAL ROCK TEXTURE PRESERVED? YES NO UNCERTAIN

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE AND FRACTURE FACES

HAS ANOTHER ROCK SHEET BEEN FILLED OUT? [✓ YES] NO

IF YES, GIVE PAGE: [✓ I - 17] S M

ALTERATION MINERALS:	[✓ QUARTZ]	K-FELDSPAR	ALBITE	PYRITE
AMOUNT:	MAJOR			
GRAIN SIZE:	? mm	mm	mm	mm
HABIT:	V			

{HABITS: DISSEMINATED(D), ENVELOPE [HALO](E), PERVASIVE(P), VEIN(V), SELVEGE(S).}

ALTERATION MINERALS:	SERICITE	PHLOGOPITE	BIOTITE	[✓ CHLORITE]
AMOUNT:				0.5%
GRAIN SIZE:	mm	mm	mm	0.1-0.2 mm
HABIT:				D

ALTERATION MINERALS:	[✓ CLAYS]	[✓ CARBONATES]	EPIDOTE	ZEOLITES
AMOUNT:	SOME	MAJOR		
GRAIN SIZE:	? mm	mm	mm	mm
HABIT:	D	D, V		
TYPE:	?	CALCITE, SIDERITE, DOLOMITE?		

ALTERATION MINERALS:	LIMONITE			
AMOUNT:	?			
GRAIN SIZE:	? mm	mm	mm	mm
HABIT:	D			

OVERALL ALTERATION TYPE: SILICIFICATION POTASSIC ALBITIZATION ADVANCED ARGILLIC SERICITIC (PHYLLIC) [✓ INTERMEDIATE ARGILLIC] PROPYLITIC/OR CHLORITIC ZEOLITIC ALTERATION

OTHER FEATURES: MOSTLY NON-MAGNETIC.

PROBABLE FORMATION OF ORIGINAL ROCK: CHERRY CR OR NICOLA AGE: TR, J

POSSIBLE TYPE OF MINERAL DEPOSIT: EPITHERMAL SYSTEM

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED / KAMLOOPS GEOLOGY PAGE: I - 1

SAMPLE REFERENCE NUMBER: K93W - A1, C1 + C2 DATE: MAY/93

SPECIFIC LOCATION OF SAMPLE: SEE KWONG (1987) MAP, (FIGURE 7).

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): PINK TO MEDIUM GREEN/GREY COLOUR (FRESH): PINK TO LIGHT GREENISH GREY

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC [✓ GRANULAR] PEGMATITIC

GRAIN SIZES: GLASSY APHANITIC [✓ FINE(S)] [✓ MEDIUM] COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___% ___% ___% ___% ___% ___%

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: [✓ STRONG : WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: MOSTLY ON FRACTURE FACES

TOTAL PERCENTAGE DARK MINERALS: 25 % (MORE IN SOME SAMPLES)

FELDSPARS: TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	75 %	MOST %	? %
GRAIN SIZE:	0.2-1 mm	0.2-1 mm	0.2-1 mm
COLOUR:	→	PINK	WHITE TO CLEAR
STRUCTURE:	→		STRIATIONS

FERROMAGNESIANS: TYPES:	AMPHIBOLES	PYROXENES	CHLORITE ⊗	
PERCENTAGE:	25 % ⊗	%	← %	%
GRAIN SIZE:	0.2-1 mm	mm	← mm	mm

QUARTZ PRESENT?: [✓ YES] NO OTHER PRIMARY MINERALS: MAGNETITE

PERCENTAGE: MINOR % PERCENTAGE: ? % ___%

GRAIN SIZE: 0.5 mm GRAIN SIZE: 0.2 mm ___mm

ROCK ALTERATION: ⊗ HORNBLENDE ALTERED TO CHLORITE AND EPIDOTE IN C1;'S NEGILIGIBLE EPIDOTE IN A1 + C2, BUT DISSEMINATED SULFIDES (PYRITE AND CHALCOPYRITE ?) PRESENT IN ONE SAMPLE

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES:

PROBABLE FORMATION CHERRY CREEK (KWONG, 1987, EJ IMS) AGE: UTR - J

APPROXIMATE FIELD NAME: SYENITE, MICROSYENITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I - 2

SAMPLE REFERENCE NUMBER: K93W - D1 DATE: JULY/88

SPECIFIC LOCATION OF SAMPLE: CORNER OF LAC LE JEUNE ROAD, WHERE IT OVERLOOKS KAMLOOPS/HIGHWAY 5, BEFORE SWINGING SOUTH. FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: ABL WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): VARIOUS COLOUR (FRESH): DARK TO LIGHT GREY ~~SLIGHTLY GREENISH~~

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC [✓ GRANULAR] PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___% 2-4% 96-98% ___% ___% ___%

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC ______

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE, FRACTURE FACES

TOTAL PERCENTAGE DARK MINERALS: 2-4 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	96-98 %	? %	✓ %
	GRAIN SIZE:	0.2-1 mm	mm	0.2-1 mm
	COLOUR:	WHITE		WHITE
	STRUCTURE:	→		SOME STRIATIONS

FERROMAGNESIANS:	TYPES:	[✓ AMPHIBOLES] ⊗	PYROXENES		
	PERCENTAGE:	2-4 %	%	%	%
	GRAIN SIZE:	<0.2 mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS: ______ ______

PERCENTAGE: ___% PERCENTAGE: ___% ___%

GRAIN SIZE: ___mm GRAIN SIZE: ___mm ___mm

ROCK ALTERATION: ABUNDANT CALCITE, EPIDOTE ALTERATION ON SOME PIECES. FELDSPAR GRAINS MAY BE ALTERED. ⊗AMPHIBOLES ALTERED TO CHLORITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR ______

OTHER FEATURES: ______

PROBABLE FORMATION CHERRY CREEK UNIT (KWONG, 1987, ꝶJIM5) AGE: uꝶ-J

APPROXIMATE FIELD NAME: GRAY/GREEN MICRODIORITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-3

SAMPLE REFERENCE NUMBER: K93W-02 DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: CORNER OF LAC LE JEUNE ROAD, WHERE IT OVERLOOKS KAMLOOPS/HIGHWAY 5, BEFORE SWINGING SOUTH. FIG. 7

SAMPLE MODE: IN SITU FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT ORANGE COLOUR (FRESH): LIGHT ORANGE/BROWN

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC [✓ GRANULAR] PEGMATITIC

GRAIN SIZES:	GLASSY	[✓ APHANITIC]	[✓ FINE(S)]	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	2-4 %	96-98 %	%	%	%

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC

ROCK CLASS: [✓ FELSIC] [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

ROCK MAGNETISM: STRONG WEEK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE, FRACTURE FACES

TOTAL PERCENTAGE DARK MINERALS: 2-4 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	96-98 %	%	✓ %
	GRAIN SIZE:	0.2-1 mm	mm	0.2-1 mm
	COLOUR:	WHITE		WHITE
	STRUCTURE:	→		STRIATIONS

FERROMAGNESIANS:	TYPES:	[✓ AMPHIBOLES] ⊛	PYROXENES		
	PERCENTAGE:	2-4 %	%	%	%
	GRAIN SIZE:	<0.2 mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS:

PERCENTAGE: % PERCENTAGE: % %

GRAIN SIZE: mm GRAIN SIZE: mm mm

ROCK ALTERATION: ABUNDANT CALCITE. SLIGHT ILLITE CLAY SMELL, AND FELDSPAR GRAINS MAY BE ALTERED (GRAINS INDISTINCT IN PLACES). ⊛ AMPHIBOLES ALTERED TO CHLORITE. ORANGF COLOR PROBABLY ANKERITE

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES:

PROBABLE FORMATION CHERRY CREEK UNIT (KWONG, 1987 TRJIMS) AGE: TR-J

APPROXIMATE FIELD NAME: ORANGE/BROWN ALTERED MICRODIORITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I-4

SAMPLE REFERENCE NUMBER: K93W-E

DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: MIDDLE OF IRON MASK BATHOLITH, EAST OF LAC LA JEUNE ROAD, SEE KWONG (1987) MAP, FIGURE 7

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT RUSTY ORANGE

COLOUR (FRESH): LIGHT GREEN/GRAY

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC [✓ GRANULAR] PEGMATITIC

GRAIN SIZES:	GLASSY	[✓ APHANITIC]	[✓ FINE(S)]	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	6 %	94 %	%	%	%

ROCK TYPE: [✓ PLUTONIC] ? [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

ROCK MAGNETISM: STRONG [✓ WEAK] NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: SOME FRACTURE FACES/VEINLETS

TOTAL PERCENTAGE DARK MINERALS: 1 %

FELDSPARS:	TYPES:	[✓ TOTAL]	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	95 %	%	%
	GRAIN SIZE:	0.1 mm	mm	mm
	COLOUR:	WHITE		
	STRUCTURE:	RECT. XTALS		NO STRIATIONS OBSERVED

FERROMAGNESIANS:	TYPES:	[✓ AMPHIBOLES] ⊗	PYROXENES		
	PERCENTAGE:	1 %	%	%	%
	GRAIN SIZE:	0.1 mm	mm	mm	mm

QUARTZ PRESENT?:	[✓ YES] NO	OTHER PRIMARY MINERALS:	[✓ MAGNETITE]	
PERCENTAGE:	<5 %	PERCENTAGE:	MINOR %	%
GRAIN SIZE:	0.1 mm	GRAIN SIZE:	0.1 mm	mm

ROCK ALTERATION: QUARTZ, CALCITE & SIDERITE VEINLETS WITH BRECCIATION - MINOR EPIDOTE. ⊗ AMPHIBOLES ALTERED TO CHLORITE AND LIMONITE, IRREGULAR QUARTZ (?) MASSES DISSEMINATED IN ROCK.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: VERY FINE BUT CLEARLY DEFINED XTALS. MAY BE SOME APHANITIC/GLASSY MATRIX.

PROBABLE FORMATION: CHERRY CREEK (TRJIMS, KWONG, 1987)

AGE: uTR-J

APPROXIMATE FIELD NAME: MICRO SYENITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-5

SAMPLE REFERENCE NUMBER: K93W - F DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: SADDLE POINT, ON LAC LE JEUNE ROAD, S. END OF IRON MASK BATHOLITH, EAST OF SUGARLOAF HILL. SEE FIG 7 (KWONG, 1987; FIG.7)

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): RUSTY WHITE TO GREENISH COLOUR (FRESH): LIGHT GREENISH GREY

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC [✓ GRANULAR] PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___% 1-2 %(?) 98+99 %(?) ___% ___% ___%

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC ______

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] SOFT (~3) ______

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORMLY

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: MOSTLY ON FRACTURES

TOTAL PERCENTAGE DARK MINERALS: 1-2 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	98-99 %	%	%
	GRAIN SIZE:	0.2-0.5 mm	mm	mm
	COLOUR:	WHITE		
	STRUCTURE:	RECT. XTALS TO INDISTINCT GRAINS		

FERROMAGNESIANS:	TYPES:	[✓ AMPHIBOLES]	PYROXENES		
	PERCENTAGE:	1-2 % ⊗	%	%	%
	GRAIN SIZE:	0.1 mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS: [✓ MAGNETITE] ______

PERCENTAGE: ___% PERCENTAGE: ? % ___%

GRAIN SIZE: ___mm GRAIN SIZE: 0.1 mm ___mm

ROCK ALTERATION: ⊗ AMPHIBOLES ALTERED TO CHLORITE. EPIDOTE ALERATION ON SOME PIECES. ABUNDANT CALCITE IN PLACES. FELDSPARS MAY BE ALTERED IN PLACES. SOME QZ IN VEINS

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR______

OTHER FEATURES: MINOR SULFIDES

PROBABLE FORMATION: CHERRY CREEK UNIT (TRJIMS, KWONG, 1987) AGE: uTR-J

APPROXIMATE FIELD NAME: MICROSYENITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I - 6

SAMPLE REFERENCE NUMBER: K93W - M

DATE: AUG/93

SPECIFIC LOCATION OF SAMPLE: ON ROAD CUT, COCHAHALLA HIGHWAY, APPROX 20 KM SOUTH OF KAMLOOPS, CENTRAL NICOLA BATHOLITH, FIG 5

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: ____

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): WHITE COLOUR (FRESH): SPECKLED WHITE/BLACK

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC [✓ GRANULAR] PEGMATITIC

GRAIN SIZES: GLASSY APHANITIC [✓ FINE(S)] [✓ MEDIUM] COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ____ % ____ % 20 % 80 % ____ % ____ %

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC ____

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] SOFT (~3) ____

ROCK MAGNETISM: STRONG WEEK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN: ____

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: MINOR REACTION IN FERROMAG.

TOTAL PERCENTAGE DARK MINERALS: 20 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	65 %	%	65 %
	GRAIN SIZE:	2-4 mm	mm	2-4 mm
	COLOUR:	WHITE		WHITE
	STRUCTURE:			CLEAVAGE/STRIATIONS

FELDSPARS POWDERY WHITE MOSTLY

FERROMAGNESIANS:	TYPES:	[✓ AMPHIBOLES]	PYROXENES	[✓ BIOTITE]	
	PERCENTAGE:	MINOR %	%	20 %	%
	GRAIN SIZE:	0.5-3 mm	mm	0.5 mm	mm

QUARTZ PRESENT?: [✓ YES] NO

PERCENTAGE: 15 %

GRAIN SIZE: 2-4 mm

OTHER PRIMARY MINERALS: ? PYRITE ?

PERCENTAGE: MINOR % } TRANSLUCENT YELLOW ____ %

GRAIN SIZE: 0.5 mm ____ mm

ROCK ALTERATION: MINOR ALTERATION TO CHLORITE & EPIDOTE

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR ____

OTHER FEATURES: QZ VEINS, SEVERAL CM WIDE CUT ROCK. CLEAR TO WHITE QZ
) TRACE PYRITE (STRIATED CUBES, 0.1 MM, DISSEMINATED).

PROBABLE FORMATION COAST INTRUSIONS

AGE: JR TO K

APPROXIMATE FIELD NAME: QUARTZ DIORITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED ; KAMLOOPS   PAGE: I - 7

SAMPLE REFERENCE NUMBER: KW93W - 1   DATE: AUG / 93

SPECIFIC LOCATION OF SAMPLE: IN CREEK BED, NW. OF LARGE POND P2 (WHITTLES, 1992) + S. OF TS (VALLEY BASALT TALUS SLIDE), WOOD CLAIM. FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT   SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT BROWN   COLOUR (FRESH): GREEN / WHITE

TEXTURE: GLASSY APHANITIC CLASTIC [✓ SOMEWHAT PORPHYRITIC] [✓ GRANULAR] PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] [✓ MEDIUM] [✓ COARSE(P)] V. COARSE

GRAIN SIZE PERCENTAGES: ____ % 10 % 70 % 20 % MINOR % ____ %

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC ____

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] SOFT (~3)

ROCK MAGNETISM: STRONG WEEK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: 20 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	%	%	78 %
	GRAIN SIZE:	mm	mm	? - 6 mm
	COLOUR:			WHITE → TO CHALKY
	STRUCTURE:			CLEAVAGE / STRIATIONS

~⅔ LARGER PHENOCRYSTS

FERROMAGNESIANS:	TYPES:	AMPHIBOLES ⊛	PYROXENES	BIOTITE ⊛	
	PERCENTAGE:	10 %	%	10 %	%
	GRAIN SIZE:	0.2-2 mm	mm	0.2-2 mm	mm

QUARTZ PRESENT?: [✓ YES] NO   OTHER PRIMARY MINERALS:

PERCENTAGE: ~2 %   PERCENTAGE: ____ % ____ %

GRAIN SIZE: 1-2 mm   GRAIN SIZE: ____ mm ____ mm

ROCK ALTERATION: MINOR EPIDOTE + AMETHYST QZ, ⊛ AMPHIBOLES + BIOTITE CONVERTED TO CHLORITE

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: 0.03 MM PYRITE CUBES, MINOR QZ VEINING, IN FORM OF N/S DYKE VERY SIMILAR TO SAMPLE NO. K93W-M, IN GENERAL APPEARANCE.

PROBABLE FORMATION COAST INTRUSION   AGE: Ɉ-K?

APPROXIMATE FIELD NAME: DIORITE / QUARTZ DIORITE / PORPHYRY

[redacted] IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED/CHU, KAMLOOPS PAGE: II -8

SAMPLE REFERENCE NUMBER: KCI93W - A + B DATE: AUG/93

SPECIFIC LOCATION OF SAMPLE: 155m(A) FROM ROAD END, WEST SIDE CHU CLAIM, AIR PHOTO CIRCULAR ANOMALY. B WAS AT 216m. FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: R. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED BROWN COLOUR (FRESH): WHITE/GREEN PATCHES

DOMINANT GRAIN SIZE: GLASSY APHANITIC FINE(S) [✓ MEDIUM] COARSE(P) V. COARSE

TEXTURE: GLASSY [✓ APHANITIC] 20% CLASTIC [✓ PROPHYRITIC] 80% GRANULAR PEGMATITIC

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) ~4

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: A FEW DISSEMINATED LOCATIONS.

TOTAL PERCENTAGE DARK MINERALS: 20-25%

FELDSPARS:	TYPES:	[✓ K-FELDSPAR]	PLAGIOCLASE	TOTAL
	PERCENTAGE:	✓ %	✓ %	65-75%
	GRAIN SIZE:	1-10 mm	1-10 mm	
	COLOUR:	WHITE	WHITE	
	STRUCTURE:	CLEAVAGE	←	

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES	CHLORITE /	SERICITE
	PERCENTAGE:	%	%	20-25 %	%
	GRAIN SIZE:	mm	mm	0.02 mm?	mm

[✓ QUARTZ] PRESENT?: [✓ YES] NO OTHER PRIMARY MINERALS:

PERCENTAGE:	5-10 %	PERCENTAGE:	%	%
GRAIN SIZE:	1-5 mm	GRAIN SIZE:	mm	mm

ROCK ALTERATION: SLIGHT CLAY SMELL

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? [✓ YES] NO

IF YES, GIVE PAGE: AR

OTHER MINERALIZATION:	SULFIDES	[✓ CHALCOPYRITE]	[✓ PYRITE]		
PERCENTAGE:	? TO 5 %? ⊛	? %	? %	%	%
GRAIN SIZE:	0.05-1 mm	0.1-0.2 mm	1 mm	mm	mm
GRAIN SHAPE:	→	CUBIC?	MASSIVE/CUBIC		

OTHER FEATURES: SULFIDES WEATHERED (POLYMORPH?) MOSTLY TO LIMINITE, AND ARE ⊛ MOST ABUNDANT ON FRACTURE FACES? NOT MAGNETIC, 0.5mm MAIROLITIC CAVITIES

PROBABLE FORMATION COAST INTRUSIONS VERY SIMILAR TO K93W-M AGE: J-K

APPROXIMATE FIELD NAME: MINERALIZED QUARTZ DIORITE PORPHYRY

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-9

SAMPLE REFERENCE NUMBER: KCU93W-11B DATE: JUNE/93

SPECIFIC LOCATION OF SAMPLE: △11 ON CHU CLAIM SE OF NED CLAIM. SEE WHITTLES (1992 SAMPLE KC92W-11). FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT BROWN/WHITE COLOUR (FRESH): WHITE / PINKISH TO GREENISH

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC [✓ GRANULAR] PEGMATITIC

GRAIN SIZES:	GLASSY	[✓ APHANITIC]	[✓ FINE(S)]	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	95 %	5 %	%	%	%

VERY SUGARY APPEARANCE UNDER MICROSCOPE

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC

ROCK CLASS: [✓ FELSIC] INTERMEDIATE MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] 4 SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: 0 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	? %	? %	✓ %
	GRAIN SIZE:	0.05-2 mm	mm	mm
	COLOUR:	CLEAR TO WHITE		
	STRUCTURE:	RECT. XTALS		STRIATIONS

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	%	%	%	%
	GRAIN SIZE:	mm	mm	mm	mm

QUARTZ PRESENT?: [✓ YES] NO

PERCENTAGE: 40 %

GRAIN SIZE: 0.05-0.2 mm

} IN MASSES SOME QZ VEINS

OTHER PRIMARY MINERALS: [✓ SERICITE] [✓ PYRITE] ?

PERCENTAGE: 20 % MINOR %

GRAIN SIZE: 0.05 mm UP TO 20 mm

ROCK ALTERATION: NONE TRANSITION TO QZ VEINS?

RUSTED OUT OR REPLACED BY HEMATITE? CUBIC PSEUDOMORPHS? IN MASSIVE QUARTZ

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: VEIN LIKE 10-20 cm WIDE, 5-10 m LONG. SUGARY TEXTURE (UNDER MICROSCOPE), BUT NOT MANY CLEAVAGE FACES, (VERY FINE GRAINED). SOME HEMATITE. TRACE OF MOLY?

PROBABLE FORMATION COAST INTRUSIONS? AGE: J?.

APPROXIMATE FIELD NAME: LEUCOCRATIC DYKE (APLITE DYKE?)

(QUARTZ / FELDSPAR / SERICITE VEIN)?

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-10

SAMPLE REFERENCE NUMBER: K93W - Y + Z DATE: AUG/93

SPECIFIC LOCATION OF SAMPLE: SOUTH END OF SUGARLOAF MOUNTAIN COCAHALLA HIGHWAY, FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT BROWN/GREEN COLOUR (FRESH): LIGHT GREENISH GREY

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] [✓ GRANULAR] PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___% 10 %? 90 % ___% ___% ___%

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC ______

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] SOFT (~3) ______

ROCK MAGNETISM: [✓ STRONG] to [✓ WEAK] NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: [✓ STRONG]? [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: DISSEMINATED LOCATIONS IN MATRIX (APHANITIC)

TOTAL PERCENTAGE DARK MINERALS: 10-40 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	60-90 %	✓ %	✓ %
	GRAIN SIZE:	0.1-1 mm	mm	mm
	COLOUR:	WHITE	WHITE	WHITE
	STRUCTURE:	CLEAVAGE ;	TWINS	STRIATIONS

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES	CHLORITE ⊛	
	PERCENTAGE:	%	%	10-40 %	%
	GRAIN SIZE:	mm	mm	~0.1 mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS: ______ ______

PERCENTAGE: ___% PERCENTAGE: ___% ___%

GRAIN SIZE: ___mm GRAIN SIZE: ___mm ___mm

ROCK ALTERATION: CALCITE, ⊛ CHLORITE APPEARS TO HAVE BEEN DERIVED FROM BIOTITE MOSTLY, ALTHOUGH SMALL SIZE MAKES IT DIFFICULT TO BE CERTAIN.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR______

OTHER FEATURES: MAGNETITE, DISSEMINATED IN MATRIX, 0.2 MM, SOME TRIANGULAR FACES; SOME HEMATITE, SOME FLOW BANDING OF FELDSPAR PHENOCRYSTS.

PROBABLE FORMATION ALKALINE INTRUSIVE (KWONG, 1987, R JIM 4) (SUGARLOAF UNIT, IRON MASK BATHOLITH) AGE: R-J

APPROXIMATE FIELD NAME: GREY MICRODIORITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I-11

SAMPLE REFERENCE NUMBER: K93W - B, I, J, K+N

DATE: JULY /93

SPECIFIC LOCATION OF SAMPLE: (B) WEST OF SALTWORT POND, SEE KWONG (1987) MAP, (FIGURE 7). (I) N. OF AFTON PIT. (J)(K)+(N) IN BETWEEN

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): RUSTY, ORANGE LICHEN

COLOUR (FRESH): DARK BROWN & GREENISH GRE

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES:	GLASSY	[✓ APHANITIC]	[✓ FINE (S)]	[✓ MEDIUM]	COARSE (P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	90 %	5 %	5 %	%	%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] [✓ PYROCLASTIC]

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ SOFT (~3)]

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: [✓ STRONG] TO [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE ? ON FRACTURE FACES ?

TOTAL PERCENTAGE DARK MINERALS: %

FELDSPARS: TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	? %	%	%
GRAIN SIZE:	mm	mm	mm
COLOUR:			
STRUCTURE:			

APPEAR AS THIN ROUNDED MASSES (POIKILITIC PATCHES, STRIATIONS ON THIN EDGES. MASSES FRACTUR EASILY. H > 5

FERROMAGNESIANS: TYPES:	[✓ AMPHIBOLES]	PYROXENES		
PERCENTAGE:	SOME %	%	%	%
GRAIN SIZE:	0.5-4 mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO]

PERCENTAGE: %

GRAIN SIZE: mm

OTHER PRIMARY MINERALS:	FELDSPATHOID (NEPHELINE?)	
PERCENTAGE:	? %	%
GRAIN SIZE:	0.1-10 mm	mm

CLEAR, STRIATIONS

ROCK ALTERATION: CALCITE ABUNDANT. QUARTZ / CHALCEDONY VEINING. SOME MASSES ACQUIRE GREENISH LOOK WHEN HCL APPLIED, SAMPLE (K) HAS ABUNDANT, DISSEMINATED LIMONITE PATCHES

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: SOMEWHAT TUFFACEOUS APPEARANCE. SAMPLE (K) IS MUCH FINER GRAINED; < 0.5MM GRAIN SIZES

PROBABLE FORMATION: KAMLOOPS (EK, KWONG, 1987)

AGE: T

APPROXIMATE FIELD NAME: FELDSPATHOIDIC ANDESITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I-12

SAMPLE REFERENCE NUMBER: K93W-Q

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: SLIDE AREA, WOOD CLAIMS, FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BLACK

COLOUR (FRESH): BLACK

TEXTURE: GLASSY [✓ APHANITIC] CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: % ~100 % % % % %

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC INTERMEDIATE [✓ MAFIC] ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

ROCK MAGNETISM: [✓ VERY ~~STRONG~~] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM; SOME MAGNETITE MASSES

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: ~100 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	~~PLAGIOCLASE~~
	PERCENTAGE:	%	%	✓ %
	GRAIN SIZE:	mm	mm	mm
	COLOUR:			CLEAR
	STRUCTURE:			STRIATIONS, TWINS

OCCASIONAL PHENOCRYSTS
ONE PERFECT CLEAVAGE
ONE GOOD TO CONCOIDAL AT 90

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	[✓ PYROXENES]	[✓ OLIVINE] -	[✓ FORSTERITE] ?
	PERCENTAGE:	%	? %	MINOR %	%
	GRAIN SIZE:	mm	<0.2 mm	10 mm	mm

OCCASIONAL PHENOCRYSTS

QUARTZ PRESENT?: YES [✓ NO]

PERCENTAGE: %

GRAIN SIZE: mm

OTHER PRIMARY MINERALS: [✓ MAGNETITE]

PERCENTAGE: ? % %

GRAIN SIZE: 5 mm mm

MASSES, BLUE-BLACK, CONCHOIDAL FRACTURE

ROCK ALTERATION:

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES NO

IF YES, GIVE PAGE: AR

OTHER FEATURES: ONE POCKET OF TRANPARENT, 0.1mm, CUBIC XTALS OF AN UNIDENTIFIED MINERAL.

PROBABLE FORMATION: VALLEY BASALT

AGE: T

APPROXIMATE FIELD NAME: VALLEY BASALT

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I - 13

SAMPLE REFERENCE NUMBER: KN93W - 192

DATE: AUG/93

SPECIFIC LOCATION OF SAMPLE: △192, LOW KNOLL NW NED ROBERTS LAKE, BETWEEN NED ROBERTS LAKE FAULTS, FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): WHITE TO BLACK

COLOUR (FRESH): MEDIUM GREEN

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES:	GLASSY	[✓ APHANITIC]	[✓ FINE(S)]	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	20 %	80 %	%	%	%

ROCK TYPE: [✓ PLUTONIC] VOLCANIC FLOW PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) H~4

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: ISOLATED LOCATIONS (FERROMAGNESIANS)

TOTAL PERCENTAGE DARK MINERALS: 15-20 %

FELDSPARS: TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	60 %	%	✓ %
GRAIN SIZE:	0.2-1 mm	mm	0.2 to 1 mm
COLOUR:	WHITE		WHITE
STRUCTURE:			STRIATIONS

FERROMAGNESIANS: TYPES:	AMPHIBOLES	PYROXENES	CHLORITE	
PERCENTAGE:	%	%	15-20 % (?)	%
GRAIN SIZE:	mm	mm	0.2 to 1 mm	mm

QUARTZ PRESENT?: YES NO

OTHER PRIMARY MINERALS:

PERCENTAGE:	%	PERCENTAGE:	%	%
GRAIN SIZE:	mm	GRAIN SIZE:	mm	mm

ROCK ALTERATION: MINOR CALCITE, EPIDOTE. CHLORITE APPEARS TO HAVE BEEN DERIVED FROM BIOTITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: DISSEM MAGNETITE, SOME △ FACES, 0.2 MM, OCCASSIONAL BLACK BRECCIATED INCLUSION

PROBABLE FORMATION ALKALINE INTRUSIVE (KWONG, 1987, TRJIm4)

AGE: TR - J

APPROXIMATE FIELD NAME: PORPHYRITIC MICRODIORITE (HATCH ET AL, 1980)

SEE SAMPLES K93W - Y, - Z
("RANGES TO A PORPHYRY)

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I -14

SAMPLE REFERENCE NUMBER: KN93W-180 DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: FIELD/GRABEN(?) WEST OF NED ROBERTS LAKE, FIG. 25

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): WHITE TO MED BROWN COLOUR (FRESH): PINK, GREEN, BLACK.

TEXTURE: GLASSY [✓ APHANITIC] [✓ CLASTIC] [✓ PORPHYRITIC] [✓ GRANULAR] PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ____% ____% ____% ____% ____% ____%

ROCK TYPE: [✓ PLUTONIC] [✓ VOLCANIC FLOW] PYROCLASTIC ____

ROCK CLASS: FELSIC INTERMEDIATE MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ 4] SOFT (~3) ____

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: PERVASIVE

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE

TOTAL PERCENTAGE DARK MINERALS: ____%

FELDSPARS:	TYPES:	[✓ TOTAL]	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	%	%	%
	GRAIN SIZE:	mm	mm	mm
	COLOUR:			
	STRUCTURE:			

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	%	%	%	%
	GRAIN SIZE:	mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS: [✓ MAGNETITE] ____

PERCENTAGE: ____% PERCENTAGE: ____% ____%

GRAIN SIZE: ____mm GRAIN SIZE: ____mm ____mm

ROCK ALTERATION: HEMATITE THRO-OUT SOME CLASTS. DISTINCTIVE PINK COLOR TO SOME APHANITIC MATRIX. CALCITE VERY ABUNDANT. FELDSPAR PHENOCRYSTS ALTERED TO LIMONITE(?) OR SIDERITE(?).

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR____

OTHER FEATURES: RED, GREEN, BLACK, GREY CLASTS (0.5-2cm+). APHANITIC TO FINE GRAINED IGNEOUS INTRUSIVE MATRIX.

PROBABLE FORMATION R̄JIM4 (KWONG, 1987) AGE: R̄-J

APPROXIMATE FIELD NAME: MICRODIORITE INTRUSIVE BRECCIA

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I-15

SAMPLE REFERENCE NUMBER: KCU93W-1

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: S. SHORE OF SMALL LAKE/POND TO SOUTH OF DAM LAKE. CHU CLAIMS, FIG 7

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BLACK/ORANGE LICHEN COLOUR (FRESH): DARK GREY

TEXTURE: GLASSY [✓ APHANITIC] CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES:	GLASSY	[✓ APHANITIC]	FINE(S)	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	90 %	20 %	%	%	%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE MAFIC] ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) 4 SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: MAINLY AROUND EPIDOTE IN VUGS

TOTAL PERCENTAGE DARK MINERALS: 80 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	✓ %	%	%
	GRAIN SIZE:	mm	mm	mm
	COLOUR:			
	STRUCTURE:			

A FEW AMPHIBOLE? FELDSPAR PHENOCRYSTS

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES	EPIDOTE ← WELL FORMED XTALS	
	PERCENTAGE:	✓ %	%	10 %	%
	GRAIN SIZE:	mm	mm	<1 mm	mm

QUARTZ PRESENT?: [✓ YES] NO

PERCENTAGE: 10 %

GRAIN SIZE: <.5 mm

OTHER PRIMARY MINERALS:

PERCENTAGE: % %

GRAIN SIZE: mm mm

ROCK ALTERATION: FERROMAG. CONVERTED TO CHLORITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: THE AMYGDULES ~ 20-25% OF SAMPLE, AND ARE FILLED WITH ~½ QUARTZ (OUTSIDE), ½ EPIDOTE CRYSTALS (INSIDE).

PROBABLE FORMATION NICOLA

AGE: uTR

APPROXIMATE FIELD NAME: AMYGDALOIDAL BASALT

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I-16

SAMPLE REFERENCE NUMBER: K93W -H

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: NORTH OF ROSE HILL, KAMLOOPS, ABOVE RADIO TOWERS. KWONG, 1987, MAP, FIG. 7.

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B.WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT RUSTY BROWN

COLOUR (FRESH): BLACK.

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ____% 95 % 5 % ____% ____% ____%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC ____

ROCK CLASS: FELSIC INTERMEDIATE [✓ MAFIC ULTRA-MAFIC]

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ 4] SOFT (~3) ____

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN: ____

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN: ____

TOTAL PERCENTAGE DARK MINERALS: ~100 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	? %	? %	? %
	GRAIN SIZE:	mm	mm	<0.5 mm
	COLOUR:			BLACK?
	STRUCTURE:			STRIATIONS

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	[✓ PYROXENES]		
	PERCENTAGE:	%	? %	%	%
	GRAIN SIZE:	mm	≤5 mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO]

PERCENTAGE: ? %

GRAIN SIZE: ____mm

OTHER PRIMARY MINERALS: ____ ____

PERCENTAGE: ____% ____%

GRAIN SIZE: ____mm ____mm

ROCK ALTERATION: NONE APPARENT, PERHAPS FERROMAGNESIANS ARE CONVERTED SOMEWHAT TO CHLORITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR____

OTHER FEATURES: TRACE OF MALACHITE & CHALCOPYRITE. UNLIKE THE VALLEY AND PICRITE BASALTS, THE ROCK IS NOT MAGNETIC

PROBABLE FORMATION: NICOLA ?

AGE: uTR?

APPROXIMATE FIELD NAME: PORPHYRITIC BASALT.

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I -17 (See AR 9)

SAMPLE REFERENCE NUMBER: K93W - G

DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: ON LAC LE JEUNE RD, SOUTH SIDE OF IRON MASK BATHOLITH, WEST OF WALLENDER LAKE, AND ROAD. FIG. 7.

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): VARIOUS

COLOUR (FRESH): MED. BROWNISH GREY

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY APHANITIC FINE(S) MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___% ___% ___% ___% ___% ___%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE, AND ON FRACTURE FACES

TOTAL PERCENTAGE DARK MINERALS: <1 % ⊛

FELDSPARS:

TYPES:	TOTAL	K-FELDSPAR	[✓ PLAGIOCLASE]
PERCENTAGE:	%	%	? % SOME PHENOCRYSTS
GRAIN SIZE:	mm	mm	0.1-1 mm
COLOUR:			CLEAR
STRUCTURE:			LONG RECTANGULAR STRIATED CRYSTALS

FERROMAGNESIANS:

TYPES:	[✓ AMPHIBOLES] ⊛	PYROXENES		
PERCENTAGE:	<1 %	%	%	%
GRAIN SIZE:	0.1-0.2 mm	mm	mm	mm

QUARTZ PRESENT?: [✓ YES] NO

PERCENTAGE: VEINS %?

GRAIN SIZE: - mm

OTHER PRIMARY MINERALS:

PERCENTAGE: ___% ___%

GRAIN SIZE: ___mm ___mm

ROCK ALTERATION: ROCK SEEM FLOODED WITH CALCITE, SIDERITE, AND QUARTZ. AMPHIBOLE CONVERTED TO CHLORITE. SOME ANGULAR MASSES OF LIMONITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? [✓ YES] NO

IF YES, GIVE PAGE: AR -9

OTHER FEATURES:

PROBABLE FORMATION: CHERRY CREEK? OR NICOLA?

AGE: K OR J

APPROXIMATE FIELD NAME: ALTERED ANDESITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I — 18

SAMPLE REFERENCE NUMBER: KXE90W – P-2 DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: AIRPORT QUARRY, NORTH OF THOMPSON RIVER (KWONG, 1987, MAP – FIG. 7)

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): RUSTY DARK GREEN COLOUR (FRESH): MED TO DARK GREEN

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: % 100 % % % % %

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) ~4

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: DISSEMINATE LOCATIONS

TOTAL PERCENTAGE DARK MINERALS: ? %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	? %	%	%
	GRAIN SIZE:	mm	mm	mm
	COLOUR:			
	STRUCTURE:			

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	? %	? %	%	%
	GRAIN SIZE:	<0.1 mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS:

PERCENTAGE: % PERCENTAGE: % %

GRAIN SIZE: mm GRAIN SIZE: mm mm

ROCK ALTERATION: SOME CALCITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: VERY FINE GRAINED (≤0.1 mm) ANDESITE; BUT STILL HAS A CRYSTALLINE APPEARANCE, NEGLIGIBLE PHENOCRYSTS.

PROBABLE FORMATION NICOLA AGE: uTR

APPROXIMATE FIELD NAME: DARK GREEN ANDESITE (NON-PORPHYRITIC

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I - 19

SAMPLE REFERENCE NUMBER: KN93W - 16 DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: Δ16, FIG. 25

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED BROWN COLOUR (FRESH): LIGHT GREEN

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___% 100 % ___% ___% ___% ___%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC ______

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ 4] SOFT (~3) ______

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN: ______

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: DISSEMINATED LOCATIONS

TOTAL PERCENTAGE DARK MINERALS: ___%

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	? %	%	%
	GRAIN SIZE:	mm	mm	mm
	COLOUR:			
	STRUCTURE:			

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	? %	%	%	%
	GRAIN SIZE:	<0.1 mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS: ______ ______

PERCENTAGE: ___% PERCENTAGE: ___% ___%

GRAIN SIZE: ___mm GRAIN SIZE: ___mm ___mm

ROCK ALTERATION: SOME CALCITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES NO

IF YES, GIVE PAGE: AR

OTHER FEATURES: A VERY FINE GRAINED ANDESITE BUT WITH A CRYSTALLINE APPEARANCE.

PROBABLE FORMATION NICOLA AGE: uTr

APPROXIMATE FIELD NAME: LIGHT GREEN ANDESITE (NON-PORPHYRITIC)

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-20

SAMPLE REFERENCE NUMBER: KN93W- 5, 7, 17A+, 22, 23, 188A -185 DATE: SEPT.

SPECIFIC LOCATION OF SAMPLE: REFER TO FIG: , △ 5 , ETC. FIG. 25

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BROWN / GREEN COLOUR (FRESH): MED TO LIGHT GREEN

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY APHANITIC FINE(S) MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ____% 80-90 % 10-20 % ____% ____% ____%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ 4] SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE, AND FRACTURES

TOTAL PERCENTAGE DARK MINERALS: 10-20 %

FELDSPARS:

TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE	
PERCENTAGE:	%	%	%	OCCASIONAL
GRAIN SIZE:	mm	mm	<1 mm	PHENOCRYSTS
COLOUR:			WHITE TO TRANSPARENT	
STRUCTURE:			STRIATIONS	

FERROMAGNESIANS:

TYPES:	AMPHIBOLES	PYROXENES		
PERCENTAGE:	10-20 % ⊛	%	%	%
GRAIN SIZE:	<1 to 3 mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS:

PERCENTAGE: ____% PERCENTAGE: ____% ____%

GRAIN SIZE: ____mm GRAIN SIZE: ____mm ____mm

ROCK ALTERATION: ABUNDANT EPIDOTE AND CALCITE. ⊛ AMPHIBOLES CONVERTED TO CHLORITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: MINOR PYRITE IN SAMPLES 22+23

PROBABLE FORMATION NICOLA AGE: uTR

APPROXIMATE FIELD NAME: GREEN PORPHYRITIC (AMPHIBOLE) ANDESITE

(GREEN + CALCITE)

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I - 21

SAMPLE REFERENCE NUMBER: K93W- AR-2 DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: NE OF SALTNORT POND IN KWONG (1987) uTRN MAP AREA. FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT BROWN COLOUR (FRESH): PINKISH

TEXTURE: GLASSY [✓ APHANITIC] CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES: [✓ GLASSY] [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ? % 85 % 15 % ___ % ___ % ___ %

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC ___

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: STRONG [✓ VERY WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: SOME DISSEMINATED LOCATIONS

TOTAL PERCENTAGE DARK MINERALS: 15 %

FELDSPARS:

TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	[✓ ?] %	? %	? % ← OCCASIONAL PHENOCRYSTS
GRAIN SIZE:	mm	0.2 mm	0.2 mm
COLOUR:		PINK?	CLEAR TO WHITE
STRUCTURE:			STRIATIONS

FERROMAGNESIANS:

TYPES:	AMPHIBOLES	PYROXENES		
PERCENTAGE:	15 %	%	%	%
GRAIN SIZE:	0.2 - 2 mm	mm	mm	mm

QUARTZ PRESENT?: YES NO OTHER PRIMARY MINERALS: [✓ MAGNETITE] ___

PERCENTAGE: ___ % PERCENTAGE: ? % ___ %

GRAIN SIZE: ___ mm GRAIN SIZE: 0.1 mm ___ mm

ROCK ALTERATION: HEMATITE STAINING GIVES OVERALL PINK COLOR, SOME PHENOCRYSTS REPLACED BY HEMATITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: IRREGULAR/ROUNDED WHITE AND CLEAR MASSES DO NOT APPEAR TO BE AMYGDULES.

PROBABLE FORMATION NICOLA (KWONG, 1987) AGE: uTR

APPROXIMATE FIELD NAME: PINKISH PORPHYRITIC (AMPHIBOLE) ANDESITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-22

SAMPLE REFERENCE NUMBER: K93W-AR-3 DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: NE OF SALTWORT POND IN KWONG (1987) UKN ON MAP. FIG. 7.

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): GREY TO REDDISH BROWN COLOUR (FRESH): MED. GREENISH GRAY

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

	GLASSY	APHANITIC	FINE(S)	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZES:	GLASSY	[✓ APHANITIC]	[✓ FINE(S)]	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	85 %	15 %	%	%	%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] SOFT (~3)

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: 15 %

FELDSPARS: TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	%	%	%
GRAIN SIZE:	mm	mm	mm
COLOUR:			
STRUCTURE:			

FERROMAGNESIANS: TYPES:	[✓ AMPHIBOLES]	PYROXENES		
PERCENTAGE:	15 %	%	%	%
GRAIN SIZE:	0.2-2 mm	mm	mm	mm

QUARTZ PRESENT?: YES NO OTHER PRIMARY MINERALS: [✓ MAGNETITE]

PERCENTAGE:	%	PERCENTAGE:	7 %	%
GRAIN SIZE:	mm	GRAIN SIZE:	0.1 mm	mm

ROCK ALTERATION: AMPHIBOLE CONVERTED (PARTLY ?) TO CHLORITE

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES:

PROBABLE FORMATION NICOLA AGE: uTR

APPROXIMATE FIELD NAME: GREY PORPHYRITIC (AMPHIBOLE) ANDESITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I - 23

SAMPLE REFERENCE NUMBER: KN93W - 13, 17B+, 24, 25, 26 / -183, 68, OC1A DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: SEE FIG. 25 △13, ETC

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BROWN GREEN COLOUR (FRESH): GREEN

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES:	GLASSY	[✓ APHANITIC]	[✓ FINE(S)]	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	80-90 %	10-20 %	%	%	%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ 4] SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: %

FELDSPARS: TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE	
PERCENTAGE:	%	%	? %	OCCASSIONAL PHENOCRYSTS
GRAIN SIZE:	mm	mm	<1 mm	
COLOUR:			TRANS,	
STRUCTURE:			STRIATIONS	

FERROMAGNESIANS: TYPES:	AMPHIBOLES	PYROXENES		
PERCENTAGE:	10-20 %	%	%	%
GRAIN SIZE:	<1 TO 3 mm	mm	mm	mm

QUARTZ PRESENT?: YES NO OTHER PRIMARY MINERALS:

PERCENTAGE: % PERCENTAGE: % %

GRAIN SIZE: mm GRAIN SIZE: mm mm

ROCK ALTERATION: ABUNDANT EPIDOTE BUT NEGLIGIBLE CALCITE.
AMPHIBOLES CONVERTED TO CHLORITE

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: MINOR SULFIDES IN 24

PROBABLE FORMATION NICOLA AGE: u$\overline{\text{R}}$

APPROXIMATE FIELD NAME: GREEN PORPHYRITIC (AMPHIBOLE) ANDESITE
(~~GREEN~~) (NON CALCITIC)

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I -24

SAMPLE REFERENCE NUMBER: KN93W-102A DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: EAST SIDE NED ROBERTS LAKE, MIDDLE SWAMPY SECTION TO WEST, FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED BROWN COLOUR (FRESH): LIGHT GREEN

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

	GLASSY	APHANITIC	FINE(S)	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZES:	GLASSY	[✓ APHANITIC]	[✓ FINE(S)]	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	85-95 %	5-15 %	%	%	%

ROCK TYPE: ? [✓ PLUTONIC] [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5) 4] SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: DISSEMINATED

TOTAL PERCENTAGE DARK MINERALS: 1-5 %

FELDSPARS:			
TYPES:	[✓ TOTAL]	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	5-15 %	%	%
GRAIN SIZE:	<1 mm	mm	mm
COLOUR:	WHITE		
STRUCTURE:	RECT. XTALS		

FERROMAGNESIANS:				
TYPES:	[✓ AMPHIBOLES]	PYROXENES	CHLORITE	
PERCENTAGE:	MINOR %	%	MOST %	%
GRAIN SIZE:	<0.5 mm	mm	<0.2 mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS:

PERCENTAGE: % PERCENTAGE: % %

GRAIN SIZE: mm GRAIN SIZE: mm mm

ROCK ALTERATION: CALCITE PRESENT; SOME VEINS. CLAY SMELL. FELDSPARS INDISTINCT + DO NOT SHOW MUCH CLEAVAGE. EPIDOTE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: LOOKS INTRUSIVE IN SPOTS. DYKE-LIKE / LAYERED,

PROBABLE FORMATION NICOLA AGE: u TR

APPROXIMATE FIELD NAME: GREEN PORPHYRITIC (FELDSPAR) ANDESITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I-25

SAMPLE REFERENCE NUMBER: K93W-AR-1, O.

DATE: JULY /93

SPECIFIC LOCATION OF SAMPLE: NE OF SALTWORT POND IN KWONG (1987) UJN MAP AREA, FIG. 7

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED REDDISH BROWN

COLOUR (FRESH): MED. GRAY

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES:	GLASSY	[✓ APHANITIC]	[✓ FINE(S)]	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	80-85 %	15-20 %	%	%	%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (>5)] SOFT (~3)

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: DISSEMINATED LOCATIONS

TOTAL PERCENTAGE DARK MINERALS: ? %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	15-20 %?	~~✓~~ %	→ PHENOCRYSTS
	GRAIN SIZE:	0.1-1 mm	✓ mm	mm
	COLOUR:	WHITE	✓	
	STRUCTURE:	RECT XTALS	TWINS	

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	? %	? ✓ %	%	%
	GRAIN SIZE:	mm	mm	mm	mm

QUARTZ PRESENT?:	YES [✓ NO]	OTHER PRIMARY MINERALS:	MAGNETITE	
PERCENTAGE:	? %	PERCENTAGE:	? %	%
GRAIN SIZE:	mm	GRAIN SIZE:	0.1 mm	mm

ROCK ALTERATION: SOME CALCITE AMYGDULES △ faces.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: SOME QZ AMYGDULES. SOME PYROXENE PHENOCRYSTS

PROBABLE FORMATION NICOLA (KWONG, 1987)

AGE: uTR

APPROXIMATE FIELD NAME: GREY PORPHYRITIC (FELDSPAR) ANDESITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-26

SAMPLE REFERENCE NUMBER: KN93W-700N, 107A, 123 ~~230, 122B, 104A~~ DATE: SEPT/93

PECIFIC LOCATION OF SAMPLE: 800 m N. OF W. END NED ROBERTS LAKE. STATION (A) OW, 700N ON OLD 1990 GRID { AND NORTH. FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED. REDDISH BROWN COLOUR (FRESH): MED GREY

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___% 80-85% 15-20% ___% ___% ___%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC ______

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ 4] SOFT (~3) ______

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: [✓ STRONG · WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE TO DISSEMINATED LOCATIONS

TOTAL PERCENTAGE DARK MINERALS: ___%

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	15-20 %	%	% → PHENOCRYSTS
	GRAIN SIZE:	0.1-1 mm	mm	mm
	COLOUR:	WHITE		
	STRUCTURE:	RECT XTALS		

FERROMAGNESIANS:	TYPES:	[✓ AMPHIBOLES]	[✓ PYROXENES] ← PARTLY CONVERTED TO CHLORITE		
	PERCENTAGE:	OCCASIONAL PHENOCRYSTS TO ~2%		%	%
	GRAIN SIZE:	mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS: MAGNETITE ______

PERCENTAGE: ___% PERCENTAGE: ? % ___%

GRAIN SIZE: ___mm GRAIN SIZE: 0.1 mm ___mm

ROCK ALTERATION: CALCITE PRESENT. SAMPLE 107 IS SATURATED WITH CALCITE, INCLUDING MANY AMYGDULES ~ 4mm OR LESS. THE FELDSPARS IN 122B ~~ARE~~ INDISTINCT + BROWNISH (ANKERITE?)

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR______ SAMPLE 700N SHOWS SOME DISTINCTLY MICRODIORITE SECTIONS.

OTHER FEATURES: SAME AS K93W-AR1. OCCASSIONAL BRECCIA FRAGMENTS, SOME REDDISH (HEMATITE?), PARTICULARILY SAMPLES 107, 2300, 104A

PROBABLE FORMATION NICOLA AGE: uTr

APPROXIMATE FIELD NAME: GREY PORPHRYTIC (FELDSPAR) ANDESITE

(TO MICRODIORITE?)

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I-27

SAMPLE REFERENCE NUMBER: KN93W-8, 14, 184

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: SEE FIG 25, Δ8, Δ14, Δ184

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MOTTLED GREEN

COLOUR (FRESH): LIGHT GREEN

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

	GLASSY	APHANITIC	FINE(S)	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZES:		✓	✓			
GRAIN SIZE PERCENTAGES:	%	75 %	25 %	%	%	%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ 4] SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: 5-20 %

[✓ FELDSPARS]	[✓ TOTAL]	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	15 %	%	%
GRAIN SIZE:	<0.5 mm	mm	mm
COLOUR:			
STRUCTURE:			

FERROMAGNESIANS: TYPES:	[✓ AMPHIBOLES]	[✓ PYROXENES]		
PERCENTAGE:	✓ 5-20%	✓ %	%	%
GRAIN SIZE:	<1 mm	<1 mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO]

PERCENTAGE: %

GRAIN SIZE: mm

OTHER PRIMARY MINERALS:

PERCENTAGE: % %

GRAIN SIZE: mm mm

ROCK ALTERATION: NO CALCITE; ONLY EPIDOTE MATRIX.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: SOME DISSEMINATED PYRITE PRESENT IN 14 + 184.
CHALCOPYRITE PRESENT IN 184.

PROBABLE FORMATION: NICOLA

AGE: uTR

APPROXIMATE FIELD NAME: GREEN PORPHYRITIC (FELDSPAR, AMPHIBOLE, PYROXENE) ANDESITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-28

SAMPLE REFERENCE NUMBER: KN93W-137 DATE: AUG/93

SPECIFIC LOCATION OF SAMPLE: Δ137, 1800N, 500E, OLD 1990 GRID FIG.25.

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED. RUSTY ORANGE COLOUR (FRESH): DARK GREY/BLACK.

TEXTURE: GLASSY APHANITIC CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES:	GLASSY	APHANITIC	FINE(S)	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	70-80 %	20-30 %	%	%	%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC INTERMEDIATE [✓ MAFIC] ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ 4] SOFT (~3)

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: PERVASIVE

HCl REACTION: [✓ STRONG] [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: NEAR VEINS DISS. FERROMAG PHENOCRYSTS

TOTAL PERCENTAGE DARK MINERALS: 5-10 %

FELDSPARS: TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	15-20 %	%	~ %
GRAIN SIZE:	<0.5 mm	mm	mm
COLOUR:	DARK GREY, TRANSLUCENT		
STRUCTURE:	RECT. XTALS GOOD CLEAVAGE		

FERROMAGNESIANS: TYPES:	AMPHIBOLES	PYROXENES		
PERCENTAGE:	5-10 %	? %	%	%
GRAIN SIZE:	<1 mm	mm	mm	mm

QUARTZ PRESENT?: YES NO OTHER PRIMARY MINERALS: [✓ MAGNETITE]

PERCENTAGE:	%	PERCENTAGE:	? %	%
GRAIN SIZE:	mm	GRAIN SIZE:	? mm	mm

ROCK ALTERATION: FELDSPAR XTALS ARE ZONED. AMPHIBOLE AT LEAST PARTIALLY CONVERTED TO CHLORITE. CALCITE COMMON. CALCITE VEIN WITH SIDERITE WALL CONTACTS

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: VERY GLASSY APPEARANCE, MATRIX VERY FINE GRAINED.

PROBABLE FORMATION NICOLA. AGE: uTR

APPROXIMATE FIELD NAME: BLACK FELDSPAR-AMPHIBOLE PORPHYRY

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I -29

SAMPLE REFERENCE NUMBER: K93W-0-1

DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: NW OF SALTWORT POND, DYKE ROCKS IN CHERRY CR. ROCKS, FIG.7

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BROWNISH BLACK

COLOUR (FRESH): DARK GREENISH GREY

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___% 70 % 30 % ___% ___% ___%

ROCK TYPE: [✓ PLUTONIC] [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] [✓ MAFIC] ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

ROCK MAGNETISM: [✓ STRONG] WEAK NOT MAGNETIC

IF MAGNETIC, GIVE PATTERN: UNIFORM

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: 10 %

FELDSPARS:	TYPES:	TOTAL	[✓ K-FELDSPAR]	PLAGIOCLASE
	PERCENTAGE:	25 %	✓ %	✓ % ?
	GRAIN SIZE:	0.2-1 mm	0.2-1 mm	✓ mm
	COLOUR:	WHITE	WHITE	WHITE
	STRUCTURE:	RECT. XTALS	TWINS	STRIATIONS ?

FERROMAGNESIANS:	TYPES:	[✓ AMPHIBOLES]	[✓ PYROXENES]		
	PERCENTAGE:	~5 %	~5 %	%	%
	GRAIN SIZE:	0.2-0.5 mm	0.2-0.5 mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO]

PERCENTAGE: ___%

GRAIN SIZE: ___mm

OTHER PRIMARY MINERALS: [✓ MAGNETITE]

PERCENTAGE: ? % ___%

GRAIN SIZE: 0.1 mm ___mm

ROCK ALTERATION: MINOR FERROMAGNESIAN CONVERSION TO CHLORITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: FELDSPAR XTALS SHOW SOME FLOW BAND ORIENTATION

PROBABLE FORMATION NICOLA

AGE: U TR

APPROXIMATE FIELD NAME: GREY FELDSPAR-AMPHIBOLE-PYROXENE PORPHYRY

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I - 30

SAMPLE REFERENCE NUMBER: KN93W-21A. DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: SEE FIG. 25., △21

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT GREEN COLOUR (FRESH): LIGHT GREEN

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES:	GLASSY	APHANITIC	FINE(S)	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	70 %	30 %	%	%	%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: [✓ FELSIC] INTERMEDIATE MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] 4 SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: ~0 %

FELDSPARS:	TYPES:	TOTAL	[✓ K-FELDSPAR]	[✓ PLAGIOCLASE]	MANY PHENO-CRYSTS
	PERCENTAGE:	30 %+	← MOST %	✓ %	
	GRAIN SIZE:	<2 mm	mm	mm	
	COLOUR:	WHITE	TO CLEAR	←	
	STRUCTURE:	RECT. XTALS	TWINS	STRIATIONS	

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	%	%	%	%
	GRAIN SIZE:	mm	mm	mm	mm

QUARTZ PRESENT?: [✓ YES] NO OTHER PRIMARY MINERALS: FELDSPATHOID.

PERCENTAGE: MINOR % VEINLETS PERCENTAGE: 5 % %

GRAIN SIZE: 7 mm GRAIN SIZE: 5 mm mm

FLAT MILKY MASS HARD (>5)

ROCK ALTERATION: EPIDOTE MATRIX ~70%?

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: TRACE OF PYRITE, SOME CHALCOPYRITE?

PROBABLE FORMATION NICOLA AGE: uTr

APPROXIMATE FIELD NAME: FELSIC FELDSPAR PORPHYRY

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-31

SAMPLE REFERENCE NUMBER: KN93W-20B DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: ⚠20; ROCK EXPOSED UNDER TREE ROOTS IN TWO LOCATIONS, FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT BROWN COLOUR (FRESH): WHITE

TEXTURE: GLASSY [✓ APHANITIC] CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

	GLASSY	APHANITIC	FINE(S)	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZES:						
GRAIN SIZE PERCENTAGES:	%	>99 %	<1 %	%	%	%

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: [✓ FELSIC] INTERMEDIATE MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] 4 SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: 0 %

FELDSPARS: TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	? %	%	%
GRAIN SIZE:	mm	mm	mm
COLOUR:			
STRUCTURE:			

GRAIN SIZE TOO SMALL. SOME CLEAVAGE FACES SEEN (<0.1MM)

FERROMAGNESIANS: TYPES:	AMPHIBOLES	PYROXENES		
PERCENTAGE:	? %	? %	%	%
GRAIN SIZE:	mm	mm	mm	mm

QUARTZ PRESENT?: [✓ YES] NO OTHER PRIMARY MINERALS:

PERCENTAGE: OCCASIONAL LARGE GRAIN PERCENTAGE: % %

GRAIN SIZE: 0.2-1 mm (QUARTZ EYE ?) GRAIN SIZE: mm mm

ROCK ALTERATION: SLIGHT CLAY SMELL. CONTACT OF FELSIC FELDSPAR PORPHYRY WITH PORPHYRITIC ANDESITE? NOT LIKELY AN ALTERATION ZONE SINCE NO RELIC STRUCTURE CAN BE SEEN.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: STRUCTURE, EXTENT, & SIGNIFICANCE NOT KNOWN. NEEDS FURTHER INVESTIGATION.

PROBABLE FORMATION NICOLA ? AGE: uTR

APPROXIMATE FIELD NAME: QUARTZ EYE RHYOLITE

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I -32

SAMPLE REFERENCE NUMBER: KXE90W - B-1

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: AIRPORT QUARRY, NORTH OF THOMPSON RIVER (KWONG, 1987, MAP - FIG. 7)

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): RUSTY, DARK GREEN

COLOUR (FRESH): BRIGHT TO DARK GREEN

TEXTURE: GLASSY [✓ APHANITIC] CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES:	GLASSY	[✓ APHANITIC]	FINE(S)	MEDIUM	COARSE(P)	V. COARSE
GRAIN SIZE PERCENTAGES:	%	100 %	%	%	%	%

ROCK TYPE: PLUTONIC VOLCANIC FLOW [✓ PYROCLASTIC] [✓ TUFFS]

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

ROCK MAGNETISM: STRONG WEEK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE, AND ON FRACTURES

TOTAL PERCENTAGE DARK MINERALS: ? %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE	
	PERCENTAGE:	? %	%	%	
	GRAIN SIZE:	mm	mm	mm	
	COLOUR:				
	STRUCTURE:				

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	? %	? %	%	%
	GRAIN SIZE:	mm	mm	mm	mm

QUARTZ PRESENT?:	YES NO	OTHER PRIMARY MINERALS:		
PERCENTAGE:	%	PERCENTAGE:	%	%
GRAIN SIZE:	mm	GRAIN SIZE:	mm	mm

ROCK ALTERATION: ABUNDANT CALCITE & EPIDOTE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: TRACE OF DISSEMINATED SULFIDES

PROBABLE FORMATION NICOLA

AGE: uTR

APPROXIMATE FIELD NAME: GREEN ASH TUFF

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: I-33

SAMPLE REFERENCE NUMBER: KN93 W-102C

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: EAST SIDE OF NED ROBERTS LAKE, MIDDLE SWAMPY PART TO WEST. FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: R. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED BROWN

COLOUR (FRESH): LIGHT GREEN

TEXTURE: GLASSY [✓ APHANITIC] CLASTIC PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___ % 100 % ___ % ___ % ___ % ___ %

ROCK TYPE: PLUTONIC VOLCANIC FLOW [✓ PYROCLASTIC]

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] 4 SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE

TOTAL PERCENTAGE DARK MINERALS: — %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	~ %	%	%
	GRAIN SIZE:	mm	mm	mm
	COLOUR:			
	STRUCTURE:			

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	%	%	%	%
	GRAIN SIZE:	mm	mm	mm	mm

QUARTZ PRESENT?: YES NO

PERCENTAGE: ___ %

GRAIN SIZE: ___ mm

OTHER PRIMARY MINERALS:

PERCENTAGE: ___ % ___ %

GRAIN SIZE: ___ mm ___ mm

ROCK ALTERATION: CALCITE PRESENT.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: DYKE-LIKE, LAYERED. 2-3 mm LAPILLI (CLASTS) WITH IMPACT CRATERS. 0.2mm LIGHTER GREEN ASH BANDS

PROBABLE FORMATION: NICOLA

AGE: uTR

APPROXIMATE FIELD NAME: (GREEN) LAPILLI ASH FALL TUFF

IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: I-34

SAMPLE REFERENCE NUMBER: KN93W-182 DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: 100M SW OF LCP (182). E. SIDE OF NED ROBERTS LAKE (102C), FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT TO MED. BROWN COLOUR (FRESH): LIGHT GREY

TEXTURE: GLASSY APHANITIC [✓ CLASTIC] PORPHYRITIC GRANULAR PEGMATITIC

GRAIN SIZES: [✓ GLASSY] [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ? % ? % ____% ____% ____% ____%

ROCK TYPE: PLUTONIC VOLCANIC FLOW [✓ PYROCLASTIC]

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) 4 [✓ SOFT (~3)]

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: [✓ STRONG WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE

TOTAL PERCENTAGE DARK MINERALS: ~0 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	? %	%	%
	GRAIN SIZE:	mm	mm	mm
	COLOUR:			
	STRUCTURE:			

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	? %	? %	%	%
	GRAIN SIZE:	mm	mm	mm	mm

QUARTZ PRESENT?: YES NO OTHER PRIMARY MINERALS: PYRITE

PERCENTAGE: ____% PERCENTAGE: 0.05 %? ____%

GRAIN SIZE: ____mm GRAIN SIZE: ~0.05 mm ____mm

ROCK ALTERATION: SOME EPITHERMAL ALTERATION PRESENT (CALCITE / DOLOMITE & SIDERITE)

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: DISSEM. GRAINS OF PYRITE (IN 182.) SOME GLASS(?) SHARD UP TO ~1CM (in 182). SOME LAYERING. IN BOTH.

PROBABLE FORMATION NICOLA AGE: uTR

APPROXIMATE FIELD NAME: GREY SANDY TUFF

METAMORPHIC ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: M -1

SAMPLE REFERENCE NUMBER: KN93W-0C1 D, 18

DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: OUTCROP Δ1. FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT GREEN

COLOUR (FRESH): MED GREEN

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

ROCK TEXTURE: [✓ FOLIATED] NON-FOLIATED

IF FOLIATED: [✓ APHANITIC] VERY FINE-GRAINED FINE TO MEDIUM AND COARSE

IF FOLIATED: [✓ ORIENTED PLATY MINERALS] ORIENTED NEEDLE-LIKE/OR BLADED CRYSTALS MINERALS SEGREGATED INTO LAYERS

IF NON-FOLIATED: APHANITIC GRANULAR GRANOBLASTIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK CLEAVAGE: NONE FAIR [✓ GOOD]

ROCK HARDNESS: HARD (≥5) [✓ SOFT (~3)]

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE

OVERALL MINERALOGY: [✓ MULTI-MINERALIC] MONO-MINERALIC

MINERALS:	CHLORITE	SERICITE?	FELDSPARS?		
PERCENTAGE:	? %	? %	? %	%	%
GRAIN SIZE:	? mm	<0.1 mm	? mm	mm	mm

ROCK ALTERATION: CALCITE COMMON

IS THERE AN ALTERED ROCK SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: ADJACENT TO A SHEAR ZONE

PROBABLE FORMATION NICOLA

AGE: uTR

APPROXIMATE FIELD NAME: CHLORITE-SERICITE MYLONITE

METAMORPHIC ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: M -2

SAMPLE REFERENCE NUMBER: KN93W-OC1 B

DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: OUTCROP A1, FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BROWNISH WHITE

COLOUR (FRESH): LIGHT GREY

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

ROCK TEXTURE: [✓ FOLIATED] NON-FOLIATED ✓ PORPHYROBLASTS

IF FOLIATED: [✓ APHANITIC] VERY FINE-GRAINED [✓ FINE TO] MEDIUM AND COARSE

IF FOLIATED: [✓ ORIENTED PLATY MINERALS] ORIENTED NEEDLE-LIKE/OR BLADED CRYSTALS MINERALS SEGREGATED INTO LAYERS

IF NON-FOLIATED: APHANITIC GRANULAR GRANOBLASTIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK CLEAVAGE: NONE FAIR [✓ GOOD]

ROCK HARDNESS: HARD (≥5) [✓ SOFT (~3)]

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE

OVERALL MINERALOGY: [✓ MULTI-MINERALIC] MONO-MINERALIC

MINERALS:	QUARTZ	FELDSPARS(?)	SERICITE?		
PERCENTAGE:	OCCASIONAL PORPHYOBLASTS %	? %	LARGE %?	%	%
GRAIN SIZE:	0.5-2 mm	? mm	<0.1 mm	mm	mm

ROCK ALTERATION: CALCITE COMMON

IS THERE AN ALTERED ROCK SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: DISSEMINATE, RUSTED, SULFIDE GRAINS. ADJACENT TO A SHEAR ZONE

PROBABLE FORMATION NICOLA

AGE: uTR

APPROXIMATE FIELD NAME: META - RHYOLITE

METAMORPHIC ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: M - 3

SAMPLE REFERENCE NUMBER: KN93W -100, 193 DATE: JULY/93

SPECIFIC LOCATION OF SAMPLE: EAST SIDE OF NED ROBERTS LAKE. (100) . NORTH SIDE OF NED ROBERTS LAKE, WEST END (193). FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED BROWN COLOUR (FRESH): MED. GREEN

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

ROCK TEXTURE: [✓ FOLIATED] NON-FOLIATED

IF FOLIATED: [✓ APHANITIC] VERY FINE-GRAINED [✓ FINE] TO MEDIUM AND COARSE

IF FOLIATED: [✓ ORIENTED PLATY MINERALS] ORIENTED NEEDLE-LIKE/OR BLADED CRYSTALS MINERALS SEGREGATED INTO LAYERS

IF NON-FOLIATED: APHANITIC GRANULAR GRANOBLASTIC

ROCK STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

ROCK CLEAVAGE: NONE FAIR [✓ GOOD]

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: FRACTURE FACES, DISSEMINATED

OVERALL MINERALOGY: [✓ MULTI-MINERALIC] MONO-MINERALIC

MINERALS:	CHLORITE	FELDSPARS	EPIDOTE	PYROXENE	AMPHIBOLE
PERCENTAGE:	ACU >15 % MASSES	? %	? %	← % →	OCCASIONAL PHENOCRYST
GRAIN SIZE:	< 1 mm	? mm	? mm	< 1 mm	< 1 mm

ROCK ALTERATION: CALCITE PRESENT.

IS THERE AN ALTERED ROCK SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: FOLIATION APPEARS TO BE THE RESULT OF SHEARING, WITH LITTLE ALTERATION, EXCEPT CHLORITE IS MORE ABUNDANT, AND FELDSPARS(?) ARE ROUNDED & ELONGATED

PROBABLE FORMATION NICOLA. AGE: uTR

APPROXIMATE FIELD NAME: META-PORPHYRITIC ANDESITE

MINERALIZED IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: MI -1

SAMPLE REFERENCE NUMBER: KN93N - 194

DATE: SEPT 1993

SPECIFIC LOCATION OF SAMPLE: △194, SW SIDE/END OF NED ROBERTS LAKE. FIG. 25

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BROWN/GREEN

COLOUR (FRESH): MED TO LIGHT GREEN.

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PROPHYRITIC] GRANULAR PEGMATITIC

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (>5)] SOFT (~3)

HCl REACTION: [✓ STRONG] [✓ WEAK] POWDER ONLY [✓ NONE] — MOST PIECES

IF HCl YES, GIVE PATTERN: ON SOME FRACTURE FACES SOME DISSEMINATED.

TOTAL PERCENTAGE DARK MINERALS: ____ %

FELDSPARS:	TYPES:	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	? %	%
	GRAIN SIZE:	mm	mm
	COLOUR:	CLEAR	
	STRUCTURE:	LONG XTALS	

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	5-15 % ⊛	%	%	%
	GRAIN SIZE:	<0.5 mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO]

PERCENTAGE: ____ %

GRAIN SIZE: ____ mm

OTHER PRIMARY MINERALS:

PERCENTAGE: ____ % ____ %

GRAIN SIZE: ____ mm ____ mm

ROCK ALTERATION: ABUNDANT EPIDOTE, SOME CALCITE. ⊛ AMPHIBOLES CONVERTED TO CHLORITE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES NO

IF YES, GIVE PAGE: AR

OTHER MINERALIZATION:	[✓ PYRITE]		[✓ ? CHALCOPYRITE]	[✓ ? SPECULAR HEMATITE]
PERCENTAGE:	FEW % (ONE LOCATION)		MINOR %	MINOR
GRAIN SIZE:	0.2 mm	mm	0.2 mm	mm
GRAIN SHAPE:	ONE STRIATED CUBE MOST IRREGULAR		IRREGULAR MASS	PRESENT IN VEINLETS +DISSEM. GRAINS.

OTHER FEATURES: NOT. MAGNETIC. SOMEWHAT BRECCIATED.

PROBABLE FORMATION NICOLA

AGE: UK

APPROXIMATE FIELD NAME: GREEN PORPHYRITIC (AMPHIBOLE) ANDESITE

MINERALIZED IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: MI - 2

SAMPLE REFERENCE NUMBER: KN93W - 188B

DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: △188, SW OF NED ROBERTS LAKE FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT RUSTY BROWN

COLOUR (FRESH): DARK GREEN

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: ___ % 20-75 % 80-25 % ___ % ___ % ___ %

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC ___

ROCK CLASS: FELSIC [✓ INTERMEDIATE MAFIC] ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5) 4] SOFT (~3) ___

ROCK MAGNETISM: [✓ STRONG] WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN: [✓ ON DARK SIDE] ON LIGHT GREEN SIDE

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN: [✓ PERVASIVE ON LIGHT GREEN SIDE]

TOTAL PERCENTAGE DARK MINERALS: [✓ 80] % TO 25%

FELDSPARS: TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	%	%	%
GRAIN SIZE:	mm	mm	mm
COLOUR:			
STRUCTURE:			

FERROMAGNESIANS: TYPES:	AMPHIBOLES	PYROXENES		
PERCENTAGE:	? % ⊛	? %	%	%
GRAIN SIZE:	<0.5 mm	<0.5 mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO]

PERCENTAGE: ___ %

GRAIN SIZE: ___ mm

OTHER PRIMARY MINERALS: ___ ___

PERCENTAGE: ___ % ___ %

GRAIN SIZE: ___ mm ___ mm

ROCK ALTERATION: FERROMAG. CONVERTED TO CHLORITE. EPIDOTE & CALCITE COMMON ON GREEN SIDE, NOT ON DARK SIDE.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER MINERALIZATION:	[✓ MAGNETITE]	[✓ PYRITE]			
PERCENTAGE:	? %	? %	%	%	%
GRAIN SIZE:	? mm	<0.1 mm	mm	mm	mm
GRAIN SHAPE:	?	ROUNDED			

OTHER FEATURES: THE DARK SIDE APPEARS TO BE A SEAM/DYKE/FLOW BAND?

PROBABLE FORMATION: NICOLA

AGE: uTr

APPROXIMATE FIELD NAME: GREEN PORPHYRITIC (AMPHIBOLE) PORPHYRY

MINERALIZED IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: MI - 3

SAMPLE REFERENCE NUMBER: KN93W-188C DATE: SEPT/88

SPECIFIC LOCATION OF SAMPLE: △188, SW OF NED ROBERTS LK. FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: R WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT BROWN COLOUR (FRESH): MED GREEN

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] GRANULAR PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: % 80-90 % 10-20 % % % %

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] 4 SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: DISSEMINATED

TOTAL PERCENTAGE DARK MINERALS: 10-20 %

FELDSPARS:	TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	%	%	%
	GRAIN SIZE:	mm	mm	mm
	COLOUR:			
	STRUCTURE:			

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	10-20 %	%	%	%
	GRAIN SIZE:	<1 mm	mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS:

PERCENTAGE: % PERCENTAGE: % %

GRAIN SIZE: mm GRAIN SIZE: mm mm

ROCK ALTERATION: CALCITE, EPIDOTE & CHLORITE COMMON.

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER MINERALIZATION:	PYRITE				
PERCENTAGE:	(*) %	%	%	%	%
GRAIN SIZE:	<.05 mm	mm	mm	mm	mm
GRAIN SHAPE:	DISSEMINATED				

OTHER FEATURES: (*) FINELY DISSEM. PYRITE THROUGHOUT. ONE 2.5 X 0.5 CM MASS OF FINE PYRITE CRYSTALS AS AN INCLUSION.

PROBABLE FORMATION NICOLA AGE: uTr

APPROXIMATE FIELD NAME: GREEN, PORPHYRITIC (AMPHIBOLE) ANDESITE

MINERALIZED IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: MI -4

SAMPLE REFERENCE NUMBER: KN93W-21B DATE: SEPT

SPECIFIC LOCATION OF SAMPLE: SEE FIG.25. ▲21B

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): MED BROWN COLOUR (FRESH): MED. GREEN

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PORPHYRITIC] [✓ GRANULAR] PEGMATITIC

GRAIN SIZES: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

GRAIN SIZE PERCENTAGES: __ % 40 % 60 % __ % __ % __ %

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: FELSIC INTERMEDIATE MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) [✓ 4] SOFT (~3)

ROCK MAGNETISM: STRONG WEAK [✓ NOT MAGNETIC]

IF MAGNETIC, GIVE PATTERN:

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: ON FRACTURE FACE WITH PYRITE

TOTAL PERCENTAGE DARK MINERALS: 5-10 %

FELDSPARS: TYPES:	TOTAL	K-FELDSPAR	PLAGIOCLASE	
PERCENTAGE:	✓ %	%	%	ONLY AN OCCASSIONAL FELDSPAR PHENOCRYST
GRAIN SIZE:	0.4 mm	mm	mm	
COLOUR:	CLEAR			
STRUCTURE:	RECT XTALS			

FERROMAGNESIANS: TYPES:	AMPHIBOLES	PYROXENES	EPIDOTE	CHLORITE
PERCENTAGE:	✓ %	%	40 % ?	5-10 % ?
GRAIN SIZE:	0.4 mm	mm	0.4 mm	0.4 mm

QUARTZ PRESENT?: YES NO OTHER PRIMARY MINERALS: FELDSPATHOID?

PERCENTAGE: __ % PERCENTAGE: ? % __ %

GRAIN SIZE: __ mm GRAIN SIZE: 2 mm __ mm

ROCK ALTERATION: EPIDOTE IS COMMON AS IRREGULAR MASSES, BUT HAVING A SOMEWHAT CRYSTALLINE APPEARANCE,

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES NO

IF YES, GIVE PAGE: AR

OTHER MINERALIZATION:	PYRITE	CHALCOPYRITE			
PERCENTAGE:	UP TO 5 %	MINOR %	%	%	%
GRAIN SIZE:	<0.2 mm	<0.1 mm	mm	mm	mm
GRAIN SHAPE:	DISSEM & STRIATED CUBES				

OTHER FEATURES: PYRITE DISSEM IN ROCK MASS, CONCENTRATED ON FRACTURE FACE. ROCK MAY BE A RECRYSTALLIZED CONTACT BETWEEN THE

PROBABLE FORMATION FELSIC FELDSPAR PORPHYRY AND PORPHYRITIC ANDESITE AGE: uTr.

APPROXIMATE FIELD NAME: GREEN PORPHYRITIC ANDESITE

MINERALIZED IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: MI - 5

SAMPLE REFERENCE NUMBER: KN93W-6B. DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: △6, FIG. 25.

SAMPLE MODE: [✓ IN SITU] ? [✓ FLOAT] ? SAMPLER: B. WHITTLES.

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): LIGHT BROWN COLOUR (FRESH): LIGHT GREEN

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PROPHYRITIC] GRANULAR PEGMATITIC

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC

ROCK CLASS: [✓ FELSIC] INTERMEDIATE MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] SOFT (~3)

HCl REACTION: STRONG [✓ WEAK] POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: ONLY IN ONE VEINLET

TOTAL PERCENTAGE DARK MINERALS: 5 %

FELDSPARS:

TYPES:	K-FELDSPAR	PLAGIOCLASE
PERCENTAGE:	30 % ←	? %
GRAIN SIZE:	0.5-2 mm	mm
COLOUR:	WHITE TO	
STRUCTURE:		

FERROMAGNESIANS:

TYPES:	AMPHIBOLES	PYROXENES		
PERCENTAGE:	5 % ←	? %	%	%
GRAIN SIZE:	0.1-0.5 mm	mm	mm	mm

QUARTZ PRESENT?: YES (?) NO

PERCENTAGE: %

GRAIN SIZE: mm

OTHER PRIMARY MINERALS:

PERCENTAGE: % %

GRAIN SIZE: mm mm

ROCK ALTERATION: FELDSPARS ZONED; WHITE (ALBITIZATION?) ON OUTSIDE, TRANSPARENT INSIDE IN SOME LOCATIONS. FERROMAGNESIANS CONVERTED PARTIALLY TO CHLORITE

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER MINERALIZATION:

	[✓ PYRITE]			[✓ MAGNETITE]	
PERCENTAGE:	few %	%	%	? %	%
GRAIN SIZE:	0.1 mm	mm	mm	? mm	mm
GRAIN SHAPE:	CUBES IN THIN 2mm BAND				

HER FEATURES: WEAKLY MAGNETIC. FELDSPAR CRYSTALS ARE ALIGNED. SIMILIAR TO ~21A

PROBABLE FORMATION NICOLA AGE: uTR

APPROXIMATE FIELD NAME: FELSIC FELDSPAR PORPHYRY

MINERALIZED IGNEOUS ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: MI – 6

MPLE REFERENCE NUMBER: KMI90C – 1 DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: NORTH OF WALKER LAKE, MENIKA PROPERTY. FIG. 5.

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: C. BOUTARD (MAY, 1990)

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): RUSTY COLOUR (FRESH): MED GREENISH GREY

DOMINANT GRAIN SIZE: GLASSY [✓ APHANITIC] [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

TEXTURE: GLASSY APHANITIC CLASTIC [✓ PROPHYRITIC] GRANULAR PEGMATITIC

ROCK TYPE: PLUTONIC [✓ VOLCANIC FLOW] PYROCLASTIC SOME BRECCIATION

ROCK CLASS: FELSIC [✓ INTERMEDIATE] MAFIC ULTRA-MAFIC

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN:

TOTAL PERCENTAGE DARK MINERALS: 15 %

FELDSPARS:	TYPES:	K-FELDSPAR	PLAGIOCLASE
	PERCENTAGE:	? %	%
	GRAIN SIZE:	mm	mm
	COLOUR:		
	STRUCTURE:		

PHENOCRYSTS

FERROMAGNESIANS:	TYPES:	AMPHIBOLES	PYROXENES		
	PERCENTAGE:	%	15 %	%	%
	GRAIN SIZE:	mm	0.2–2 mm	mm	mm

QUARTZ PRESENT?: YES [✓ NO] OTHER PRIMARY MINERALS:

PERCENTAGE: % PERCENTAGE: % %

GRAIN SIZE: mm GRAIN SIZE: mm mm

ROCK ALTERATION:

IS THERE AN ALTERED ROCK SAMPLE SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER MINERALIZATION:	PYRITE?				
PERCENTAGE:	3 %	%	%	%	%
GRAIN SIZE:	0.1 mm	mm	mm	mm	mm
GRAIN SHAPE:	⊗				

HER FEATURES: NOT MAGNETIC. → ⊗ SULFIDES IN CLUSTER UP TO 4MM IN SIZE, UP TO 10% BRECCIATED GREY, WHITE, AND BROWN CLASTS

PROBABLE FORMATION NICOLA AGE: uTr

APPROXIMATE FIELD NAME: GREY PORPHYRITIC (PYROXENE) FLOW BRECCIA.

MINERALIZED SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: MIN - 1

SAMPLE REFERENCE NUMBER: KN93W - 124, 141 DATE: SEPT/93

SPECIFIC LOCATION OF SAMPLE: SEE FIG: 25,

SAMPLE MODE: [✓ IN SITU] [✓ FLOAT] SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BLUE/GREEN/BROWN COLOUR (FRESH): ←

OVERALL GRAIN SIZE: GLASSY [✓ APHANITIC] FINE(S) MEDIUM COARSE(P) V. COARSE

SAMPLE SIZE: LARGE

ASSOCIATED ROCK TYPE: [✓ (IGNEOUS) INTRUSIVE] (IGNEOUS) EXTRUSIVE SEDIMENTARY METAMORPHIC

SAMPLE STRENGTH: LOOSE FRIABLE [✓ WEAK] STRONG VERY STRONG

SAMPLE HARDNESS (MOHS): ~3

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: PERVASIVE ON AZURITE + MALACHITE

MINERALS PRESENT:	AZURITE	MALACITE		
AMOUNT:	<1%	<1%		
GRAIN SIZE:	? mm	? mm	mm	mm
GRAIN SHAPE:	POWDERY TO CRYSTALLINE			
OTHER PROPERTIES:	BLUE	GREEN		
MINERALS PRESENT:				
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
GRAIN SHAPE:				
OTHER PROPERTIES:		AZURITE + MALACHITE		

OTHER TESTS/OBSERVATIONS/PROPERTIES: OCCURS IN CAVITIES AND FRACTURE SURFACES IN CARBONATE ALTERATION ZONE, SOME CHALCEDONY PRESENT BUT NO SULFIDES. ONE ASSAY (WHITTLES, 1990) RETURNED 0.8% Cu

HAS A ROCK I.D. SHEET BEEN FILLED IN? YES [✓ NO]

IF YES, GIVE PAGE NUMBER: MI MS MM

HAS THIS SAMPLE BEEN ASSAYED? [✓ YES] NO 0.8% Cu.

ASSOCIATED ROCK FORMATION ALTERATION ZONE IN NICOLA AGE: J

APPROXIMATE FIELD NAME: COPPER CARBONATE MINERALIZATION

MINERALIZED SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS   PAGE: MIN -2

SAMPLE REFERENCE NUMBER: KN93W-OC2A   DATE: SEPT/93

CIFIC LOCATION OF SAMPLE: OUTCROP #2, SOUTH SIDE OF ROCHE MOUTONÉE. FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT   SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): WHITE   COLOUR (FRESH): WHITE

OVERALL GRAIN SIZE: GLASSY APHANITIC FINE(S) [✓ MEDIUM] COARSE(P) V. COARSE

SAMPLE SIZE: LOTS

ASSOCIATED ROCK TYPE: [✓ (IGNEOUS) INTRUSIVE] [✓ (IGNEOUS) EXTRUSIVE] SEDIMENTARY METAMORPHIC

SAMPLE STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

SAMPLE HARDNESS (MOHS): 3-7

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: NEAR WALL ROCK SELVAGE

MINERALS PRESENT:	QUARTZ	CALCITE	CHALCOPYRITE	MALACITE
AMOUNT:	MAJOR	MINOR	?	SURFACE STAIN
GRAIN SIZE:	? mm	? mm	UP TO 30 mm	– mm
GRAIN SHAPE:	MASSIVE	MASSIVE	MASSES	POWDER
OTHER PROPERTIES:	WHITE TO SMOKY			SECONDARY SOME MASSES
MINERALS PRESENT:	AZURITE	PYRITE?	?	LIMONITE HEMATITE
AMOUNT:	SURFACE STAIN	OCCASSIONAL MOLD	OCCASIONAL XTAL	MINOR SURFACE STAIN
GRAIN SIZE:	– mm	~3 mm	~3 mm	POWDER mm
GRAIN SHAPE:	POWDER	EMPTY CUBIC MOLD	ELONGATED XTALS	"
OTHER PROPERTIES:	SECONDARY	!	LIGHT BROWN HARD > 5	

OTHER TESTS/OBSERVATIONS/PROPERTIES: AZURITE + MALACHITE ARE SECONDARY MINERALS UNLIKE THOSE NORTH OF NED ROBERTS LAKE. ORIGINAL VEIN SOLUTIONS PROBABLY COAST INTRUSIONS; HOWEVER, ONE PIECE OF NEAR-MICRODIORITE WAS IN BAG. CHECK LATER.
ATTITUDE 240°-270°/45-60° R, UP TO 1 METER IN THICKNESS.

HAS A ROCK I.D. SHEET BEEN FILLED IN? YES [✓ NO]

IF YES, GIVE PAGE NUMBER: MI   MS   MM

AS THIS SAMPLE BEEN ASSAYED? YES [✓ NO]

SOCIATED ROCK FORMATION NICOLA (MICRODIORITE?)   AGE: J

APPROXIMATE FIELD NAME: MINERALIZED QUARTZ CARBONATE VEIN.

(4)

MINERALIZED SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS　　PAGE: MIN-3

SAMPLE REFERENCE NUMBER: KN93W-OC1-C　　DATE: JUNE/93

SPECIFIC LOCATION OF SAMPLE: OUTCROP #1, FIG. 25.

SAMPLE MODE: [✓ IN SITU] FLOAT　　SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): WHITE　　COLOUR (FRESH): WHITE

OVERALL GRAIN SIZE: GLASSY APHANITIC FINE(S) [✓ MEDIUM] COARSE(P) V. COARSE

SAMPLE SIZE: FIST

ASSOCIATED ROCK TYPE: [✓ (IGNEOUS) INTRUSIVE] [✓ (IGNEOUS) EXTRUSIVE] SEDIMENTARY METAMORPHIC

SAMPLE STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

SAMPLE HARDNESS (MOHS): 3 - 7

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: CALCITE LOCATIONS

MINERALS PRESENT:	QUARTZ	CALCITE	DOLOMITE	ANKERITE
AMOUNT:	50%?	?	?	?
GRAIN SIZE:	~5 mm	~5 mm	? mm	? mm
GRAIN SHAPE:	MASSIVE	←		
OTHER PROPERTIES:	SOME XTAL FACES	SOME CLEAVAGE FACES		
MINERALS PRESENT:	CHALCOPYRITE			
AMOUNT:	1 PIECE			
GRAIN SIZE:	2 mm	mm	mm	mm
GRAIN SHAPE:	MASS			
OTHER PROPERTIES:				

OTHER TESTS/OBSERVATIONS/PROPERTIES: QZ VEIN 5M LONG, 2-7CM WIDE. 020°/30 TO 70°R IN NICOLA VOLCANICS.

HAS A ROCK I.D. SHEET BEEN FILLED IN? [✓ YES] NO

IF YES, GIVE PAGE NUMBER: MI MS MM I-

S THIS SAMPLE BEEN ASSAYED? YES [✓ NO]

ASSOCIATED ROCK FORMATION NICOLA　　AGE: J?

APPROXIMATE FIELD NAME: QUARTZ CARBONATE VEIN. (+CHALCOPYRITE)

MINERALIZED SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: MIN -4

SAMPLE REFERENCE NUMBER: XN93W -18

DATE: AUG/93

SPECIFIC LOCATION OF SAMPLE: OLD MINE ?/PIT? at △18, IN 3-4m WIDE SHEAR ZONE THAT RUNS EAST/WEST ; AT FOOT OF 30m CLIFF, FIG.25.

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): WHITE

COLOUR (FRESH): WHITE

OVERALL GRAIN SIZE: GLASSY APHANITIC FINE(S) [✓ MEDIUM] COARSE(P) V. COARSE

SAMPLE SIZE: LARGE

ASSOCIATED ROCK TYPE: (IGNEOUS) INTRUSIVE [✓ (IGNEOUS) EXTRUSIVE] SEDIMENTARY METAMORPHIC

SAMPLE STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

SAMPLE HARDNESS (MOHS): 3 - 7

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: CALCITE LOCATIONS

MINERALS PRESENT:	[✓ QUARTZ]	[✓ CALCITE]	[✓ SERICITE]	[✓ ANCERITE]
AMOUNT:	MAJOR	MAJOR	MINOR	
GRAIN SIZE:	2 mm	2 mm	0.1 mm	? mm
GRAIN SHAPE:	MASSIVE	MASSIVE	BASAL FLAKES	POWDERY ?
OTHER PROPERTIES:				
MINERALS PRESENT:	[✓ CHLORITE]			[✓ HEMATITE]
AMOUNT:	MAJOR IN WALLROCK SELVAGE			STAIN SPECULAR?
GRAIN SIZE:	0.1 mm	mm	mm	0.2 mm
GRAIN SHAPE:	BASAL FLAKES			STAIN.
OTHER PROPERTIES:				RED.

OTHER TESTS/OBSERVATIONS/PROPERTIES: IN 3-4 M SHEAR ZONE, ACTUAL WIDTH OF VEIN UNCLEAR BECAUSE OF WEATHERING IN ZONE. GOOD ROCK SEVAGE . NO SULFIDES FOUND; CHANNEL SAMPLE AND ASSAY FOR GOLD Y SILVER AT SOME LATER TIME

HAS A ROCK I.D. SHEET BEEN FILLED IN? [✓ YES] NO

IF YES, GIVE PAGE NUMBER: MI MS MM M-

S THIS SAMPLE BEEN ASSAYED? YES [✓ NO]

ASSOCIATED ROCK FORMATION NICOLA / CHLORITE -SERICITE MYLONITE.

AGE: J?

APPROXIMATE FIELD NAME: QUARTZ - CARBONATE VEIN

MINERALIZED SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: MIN -5

SAMPLE REFERENCE NUMBER: KN93W - 13 DATE: MAY/93

ECIFIC LOCATION OF SAMPLE: △13 SEE FIG. 25.

SAMPLE MODE: IN SITU [✓ FLOAT] SAMPLER: B. WHITTLES.

(IF FLOAT): SPHERICITY: [✓ ANGULAR] SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): WHITE COLOUR (FRESH): WHITE

OVERALL GRAIN SIZE: GLASSY APHANITIC [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

SAMPLE SIZE: FIST-SIZED

ASSOCIATED ROCK TYPE: [✓ (IGNEOUS) INTRUSIVE] (IGNEOUS) EXTRUSIVE SEDIMENTARY METAMORPHIC

SAMPLE STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

SAMPLE HARDNESS (MOHS):

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES, GIVE PATTERN: CALCITE 1 VUG IN QZ

MINERALS PRESENT:	HEMATITE	CALCITE	QUARTZ	
AMOUNT:	MINOR	~1%	~99%	
GRAIN SIZE:	.2 mm	~10 mm	? mm	mm
GRAIN SHAPE:	FLAT FLAKES	RHOM XTALS?	MASSIVE	
OTHER PROPERTIES:	SPECULAR VARIETY	IN VUG.	VEIN DEPOSIT	
MINERALS PRESENT:				
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
GRAIN SHAPE:				
OTHER PROPERTIES:				

OTHER TESTS/OBSERVATIONS/PROPERTIES: TYPICAL OF THE NUMEROUS

HAS A ROCK I.D. SHEET BEEN FILLED IN? [✓ YES] NO

IF YES, GIVE PAGE NUMBER: MI MS MM I-

HAS THIS SAMPLE BEEN ASSAYED? YES [✓ NO]

ASSOCIATED ROCK FORMATION: NICOLA AGE: J?

APPROXIMATE FIELD NAME: QUARTZ - CARBONATE VEIN

MINERALIZED SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: MIN -6

SAMPLE REFERENCE NUMBER: KN93-W – 17 + 300m, ,15 ,8B, 19+70N DATE: ____

SPECIFIC LOCATION OF SAMPLE: △ 17A + 300, 450, 500, △ 19 + 70N, FIG. 25.

SAMPLE MODE: IN SITU [✓ FLOAT] SAMPLER: G. WHITTLES

(IF FLOAT): SPHERICITY: [✓ ANGULAR] SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): BLACK TO WHITE COLOUR (FRESH): WHITE

OVERALL GRAIN SIZE: GLASSY APHANITIC [✓ FINE(S)] MEDIUM COARSE(P) V. COARSE

SAMPLE SIZE: 5cm X 3cm x 2cm.

ASSOCIATED ROCK TYPE: [✓ (IGNEOUS) INTRUSIVE] (IGNEOUS) EXTRUSIVE SEDIMENTARY METAMORPHIC

SAMPLE STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

SAMPLE HARDNESS (MOHS): ____

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES, GIVE PATTERN: ____

MINERALS PRESENT:	QUARTZ	HEMATITE		
AMOUNT:	~100%	MINOR		
GRAIN SIZE:	? mm	0.2 mm	mm	mm
GRAIN SHAPE:	MASSIVE.	↓		
OTHER PROPERTIES:	VEIN DEPOSIT	RED STAIN SPECULAR		
MINERALS PRESENT:				
AMOUNT:				
GRAIN SIZE:	mm	mm	mm	mm
GRAIN SHAPE:				
OTHER PROPERTIES:				

OTHER TESTS/OBSERVATIONS/PROPERTIES: SMALL SPOTS OF SPECULAR HEMATITE, NO CALCITE NOTICED, RED HEMATITE STAIN. SOME ROCK SELVAGE. 8B IS VERY BRECCIATED, AND IS AT 290°/70°R, 15CM WIDE, 10M LONG NO SULFIDES OBSERVED.

HAS A ROCK I.D. SHEET BEEN FILLED IN? YES [✓ NO]

IF YES, GIVE PAGE NUMBER: MI ____ MS ____ MM ____ ____

HAS THIS SAMPLE BEEN ASSAYED? YES [✓ NO]

ASSOCIATED ROCK FORMATION: NICOLA AGE: J?

APPROXIMATE FIELD NAME: QUARTZ VEIN

SEDIMENTARY ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS

PAGE: S - 1

SAMPLE REFERENCE NUMBER: K93W - S

DATE: MAR/93

SPECIFIC LOCATION OF SAMPLE: WEST OF ROSE HILL AND JOYCE GULCH SEE FIG. 5

SAMPLE MODE: [✓ IN SITU] FLOAT

SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): WHITE TO MED. RUSTY

COLOUR (FRESH): GREEN/BLACK

TEXTURE: APHANITIC [✓ CLASTIC] NON-CLASTIC CRYSTALLINE

GRAIN SIZE IF NOT CLASTIC: APHANITIC [✓ FINE] MEDIUM COARSE V. COARSE

GRAIN SIZE IF CLASTIC: MUD [✓ SAND] >SAND

GRAIN SHAPE: [✓ ANGULAR] [✓ SUB-ANGULAR] [✓ SUB-ROUNDED] [✓ ROUNDED]

MATRIX SIZE IF CLASTIC: MUD SAND

PERCENTAGE: GRAINS: 100 % MATRIX: ____ %

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) [✓ ~4]

HCl REACTION: [✓ STRONG] WEAK POWDER ONLY NONE

IF HCl YES: [✓ GRAINS REACTING] MATRIX REACTING

PARTICULARILY LIMESTONE CLASTS

MINERALS:

PERCENTAGE: ____ % ____ % ____ % ____ % ____ %

GRAIN SIZE: ____ mm ____ mm ____ mm ____ mm ____ mm

GRAIN SHAPE:

ROCK ALTERATION:

IS THERE AN ALTERED ROCK SUMMARY SHEET? YES NO

IF YES, GIVE PAGE: AR

OTHER FEATURES: SOME QZ + CALCITE VEINLETS. SOME AMPHIBOLE CRYSTALS, NUMEROUS ROUNDED QUARTZ/QUARTZITE/CHERT GRAINS. AVE. SIZE ~1 mm. LARGER ANGULAR TO SUBROUNDED GRAINS OF CHERT + LIMESTONE 3 TO 4mm

NOT MAGNETIC

PROBABLE FORMATION BASAL MEMBER NICOLA GROUP ?

AGE: TR

APPROXIMATE FIELD NAME: TUFFACEOUS SANDSTONE.

SEDIMENTARY ROCK SAMPLE SUMMARY SHEET

PROJECT: NED, KAMLOOPS PAGE: S -2

SAMPLE REFERENCE NUMBER: K93W-R DATE: MAR 93

SPECIFIC LOCATION OF SAMPLE: BOTTOM OF JOYCE CREEK GULCH, WEST OF ROSE HILL. SEE FIGURE 5

SAMPLE MODE: [✓ IN SITU] FLOAT SAMPLER: B. WHITTLES

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

COLOUR (WEATHERED): RUSTY COLOUR (FRESH): DARK GREY / BLACK

TEXTURE: [✓ APHANITIC] CLASTIC NON-CLASTIC CRYSTALLINE

GRAIN SIZE IF NOT CLASTIC: APHANITIC FINE MEDIUM COARSE V. COARSE

GRAIN SIZE IF CLASTIC: [✓ MUD] SAND >SAND

GRAIN SHAPE: ANGULAR SUB-ANGULAR SUB-ROUNDED ROUNDED

MATRIX SIZE IF CLASTIC: MUD SAND

PERCENTAGE: GRAINS: % MATRIX: %

ROCK STRENGTH: LOOSE [✓ FRIABLE WEAK] STRONG VERY STRONG

ROCK HARDNESS: [✓ HARD (≥5)] SOFT (~3)

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES: GRAINS REACTING MATRIX REACTING

MINERALS:

PERCENTAGE: % % % % %

GRAIN SIZE: mm mm mm mm mm

GRAIN SHAPE:

ROCK ALTERATION:

IS THERE AN ALTERED ROCK SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

OTHER FEATURES: NOT MAGNETIC. NUMEROUS SMALL QUARTZ VEINS, VERY RUSTY (HEMATITE + LIMONITE) ALONG FRACTURES. MINOR BRECCIA + SANDSTONE

PROBABLE FORMATION CACHE CREEK AGE: M to P

APPROXIMATE FIELD NAME: ARGILLITE

SEDIMENTARY ROCK SAMPLE SUMMARY SHEET

PROJECT: NED , KAMLOOPS PAGE: S - 3

SAMPLE REFERENCE NUMBER: KN 93W - 190 DATE: SEPT /93

SPECIFIC LOCATION OF SAMPLE: △190 , CENTER OF LONG KNOLL SOUTH SIDE OF NED ROBERTS LAKE. 2 LARGE BOULDERS (ROUNDED). FIG. 25.

SAMPLE MODE: IN SITU [✓ FLOAT] SAMPLER:

(IF FLOAT): SPHERICITY: ANGULAR SUB-ANGULAR SUB-ROUNDED [✓ ROUNDED]

COLOUR (WEATHERED): DARK BROWN COLOUR (FRESH): VARIOUS

TEXTURE: APHANITIC [✓ CLASTIC] NON-CLASTIC CRYSTALLINE

GRAIN SIZE IF NOT CLASTIC: APHANITIC FINE MEDIUM COARSE V. COARSE

GRAIN SIZE IF CLASTIC: MUD SAND [✓ >SAND]

GRAIN SHAPE: [✓ ANGULAR] SUB-ANGULAR SUB-ROUNDED [✓ ROUNDED]

MATRIX SIZE IF CLASTIC: MUD [✓ SAND] — ANGULAR GRAINS

PERCENTAGE: ROUNDED GRAINS: 80 ⊗ % MATRIX: 20 % ⊗⊗

ROCK STRENGTH: LOOSE FRIABLE WEAK [✓ STRONG] VERY STRONG

ROCK HARDNESS: HARD (≥5) SOFT (~3) VARIES

HCl REACTION: STRONG WEAK POWDER ONLY [✓ NONE]

IF HCl YES: GRAINS REACTING MATRIX REACTING

MINERALS:

PERCENTAGE: % % % % %

GRAIN SIZE: mm mm mm mm mm

GRAIN SHAPE:

ROCK ALTERATION: NONE APPARENT.

IS THERE AN ALTERED ROCK SUMMARY SHEET? YES [✓ NO]

IF YES, GIVE PAGE: AR

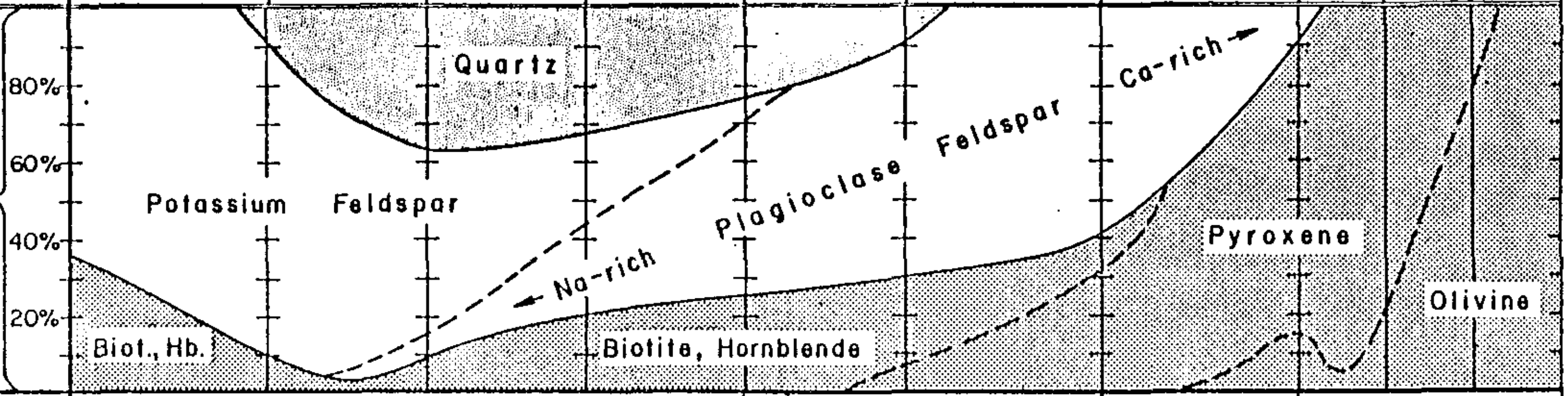
OTHER FEATURES: APPEARS SIMILAR TO OCR SE OF KNUDSFORD. ARGILLITE AND LARGE ROUNDED CLASTS OF A VERY DISTINCTIVE, REDDISH FELDSPAR PORPHYRY (TO 10cm), ⊗ "GRAINS" ARE WELL ROUNDED PEBBLES + COBBLES 1 TO 10 cm IN SIZE. MATRIX IS A VERY ANGULAR MIX OF VARIOUS ROCK + MINERAL FRAGMENTS, INCLUDING SOME AMPHIBOLES. SEE CACKFIELD '961) NOT MAGNETIC

PROBABLE FORMATION NICOLA AGE: uTr

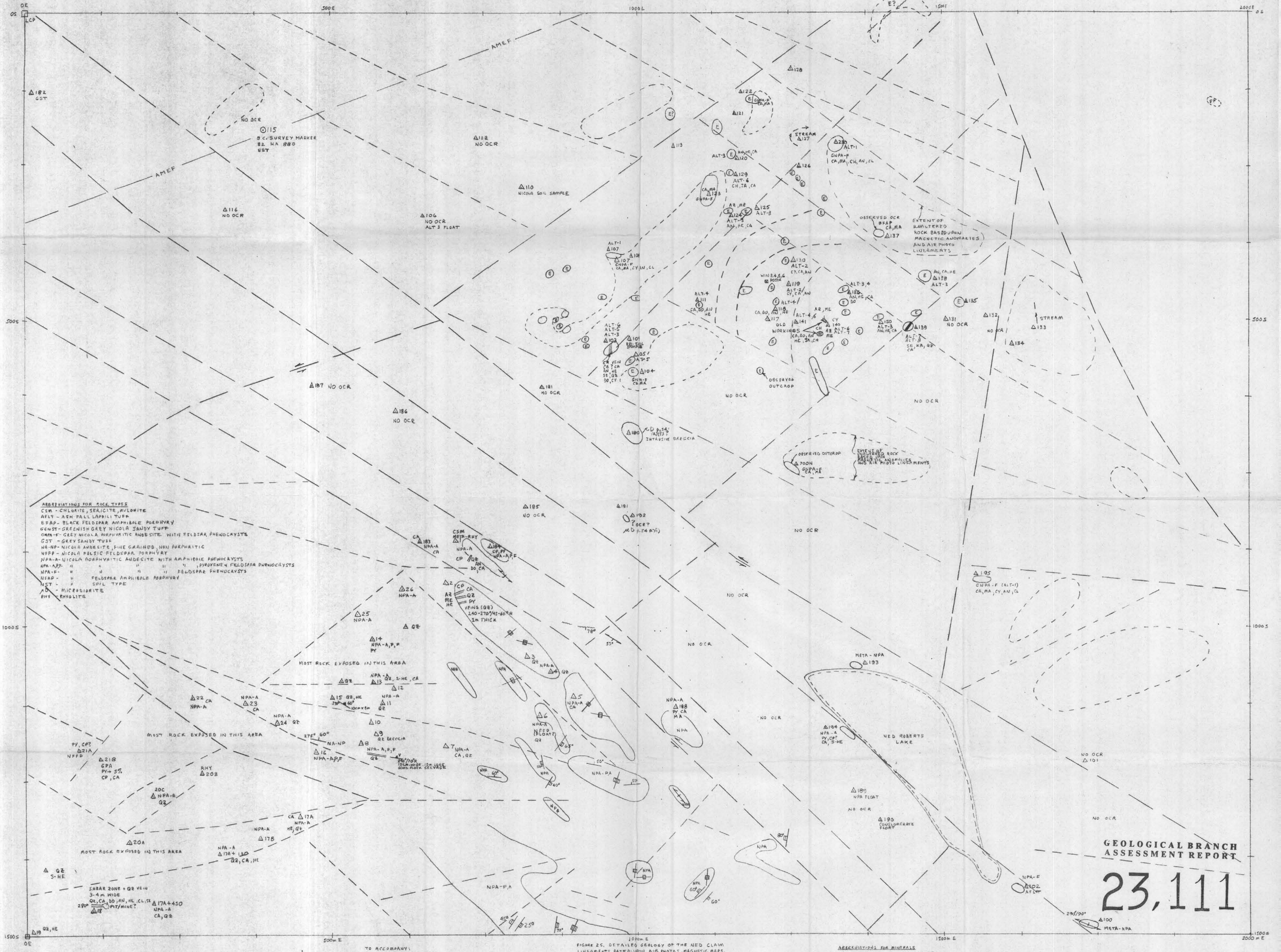
APPROXIMATE FIELD NAME: NICOLA BASAL CONGLOMERATE

A CLASSIFICATION OF THE COMMON IGNEOUS ROCKS

Figure 29

<table>
<tr><td colspan="3">COMPOSITION TYPE →</td><td colspan="4">FELSIC (Si and Al rich)</td><td colspan="2">INTERMEDIATE</td><td>MAFIC</td><td colspan="3">ULTRAMAFIC(Mg,Fe</td></tr>
<tr><td rowspan="5">VOLCANIC (at or near surface)</td><td rowspan="2">PYROCLASTICS</td><td rowspan="2">Texture Fragmental very coarse to very fine</td><td colspan="7">VOLCANIC BRECCIA fragments large, angular
AGGLOMERATE or VOLCANIC CONGLOMERATE fragments large, rounded</td><td colspan="3" rowspan="5">rare</td></tr>
<tr><td colspan="6">VOLCANIC ASH loose, fine-grained material, often pumice-rich
TUFF consolidated volcanic ash { ASHFALL TUFF well-sorted
ASHFLOW TUFF unsorted, some large fragments
WELDED TUFF densely compacted; may have flow banding, glassy matrix, thin cavities</td><td>uncommon</td></tr>
<tr><td rowspan="3">LAVAS</td><td>Texture Glassy</td><td colspan="5">PUMICE frothy glass (often dull due to alteration)
OBSIDIAN dense, massive glass</td><td colspan="2">uncommon</td></tr>
<tr><td rowspan="2">Texture aphanitic or Porphyritic with aphanitic groundmass (with typical phenocrysts)</td><td colspan="5">"FELSITE" name used for aphanitic, light-coloured, lava or dike rock lacking recognizable phenocrysts</td><td>med-dark colour</td><td>very dark colour</td></tr>
<tr><td>TRACHYTE
(K-feld ± mafic)</td><td colspan="2">RHYOLITE
(Q + K-feld ± mafic)</td><td colspan="2">DACITE
(Q + Plag ± mafic)</td><td>ANDESITE
(Plag + px, hb)</td><td>BASALT
(Plag, olivine, px, hb)</td></tr>
<tr><td rowspan="3">PLUTONIC (deep)</td><td>DIKES, SILLS</td><td rowspan="3">Texture typically medium to coarse, even-grained Sometimes porphyritic</td><td colspan="5">APLITE med/fine sugary texture; little or no mafic minerals
PEGMATITE very coarse and heterogeneous texture; (may contain unusual minerals)</td><td colspan="2">DOLERITE or DIABASE</td><td colspan="3">rare</td></tr>
<tr><td rowspan="2">BATHOLITHS, STOCKS</td><td rowspan="2">SYENITE</td><td colspan="4">"GRANITIC ROCKS"</td><td rowspan="2">DIORITE</td><td rowspan="2">GABBRO</td><td rowspan="2">PYROXENITE</td><td rowspan="2">PERIDOTITE</td><td rowspan="2">DUNITE</td></tr>
<tr><td>"TRUE" GRANITE</td><td>QUARTZ MONZONITE</td><td>GRANO-DIORITE</td><td>QUARTZ DIORITE</td></tr>
<tr><td>← ENVIRONMENT</td><td>← OCCURRENCE</td><td>← TEXTURE
Approximate Mineral Content</td><td colspan="10"> </td></tr>
<tr><td colspan="3">COMPOSITION TYPE →</td><td colspan="4">FELSIC (Si and Al rich)</td><td colspan="2">INTERMEDIATE</td><td>MAFIC</td><td colspan="3">ULTRAMAFIC(Mg,Fe)</td></tr>
</table>

Last



ABBREVIATIONS FOR ROCK TYPES
CSM - CHLORITE, SERICITE, MYLONITE
AFLT - ASH FALL LAPPILI TUFF
BFAP - BLACK FELDSPAR AMPHIBOLE PORPHYRY
GGNST - GREENISH GREY NICOLA SANDY TUFF
GNPA-F - GREY NICOLA PORPHYRITIC ANDESITE WITH FELDSAR PHENOCRYSTS
GST - GREY SANDY TUFF
NA-NP - NICOLA ANDESITE, FINE GRAINED, NON PORPHRITIC
NFFP - NICOLA FELSIC FELDSPAR PORPHYRY
NPA-A - NICOLA PORPHYRITIC ANDESITE WITH AMPHIBOLE PHENOCRYSTS
NPA-A,P,F - " " " " " , PYROXENE & FELDSPAR PHENOCRYSTS
NPA-F - " " " " FELDSPAR PHENOCRYSTS
NFAP - " FELDSPAR AMPHIBOLE PORPHYRY
NST - " SOIL TYPE
MD - MICRODIORITE
RHY - RHYOLITE

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100m

N

TO ACCOMPANY:
"GEOLOGICAL, AIR PHOTO AND
GEOPHYSICAL INTERPRETATION REPORT
ON THE NED CLAIM"
BY: A.B.L. WHITTLES, P.ENG., 1993

FIGURE 25. DETAILED GEOLOGY OF THE NED CLAIM
LINEAMENTS BASED UPON AIR PHOTOS, MAGNETIC MAPS,
AND VLF-EM MAP.

VEINS
JOINTS
FOLIATION
BEDDING
FAULTS

ABBREVIATIONS FOR MINERALS
CA - CALCITE
DO - DOLOMITE
CH - CHALCEDONY
CL - CHLORITE
KA - KAOLINITE
CY - CLAY
SE - SERICITE
QZ - QUARTZ
AN - ANKERITE
HE - HEMATITE
S- - SPECULAR
CB - CINNIBAR
JR - JASPER
MA - MAGNETITE, MAGNETIC
ME - MALACHITE
AZ - AZURITE

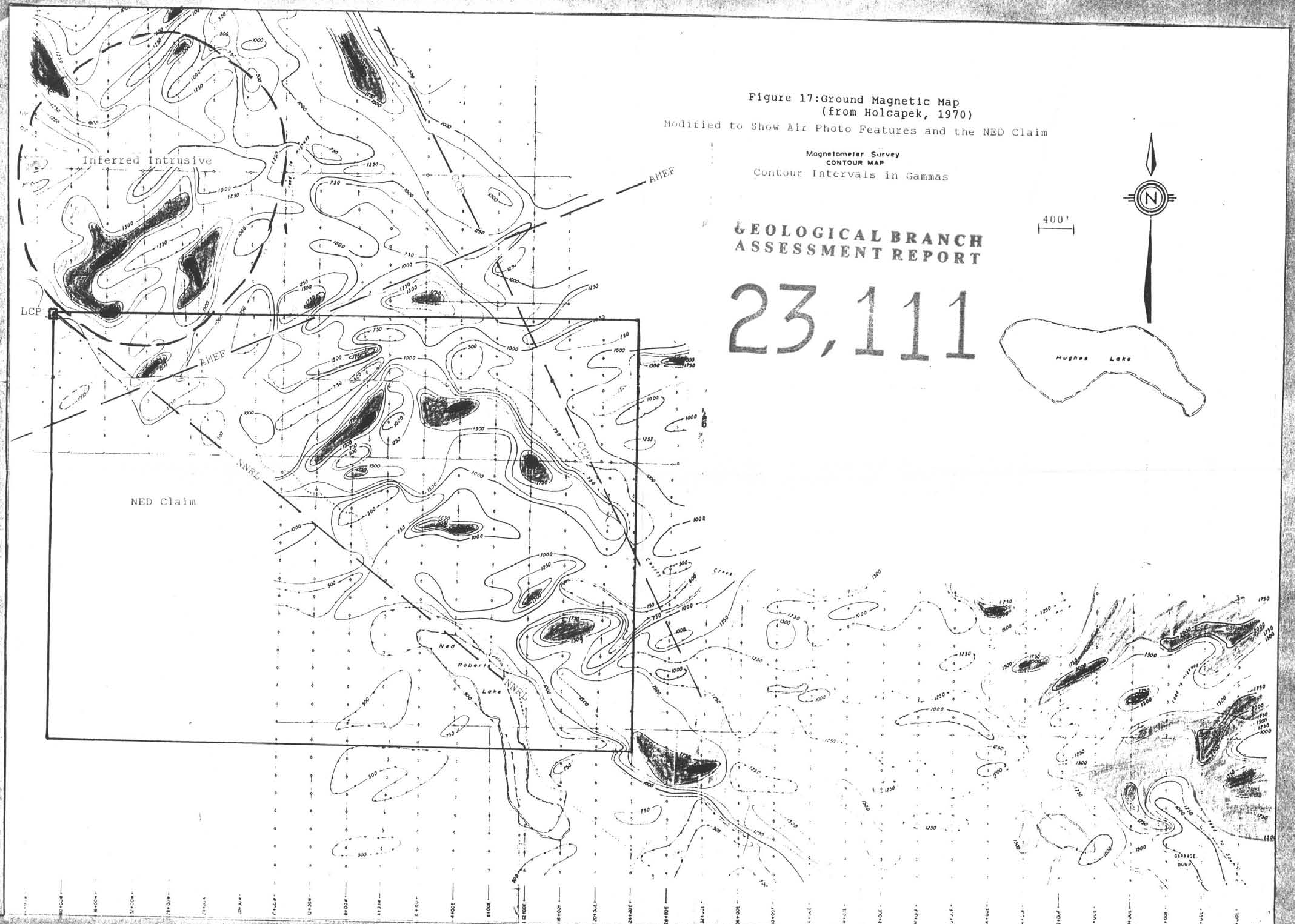


Figure 17:Ground Magnetic Map
(from Holcapek, 1970)

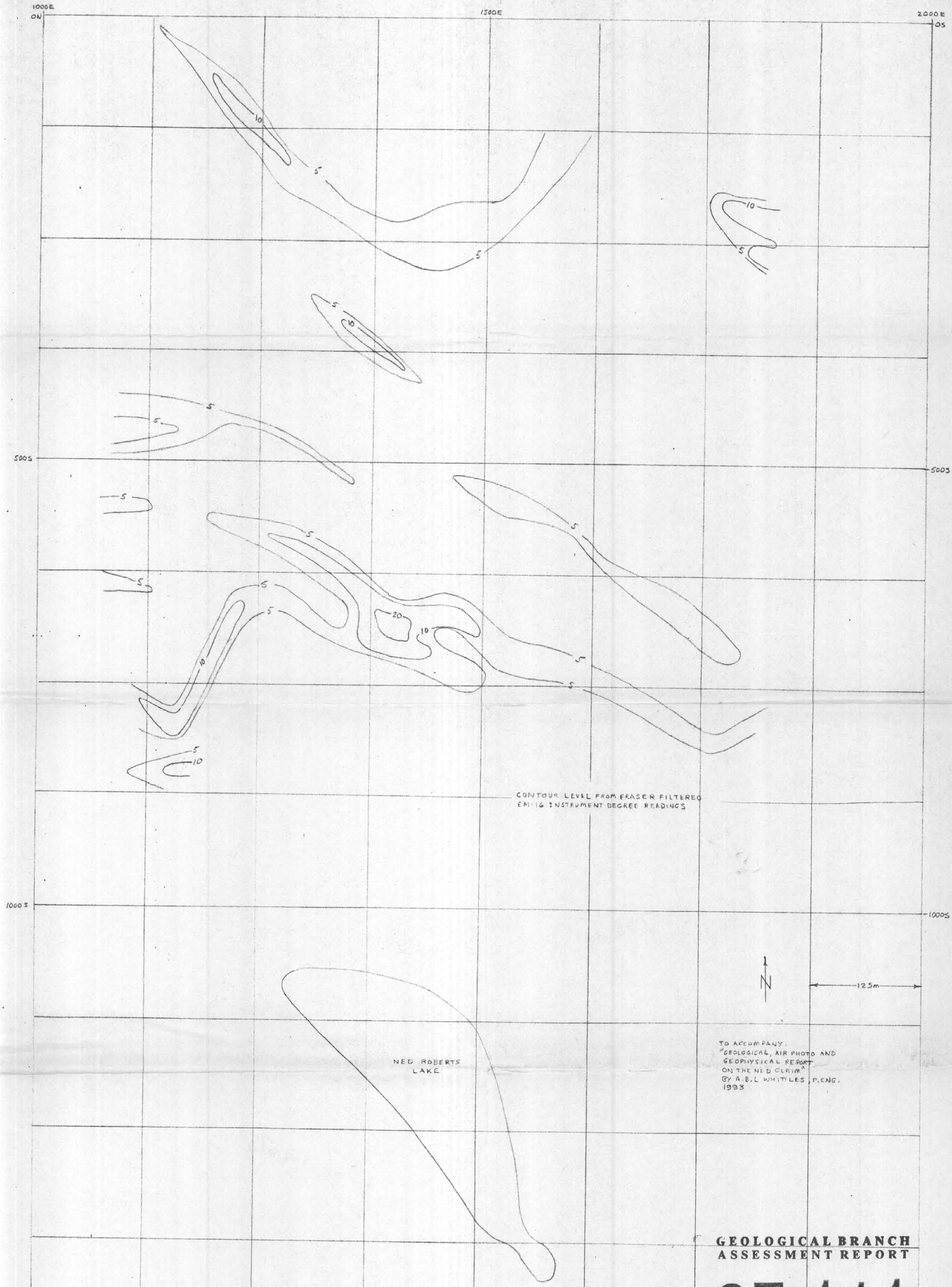
Modified to Show Air Photo Features and the NED Claim

Magnetometer Survey
CONTOUR MAP

Contour Intervals in Gammas

GEOLOGICAL BRANCH
ASSESSMENT REPORT

23,111



CONTOUR LEVEL FROM FRASER FILTERED
EM-16 INSTRUMENT DEGREE READINGS

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ON THE NED CLAIM"
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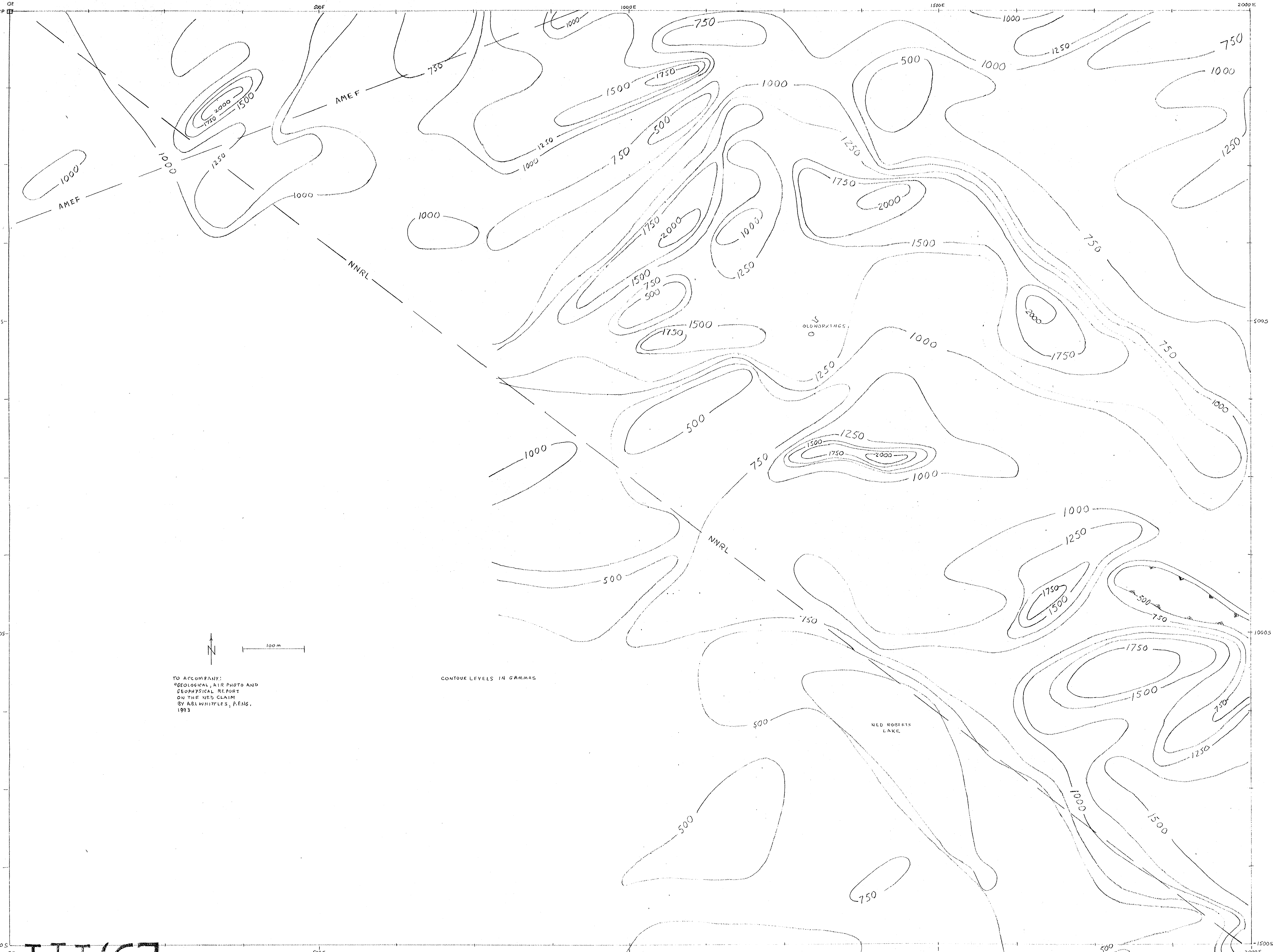
1993

FIGURE 19. GROUND VLF-EM MAP OF THE NED.CLAIMS
(FROM REED, 1976)



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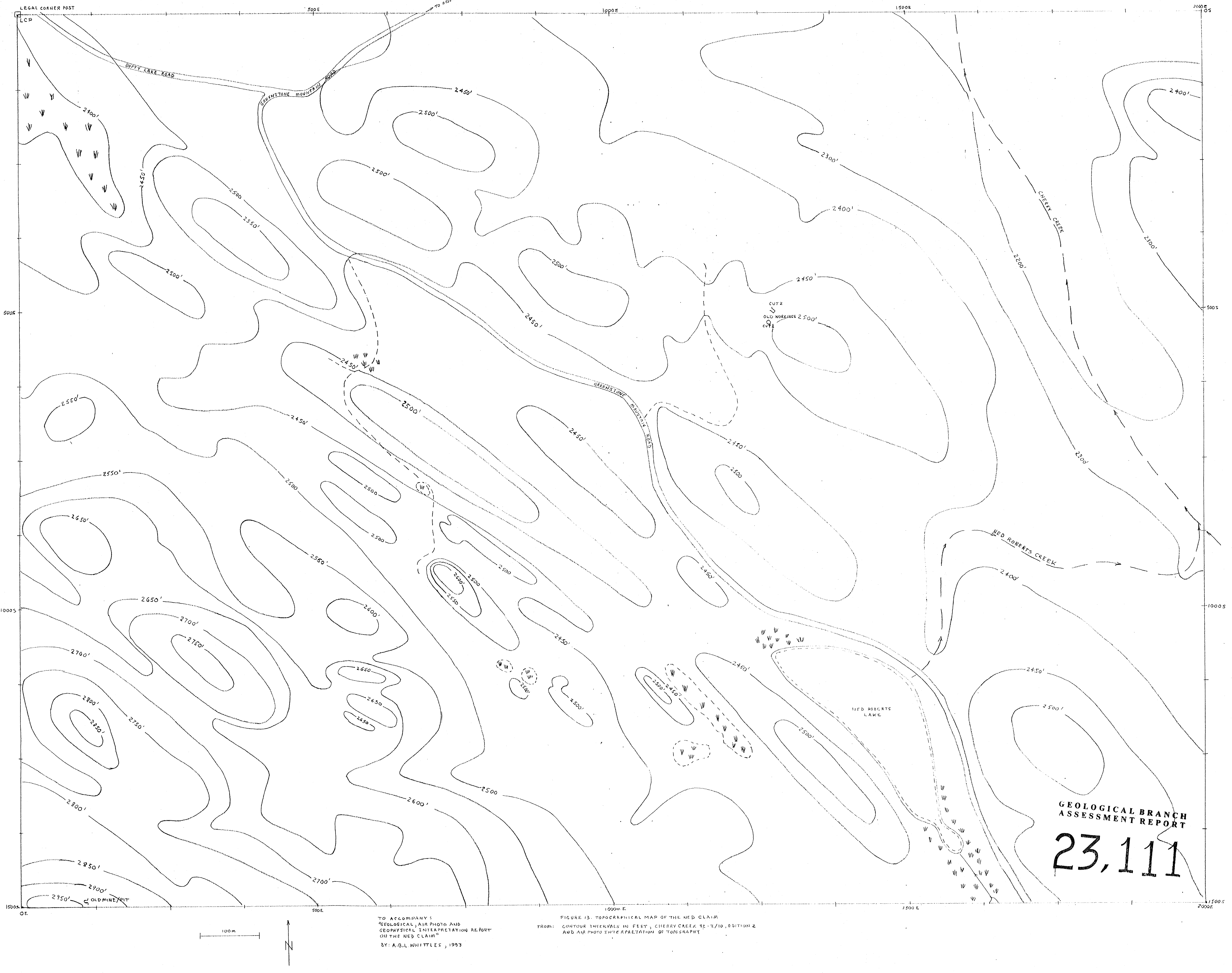
CONTOUR LEVELS IN GAMMAS

FIGURE 18. GROUND MAGNETIC MAP OF THE NED CLAIM
(FROM HOLCAPEK, 1970)



TO ACCOMPANY:
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ON THE NED CLAIM"

BY: A.B.L. WHITTLES, 1993

FIGURE 13. TOPOGRAPHICAL MAP OF THE NED CLAIM

FROM: CONTOUR INTERVALS IN FEET, CHERRY CREEK 92-I/10, EDITION 2
AND AIR PHOTO INTERPRETATION OF TOPOGRAPHY

TO ACCOMPANY:
"GEOLOGICAL, AIR PHOTO, AND
GEOPHYSICAL INTERPRETATION REPORT
ON THE NED CLAIM"

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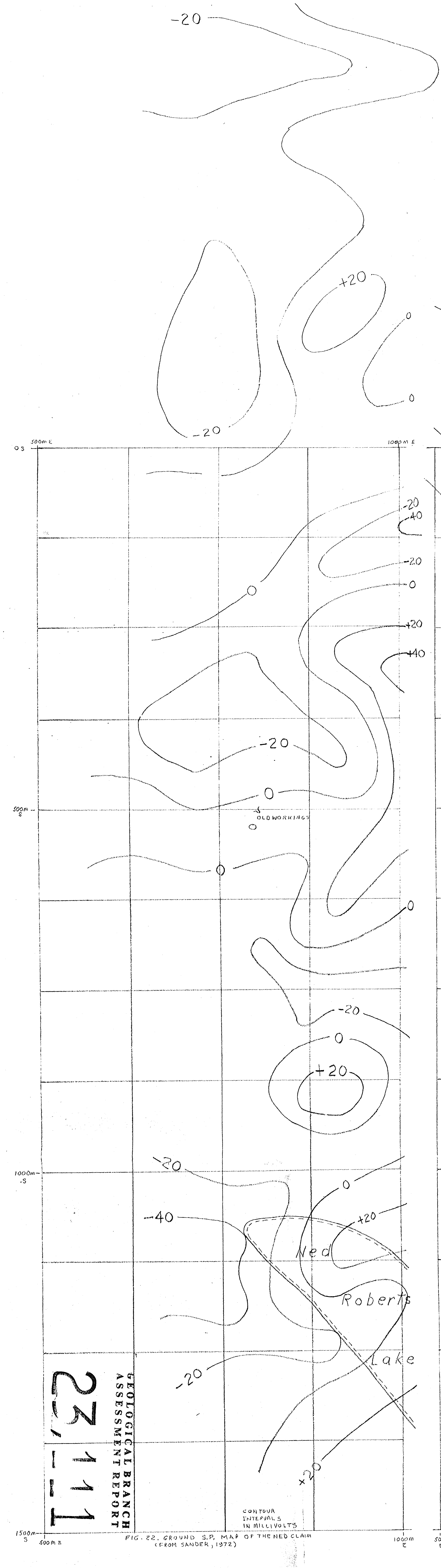
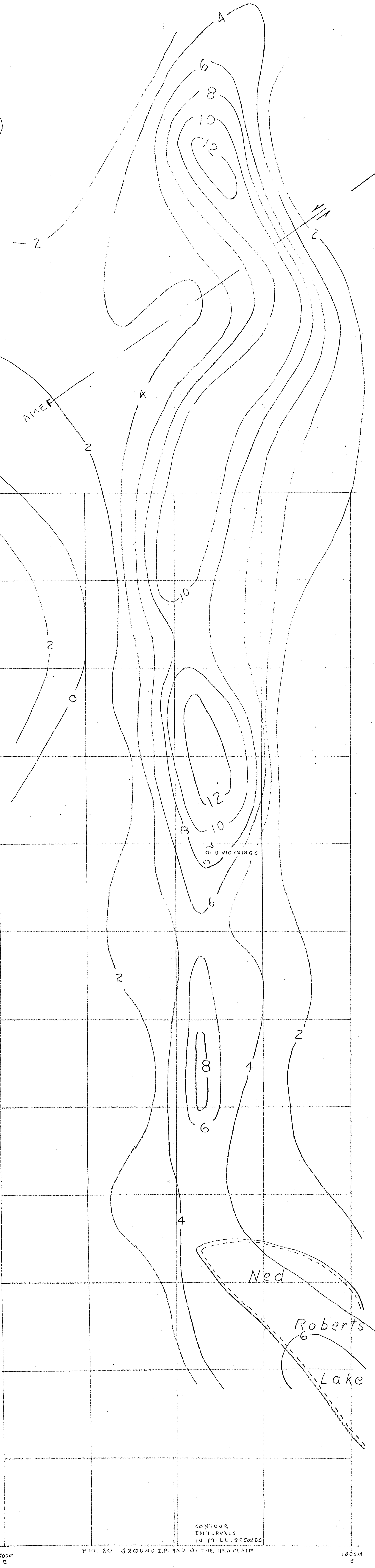


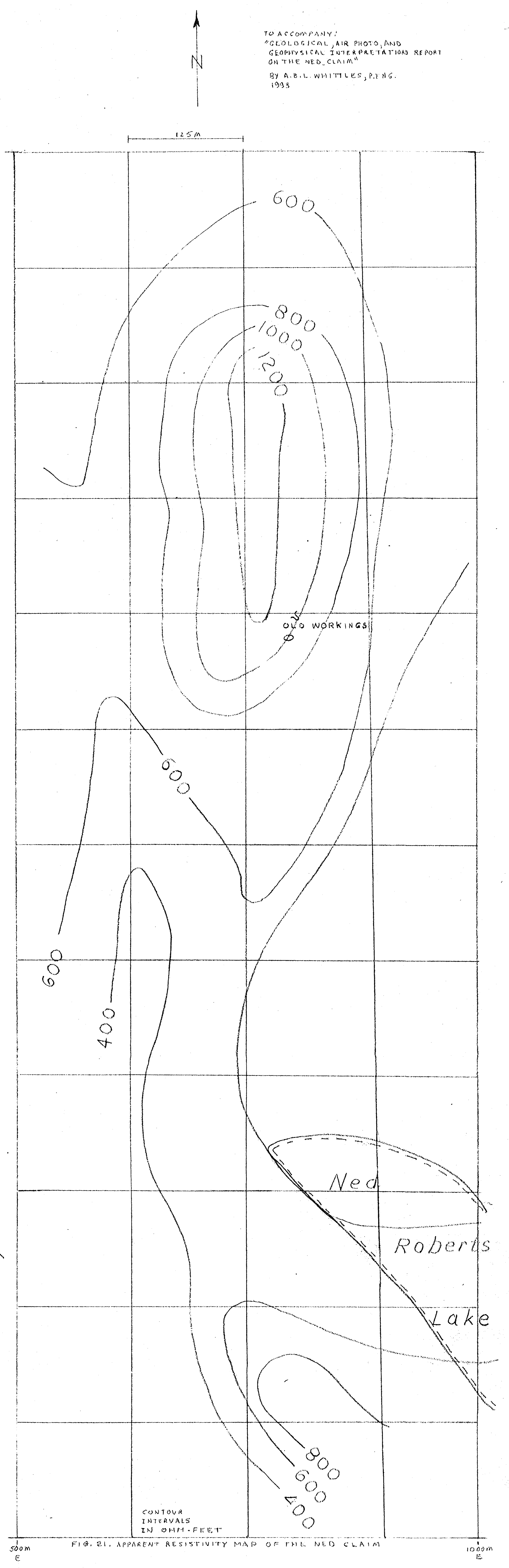
CONTOUR INTERVALS IN MILLIVOLTS

FIG. 22. GROUND S.P. MAP OF THE NED CLAIM (FROM SANDER, 1972)



CONTOUR INTERVALS IN MILLISECONDS

FIG. 20. GROUND I.P. MAP OF THE NED CLAIM



CONTOUR INTERVALS IN OHM-FEET

FIG. 21. APPARENT RESISTIVITY MAP OF THE NED CLAIM