



## ASSESSMENT REPORT TITLE PAGE AND SUMMARY

**TITLE OF REPORT: SUMMARY REPORT ON GEOLOGICAL, GEOPHYSICAL & GEOCHEMICAL SURVEYS AND DIAMOND DRILLING ON THE WOOD GROUP**

**TOTAL COST: \$14,000**

**AUTHOR(S): William Richard Bergey**  
**SIGNATURE(S):**

**NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):**  
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**YEAR OF WORK: 2011**

**PROPERTY NAME: Wood Group**

**CLAIM NAME(S) (on which work was done): 396557, 503540, 504010, 508614, 515333,**

**515335, 515339, 515354, 516119, 570405, 570406, 570407, 571139.**

**COMMODITIES SOUGHT: Cu, Au, Ag, Mo**

**MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:**

**MINING DIVISION: Kamloops**

**NTS / BCGS: 921688**

**LATITUDE: \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "**

**LONGITUDE: \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ " (at centre of work)**

**UTM Zone: 675 000      EASTING: 5 610 000      NORTHING:**

**OWNER(S): Charles Boitard.**

**MAILING ADDRESS: 1756 – 246 St., Langley BC V2Z 1G4**

**OPERATOR(S) [who paid for the work]: Green Valley Mine Inc.**

**MAILING ADDRESS: 1756 – 246 St., Langley BC V2Z 1G4**

**REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. Do not use abbreviations or codes)**

**Alkalic Intrusive Complex, Roper Lake Intrusions, intrusive breccia, Iron Mask batholith, Nicola graben, Cherry Creek fault, Northwest Deformation Zone**

**REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 7180, 9554, 11248, 20116, 22404, 26292, 22630, 22699, 23420, 24017, 25327, 25615, 25967, 26852, 26915, 27170, 27381, 27695, 29880, 28341, 28363, 30090, 31023, 31791, 32363.**

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)		ON WHICH CLAIMS		PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)					
	various	Photo-geo follow-up	All		\$2600.
Ground, mapping	1:20,000	150 square kilometres	All – includes data review & interpretation of previous surveys & drilling		\$11,400.
Photo interpretation	1: 40, 000 1: 80,000				
GEOPHYSICAL (line-kilometres)					
Ground					
Magnetic					
Electromagnetic					
Induced Polarization					
Radiometric					
Seismic					
Other					
Airborne					
GEOCHEMICAL (number of samples analysed for ...)					
Soil					
Silt					
Rock					
Other					
DRILLING (total metres, number of holes, size, storage location)					
Core					
Non-core					
RELATED TECHNICAL					
Sampling / Assaying					
Petrographic					
Mineralographic					
Metallurgic					
PROSPECTING (scale/area)					
PREPATORY / PHYSICAL					
Line/grid (km)					
Topo/Photogrammetric (scale, area)					
Legal Surveys (scale, area)					
Road, local access (km)/trail					
Trench (number/metres)					
Underground development (metres)					
Other					
<b>TOTAL COST</b>					<b>\$14,000</b>

**SUMMARY REPORT  
ON  
GEOLOGICAL, GEOPHYSICAL & GEOCHEMICAL SURVEYS  
AND DIAMOND DRILLING**

**ON THE  
WOOD GROUP OF MINERAL CLAIMS**

**FOR  
GREEN VALLEY MINE INC.**

**LOCATED IN THE IRON MASK – CHUWHELS MOUNTAIN AREA  
OF  
SOUTH-CENTRAL BRITISH COLUMBIA**

**NTS: 092I068  
UTM: 875000E 610000N**

**BC Geological Survey  
Assessment Report  
32977**

**WILLIAM R. BERGEY, P.Eng.**

**March 30, 2012**

**ASSESSMENT REPORT**

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SUMMARY REPORT  
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**INTRODUCTION**

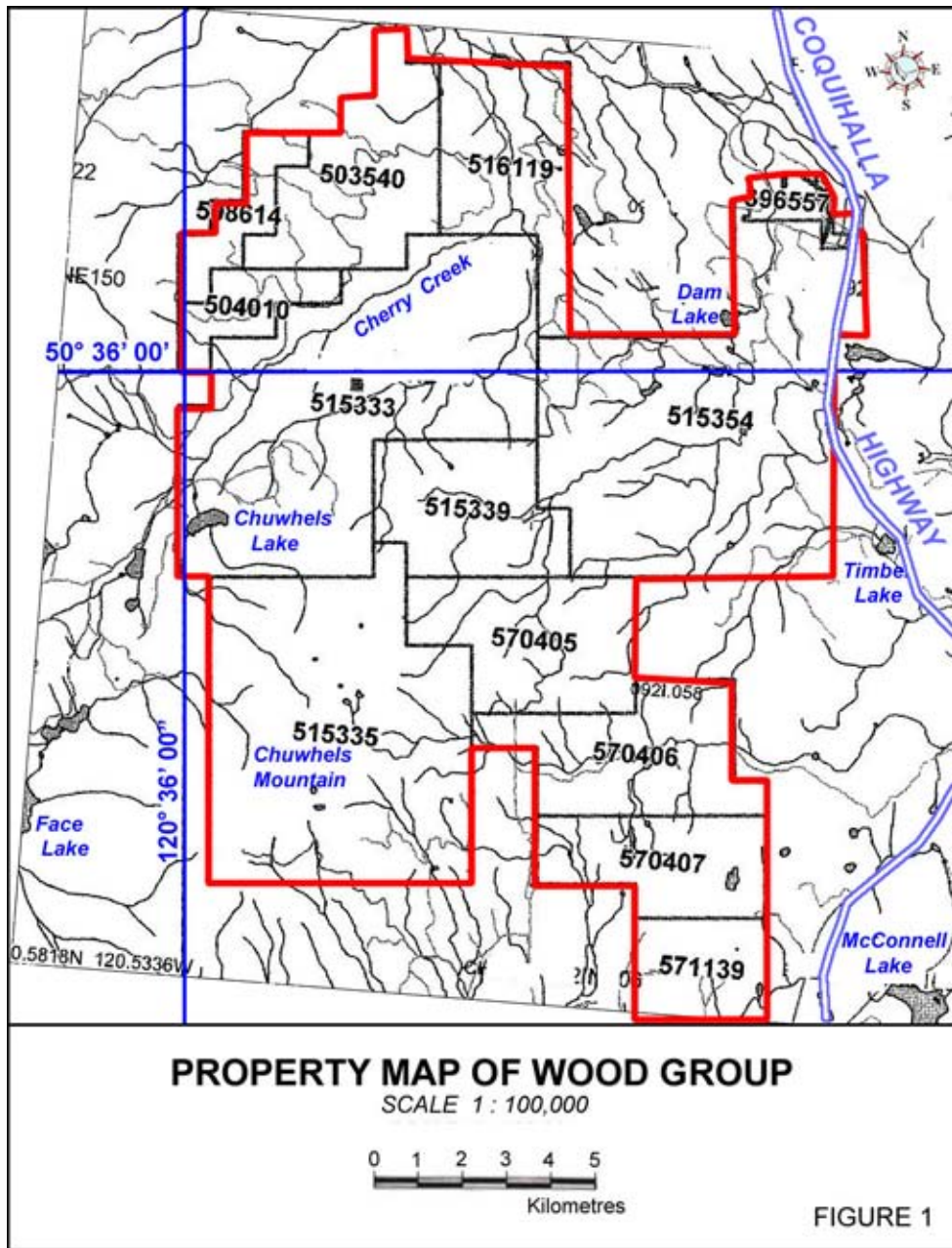
The present report was prepared at the request of Green Valley Mine Inc. (Green Valley), the owner of the Wood Group of mineral tenures (“the Property”), to satisfy the assessment work requirements on the Property.

I have carried out field geological mapping and photo-geological interpretations within the region that encloses the Property intermittently for the past seven years. The work was done partly on behalf of several clients and partly for my own account. My employment as a consulting geologist by Green Valley Mine Inc. commenced about a year ago. By that time, the results of my geological study had uncovered evidence that permitted a very significant revision of the geology of the Kamloops area, including the Wood Property.

The present report is intended as a review and re-interpretation of the large amount of data accumulated by Green Valley and its predecessors in the light of my revision of the geology of the region. The published sources of information consulted for this report are listed under “References”. The results of the drilling programs, and of the geophysical and geochemical surveys, carried out on the Wood Group were derived from assessment reports and from private reports by Green Valley’s consultants. Most of the data shown on the geological maps of the Property and its surroundings were derived from previous field mapping and photo-geological interpretation by the author. However, several days of field mapping and a more detailed photo-interpretation of the Property and its immediate surroundings also were undertaken during the past year in conjunction with the compilation and interpretation of the Green Valley exploration data.

# PROPERTY

The claim, located within the Map Sheets NTS 92I 058 and NTS 92I 068, covers a surface area of 7967.6 hectares (about 30 square miles).

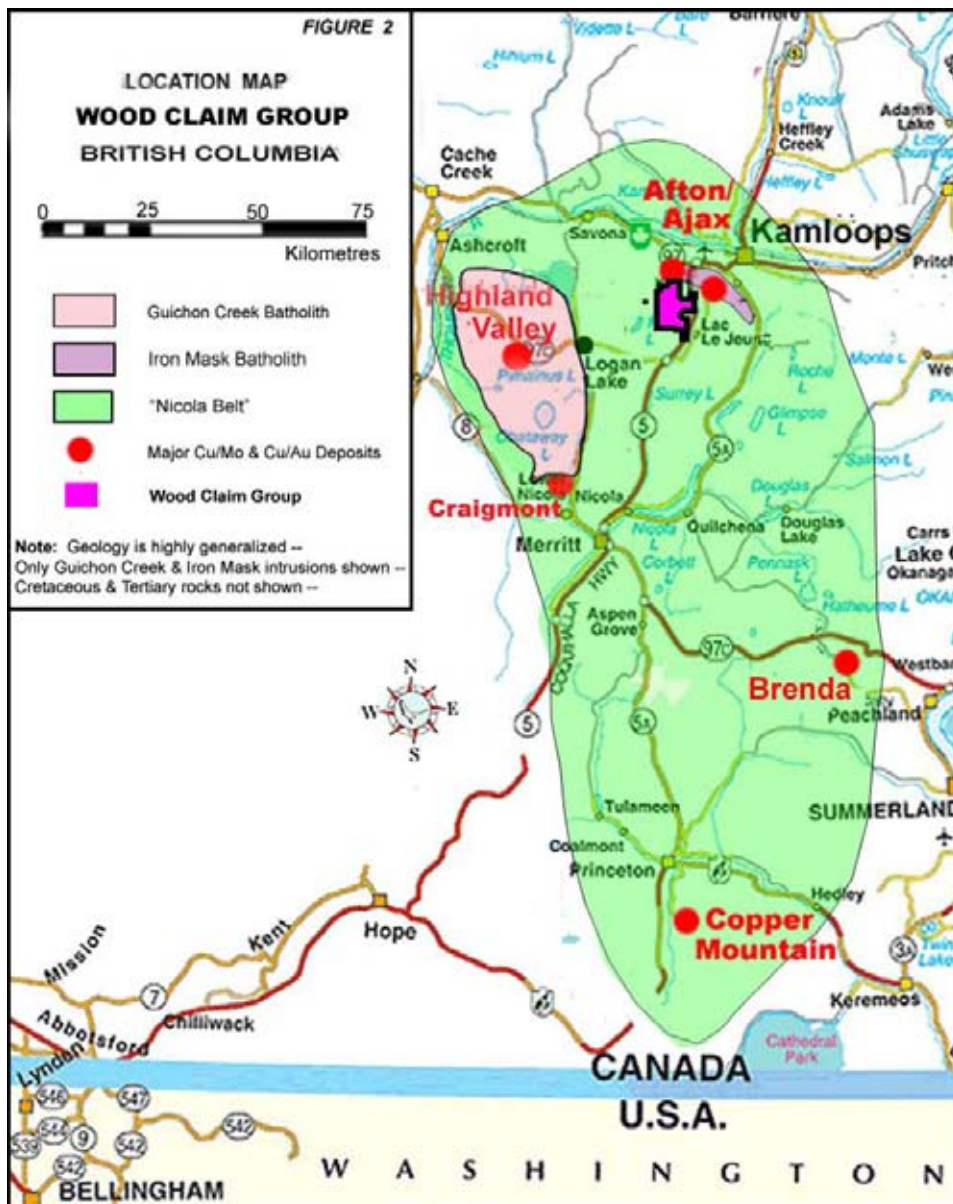


The chart below, taken from the Confirmation Page, illustrates the application of the work described in the present report.



Tenure Number	Claim Name/Property	Issue Date	Good To Date	New Good To Date	# of Days Forward	Area in Ha	Applied Work Value	Submission Fee
396557	MONARCH	2002/sep/24	2012/may/24	2012/aug/15	83	150.00	\$ 272.13	\$ 13.64
503540	CORONA	2005/jan/14	2013/jan/14	2013/jan/14	0	512.52	\$ 0.00	\$ 0.00
504010	CORONA 2	2005/jan/17	2013/jan/17	2013/jan/17	0	164.06	\$ 0.00	\$ 0.00
508614	Corona 3	2005/mar/10	2012/mar/10	2012/aug/15	158	164.02	\$ 568.01	\$ 28.40
515333		2005/jun/27	2012/apr/04	2012/aug/15	133	1497.44	\$ 4357.60	\$ 218.26
515335		2005/jun/27	2012/feb/15	2012/aug/15	182	1416.58	\$ 5639.52	\$ 282.54
515339		2005/jun/27	2012/feb/15	2012/aug/15	182	430.88	\$ 1715.38	\$ 85.94
515354		2005/jun/27	2012/apr/26	2012/aug/15	111	1559.02	\$ 3787.12	\$ 189.65
516119		2005/jul/06	2012/aug/01	2012/aug/01	0	471.51	\$ 0.00	\$ 0.00
570405	VIC 2	2007/nov/21	2012/nov/21	2012/nov/21	0	492.60	\$ 0.00	\$ 0.00
570406	VIC 3	2007/nov/21	2012/nov/21	2012/nov/21	0	492.75	\$ 0.00	\$ 0.00
570407	VIC 4	2007/nov/21	2012/nov/21	2012/nov/21	0	369.66	\$ 0.00	\$ 0.00
571139	VIC 5	2007/dec/01	2012/dec/01	2012/dec/01	0	246.51	\$ 0.00	\$ 0.00

## LOCATION, ACCESS, CHARACTER OF THE REGION





The Wood Property is located in south-central British Columbia, about 200 kilometres northeast of Vancouver and approximately 15 kilometres south-southwest west of the city of Kamloops. Figure 2 shows the location of the property. It also displays a highly generalized version of the regional geology.

Access to the Wood Group is via the Coquihalla Highway (Highway 5), located adjacent to the eastern boundary of the Property, which connects Vancouver with Kamloops. All parts of the claims are accessible along a network of gravel and dirt roads.

The Property lies along the east flank of the Greenstone Mountain - Chuwels Mountain upland. The summit of the latter is located in the south-western corner of the claims. This upland receives anomalously high precipitation and is covered with fairly dense forest. Logging of pine beetle infested areas is continuing in this area. The portion of the Wood Group that lies farther northeast is relatively arid and the tree cover is discontinuous. Ranching is the dominant activity in this area.

## HISTORY

The Iron Mask batholith and its surroundings have been seriously explored since the mid-19<sup>th</sup> Century. The earliest exploration produced a number of small-scale mining operations that included the eponymous Iron Mask mine. Mining exploration reached an all-time high in the district in 1972, propelled by Chester Millar's discovery of the Afton ore deposit. Since that time, exploration activity rose and fell with metal prices. The activity is high in the district at present, due in part to the development of the underground portion of the Afton mine by New Gold and to the detailed investigation of the feasibility of a greatly expanded operation at the former Ajax mine on behalf of Abacus.

Charles Boitard and, later, Green Valley Mine Inc, have actively explored the Wood Group since 1990. (The Wood group originally included only the northern portion of the current Property.) Almost all of the serious exploration on the claims was carried out during this post-1990 period, a fact that can be deduced from the "References."

# GEOLOGICAL SETTING

## SCOPE OF THE RECENT WORK

The geology depicted in the present report is almost completely at odds with the generally accepted version. This is largely the result of the author's extensive use of air photographs in the interpretation of the geology of the region. Accordingly, a discussion of photo-geology, and the author's background in the subject, is in order. I was introduced to photo-geology by Dr. J.Tuzo Wilson while in graduate school at the University of Toronto more than 60 years ago. Since that time I have used air photos on a more-or-less routine basis as an adjunct to geological mapping. In addition, I have carried out several regional photo-geological interpretations in Canada, the United States, Jamaica, Puerto Rico, Chile, and Ecuador. During the past seven years I have intermittently carried out a field and air-photo geological study of the region south of Kamloops Lake, an area that covers more than 6000 square kilometres.

The study is an amalgam of interpretations carried out on behalf of clients and on reconnaissance work for my own account. The region is close to ideal for the application of photo-geology since the topography is sufficiently hilly to provide visual contrast between geological units of varying resistance to erosion, and because relatively thin till cover is nearly ubiquitous. Hence, rock exposures are comparatively rare and they tend to be of poor quality for field geological mapping.

Photo-geological interpretation should not be confused with simple plotting of linear features, or with so-called "topographical lineation analysis." To be effective, photo-interpretation must be accompanied by geological field work. The objective of the exercise is to produce a geological map without blank spaces. Glacial till (a.k.a. basal till) generally can be ignored, but types of overburden that would preclude the use of conventional soil geochemical prospecting should be identified and labelled.

My work in the region utilized air photos at nominal scales of 1:15,000 and 1: 75,000. The large-scale photos covered only the areas that surround my clients' properties, as well as the Iron Mask batholith and its environs. In the case of the Wood Group, only the northern part of the Property is covered by large-scale photos. The interpretation was done at 2x and 4x magnification.

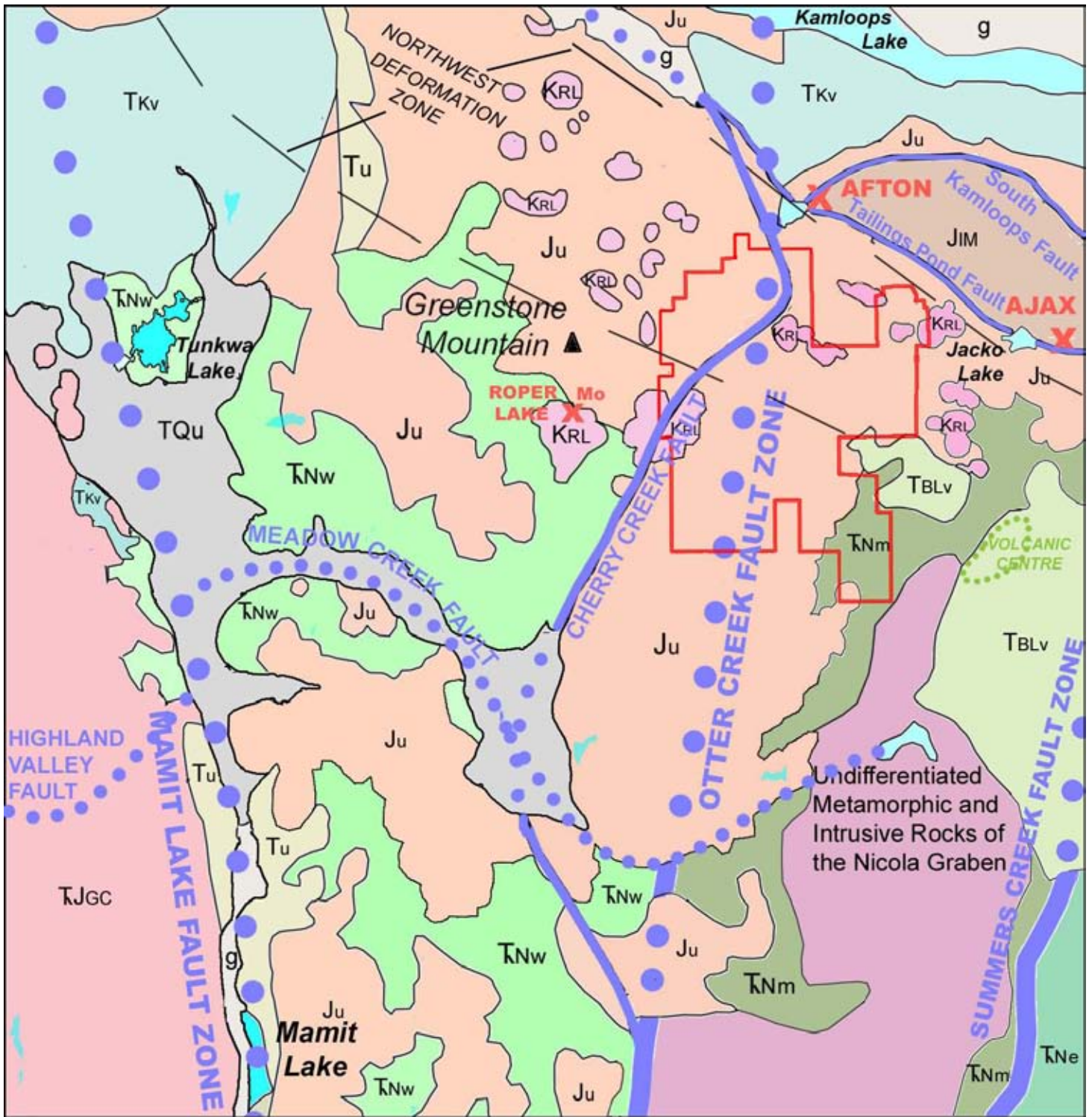
The major geological revision in the area surrounding the Wood Group was the virtual elimination of the stratified rocks of the Nicola Group, which dominate the existing geological maps of the area. This was accompanied by a concomitant expansion of the outcrop areas of younger intrusive rocks, including large volumes of intrusive breccia. The latter commonly were injected as pipe-shaped bodies that are reflected

on the air photos as distinct circular features. These massive units usually can be distinguished from the steeply dipping, stratified rocks of the Nicola Group that almost always are indicated by parallel banding that strikes within a few degrees of north-south. A more difficult task is the identification of the material in the pipes, since they commonly occur within six mappable rock units.

## REGIONAL GEOLOGY

The Location Map (Figure 2) includes the generalized outline of the “Nicola Belt”, which is the southern portion of Quesnellia, an accreted terrane that is believed to have collided with the North American plate during the Late Jurassic. Previous geological mapping indicated that bodies of alkaline rocks composed mainly of diorite, monzonite and syenite, intrude the volcanic and sedimentary rocks of the Triassic Nicola Group. Most of these bodies are small but the largest of them, the Iron Mask intrusion, is the size of a smallish batholith, and is so designated. A common assumption is that the alkaline intrusive rocks were coeval with the Nicola Group. My recent work indicates that not only are the alkaline rocks not part of the Nicola Group, but that they were introduced following the folding, faulting and metamorphism of the volcanic and sedimentary rocks – and even after the intrusion of granitic batholiths in Late Triassic and Early Jurassic time. My mapping also suggests that most of the rocks previously mapped as stratified rocks of the Nicola Group within the region are part of a unit that I designate as the Alkalic Intrusive Complex. It includes the Iron Mask batholith and other previously mapped alkaline intrusions, but overall the unit is composed mainly of intrusive breccia. The regional map (Figure 3) shows the generalized distribution of the rocks of the Alkalic Intrusive Complex within the area between Kamloops and the Guichon Creek batholith, host of the Highland Valley copper deposits.

The Kamloops-Greenstone Mountain district, which includes the Property, is almost entirely devoid of outcrops of the Nicola Group. This is by far the largest continuous outcrop area of exposed rocks of the Alkalic Intrusive Complex within my 6000-square-kilometre study area. The only Nicola Group rocks that I identified near Property are metamorphosed volcanic rocks of the Nicola horst (Moore, 2000). This uplift is bounded on the east and west by a pair of deep-seated regional north-trending faults. These faults were first identified by Vic Preto in the Aspen Grove area south of Merritt (Preto, 1979). He speculated that they were somehow related to the deposition of the rocks of the Nicola Group, and he used the faults as the boundaries for a tripartite division of that group. Thus the metamorphosed volcanic rocks of the graben presumably belong to the Central Belt. Within the map area (Figure 3), the Western Belt is exposed west of the Otter Creek fault and the Eastern facies is interpreted east of the Summers Creek graben-boundary fault in the southeast corner of the map area. A more recent ongoing study indicates that the faults, and the Alkalic Intrusive Complex, continue for a long distance to the north beyond Kamloops Lake.



**REGIONAL GEOLOGY**

Scale 1 : 200,000

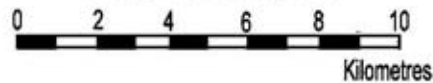
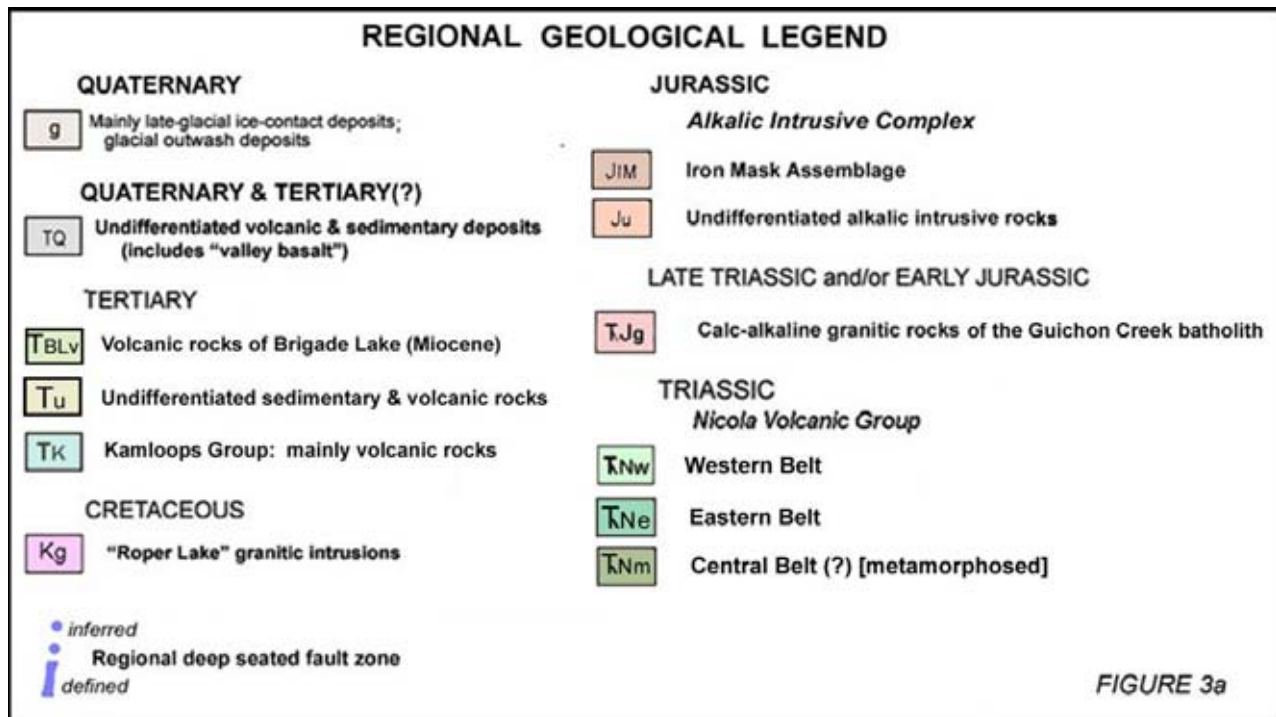


FIGURE 3



I carried out a detailed study of the Otter Creek fault on my own claims in the vicinity of Otter Creek, south of Aspen Grove, before I became aware of the existence of a major intrusive breccia component associated with the alkaline intrusions. The Otter Creek fault in that area is reflected as a very well defined magnetic "low." The fault is cut off to the south by the Allison Lake batholith, which is dated at about 200 m.a. (close to the Triassic-Jurassic boundary). A porphyritic granite dike was injected along the fault line north of the main body of the batholith. The fault and the porphyry were followed by later shearing and, subsequently, all three were intruded by diorite of the Alkalic Intrusive Complex. A major fault of probable Eocene age follows the Otter Creek fault intermittently for more than 100 kilometres. This fault diverges from the Otter Creek fault where the latter is cut off by the Allison Lake batholith only to rejoin the projection of the older fault-line some 15 kilometres to the south. This behaviour is repeated twice to the north of Aspen Grove. (One of these divergences, designated the "Cherry Creek fault", is shown on Figure 3.) Similar relationships have been noted between other inferred deep-seated faults and later faulting. It appears to me that the lines of weakness related to deep-seated fault zones of the Otter Creek type were exploited by "successor" faults, even though the shallow portions of the primordial structures were obliterated by intrusion.

The Nicola horst is believed to be early Tertiary in age (Moore, 2000). However, there is strong evidence that the bounding faults are Triassic. The horst is cut off to the south by a north-dipping thrust fault that juxtaposes greenschist facies rocks of the Central Belt of the Nicola Group with amphibolite facies rocks within the horst.) There is good field geological control on the Otter Creek fault. This indicates that the original



structure was a very straight north-south feature. My evidence agrees with Preto (1979) that the Otter Creek fault (or its equivalent) formed the boundary between two distinctive Triassic lithologic belts implying a very large horizontal displacement along the structure. Their straight north-south trends and their continuity for more than 100 kilometres suggest that Preto's fault pair and two other faults that are inferred farther to the west are deep-seated transcurrent faults that were activated during the early stages of plate movement after the break-up of Pangaea. Incidental vertical movement associated with the very large indicated horizontal displacement could account for the uplift of the Nicola horst. The motivation for this discourse on the Otter Creek fault is that the structure is inferred to transect the Wood Property (at depth) and to pass close to the western junction of the bounding faults of the Iron Mask batholith – and the Afton orebody -- about a kilometre to the north.

Like those of the Nicola Group, rocks related to the granitic batholiths of Late Triassic to early Jurassic age are absent from the vicinity of the Property except close to the extreme southeast corner, within the Nicola horst.

I have sub-divided the Alkalic Intrusive Complex within the Kamloops–Greenstone Mountain area into five “assemblages.” Only two of these – the Beaton Lake Assemblage and the Greenstone Mountain Assemblage – crop out within the Wood Group, but the south boundary of the Iron Mask Assemblage is located less than a kilometre to the north. These assemblages are described under “Property Geology.”

Granitic rocks of Early Cretaceous age were mapped previously within the area surrounding Greenstone Mountain, notably at Roper Lake, which lies two kilometres to the south of the mountain. My air-photo study, confirmed and augmented by field mapping, outlined a large number of mostly small bodies of granitic rock that had not been noted previously or had been misidentified as volcanic rocks. I correlated these with the Roper Lake Intrusions. The intrusions in the lowlands to the north and east of Greenstone Mountain were intruded in most cases as coalescent pipe-shaped bodies. They are confined mainly to a northwest-trending zone of deformation, but there are several within the Iron Mask batholith.

Volcanic and sedimentary rocks of Cretaceous to early Tertiary age are scarce in the area surrounding the Property, except for the predominantly volcanic rocks of the Eocene Kamloops Formation that blankets the hills south of Kamloops Lake. This dearth of Cretaceous and early Tertiary rocks is a curiosity, since they are abundant and varied elsewhere in the region. The “Volcanic Rocks of Brigade Lake” of Miocene age crop out close to the south-western boundary. Small outliers of sedimentary and volcanic rocks of probable late Tertiary age are exposed throughout the map area.

## **PROPERTY GEOLOGY**

Almost all of the previous exploration on the Wood Group was confined to the northern half of the property. As it happens, large-scale air photos and most of my field work followed the same pattern. Accordingly, I have prepared maps at two scales. The northern area is covered by Figures 4b and 4c at 1:40,000. These were merged with the less detailed data from the south half to produce Figure 4a at 1:80,000. (I refer to Figure 4a as “the map area” in this section)

### **Rocks of the Nicola Horst**

The horst appears to have been uplifted near the end of the Triassic Period. Some highly metamorphosed sedimentary rocks are speculated to be much older, but there appears to be no definitive evidence to substantiate this. The metavolcanic rocks that crop out near the southeast corner of the Property may be correlative with the Nicola Group. Similarly, the metamorphosed granitic rocks of the Nicola batholith may be early members of the regional Late Triassic to Early Jurassic calc-alkaline suite.

### **Nicola Group**

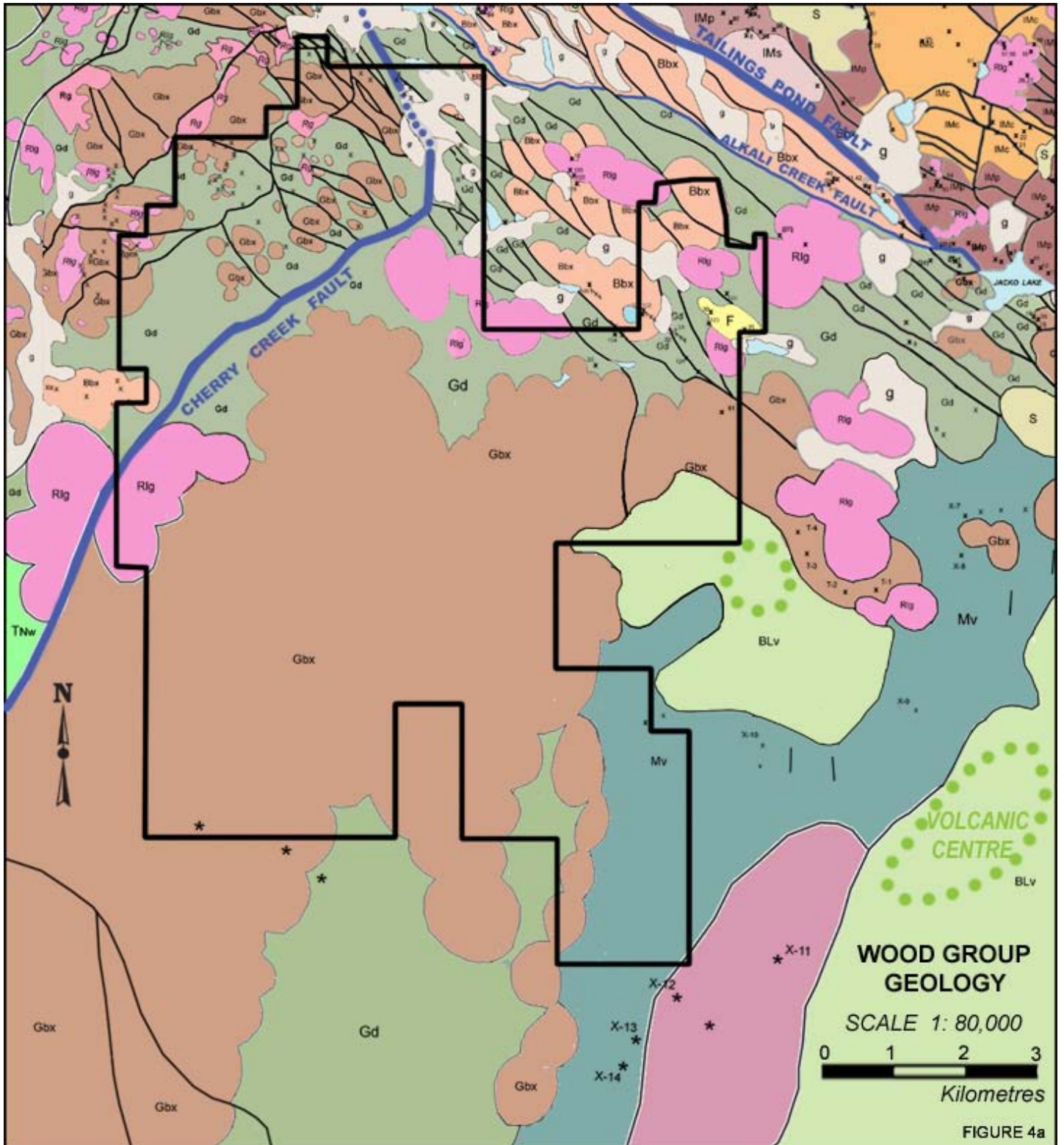
The Triassic Nicola Group of volcanic and sedimentary rocks is widely distributed throughout the Princeton-Kamloops region and it extends northward for an even greater distance. My recent work indicates that many of the rocks mapped as volcanic in origin are intrusive breccias, as noted earlier. As a result of my suggested revision, the Nicola Group appears to be predominantly a sedimentary unit. The rocks have been steeply folded along north-south axes. The stratification is fairly readily identified on air photographs.

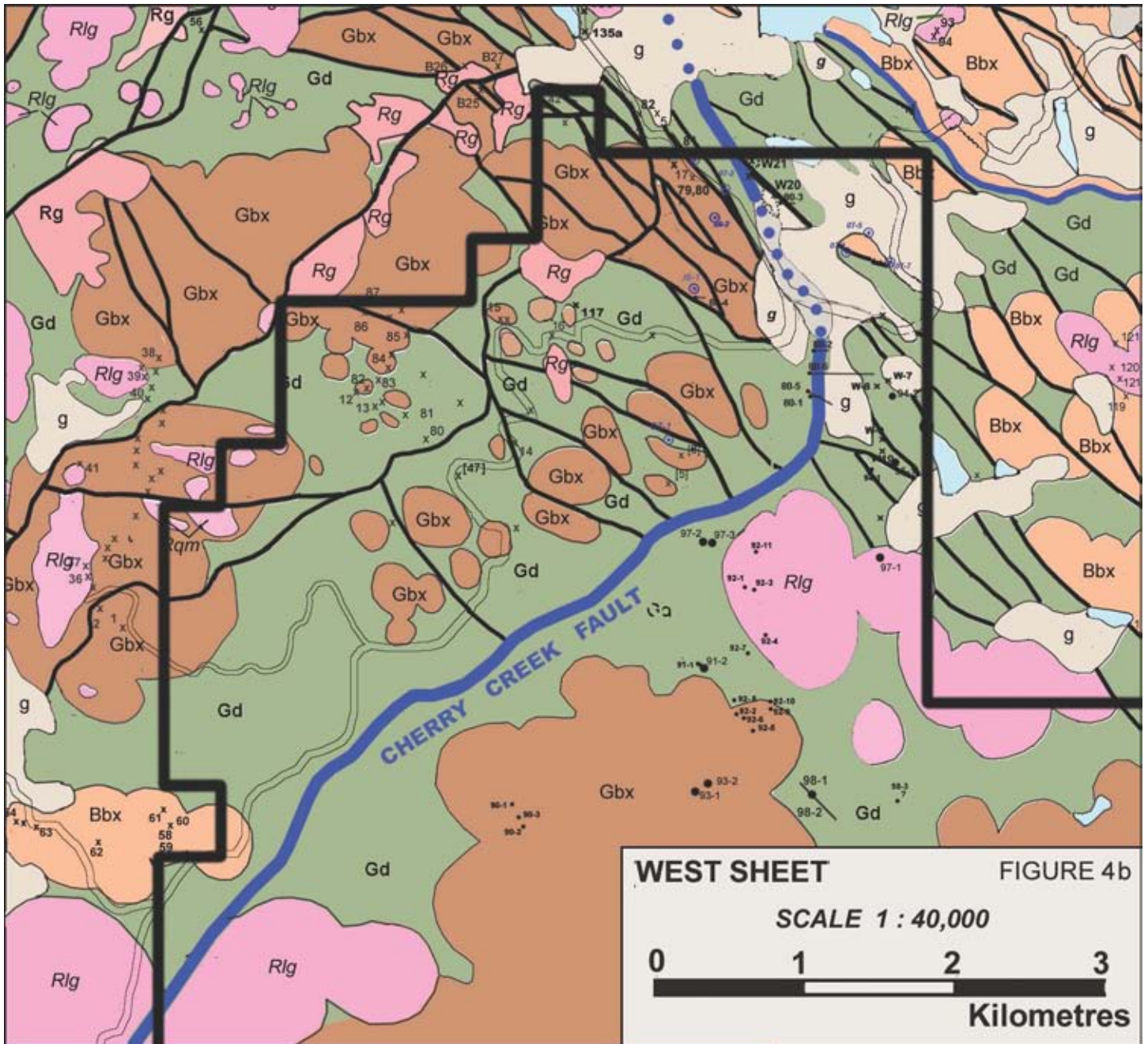
Although the Nicola Group is indicated to be the dominant unit in the map area, I was able to identify it with confidence only within a very small outcrop area along the west boundary. Metamorphosed volcanic rocks that probably correlate with the Nicola Group occur within the Nicola horst in the southeast. Highly metamorphosed volcanic rocks of the horst are juxtaposed with greenschist facies volcanic rocks across the Otter Creek fault.

### **Triassic to Jurassic Calc-alkaline Granitic Rocks**

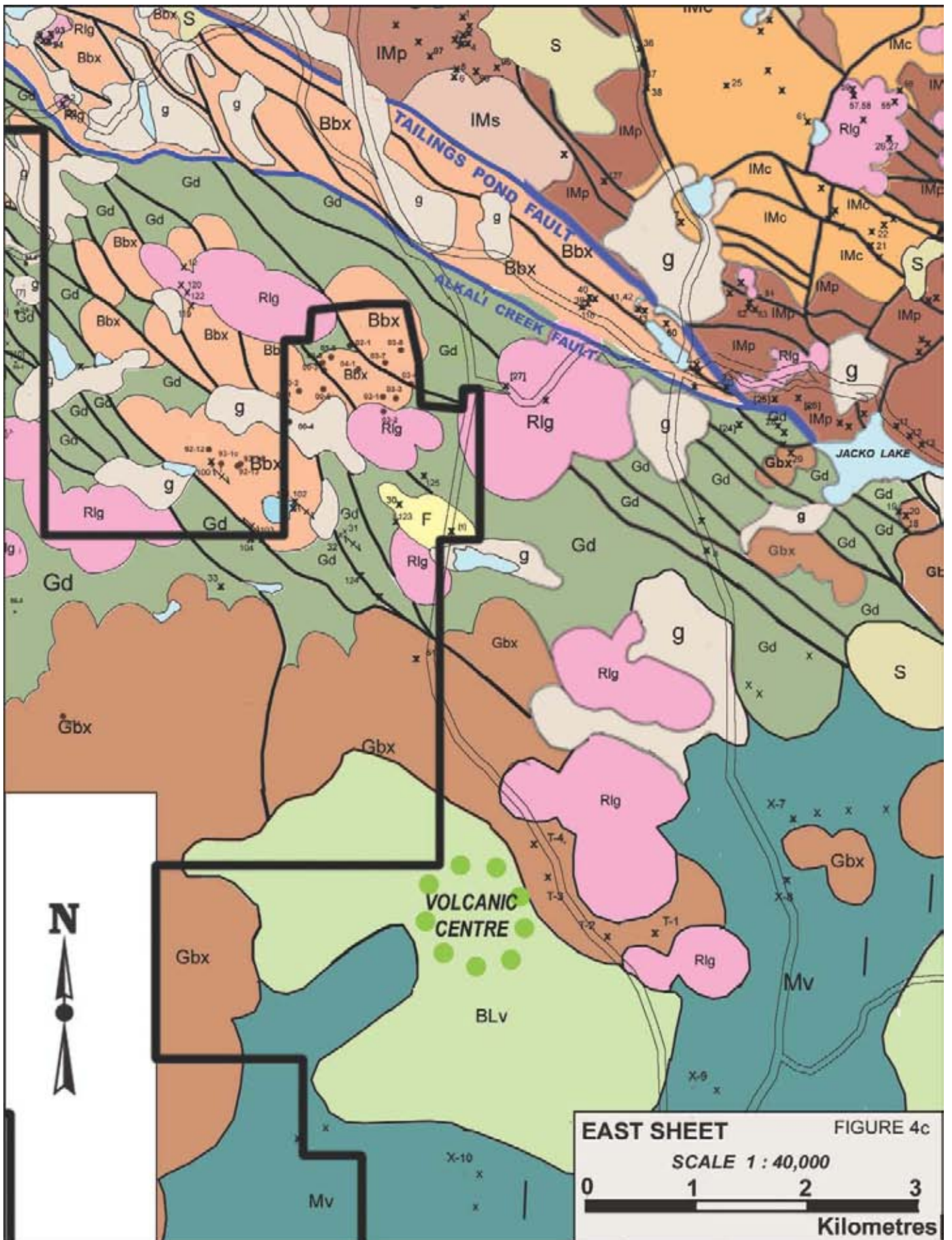
A number of granitic batholiths and stocks of Late-Triassic to Early Jurassic age occur within the region. These include the Guichon Creek batholith that hosts the major copper deposits of the Highland Valley (see Figure 3). These rocks do not crop out within the map area. However, metamorphosed rocks of the Nicola batholith, which probably belong to this suite, are present close to the south-eastern corner.











**LEGEND FOR PROPERTY GEOLOGY MAPS**

## QUATERNARY

**g** Mainly late-glacial ice-contact deposits

## TERTIARY

**BLv** Volcanic rocks of Brigade Lake (Miocene)

**S** Sedimentary rocks (age uncertain)      **F** Felsic volcanic rocks (age uncertain)

## CRETACEOUS

*Roper Lake Intrusions*

**Rg** Granodiorite, quartz monzonite      **Rlg** Porphyritic leucogranitic rock

## JURASSIC

*Alkalic Intrusive Complex*

## Iron Mask Assemblage

**IMc** Cherry Creek facies      **IMs** Sugarloaf facies      **IMp** Pothook facies

## Beaton Lake Assemblage

**Bbx** Mainly intrusive breccia

## Greenstone Mountain Assemblage

**Gbx** Mainly intrusive breccia      **Gd** Mainly porphyritic microdiorite

## TRIASSIC

**Nw** Nicola Group: volcanic & sedimentary rocks of the Western Belt

*Metamorphosed Rocks of the Nicola Horst*

**Nm** Nicola Group(?): mainly volcanic rocks      **Gm** Granitic rocks of the Nicola batholith

 **Fault**

**x**<sup>137</sup>      Specimen No.  
Rock outcrop

 **Major regional fault**

**●**<sup>07-1</sup>      Hole No.  
Diamond drill hole

**Alkalic Intrusive Complex**

The Wood Group is underlain almost entirely by rocks of the Alkalic Intrusive Complex. I have sub-divided this unit into five “assemblages” within the Kamloops – Greenstone Mountain area. Only three of these occur within the map area. The relative ages of these assemblages is unknown, but I believe that the Greenstone Mountain assemblage is the oldest.

### Iron Mask Assemblage

This assemblage is present only in the north-eastern corner of the map area, north of the Tailings Pond fault. The assemblage corresponds to the Iron Mask batholith and the generally accepted designations of the intrusive facies of which it is composed are retained. These are the Pothook diorite, the Sugarloaf diorite and the Cherry Creek facies. (The Cherry Creek facies is composed mainly of bodies of monzonite, syenite, diorite and monzodiorite.) However, I do not believe that a “Hybrid” facies exists, not least because I do not believe that the rocks of the assemblage were in contact with volcanic rocks so that hybridization could take place.

A detailed discussion of this assemblage is not relevant to the present report except to note that its component rock types occur as intrusive bodies throughout the Kamloops-Princeton region. These intrusions are highly variable in size. They intrude rocks of the Nicola Group and some intrusive breccia assemblages, and they make up most of the fragments of the intrusive breccias of the Beaton Lake type.

### Beaton Lake Assemblage

The main outcrop area of the Beaton Lake assemblage in the map area is a wedge-shaped block between the Tailings Pond fault and the Alkali Creek fault. The latter forms the regional boundary between the Beaton Lake and the Greenstone Mountain assemblages, a juxtaposition that extends west for about 20 kilometres before swinging to the south for an indefinite distance. Coalescent breccia pipes of the type that are characteristic of the Beaton Lake assemblage intrude the Greenstone Mountain assemblage -- and perhaps the Iron Mask assemblage as well.



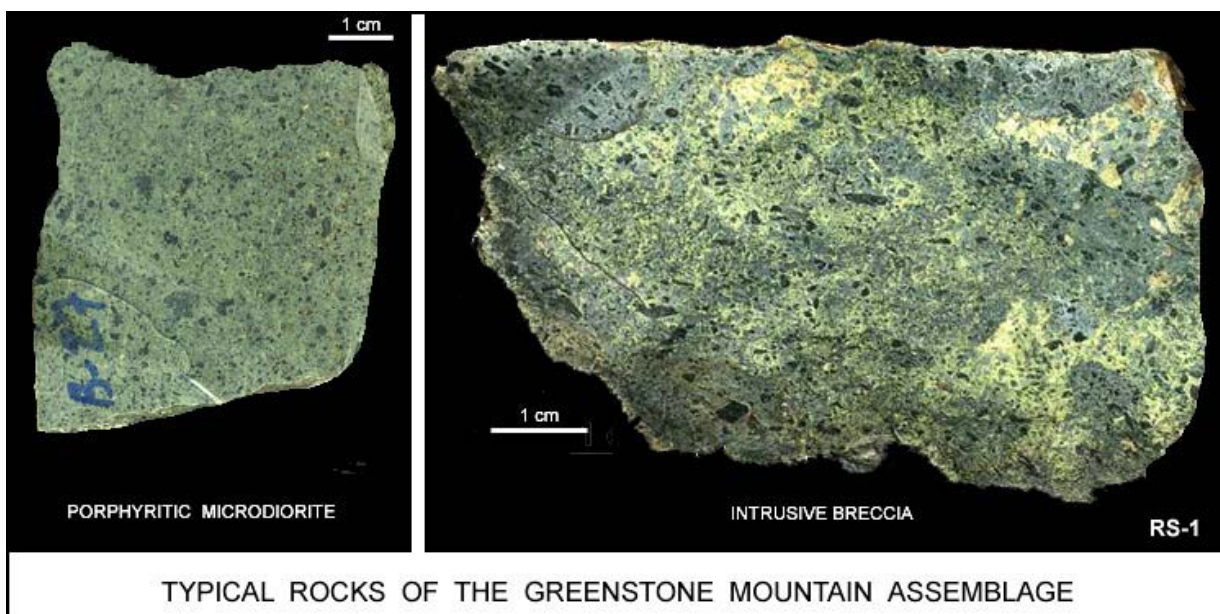
The Beaton Lake Assemblage is composed mainly of intrusive breccia made up of clasts of the rock types that compose the Cherry Creek facies of the Iron Mask Assemblage – monzonite, syenite, monzodiorite. Clasts of diorite resembling other facies of the Iron Mask Assemblage are less common.



The Beaton Lake specimen on the left deserves special attention. This somewhat enigmatic rock type is widely distributed within the rocks of the Alkalic Intrusive Complex in the region, and it may be the main reason that the intrusive breccias have been mistaken for volcanic rocks. I initially mapped it as a volcanic rock and named it “BRB” (for brick-red basalt). This distinctive rock, in a variety of disguises, may occur as either matrix or fragments in intrusive breccia (e.g., in both specimens to the right). BRB uncommonly occurs as extensive bodies of unbrecciated material (e.g., in the southern part of the City of Kamloops) but in no case over the past seven years have I seen any associated stratification or any unequivocal evidence of volcanic characteristics. The rock is characterized by green augite and/or plagioclase phenocrysts in a generally fine-textured, holocrystalline matrix.

### Greenstone Mountain Assemblage

The Greenstone Mountain assemblage underlies more than 90% of the Wood Group. It consists mainly of altered porphyritic microdiorite invaded by pipes of intrusive breccia of the same composition. The oldest unit in the assemblage is a microdiorite that most commonly is hornblende-pyroxene-plagioclase phyric. The rocks often have a characteristic “greenstone” appearance due to epidote and chlorite alteration – giving it a superficial resemblance to andesitic volcanic rock. This impression is intensified within the Northwest Deformation Zone, where ductile deformation and alteration banding locally mimic stratification.



The microdiorite was invaded by a multitude of pipe-shaped bodies of intrusive breccia that vary in size from 200 metres to 1.5 kilometres in diameter. The breccia pipes characteristically coalesce into large irregularly shaped clusters. Most of the southern part of the Property is underlain by a portion of the largest continuous mass of breccia pipes that I have encountered within the region.



The photo to the right, taken in the north-western part of the Property, shows a group of small breccia pipes that are partly separated by microdiorite. The east-west fault marks the southern margin of the Northwest Deformation Zone. The larger pipes to the north are elongated parallel to the deformation zone and resemble gigantic lava pillows.

## Roper Lake Intrusions

Small bodies of granitic rock are very widely distributed throughout the map area. On the basis of a field examination at the type locality, and on a literature review, I have correlated these rocks with the Roper Lake stock and of the many nearby small bodies of granitic rock. An Early Cretaceous date of 124 Ma, is cited in Pauwels (2003).

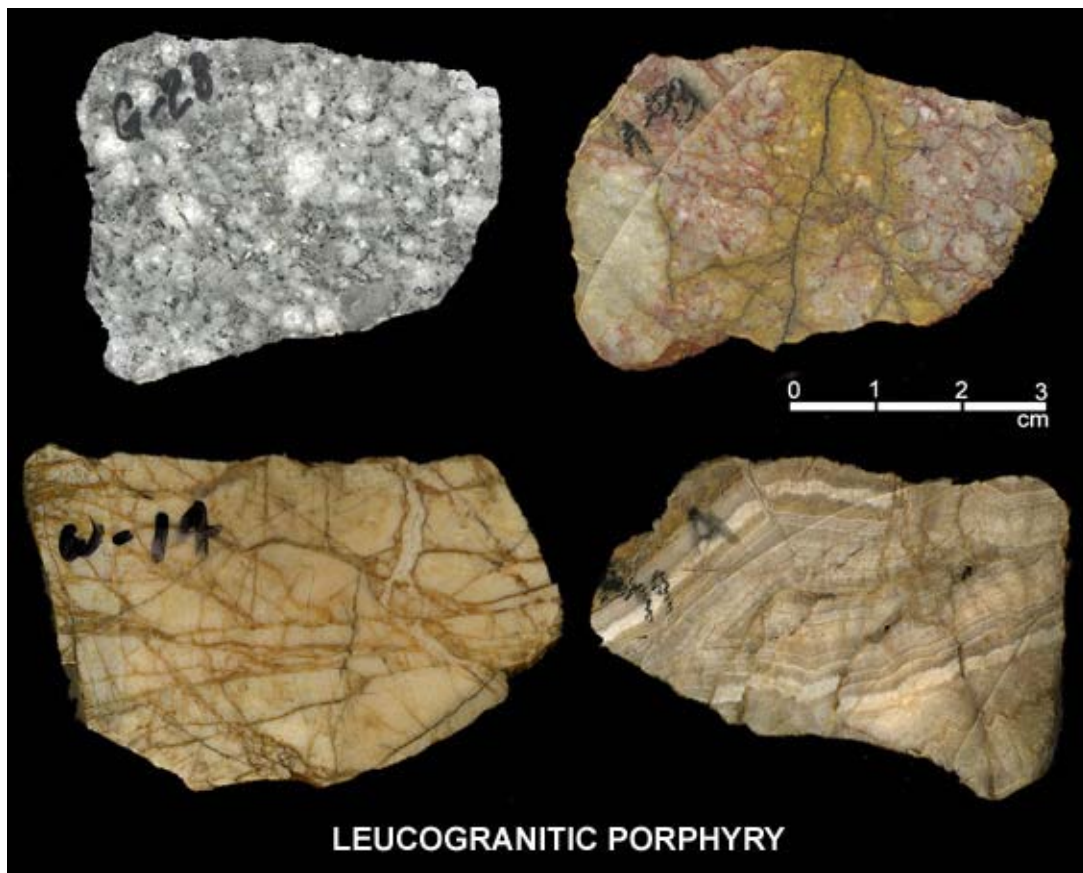
The “Roper Lake” Intrusions are well exposed on Greenstone Mountain and at the type locality near Roper Lake, which contains a significant molybdenum prospect (MINFILE 92I NE071). They are abundant, but very poorly exposed in the rest of the region. In the lowlands, outcrops of the Roper Lake Intrusions tend to be very small and extremely scarce, even though the outlines of the intrusions are fairly apparent as low, rounded domes on the air photos. Although these granitic intrusions are interpreted to underlie perhaps 25% of the terrain along the deformation zone, the most recent geological map (Monger, 1989) shows only a single body within an area of about 80 square kilometers.

The air photos reveal that the porphyritic granitic rocks in the lowlands north and east of Greenstone Mountain were intruded as coalescent pipe-shaped bodies. They are somewhat difficult to differentiate on the photos from the plethora of circular features in the enclosing Alkalic Intrusive Complex. However, they do not exhibit the same “rubbly” surface texture and they tend to be more nearly circular in outline, probably due to distortion of the pipes in the older rocks within the pre-Cretaceous deformation zone. They almost universally are highly fractured, silicified and quartz veined. Hematitic and limonitic staining is ubiquitous. As a result, the texture is obscured and



the rock in the pipes appears to have been misidentified in every case that I have been able to locate and check. Dacite is the most common designation and it generally is attributed to the Kamloops Group, although dacite is by no means typical of that unit. [It should be stressed that I am referring to the highly fractured and altered rocks in the pipes, and not to the larger bodies in the area surrounding Greenstone Mountain.]

Two types of Roper Lake intrusions have been identified. The commonest type is “crowded” feldspar porphyry (granophyre) that contains a few scattered mafic crystals and conspicuous quartz “eyes” in a sparse fine-textured matrix. I refer to this rock type as “leucogranitic porphyry.” Equigranular granodiorite often crops out adjacent to the porphyry, but it does not appear to have been intruded as pipes, and it is more recessive.



**LEUCOGRANITIC PORPHYRY**

The combination of intense fracturing, veining and silicification in the pipes disrupts the texture and creates a very pale, somewhat porcelaneous, rock that can easily be mistaken for a felsic volcanic rock. However, evidence of large feldspar crystals in a somewhat finer-textured matrix usually can be distinguished. The specimen at the upper left in the photograph is “fresh” rock from Greenstone Mountain. The remaining specimens are from pipes. Identification of the texture becomes increasingly difficult as the silicification increases. [Material that is similar to specimen W-14 is particularly

common.] Medium-textured, equigranular granodiorite frequently is associated with the granophyre pipes, but it is not obviously fractured or altered.

A relatively large body composed of coalescent pipes and intersected by the Cherry Creek fault is interpreted along the western boundary. (The interpretation was based on characteristic circular features, since I had no field geological data.) The eastern offset portion of this body lies within the Wood Group, about two kilometers east of the Roper Lake stock – and the Roper Lake molybdenum deposit.

### **Sedimentary & Volcanic Rocks of Unknown Age**

Small, flat-lying outliers of undetermined age crop out throughout the region. They include sandstone, siltstone, mudstone, limestone and felsic lava. Not all of the small outcrop areas are shown on the maps.

### **Volcanic Rocks of Brigade Lake**

Olivine basalt lava flows and pyroclastic rocks of Miocene age occupy a large area that overlies the Summers Creek fault southeast of the Property. The volcanic rocks were extruded from the volcanic centres shown on Figure 4a, as well as from other vents. The north-western portion of small outcrop area that surrounds a local volcanic centre is located along the eastern margin of the Wood Group.

### **Glacial Deposits**

Glacial till covers almost all of the bedrock in the map area. It is relatively thin and does not present a serious hindrance to conventional geochemical soil sampling or to photo-geological interpretation.

Extensive late-glacial melt-out deposits are restricted to the northern portion of the Property. This transported material does inhibit soil sampling. Fortunately, the mobile metal ion (MMI) extraction technique was utilized by Green Valley, apparently with satisfactory results.

### **Faulting**

The important major fault structures in the vicinity of the Wood Group were discussed under “Regional Geology.” Almost all of the other faults that were identified on the air photos are located in the northernmost part of the Property – and almost all of these appear to be related to the Northwest Deformation Zone.

The Northwest Deformation Zone is comprised of a number of regional faults with associated ductile deformation. The rocks between the faults are much less deformed but “stretching” of the rocks parallel to the faulting is common as indicated in the photograph on page 17. The Northwest Deformation Zone is younger than the Alkalic Intrusive Complex, which probably is Early Jurassic in age, but the deformation

is truncated by the Early Cretaceous Roper Lake Intrusions. The movement along faults of the deformation zone appear to be small.

The Cherry Creek fault is interpreted to offset the Northwest Deformation Zone by several kilometres (east side north). This interpreted sinistral movement is supported by similar offsets of the Alkali Creek fault and of the Roper Lake-type stock in the south-western part of the property.

The most intensely deformed zones of the Northwest Deformation Zone frequently, if not universally, are (mis)interpreted as sedimentary rocks (e.g., Logan & Mihalynuk, 2006). [I have done the same thing myself in the not-so-distant past.] They are particularly difficult to identify when dark fragments are stretched within a pale matrix.



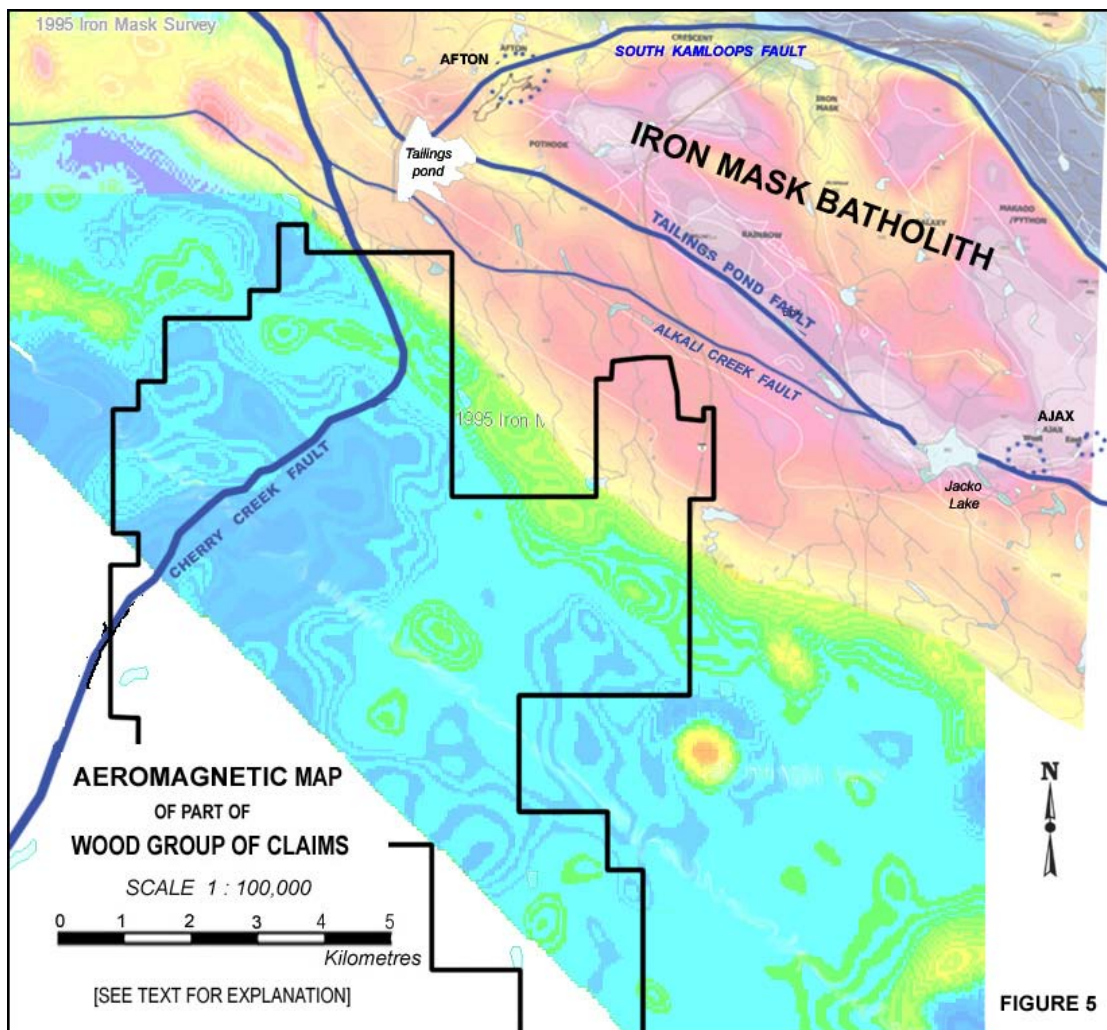


# DISCUSSION OF THE RESULTS OF TECHNICAL SURVEYS

## AIRBORNE GEOPHYSICAL SURVEYS

### Aeromagnetic Surveys

A regional aeromagnetic survey was carried out by the GSC in 1966-1968 (the local maps are Cherry Creek 5271G and Kamloops 5216G). These maps show isomagnetic contours only, and I find them more useful for interpretative purposes. The Iron Mask area was flown in a helicopter-borne survey by the GSC in 1995 (GSC Open File 2817). These data were digitally manipulated and integrated with radiometric and geological maps by BCEMPR in 2006 as Open File 2006-2). These digitally manipulated and coloured maps are more effective for promotion and for effortless viewing. The aeromagnetic data illustrated on Figure 5 were composited from maps taken from the two open file reports.



The most striking feature of the magnetic map is the generally high magnetic intensity (“hot” colours) over the Iron Mask batholith, which is located between the Tailings Pond and the South Kamloops faults. This high magnetic intensity is by no means absolute within the batholith. The highest magnetic intensity appears to be confined mainly to outcrop areas of the Pothook diorite. The Afton orebody is located within a relative magnetic “low.” This ore deposit was emplaced in rocks of the Cherry Creek intrusive facies, but there also is evidence of the destruction of magnetite by hydrothermal alteration. The zone of very low magnetic intensity, perhaps the lowest in this part of the region, in the northeast corner of Figure 5 closely correlates with the outcrop area of BRB.

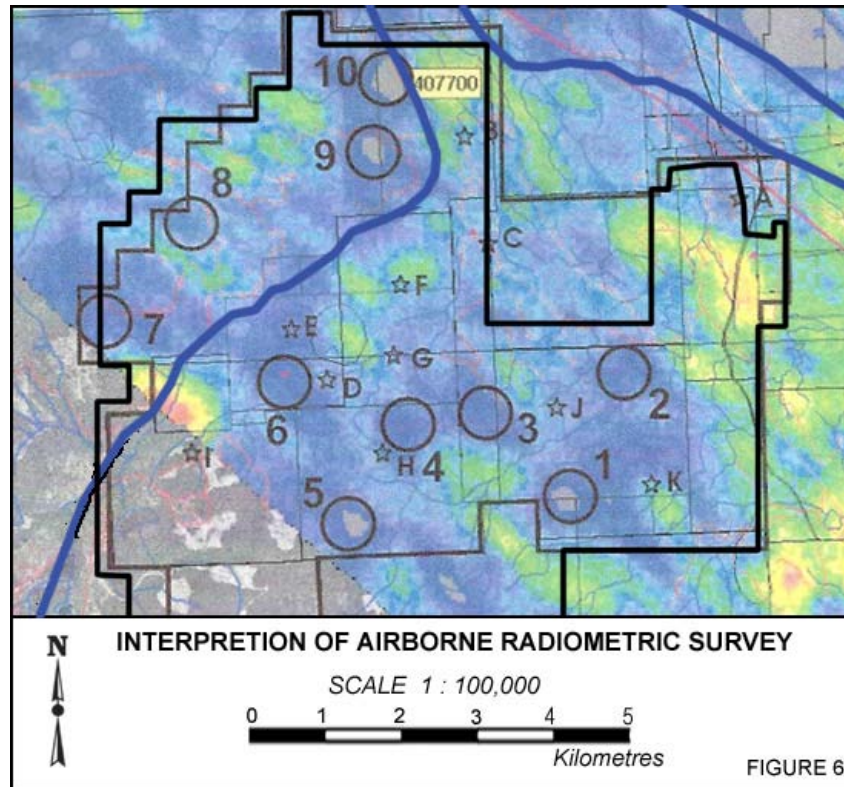
In contrast to the high magnetic intensity over the Iron Mask assemblage, the magnetic data in the southern part of Figure 5 appear to have a fairly uniform magnetic property. The strongest anomaly is a small circular magnetic feature west of the Property that is located over an interpreted Miocene volcanic centre. [This is a textbook example of the magnetic expression of a vertical magnetic cylinder – a central “high” surrounded by an annular “low.”]

A large, distinct area of particularly low magnetic intensity follows the Otter Creek fault in the north-western part of the Property. Much of the earlier diamond drilling carried out by Green Valley was located within this anomaly area. The cause of the anomalously low magnetic intensity is uncertain. However, drill logs of holes close to the fault describe “intensely weathered” rocks at depths of greater than 200 metres, suggesting that the “weathering” was, in fact, hydrothermal alteration that may have diminished the magnetic property. No drill cores have survived to enable a check this possibility.

Between the generally very high magnetic intensity over the Iron Mask batholith and the uniform low intensity area in the south there is a zone of intermediate intensity. In the western part of the map area the south margin of this zone is the Alkali Creek fault, which forms the contact between the Beaton Lake and the Greenstone Mountain assemblages of the Alkalic Intrusive Complex. East of the Otter Creek fault the transitional zone extends into the Greenstone Mountain assemblage. [It should be noted that the data manipulation and digital colouring tend to emphasize this zone whereas the older contour maps indicates a more gradual decrease in intensity, which I believe is more compatible with the geology.] In any event, there are a number of intrusions of the Beaton Lake assemblage into the Greenstone Mountain assemblage within this zone. One of these is located over the Monarch “Zone” in the north-eastern corner of the Property.

## Radiometric Survey

The radiometric survey was carried out as part of the multisensor survey noted above (GSC Open File 2817) that combined gamma ray spectrometric and magnetic sensors. The data from this survey were analyzed and interpreted for Green Valley by Robert B. Chives of the Geological Survey of Canada.



The colour pattern reflects the ratio of thorium to potassium ( $eTh/K$ ). Low  $eTh/K$  values (shown in dark blue) are considered the most favourable for mineralization. The numbered circles indicate “airborne anomalies” based on low  $eTh/K$  indications, and apparently also on high magnetic values. In a case like this, where magnetic “highs” are scarce, the interpretation is based almost entirely on the radiometric data. The report states that, “*these lows are generally coincident with 11 zones of interest identified by the companies.*” (These are indicated by alphabetized stars.) However, I have not been able to locate a source for the putative “zones of interest.”

## GROUND GEOPHYSICAL & GEOCHEMICAL SURVEYS

A typical exploration program by Green Valley was composed of a Mobile Metal Ion (MMI) geochemical survey and an Induced Polarization (IP) geophysical survey. Since the results of these surveys inevitably produce anomalies, they were followed by diamond drilling.

## **Mobile Metal Ion Surveys**

“Mobile metal ions” is a term used by the proponents of this technique to describe ions that have been extracted from oxidizing metallic minerals and subsequently are transported upward into the weathering zone. They eventually become loosely absorbed on soil particles a few inches below the base of the organic layer. Convection, electrochemistry, diffusion, capillary rise and seismic pumping are some of the hypotheses that have been put forward to explain a very poorly understood means of transport. The MMI laboratory technique strips mobile metal ions from the surface of the soil particles using a partial extraction that (hopefully) does not extract metals from the soil itself. In cases where the mineralized rock is covered by barren material the technique offers the possibility of detection of mineralization that is off limits to conventional soil geochemistry.

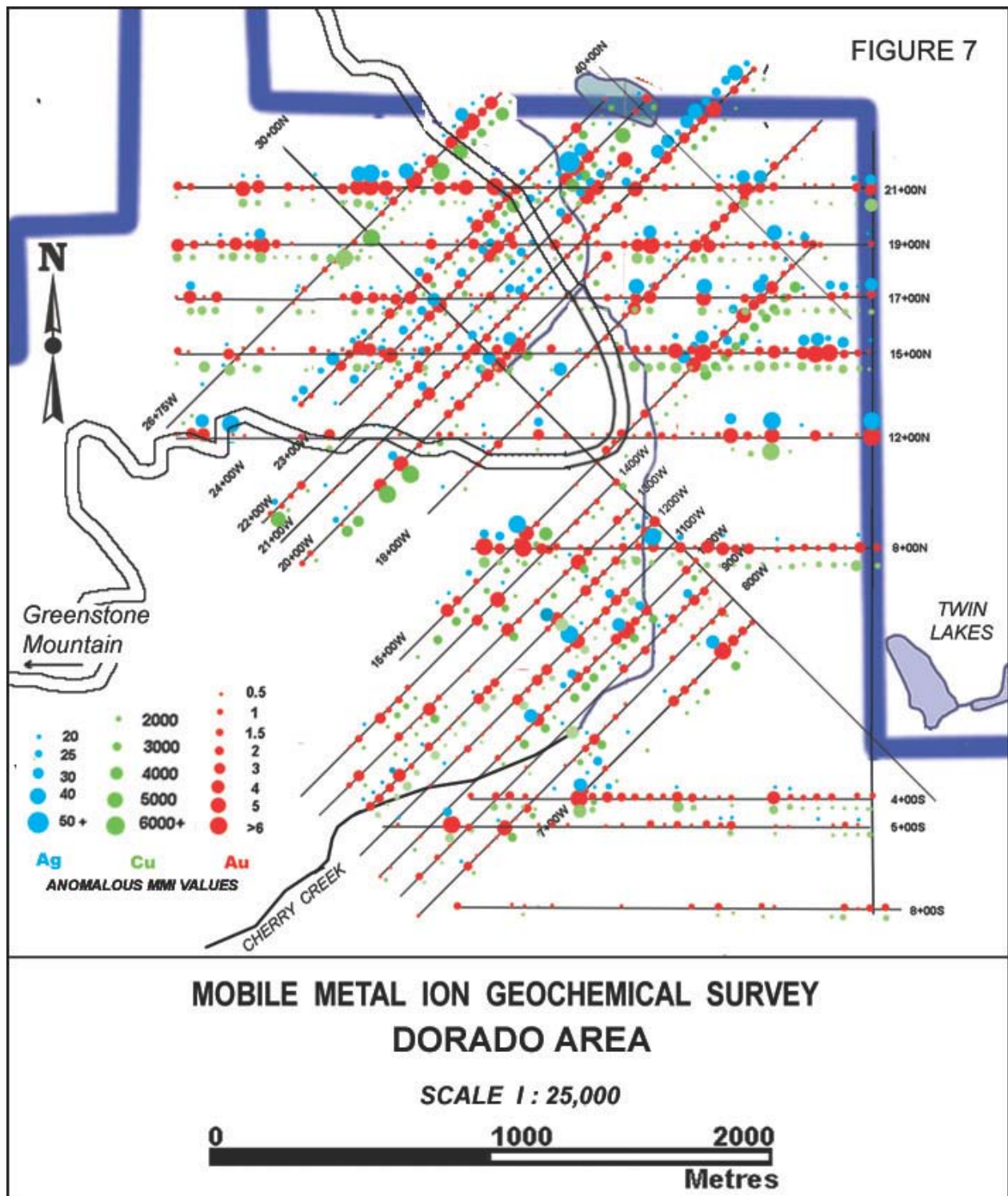
Most of the surveys on the Wood Group were carried out on till, which is a good sampling medium for conventional soil-sampling techniques, rendering the use of MMI unnecessary in most cases. Green Valley management was aware of this, but they were convinced by the proponents of the method that mineralization could be detected to a depth of several hundred metres beneath barren rocks. I have not found any convincing evidence that this is applicable to British Columbia, if at all. However, I believe that MMI is capable of detecting mineralization beneath transported cover materials that preclude the use of conventional soil sampling. The effective depth has not been determined to my knowledge, but it likely is relatively shallow. Local deposits of transported overburden are distributed throughout the northern part of the Property, so the use of MMI was a reasonable decision. The negative factors are the greater cost and the difficulty experienced in interpreting the results, since case histories for the local environment are totally inadequate. The data interpretation is not well served by the proponents’ advice on data treatment and presentation, since it appears to be aimed more toward promotion than science.

Soil samples from the more recent surveys were analysed for more than 50 elements, providing a data base that is of possible value beyond the determination of the obvious target metals. For example, I found that there was a striking depletion in the values of a number of elements in several areas and that in some cases this depletion strongly correlated with increases in Cu, Au and Ag. (The depleted elements include Zn, Pb, Co, Ba, Th, U, Zr, and all of the rare earth elements.) I have been unable to establish a meaningful pattern for this depletion where there is no evident correlation with an increase in other elements. It is possible that the reduction of a spectrum of elements is related to hydrothermal alteration.



## Dorado Area

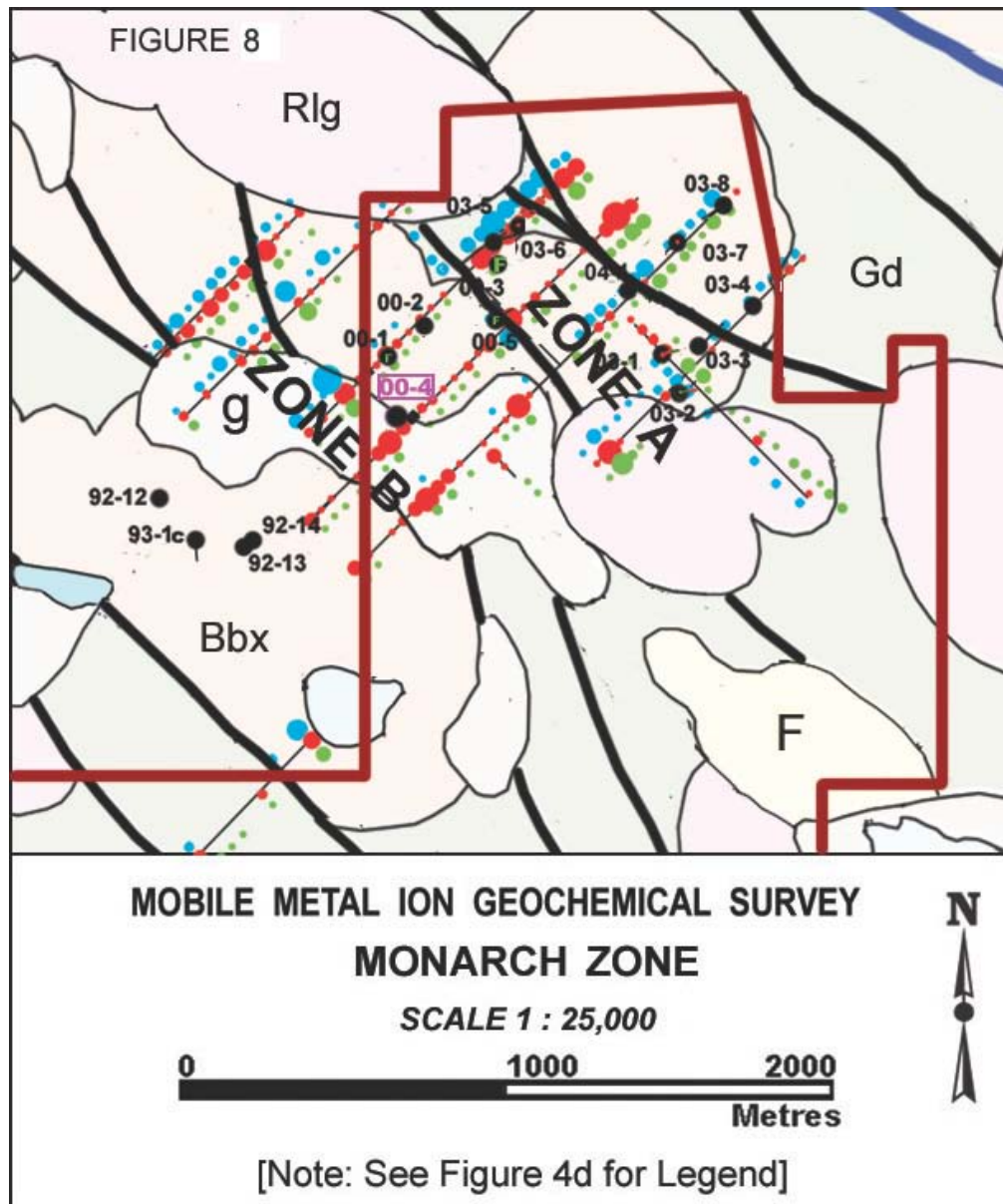
This area, in the north-western part of the Property is covered by two MMI surveys (see Figure 7). A survey that followed northeast-trending lines was completed in 2006 (Mark, 2007). A subsequent survey that utilized east-west lines was submitted as assessment work (ARIS 29980), but the report has not been released to the Internet.



I re-interpreted the MMI data for Cu, Au and Ag based on an experience-derived “threshold of interest” rather than mathematical “response ratios.” Gold is indicated by the MMI sampling to be much more important than copper or silver. There is fairly good correlation between the three elements overall. The highest concentrations appear to be related to two structural controls: the northwest deformation zone and, to a lesser extent, the Cherry Creek fault.

### Monarch Area

The Monarch Area occupies the north-eastern corner of the Property. (The Monarch two-post claims constitute the oldest part of the Wood Group.) The geology of this area is more complex than at Dorado. The geological interpretation is shown on Figure 8 along with the MMI data.

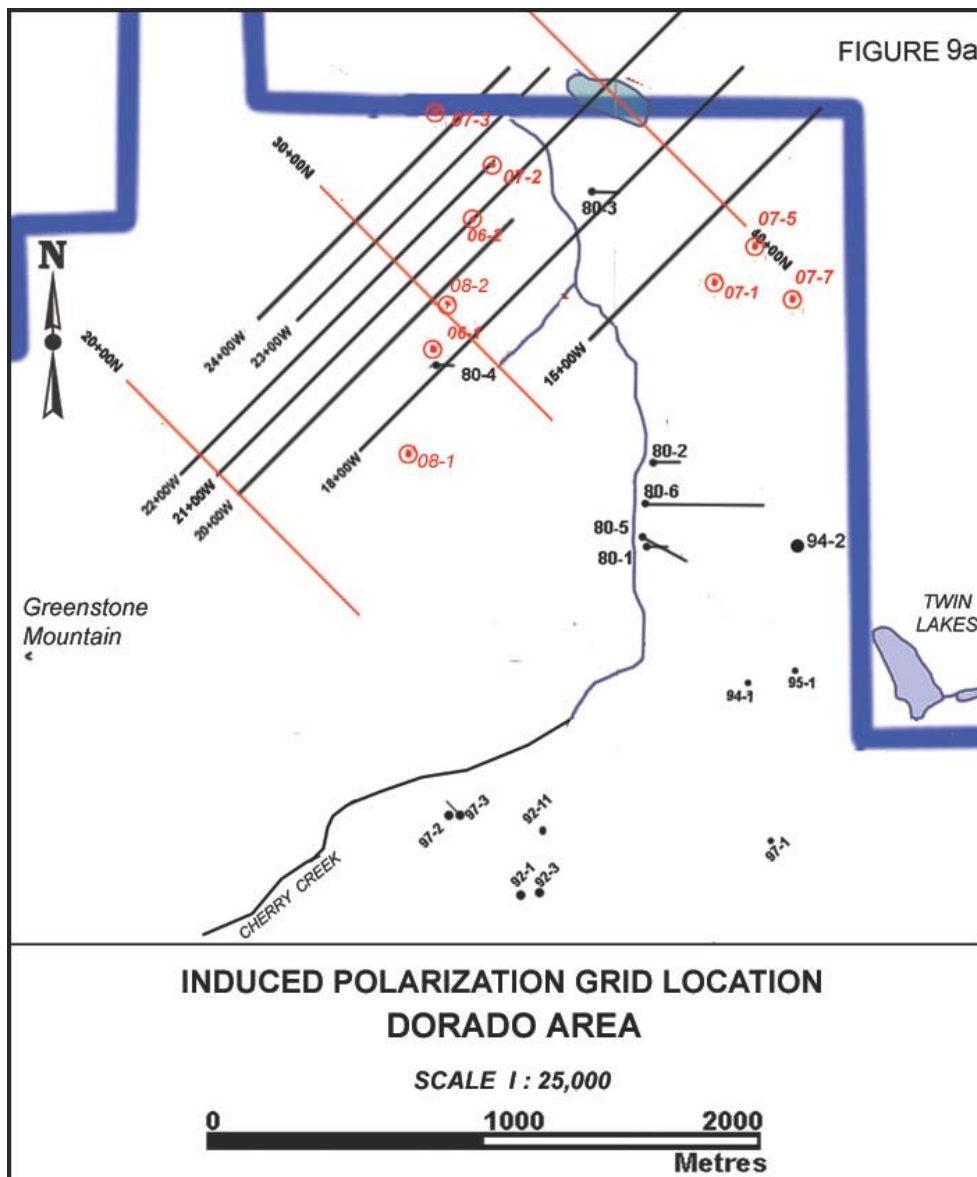


Significantly anomalous gold values are far more abundant than high copper values. Anomalous silver indications tend to be localized. In general, there is fairly good correlation between the three metals. Most of the significant anomalous gold values appear to be associated with two groups of northwest-trending faults that I have designated as Zones A and B. It is of interest to note that high MMI gold values from Zone A were found in samples collected from transported late-glacial material (g). Conventional geochemical soil sampling presumably would not have detected them.

### Induced Polarization Surveys

Induced polarization surveys were carried out over both the Dorado and Monarch Areas. The surveys generally utilized the same traverse lines as the MMI surveys, but with less complete coverage.

#### Dorado Area





Only the northern part of Dorado Area was covered by IP surveys. The work was carried out by David Mark who provided me with cross sections, but I do not have the technical details or any interpretative data. Unfortunately the work was not filed for assessment credit. The survey followed northeast lines, which was the optimum orientation to provide information relating to the Northwest Deformation Zone. Figure 9b illustrates a cross section over an interesting diamond drill hole (discussed later) and the important Cherry Creek fault. [The Cherry Creek fault appears on many geological maps, in many different locations. This version at least has the distinction of following the eponymous drainage for its entire length.] Figure 9c is a compilation of all of the IP survey cross sections. The MMI data are shown as well as the calculated apparent resistivity and chargeability on both Figures 9b and 9c.

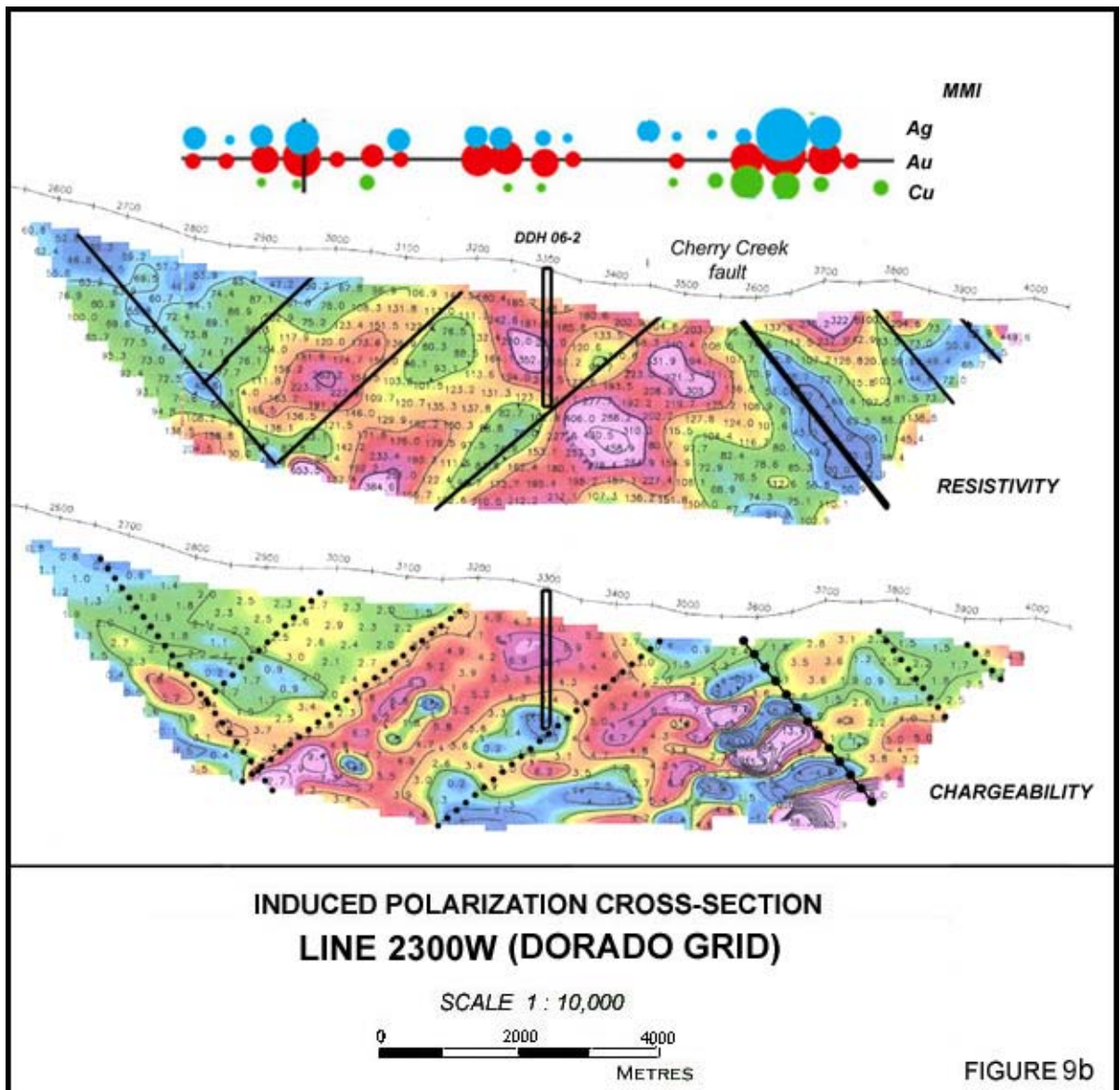
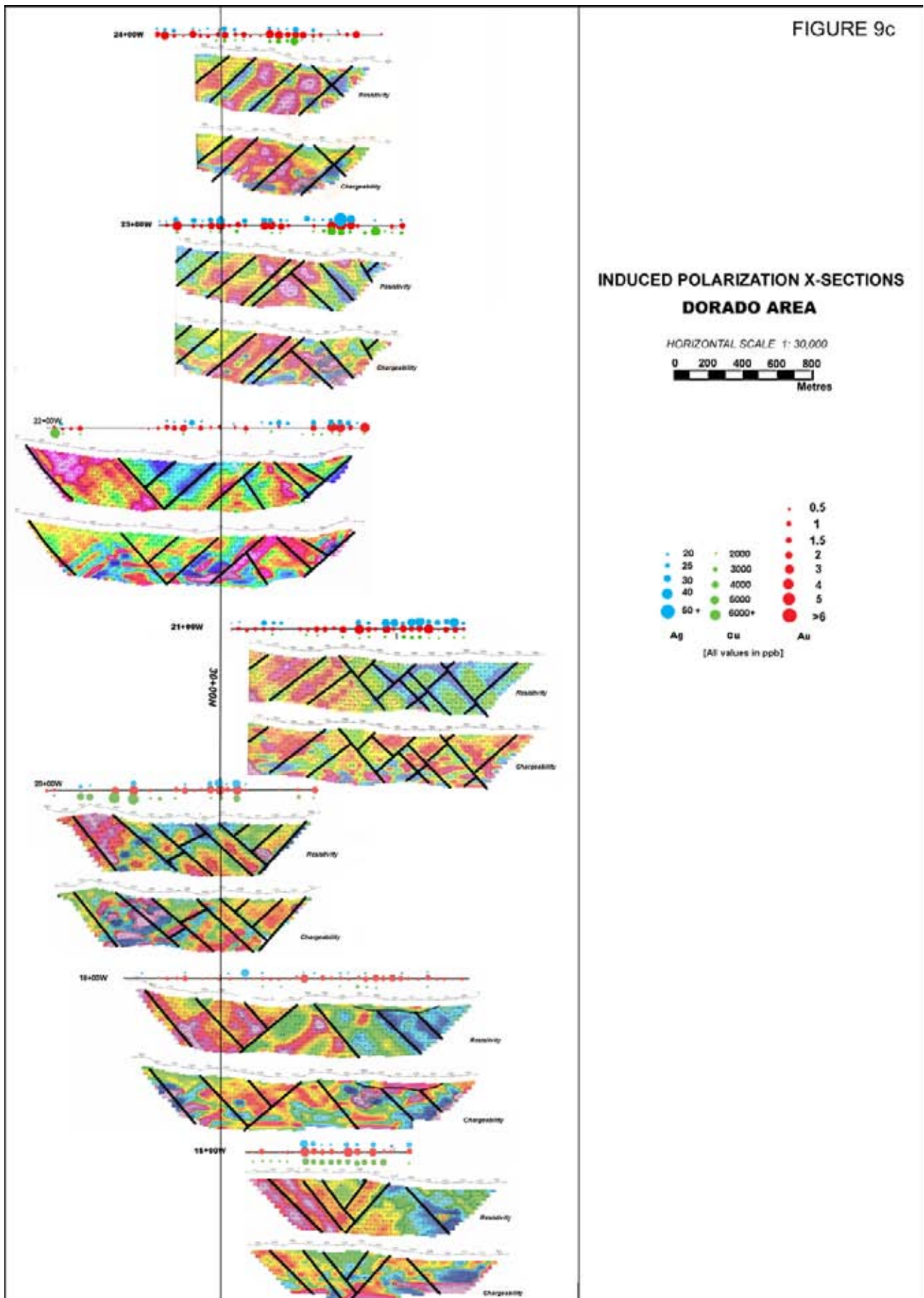


FIGURE 9c



I had carried out a photo-geological study of the Kamloops--Greenstone Mountain area a year or so prior to examining the results of the IP survey. Surprisingly, all of the interpreted faults, most of which were related to the "deformation zone swarm," appear to be reflected in the IP data as resistivity "lows." One of the most interesting features of the survey is that the dips of the faults appear to be clearly indicated. In several cases this inclination was confirmed in the field by foliation close to the interpreted faults. A particularly distinct "low" defines the Cherry Creek fault. Field mapping indicates an apparent dip of 60°E. In general, the dip of the faults appears to be considerably steeper than geophysical indication.

### Monarch Area

The main chargeability anomaly on Figure 10 is generally coincident with the anomalous MMI zone A. Unfortunately the IP survey did not extend far enough to the southwest to test Zone B.

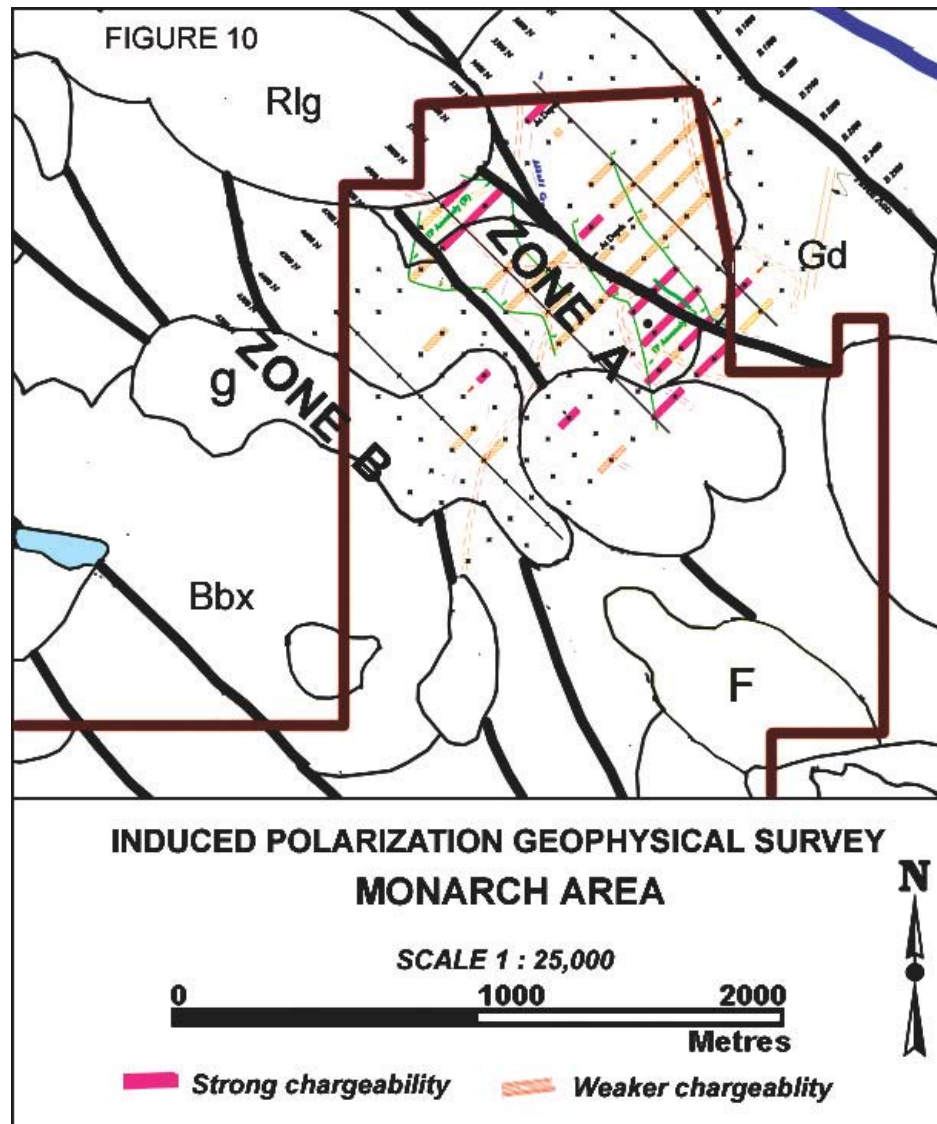
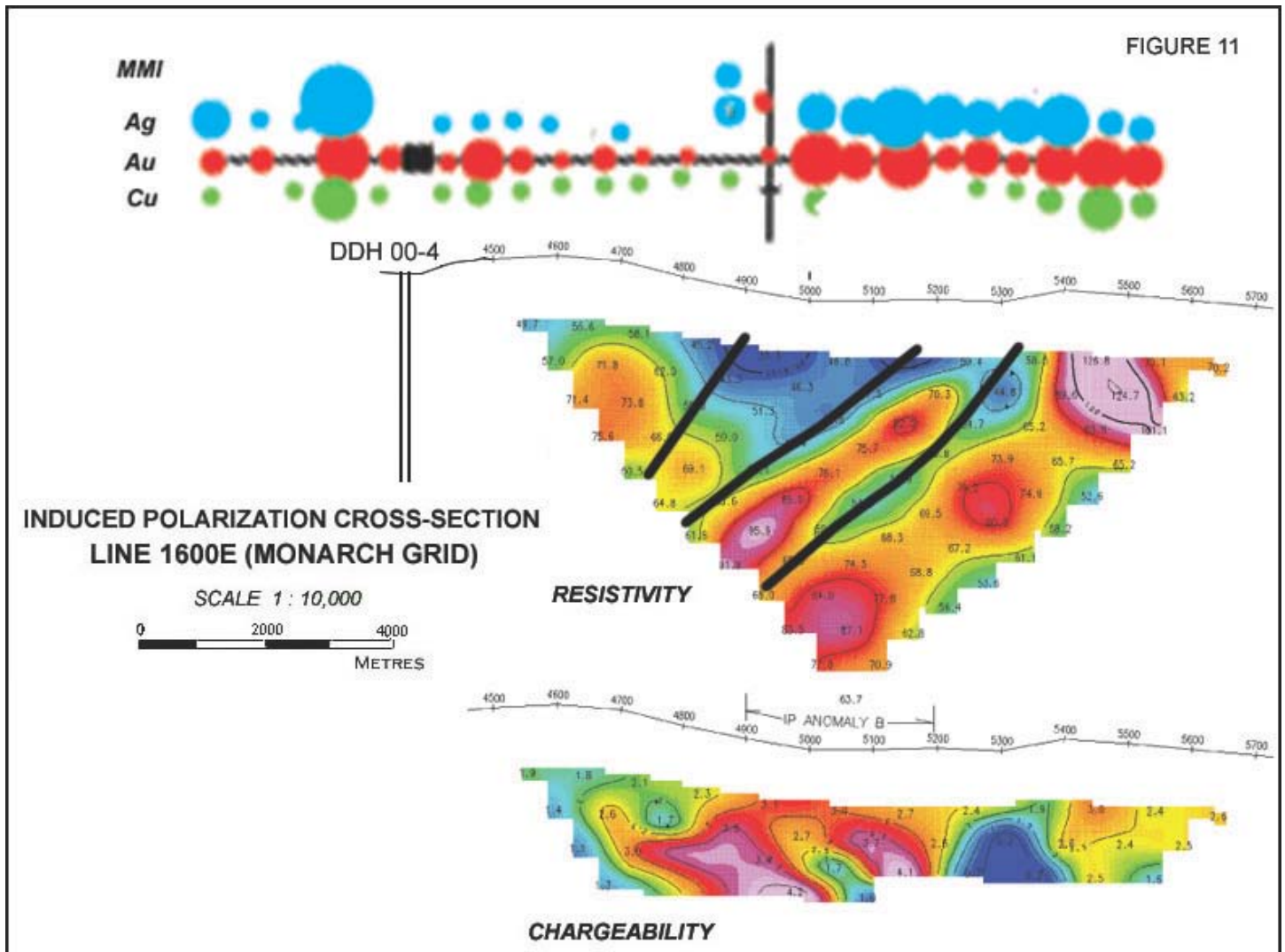




Figure 11 is a cross section of Line 1600E, which crosses the north-eastern part of the Monarch Grid. DDH 00-4, the only hole drilled within Zone A is illustrated, along with the MMI data along the line. This drill hole is described under “Diamond Drilling.”

Three faults related to the northwest deformation zone are shown on the resistivity cross section. The surface location of these faults was taken from the photo-geological interpretation, and the downward projections are interpreted from the resistivity data. As in the Dorado Area, faults within the deformation zone are unusually well reflected in the resistivity data. Field geological mapping at a number of localities suggests that the direction of dip is accurate, but that the dip angle is steeper than indicated.





## DIAMOND DRILLING

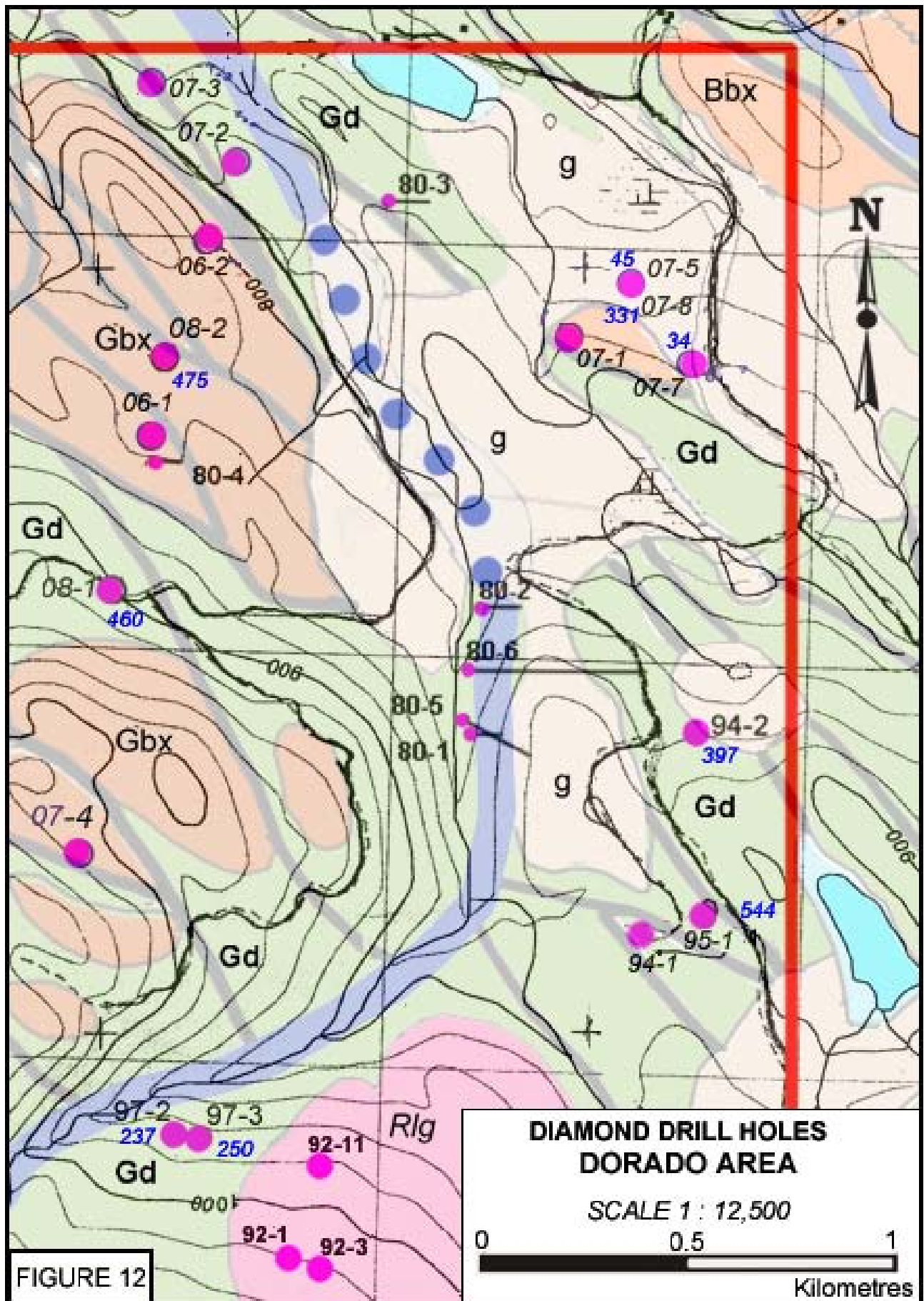
I have located 61 diamond drill holes within and adjacent to the Property. The earliest drilling on record was carried out by Dorado Resources Ltd. (Tully, 1981). The remainder were put down by Green Valley Mine Inc.

A total of 18 holes were drilled in the west-central part of the Property, 16 of them in the period 1990-1993. The logs for many of these holes were before they could be applied as assessment work. It is evident that very little assaying was carried out on the drill core in this area. The reasons for drilling these holes are obscure. The locations of the holes in this area are shown on Figure 4b.

### Dorado Area

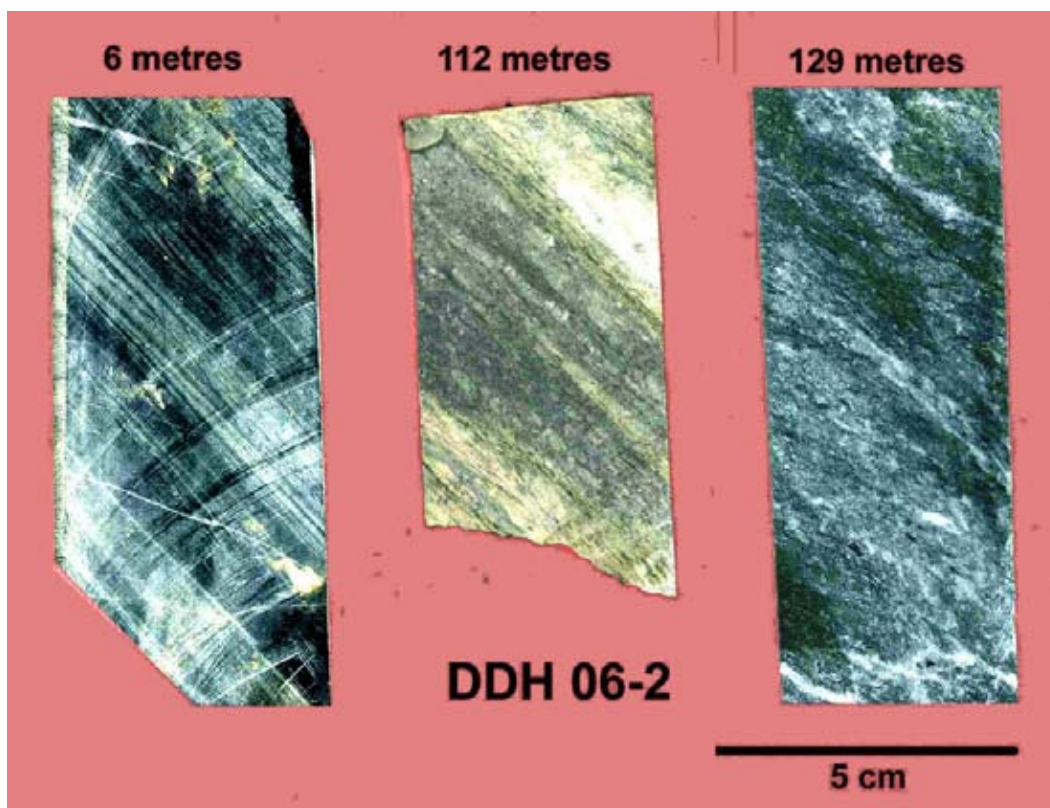
The area was named for Dorado Resources, which drilled 6 holes therein. The drilling apparently was based on electromagnetic (EM) surveys (Tully, 1981). EM is not an appropriate method for porphyry copper exploration. However, the survey seems to have been successful in detecting some of major faults, although it apparently failed to indicate the directions of the dips of the faults. Four holes were drilled through the Cherry Creek fault. Unfortunately they all appear to have been drilled “down-dip”. DDH 80-4, to the west, followed a west -dipping shear zone for its entire length, but did not recover any core to a depth of 90 metres. DDH 80-3 followed an east-dipping fault, one of the interpreted faults shown in the eastern portion of Figure 9. The drilling did not intersect copper mineralization. Quartz veining and silicification were indicated in several holes, but assaying for gold does not appear to have been carried out.

Drilling carried out by Green Valley during the 1990's (8 holes) was confined to the southern part of the area, east of the Cherry Creek fault. All of the cores from these holes have been lost, and most of the logs as well. The remaining 11 holes were drilled between 2006 and 2008. These holes all were located within the Northwest Deformation Zone. This zone apparently was offset several hundred metres (east side north) along the Cherry Creek fault. Several other lines of evidence tend to confirm this offset. The holes are all deep, except for the ones that were aborted prematurely. The average depth of the holes within the deformation zone for which information is available averaged 415 metres. Almost all of them were drilled vertically. The 2006-2008 drill cores were relocated to protected storage areas.



The results of the eleven most recent diamond drill holes are not in the ARIS database and logs have been lost for several of them. As it happens, I visited many of the recent holes while drilling was in progress. Unfortunately, I was unable to persuade the various site geologists that “porphyritic andesite” and “volcanic breccia” were diorite and intrusive breccia respectively. Most of the cores, except for dike rocks, were logged as varieties of “Nicola volcanic rocks.” The exceptions were dike rocks, and ductile deformation zones that were mapped as bedded rocks.

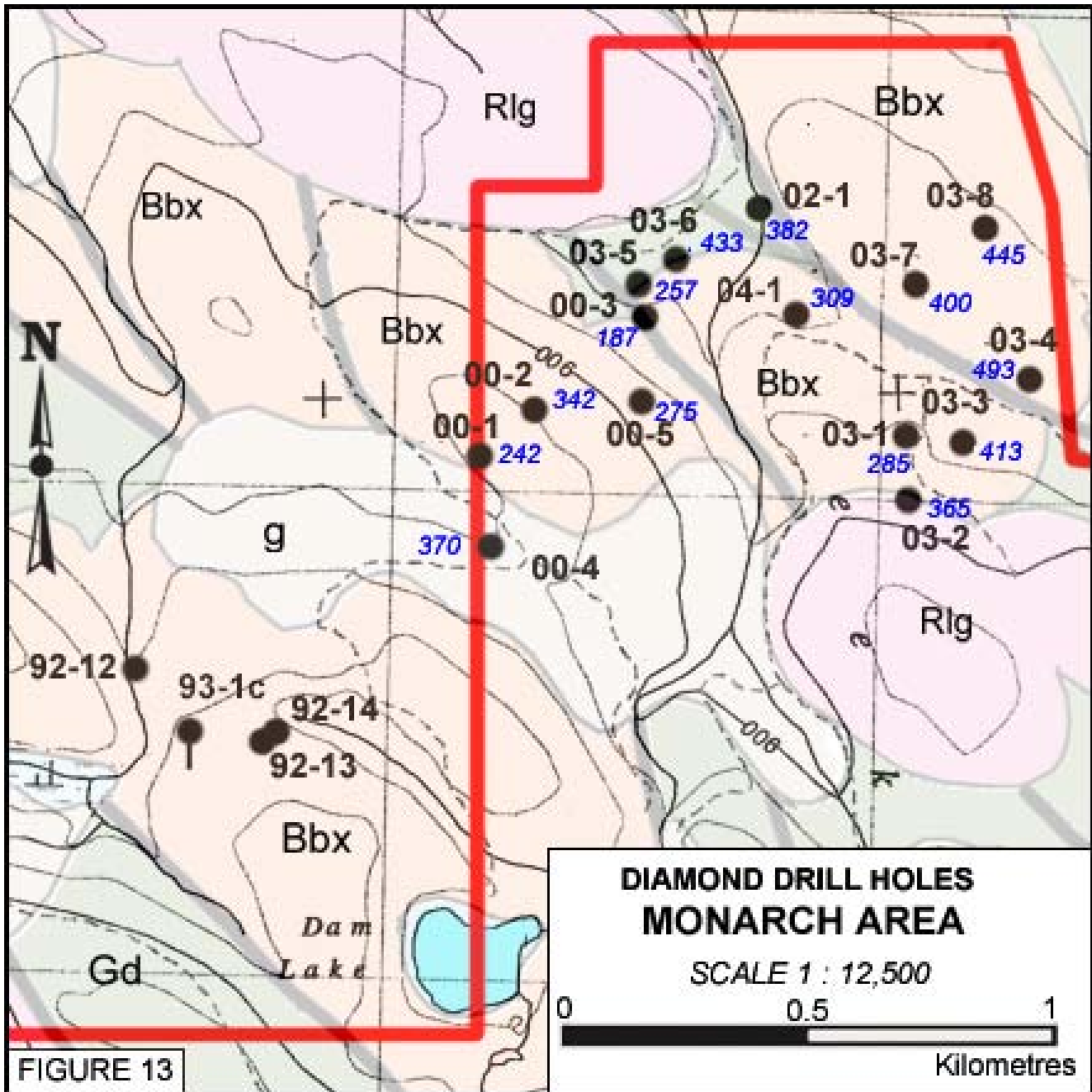
DDH 06-2 was particularly interesting. The log has been lost, but I photographed portions of the core. This vertical hole penetrated a ductile deformation zone, passed through a zone of intrusive breccia with highly elongated diorite clasts, and bottomed in relatively undeformed intrusive breccia of the Greenstone Mountain Assemblage.



The core at the start of the hole resembles a thin-bedded sedimentary rock on casual examination. Deeper in the hole the rock is highly altered (mainly clay-carbonate) and there are abundant silica bands and quartz-carbonate stringers along with an estimated 0.5% pyrite. The only sampling from this hole was a section of disseminated chalcopyrite from 275 to 282 metres that reportedly assayed 0.55% copper. There is no explanation for the MMI gold anomaly -- and no assays in quartz-rich sections.

## Monarch Area

A total of 18 holes were drilled in the Monarch Area during 2000 to 2004. They all were vertical or very steeply inclined, and they all were deep, averaging well over 300 metres. [The depths are indicated in blue on Figure 13. Details of the drilling can be found in Deighton (2000), Mark et al. (2003), Whiteaker (2004), and Lindinger (2005).



I have not examined any of the cores from the Monarch drilling except for material from piles of core that had been dumped in the bush. Most of this core was composed of intrusive breccia of the Beaton Lake type, along with minor amount of felsic porphyry of the Roper Lake type.

## CONCLUSIONS

1. The Green Valley exploration work on the Wood Group was directed toward the search for bulk tonnage porphyry copper-gold deposits of the Iron Mask (Afton-Ajax) type. This included the drilling of deep vertical or steeply dipping holes to test targets that were defined by coincident chargeability and MMI geochemical anomalies.
2. The MMI geochemical soil surveys suggested that copper is of much less potential exploration significance than gold within the areas surveyed. The MMI survey further indicated that the gold anomalies tend to have a northwest trend that appear to be related to photo-interpreted fault zones within a major structural feature designated as the Northwest Deformation Zone.
3. Induced polarization surveys carried out in the Dorado and Monarch areas, were useful in evaluating the MMI results in terms of possible fault-related gold deposits. The resistivity data proved to be effective in confirming the interpreted faults within the deformation zone, as well as in indicating the direction of the dip of the faults. The chargeability data tended to support the inference that mineralization in the two areas is related to northwest-trending deformation. It should be noted that both brittle and ductile deformation zones are present. The most intense brittle deformation is related to distinct regional faults that are readily apparent on the air photos. These appear to be highly conductive and consequently they are reflected unusually well in the resistivity data. The ductile zones are resistant to weathering and they appear to be poorly conductive, probably because of alteration and veining.
4. Future work within northern part of the Wood Group should be directed toward structurally controlled gold deposits related to the Northwest Deformation Zone. Additional geochemical soil sampling based on geological mapping would be useful. Diamond drill tests should be shorter and less steeply inclined than previous drill holes.
5. The Roper Lake Intrusions are of potential interest for gold and molybdenum in the Wood Group. The results of geochemical surveys within the region indicate that anomalously high gold, arsenic and molybdenum are associated with these granitic rocks. The western portion of a body of intrusive rock that appears to be of the Roper Lake type is interpreted within the Property near Chuwels Lake, about two kilometres east of the Roper Lake (Rabbit South) advanced molybdenum prospect. Field checking of this interpretation should be given a high priority. Gold showings and prospects within and close to bodies of felsic intrusive rock, which I believe are of the Roper Lake type, have been explored at a number of localities in the region. Several clusters of coalescent pipes were indicated by photo-geological interpretation within the Northwest Deformation Zone in the northern part of the Wood Group but no serious exploration has been carried out, possibly because the highly fractured rock seldom crops out.



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## STATEMENT OF COSTS

<u>Type of Work</u>	<u>Days</u>	<u>Cost/day</u>	<u>Cost</u>
<u>W.R.Bergey, P.Eng.</u>			
Geological mapping	3	\$600.	\$ 1,800.
Photo-geological interpretation	6	600.	3,600.
Data compilation & interpretation	8	600	4,800.
Report preparation	5	600.	<u>3,000.</u>
			\$13,200.
 <u>Field Expenses</u>			
Meals & accommodation			\$ 500.
Vehicle expenses			<u>300.</u>
			\$ 800.
		<b>TOTAL COST</b>	<b>\$14,000.</b>



## STATEMENT OF QUALIFICATIONS

I, William Richard Bergey of 25789 - 8<sup>th</sup> Ave., Aldergrove, B.C., do hereby certify that:

1. I am a Professional Engineer (Geological) in the Province of British Columbia.
2. I have been employed in mining and mineral exploration for the past 64 years.
3. I have had many years of experience in geological mapping, and photo-geological interpretation related to mineral exploration.
4. I personally conducted all of the geological work described in the above report.

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W.R.Bergey, P.Eng.

March 30, 2012