SUMMARY REPORT
on the
SONORA GULCH PROPERTY
DAWSON RANGE-YUKON

HAYES CREEK AREA
NTS 115 J-9, I-12
For: Jan Martensson and Alan McDiarmid
By: G.S. Davidson, P.Geol.

This report has been examined by
the Geological Evaluation Unit
under Section 53 (4) Yukon Quartz
Mining Act and is allowed as
representation work in the amount
of $ 6700.00 .

for Regional Manager, Exploration and
Geological Services for Commissioner
of Yukon Territory.

SUMMARY REPORT

ON THE

SONORA GULCH PROPERTY

(SWEDE 1-6 YA2779-84, SAM 1-18 YA3869-86, SAM 20-35 YA3888-903, SAM37-44 YA3905-12, SAM 48 YA3916, SAM 50 YA3918, SAM 52 YA3920, SAM 54 YA3922, SAM 56 YA3924, SAM 87-98 YA8275-86, SAM 117-118 YC8341-42, STONE 1-48 YC14648-95, S 1-16 YC14632-47)

DAWSON RANGE

NTS 115 J-9, I-12
Lat. 62° 38' N, Long. 138° 35' W
Whitehorse Mining District
YUKON TERRITORY

For: **Jan Martensson and Alan McDiarmid.**
117 Platinum Road
Whitehorse Y.T.
Y1A 5M4

Prepared by: G. S. Davidson, P. Geol.
January 16, 2000

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1.0 SUMMARY

The SONORA property consists of 131 claims (2,739 hectares) located at Hayes Creek, 110 km west of Carmacks and 270 km northwest of Whitehorse in the central Yukon Territory. This report is prepared at the request of J. Martensson and Alan McDiarmid to compile and interpret all the exploration and government data, to detail a program for continued exploration and identify drill sites for a 2000 drill program. Access to the area is by helicopter, plane or winter road. The Casino Trail passes through the property but the section accessible to four-wheel drive vehicles ends 22 km to the east. The winter road is well established and has often been used for haulage of equipment and supplies by placer miners and exploration companies. The property lies in the Dawson Range portion of the Yukon Tanana terrane along a regional structure that hosts a series of Cu-Au porphyry and Au-Ag vein deposits associated with Mesozoic and Cenozoic intrusive rocks.

Hayes Creek is in an area of moderate relief featuring rounded hills and ridges and fairly wide swampy valley floors. The ridges are incised by narrow, steep-sided valleys, which drain into the main Hayes Creek valley. Placer gold mines have operated periodically on several tributaries of Hayes Creek including, Apex Creek (located upstream of the property) and Klines & Sonora Gulches (located on the property). Heavy concentrates found in the sluice riffles in both gulches include galena, tetradymite (bismuth telluride mineral), gold nuggets and scheelite.

Plutonic rocks of the Cretaceous Dawson Range Batholith and the Prospector Mountain Plutonic Suite intrude the Devono-Mississippian Wolverine Creek Metamorphic Suite in the Hayes Creek area. Younger Carmacks Group volcanic flows cover the older units east of the claims. The Big Creek Fault, a regional structure follows the Hayes Creek and Big Creek valleys in a northwest-southeast orientation and cuts through the claim block. A second regional fault the Hootchekoo Fault follows the Selkirk Creek valley and then parallels the Big Creek Fault on the north side of the lower Hayes Creek valley. The Big Creek Fault and intrusions of the Prospector Mountain Plutonic Suite are spatially related with porphyry style mineralization and/or gold bearing veins and breccia bodies at the Casino, Mt. Caulfield, Cash, Revenue, Freegold Mountain and SONORA properties.

The property is primarily underlain by lenses and sills of plagioclase-quartz-biotite porphyry ("Quartz Porphyry") intruding Wolverine Creek intermediate to felsic metavolcanic and related finely layered metasedimentary rocks. Across the central portion of the claims, an east-west trending series of ultramafic lenses occur in the metavolcanics. These ultramafics are easily delineated by strong magnetic highs on the airborne geophysical maps. Mineralization types hosted by quartz porphyry include gold-quartz-sulphide veins in fractures and shear zones, and porphyry copper. Metavolcanic rocks host quartz-sulphide veins in structures and fractures around the ultramafic lenses and in the faults. Listwanite alteration zones around the ultramafic lenses host patchy copper mineralization. Douglas, 1981 called a series of parallel quartz-sulphide veins and VLF-EM conductors trending NW-SE the "Tetradymite Vein System" (TVS). This system appears to be the same as the Big Creek Fault zone.

Early prospecting in the Hayes Creek drainage began prior to the 1900's. The first lode claim was staked near the mouth of Klines Gulch in 1899 to cover an auriferous quartz vein up to 2.5 m wide. An adit was driven into the west side of the Hayes Creek valley at creek level to intersect the vein. In the adit the vein was reported to assay up to 7 gpt. Placer exploration and limited mining took place on Hayes Creek in the early 1900's and in the 1930's. Modern exploration started in the 1960's during regional reconnaissance programs targeting porphyry copper mineralization. The discovery at Casino prompted evaluations of the Sonora Gulch area by Coranex Limited in 1965 and by the Dawson Range Joint Venture from 1969-1970. Mr. Martensson and McDiarmid staked the Swede claims in 1975 after finding large amounts of tetradymite and tetradymite-gold nuggets while placer mining in Sonora Gulch. They optioned the prospect to Anglo American Corporation of Canada (Anglo) after their geologist seen the tetradymite nuggets found in the area. Anglo added 98 claims to the property and completed soil geochemistry and trenching before entering a joint venture with Hudson Bay Exploration and Development Company Limited and Tombil Mines Limited in 1977. The claims were transferred to Hayes Resources Ltd. in 1984. From 1977-1985 exploration included soil geochemical and geophysical surveys, cat trenching (75 trenches) and drilling (26 drill holes totaling 7,877 ft). Expenditures listed in reports on the various work programs on the property total $650,000.

Tenure of the property remained with Hayes Resources until 1997 when Martensson and McDiarmid regained title to the 104 claims. Between 1986-1997 no work was undertaken by Hayes Resources Ltd. or their partners. In 1997 and 1998 minor assessment programs were undertaken by Aurum Geological Consulting to keep the claims in good standing. In 1999 sixty-four claims were added to the block to cover the easterly limit of the ultramafic bodies and the eastern edge of the quartz porphyry body.

The target model for the Sonora is; structurally controlled sulphide gold mineralization occurring in the intrusive bodies with similarities to both porphyry and plutonic gold type deposits and; structurally hosted quartz-sulphide veins and fractures in the metavolcanic rocks and listwanite alteration zones. The 31 element ICP analyses of mineralization

from various trenches and host rocks indicates a common source for the mineralizing fluids, probably the quartz porphyry intrusion (Doherty, 1999).
The plutonic rocks at the nearby Casino deposit have been dated at an average of 72 Ma but the age of the quartz porphyry at Sonora is unknown. Plutonic-Au deposits in central Alaska and in the Yukon are effectively classified on the basis of comparison with the Fort Knox gold deposit near Fairbanks, Alaska. Most plutonic-Au deposits are hosted within, or are genetically related to, Mid-Cretaceous age I-type plutonic rocks that fall within the age range of 110-86 Ma. The Dawson Range Batholith, mainly granodiorite is dated at an average of 100 Ma in the Hayes Creek area. In west-central Alaska the age range of plutonic gold deposits has been stretched to include mineralization associated with 70 Ma intrusions.

The majority of plutonic-Au deposits occur within or in close proximity to the apical portions of small to moderate sized igneous plugs or stocks like the quartz diorite plug at Sonora. These are interpreted to be high level, highly differentiated cupolas, comagmatic with adjacent or underlying plutons. Low sulphide gold mineralization is most often hosted in steep brittle quartz-pyrite sericite stockworks or sheeted quartz veins that occur within the intrusive and less often in the enclosing host rocks. Geochemical indicators include Au-As-Bi-Pb-Te anomalies and geophysical signatures are magnetic lows adjacent to a magnetic high. Structural preparation of the host rock is essential for quartz vein development and gold deposition. These characteristics of plutonic gold deposits are found on the Sonora property similar to the developing Pogo and Fort Knox deposits.

In the preparation of this report previous exploration work was compiled on a new base map and summarized in tables. New government geological and airborne geophysical data was also incorporated into this summary report. The combination of soil geochemical anomalies, geophysical features and updated geology provides several highly prospective targets for further grid work followed by a diamond drill program. Five target areas are outlined by the previous work include (see Figure 7 for target locations):

1. The margins of the ultramafic bodies show up well on the airborne geophysical maps. The TVS or Big Creek Fault divides the two main lenses. A small portion of the TVS and sill margins have been examined by exploration finding Au-Ag-As-Bi-Te-Sb geochemical anomalies, VLF-EM responses and fracture to fault hosted gold bearing quartz-sulphide veining; and listwanite style quartz-carbonate veining. The geochemical anomalies trend E-W along the hanging wall contact of the ultramafic sill. The VLF-EM anomalies trend NW-SE along the TVS. Several diamond drill holes and trenches in this area intersected good gold values in porphyry sills, quartz-sulphide veins, shears and fractures. Along trend to the east a strong Au-Ag-As-Te-Bi-Sb geochemical anomaly is untested and remains open to the east. This anomaly correlates with the hanging wall contact of the ultramafic sill and a deep magnetic low. The western ultramafic lense evident on the mag maps remains unexplored.

2. A strong Au-Ag-As-Pb geochemical anomaly over a 2 km length occurs on the ridge top around the airstrip. Smaller patchy Te-Bi-Sb soil anomalies occur within the larger gold response. The gold geochemical anomaly is open to the east and occurs immediately downslope of a strong VLF-EM response. Also present are high Ag-Pb geochemical values indicative of the occurrence of galena veins, possibly of NE strike. The quartz porphyry body underlies this area and continues to the east for several kilometers, crossing Hayes Creek at Little Klines Gulch. Potential 110^0 main structures and secondary NE trending structures are primary targets for further exploration.

3. A strong Au-Ag-Cu geochemical anomaly coinciding with a VLF-EM conductor lies at the head of Little Klines Gulch.

4. The historical quartz vein occurrence at the mouth of Little Klines Gulch coincides with a small but strong Au-Ag-As-Cu geochemical anomaly. Quartz porphyry outcrops along the bank of Hayes Creek but overburden thickens upslope to the west masking any underlying mineralization.

5. Further to the east on the Stone claims, the quartz porphyry unit is coincidental with a strong linear Ag-Cu-Pb geochemical response (gold analyses were not done in this area).

An initial surface program of $50,000 is recommended to expand grid coverage to the east and provide for geological, geochemical and geophysical surveys. Grid line 12+00N should be extended to the east and used as a baseline to run north-south gridlines to cover targets No. 1, 3 4 and 5. A second grid area to cover the No. 2 target should run a max-min survey along existing N-S cut lines. The two suggested grid areas are marked for examination. A diamond drill program at a budget of $200,000 is recommended to follow the initial program.

2.0 PROPERTY

2.1 Introduction

The Sonora property is located in the central Yukon Territory at Hayes Creek a tributary of the Selwyn River in the Whitehorse Mining District, NTS Map Sheets 115 I-12 & J-9. Access is by helicopter or plane to a gravel airstrip on the ridge top at the head of Sonora Gulch. From the airstrip, cat roads access the numerous trenches and drill sites, and extend to the placer camp on Sonora Gulch. ATV's can be used to travel on these roads. Heavy equipment, supplies, and fuel can be hauled in on the Casino Trail, a winter road that connects to an all-weather road located 25 km east of the claims. The road distance from Whitehorse is 345 km.

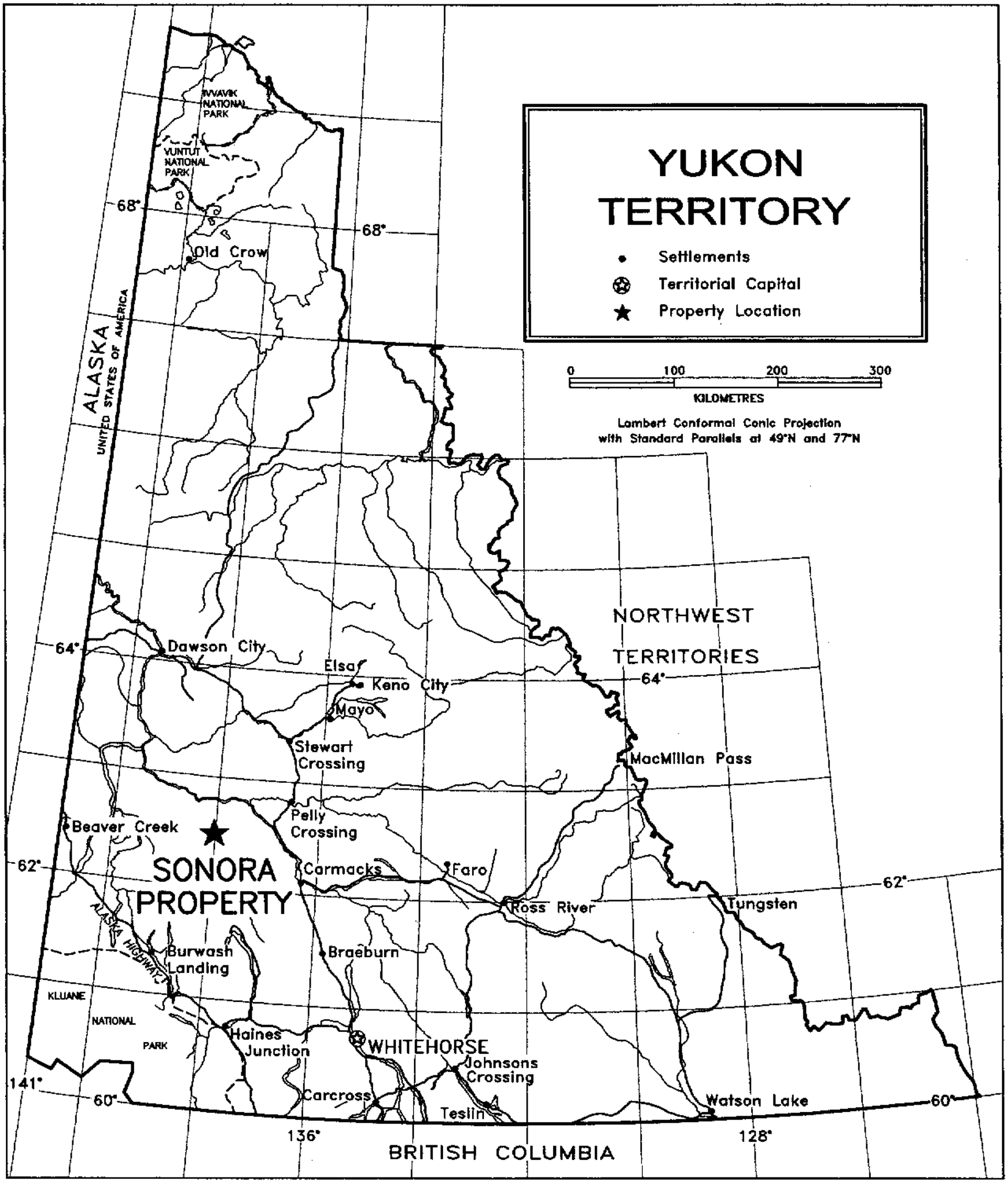
This report was prepared at the request of Jan Martensson and Alan McDiarmid. Assessment reports detailing exploration programs between 1975-1998 were reviewed and compiled in the preparation of this report. Geochemical, geophysical, geological, trenching and diamond drill data is summarized and airborne geophysical data from a 1994 government survey provides a new geological interpretation. Color shade plots of the magnetics revealed geological and structural features, which are correlative to mineralization and geochemical anomalies defined by the previous work.

The writer has performed exploration in the area since 1985, returning periodically to work on prospects around Hayes Creek, Freegold Mountain, Prospector Mountain, Mt. Caulfield and Casino.

2.2 Location and Access

The Sonora property is located on Hayes Creek in the Dawson Range on NTS Map Sheet 115 J-9 and I-12 at geographical co-ordinates 62° 38' N and 138° 35' W. The Sonora property is accessed by charter helicopter from Carmacks or Whitehorse. An airstrip located on a ridge crest in the southern part of the property is usable by Otter or smaller aircraft. A network of cat roads connects the airstrip, trenches and drill sites to the various placer workings and camps. A plywood 14x16 ft building situated beside the airstrip was used for accommodations during the 1997 & 1998 assessment programs. A second camp situated on Sonora Gulch consists of two small cabins.

The Casino Trail is a winter road connecting the Freegold Road to the Casino Property provides access to the Sonora property. The winter road connects to the all-weather road 25 km east of the claims at the base of Prospector Mountain. The winter road is passable to ATV's and nodwell type vehicles in summer, however heavy equipment, supplies and fuel are moved in February and March. Local placer miner George Wilson has heavy equipment and a camp located on Hayes Creek, 5 km downstream of Sonora Gulch. He opens and utilizes the winter trail in late February. Logistically, Carmacks and Whitehorse provide charter aircraft, supplies and services to the district. Figures 1 and 2 show the property location.

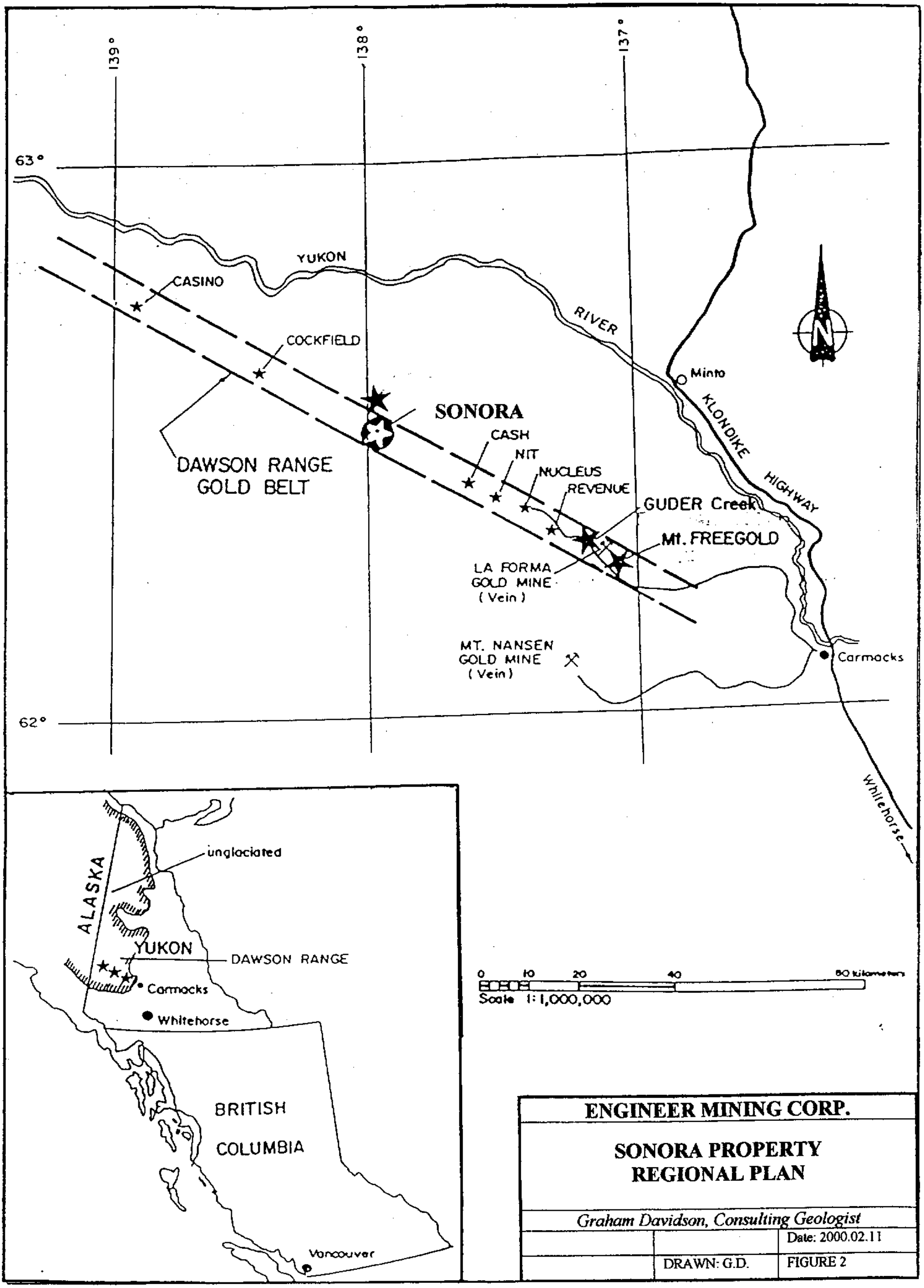


ENGINEER MINING CORP.

**SONORA PROPERTY
LOCATION MAP**

Graham Davidson, Consulting Geologist

SCALE: 1 : 6,000,000		DATE: 2000.02.15
NTS: 115 I/12, 115 J/9	DRAWN:	FIGURE 1



ENGINEER MINING CORP.

SONORA PROPERTY
REGIONAL PLAN

Graham Davidson, Consulting Geologist

		Date: 2000.02.11
	DRAWN: G.D.	FIGURE 2

2.3 Physiography

This section of the Dawson Range features moderate topography characterized by long sinuous ridges incised by narrow valleys that descend to the wider swampy flat-bottomed valleys of the main creeks. Outcrop is sparse, except on steeper slopes and knolls, and in canyons on the Selwyn River and lower Hayes Creek. Bulldozer trenching failed to penetrate the overburden in many locations on the Sonora property. Frozen clay and gravel averages 6 meters deep on hillsides and 10 meters in the Hayes Creek valley. Permafrost is limited to north facing slopes and valley bottoms. Elevations in the property area range from 760 - 1280 m (2500' - 4200').

Vegetation consists of swamp hummocks and sparse stunted spruce on north facing slopes, to birch, poplar, and spruce forest on south and westerly facing slopes. Stands of large spruce are found on the banks of Hayes Creek. Alder and buck brush are patchy with thickets along creek banks and at treeline. Forest fires have ravaged much of the area including some of the claims. A recent fire burned the northeastern edge of the claim area; dead standing trees and little undergrowth remain.

The Dawson Range district has a northern interior climate marked by long cold winters and low annual precipitation. Exploration on the property can be performed on a year round basis but is most practical from March to October.

2.4 Title

The Sonora property consists of 131 mineral claims, as shown in Figure 3 and listed in Table 1. Requirements for the upkeep of mineral claims in the Yukon are detailed in the Yukon Quartz Mining Act regulations. Exploration or mining expenditures of $100 per claim per year or payment of an equal amount in lieu of work are necessary for the maintenance of claims. Payments and documents are submitted to the mining recorder at the Whitehorse District office.

TABLE I: CLAIM DATA

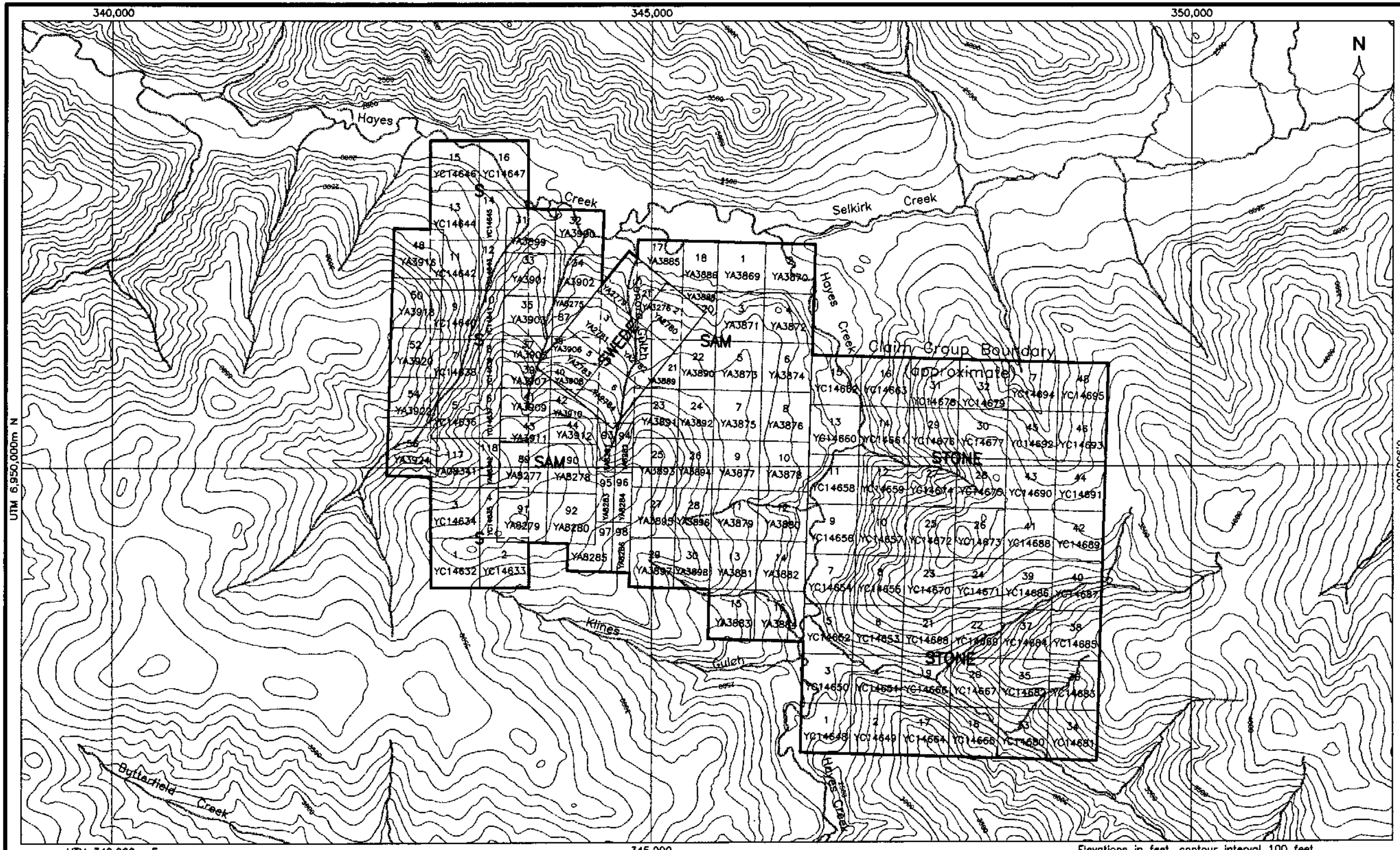
CLAIM NAME	GRANT NUMBERS	MINING DISTRICT	EXPIRY DATE (*applied for)
SWEDE 1-6	YA03779-YA03784	WHITEHORSE	*OCT. 28, 2000
SAM 1-18	YA03869-YA03886	WHITEHORSE	*OCT. 28, 2000
SAM 20-35	YA03888-YA03903	WHITEHORSE	*OCT. 28, 2000
SAM 37-44	YA03905-YA03912	WHITEHORSE	*OCT. 28, 2000
SAM 48	YA03916	WHITEHORSE	*OCT. 28, 2000
SAM 50	YA03918	WHITEHORSE	*OCT. 28, 2000
SAM 52	YA03920	WHITEHORSE	*OCT. 28, 2000
SAM 54	YA03922	WHITEHORSE	*OCT. 28, 2000
SAM56	YA03924	WHITEHORSE	*OCT. 28, 2000
SAM 87-98	YA08275-YA08286	WHITEHORSE	*OCT. 28, 2000
SAM 117-118	YC08341-YC08342	WHITEHORSE	*OCT. 14, 2000
STONE 1-48	YC14648-YC14695	WHITEHORSE	JUNE 1, 2000
S 1-16	YC14632-YC14647	WHITEHORSE	JUNE 1, 2000

2.5 Environment

No special environmental concerns are known for this area. The Department of Indian and Northern Affairs has implemented land use regulations in the Yukon Quartz Mining Act. Under these regulations more advanced exploration programs will require a mining land use permit prior to commencing exploration. Most drill programs will require a Level 3 permit and it is recommended that Land Use Applications for applicable work programs be submitted at least 60 days prior to mobilization. A separate land use permit for utilization of the Casino winter trail is also required.

3.0 REGIONAL GEOLOGY

The Dawson Range is a northwesterly trending range of mountains extending from Mount Freegold to east-central Alaska and is part of the Yukon Tanana Terrane (YTT) of the Canadian Cordillera. The YTT consists of a belt of Devono-Mississippian metamorphic rocks, mainly metavolcanics with lesser metasediments, between the Tintina Fault to the north and the Denali Fault to the south (see Figure 4). Metavolcanic sequences are primarily quartz-mica schist, gneiss and diorite. Plutonic rocks of the Cretaceous Dawson Range Batholith intrude the YTT over widespread sections of the district. The plutonic rocks consist of large bodies of granodiorite and quartz monzonite, and smaller high-level felsic porphyry plugs and sills. Locally, small sills of Late Cretaceous ultramafic rock are emplaced along the main structures. Volcanic rocks in the district consist of sills, dikes and flows of the Late Cretaceous Mount Nansen Group and mafic flows and pyroclastics of the Tertiary Carmack's Group.



LEGEND

(heavy line)	Claim Group Boundary (approximate)
(line)	Claim Group
(thin line)	Claim Line
24	Claim Number
YC14671	Grant Number

0 500 1000 1500
METRES

ENGINEER MINING CORP.

SONORA PROPERTY
CLAIM LOCATION MAP

Graham Davidson, Consulting Geologist

SCALE: 1 : 50,000	PROJ: UTM NAD 83	DATE: 2000.02.15
NTS: 115 I/12, 115 J/9	DRAWN:	FIGURE 3

Structurally, two regional scale faults, the Big Creek and Hootchekoo Faults traverse the district. At the confluence of Selkirk and Hayes Creeks the NW trending Big Creek Fault meets the EW trending Hootchekoo Fault zone and bends to an EW orientation. The two fault zones merge and split along a complex set of structures that follow a WNW trend. The Big Creek Fault is the locus of a well-mineralized belt extending from Freegold Mountain to Casino. Copper porphyry and structurally hosted gold deposits are found along the fault zones with associated placer gold deposits in the drainages. Placer gold has been mined periodically from many creeks in the district including Hayes Creek, Sonora Gulch and Klines Gulch.

The most recent geological map of the area was compiled by S.T. Johnston of the Yukon Geoscience Office, available in Open File 1995-2(G). Figure 5 shows the regional geology and the Table of Formations is presented in Table III.

4.0 HISTORY

Exploration in the Dawson Range began in 1898 when prospectors found placer gold on Klines Gulch and in 1899 the first lode claims were staked at the bottom of Klines Gulch on a gold bearing quartz vein. In 1900 an adit located 30 m north of Little Klines Gulch is reported to have cut a 2.5 m wide quartz vein returning values of up to 13.7 gpt. The Hayes Creek area shows evidence of several periods (late 1930's, early 1940's, 1970's) of placer testing and mining. Total gold production from placer mining on Sonora and Klines Gulches is estimated at a minimum of 3,000 ounces (Martensson pers. comm.). Gold morphology varies widely with dendritic, crystalline, wiry, angular and rounded gold found. Gold-quartz and gold-tetradymite nuggets are recovered from both gulches. The rough angular appearance of these nuggets is indicative of a nearby bedrock source. Tetradymite nuggets are soft and do not travel far in stream gravels before breaking down. The placer concentrate also contains scheelite, galena, sphalerite and other sulphide minerals.

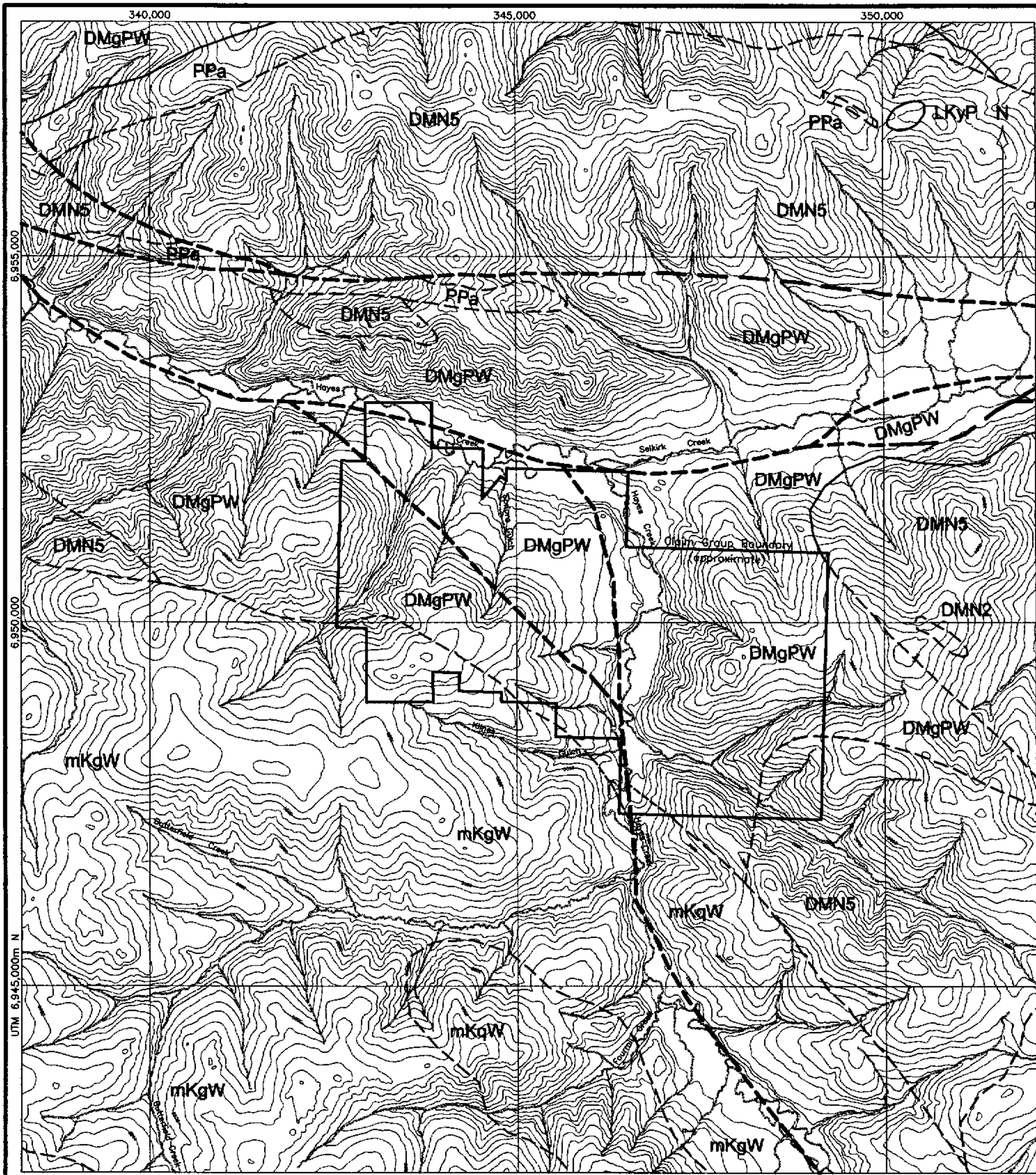
Modern exploration started in the 1960's when porphyry mineralization became the target of exploration companies. The Casino deposit was outlined and numerous mineral occurrences were discovered along the trend of the Big Creek Fault. The Casino deposit has reserves of 125 million tones grading 0.3% copper and 0.5 gpt gold. In the late 1980's, the potential for bulk tonnage gold deposits in the oxide zones of porphyry deposits and in breccia bodies was investigated throughout the Dawson Range. Many of the porphyry prospects contain significant gold mineralization.

The Sonora Gulch area was staked for its porphyry copper-molybdenum potential in 1965 and in 1975. The Swede 1-6 claims were staked by the present owners while placer mining on Sonora Gulch in 1975. Hudson Bay Mining and Smelting, Tombill Mining Ltd. and Minorco Canada Ltd. optioned the claims in 1975 and expanded the property to 106 claims. Between 1975-1981 they completed 21 drill holes, bulldozer trenching, road building, geochemical sampling and geophysical surveys. Hayes Resources Inc. acquired ownership of the claims in 1984 and performed more drilling and trenching. The following year the property was optioned to Hudson Bay Mining and Smelting Ltd. and further drilling and trenching were undertaken. However, this proved to be the last sizeable exploration program on the property and the option was later dropped by Hudson Bay.

TABLE II-SELECTED DRILL RESULTS

DRILL HOLE	GEOLOGY		ANALYTICAL RESULTS
			Footage Au gpt Ag gpt
78-5	Oxidized quartz porphyry, limonite and hematite, fractured		144-144.5 3.4 1.4
81-3	TVS, quartz-sulphide vein		351-353.8 25.1 39
81-3	Fault zone at porphyry-metavolcanic contact		420-428 5.54 4.0
81-4	Mafic volcanics and gabbro		395-398 18.9 6.9
84-3	Porphyry		282-283 22.85 11
84-4	Chlorite schist		270-272 6.5 663

After 1985, Hayes Resources held the property until 1996, when the original claim owners managed to have the claims transferred from a defunct Hayes Resources back to themselves. The property was then optioned to a private company that contracted Aurum Geological Ltd. to perform two short sampling and mapping programs to meet assessment requirements. This option expired in June 1999 and the claims again reverted back to the owners. Increased interest in the potential for plutonic gold style deposits in the Dawson Range has again focused attention on the Sonora property. The owners expanded the eastern boundary of the property by staking 48 new claims to cover an airborne geophysical anomaly. A full chronology of exploration activity at the Sonora Property is listed in Appendix II-Table V.



LEGEND

———	contact defined	━━━	fault defined
— — —	contact approximate	━ ━ ━	fault approximate
- - - -	contact assumed	━ ━ ━ ━	fault assumed

LKyP	PROSPECTOR MOUNTAIN SUITE syenite
mKgW	WHITEHORSE SUITE granitic rocks, mafic composition
mKqW	WHITEHORSE SUITE granitic rocks, felsic composition
PPa	AMPHIBOLITE
DMgPW	PELLY GNEISS SUITE deformed granitic rocks
DMN2	NASINA ASSEMBLAGE marble
DMN5	NASINA QUARTZITE

0 1000 2000 3000

METRES

Elevations in feet, contour interval 100 feet.

ENGINEER MINING CORP.

SONORA PROPERTY
REGIONAL GEOLOGY MAP

Graham Davidson, Consulting Geologist

SCALE: 1 : 75,000	PROJ: UTM NAD 83	DATE: 2000.02.15
NTS: 115 I/12, 115 J/9	DRAWN:	FIGURE 5

Geology modified after Gordey, S.P. and Makepeace, A.J., 1999.

5.0 TARGET MODEL

The target model for the Sonora is structurally controlled gold-sulphide and gold-quartz veins occurring in and proximal to a high-level felsic intrusive body associated with the Big Creek Fault zone, a WNW trending fault system of similar orientation and geology to the Pogo trend in Alaska. Characteristics of both plutonic gold and porphyry style mineralization exist on the Sonora property (see Table III). The plutonic model is suggested by the high level of structural ground preparation, the felsic plug and elevated bismuth, arsenic, antimony, tellurium and gold values in drill core, rock samples and soil geochemistry. The presence of intense argillic and propylitic alteration zones and oxide gold mineralization is indicative of a porphyry style intrusion. Copper soil anomalies are present but untested.

Plutonic-Au deposits in central Alaska and in the Yukon are effectively classified on the basis of comparison with the Fort Knox gold deposit near Fairbanks, Alaska. Most plutonic-Au deposits are hosted within, or are genetically related to, Mid-Cretaceous age I-type plutonic rocks that fall within the age range of 110-86 Ma. On the basis of association with gold and the narrow age range, this group of plutonic rocks has been termed the Tombstone suite. This is only one of several plutonic suites that have been defined, primarily in the Yukon, by Mortensen et al through systematic U-Pb dating. Contrary to the accepted fact that Tombstone Suite is essentially the only gold-bearing plutonic suite, Mortensen and others favour a much less rigid definition and conclude that a number of these Cretaceous suites possess gold potential. The Dawson Range Batholith is dated at an average of 100 Ma in the Hayes Creek area. In west-central Alaska the age range of plutonic gold deposits has been stretched to include mineralization associated with 70 Ma intrusions.

The majority of plutonic-Au deposits occur within or in close proximity to the apical portions of small to moderate sized igneous plugs or stocks. These are interpreted to be high level, highly differentiated cupolas, comagmatic with adjacent or underlying plutons. Low sulphide gold mineralization is most often hosted in steep brittle quartz-pyrite sericite stockworks or sheeted quartz veins that occur within the intrusive and less often in the enclosing host rocks. Structural preparation of the host rock is essential for quartz vein development and gold deposition.

Mineralogical and geochemical characteristics of the Pogo deposit are comparable to the Sonora property. Sulphide mineralization at Pogo and Sonora includes tetradymite, bismuthinite, stibnite, galena and silver minerals.

TABLE III

TARGET MODEL CHARACTERISTICS

Feature	Porphyry Deposit	Typical Plutonic Au Deposit
Age	• mid and late Cretaceous 70-105 Ma	• mid Cretaceous 85-105 (100Ma)
igneous association?	• small stocks • equigranular to porphyritic • quartz monzonite and granite porphyry	• Yes: high level small stocks • Evolved intrusions • Equigranular to porphyritic, metaluminous to peraluminous • Quartz monzonite-granodiorite-low quartz granite
pressure of formation	•	• 0.5-2 Kbars
temperature of formation	•	• 270-350°C
salinity of inclusions	•	• moderate
CO_2 content of inclusions	•	• high
methane in inclusions	•	• no
quartz vein types	• white quartz-sulphide veins • stockworks • quartz-carbonate veins	• primarily thin milky quartz stringer stockworks • also shear veins with gouge • some drusy veins
placer association	• yes	• often
primary metal signature	• Cu-Mo-As-Au	• Au-Bi-As-Te
associated metals	• Pb-Zn	• Sb-W-Mo-Pb
alteration and vein minerals	• potassic, argillic, propylitic, silicification, pyritic halo • QZ-CB-sulphide • oxide mineralization to 80 m depth, manganese and limonite breccia	• QZ-MS-AS-TO-CB-PY±BI-KF-AB
metamorphic grade of hosts	• greenschist	• variable, mostly greenschist
metamorphic aureole	• yes	• yes
contact Sn-W skarns	•	• yes when reactive rocks intruded
structural control	• yes: major NW-SE faults • secondary E-W and NE-SW faults • brecciation	• yes: both steep stockworks and often shallow, often brittle shear or fault zones best developed along lithological contacts, including different phases of composite intrusive bodies
major controlling structures	• Big Creek Fault	• Intersection of regionally extensive structures is sometimes suggested

6.0 PROPERTY GEOLOGY

6.1 Introduction

A detailed description of the regional rock units starts with the oldest rocks in the map area, the Wolverine Creek Metamorphic Suite composed of metavolcanic and metasedimentary units. Felsic metavolcanics consist of interbedded light brown weathering quartz muscovite schist and felsic tuff containing abundant concordant quartz boudins and veins, patchy sulphide blebs and weak limonite staining. Metasedimentary layers are less common composed of mafic schist and argillaceous beds. The thin metasedimentary units display a strong and generally consistent, parallel foliation trending NW. During the Early Jurassic period, a major structural event of arc-continent collision created the strong (NW) structural orientation as well as stress related high angle shear and extensional fractures in the northeast (NE) direction.

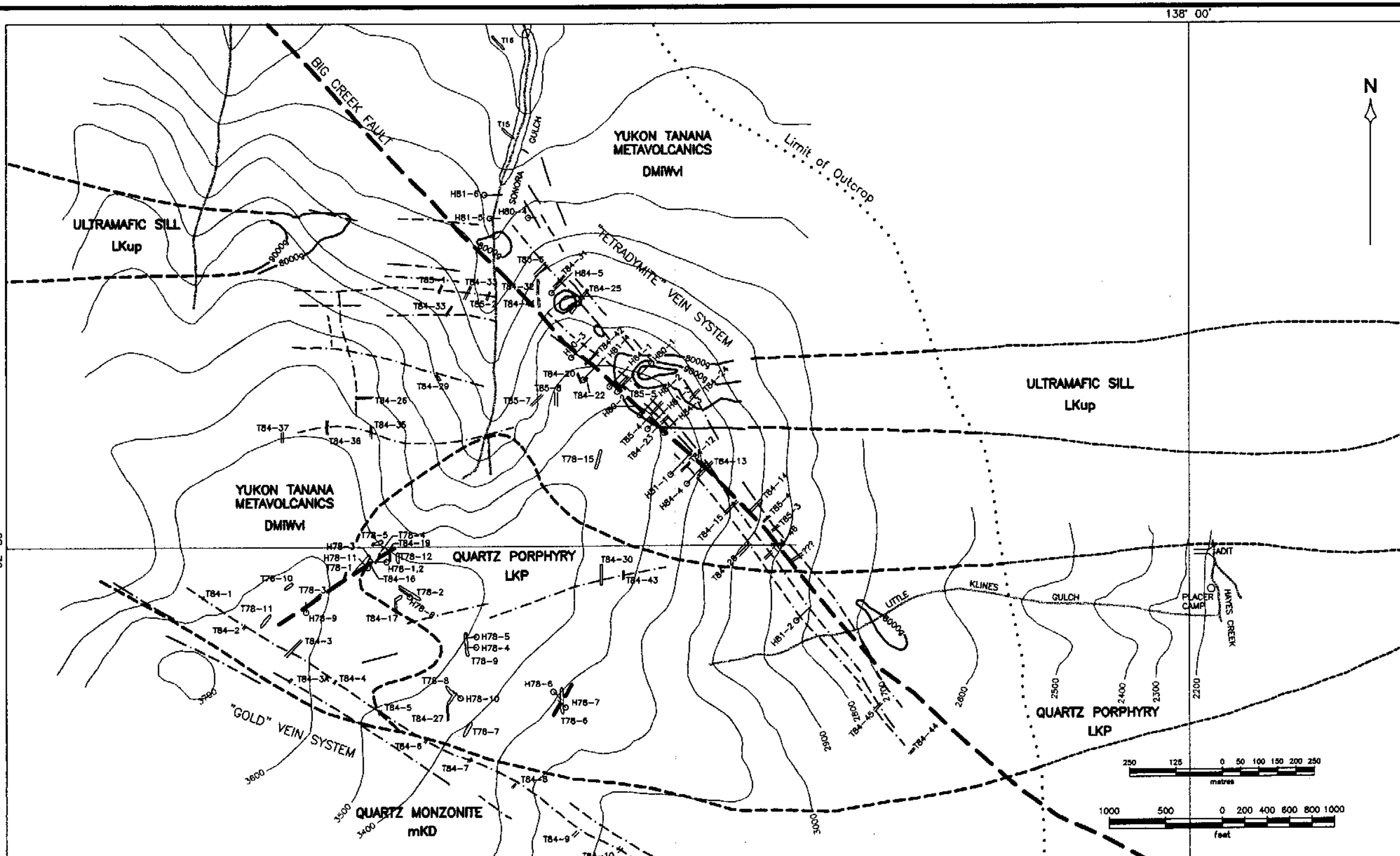
The metamorphic rocks were intruded by granitic rocks of the large Cretaceous Dawson Range Batholith followed by intrusion of small high level plugs along the major structures and the margins of the batholith. The granitic rocks of the Dawson Range Batholith consist of granodiorite, quartz diorite and quartz monzonite that are medium to coarse grained with equigranular texture. In the Hayes Creek area the batholith is biotite rich, leucocratic quartz monzonite and granite while the small high level plugs are quartz eye feldspar porphyries. The WNW trending Big Creek Fault system caused a strong northwest structural orientation to fractures and shears in the intrusives. On the Sonora property two large EW trending sills and numerous narrow sills of pyroxenite occur in the metamorphic sequence. In drill logs the sill is described as gabbro to pyroxenite with bleached listwanite alteration zones at the contact.

The Mount Nansen and Carmacks Groups have not been mapped on the claims but may occur as dykes and sills of intermediate to felsic volcanic and porphyry rock. The source pluton for the younger groups may have caused local uplift and doming of the Dawson Range granodiorite allowing a greater rate of erosion that has exposed a deeper section of stratigraphy. Rock types found on the Sonora property are described as follows:

DEVONO-MISSISSIPPIAN
Wolverine Creek Metamorphic Suite-metaigneous and metasedimentary schist and gneiss consisting of quartz-muscovite to biotite schist, hornblende schist, gneissic equivalents, tuffaceous layers, quartzite and minor argillite.

MID-CRETACEOUS
Dawson Range Batholith, quartz-hornblende-biotite granodiorite, quartz monzonite and quartz diorite to granitic rocks;
Prospector Mountain Plutonic Suite, quartz porphyry stocks of granitic or monzonitic composition, felsic dykes and breccias. The Quartz Porphyry is a quartz eye-feldspar-biotite porphyry with smokey to clear quartz eyes and feldspar phenocrysts with lesser

biotite. Argillic and propylitic alteration, and brecciation of the porphyry was extensive in some of the drill core.



Elevations in feet, contour interval 100 feet.

LEGEND

contact approximate		mKD	QUARTZ MONZONITE
contact assumed		LKP	QUARTZ PORPHYRY
fault approximate		LKuP	ULTRAMAFIC SILL
EM-16 Conductor Axis		DMiWvl	YUKON TANANA METAVOLCANICS
Magnetic High (1000 gamma interval)			
T78-9	buildozer trench, trench no.		
H78-4	diamond drill hole, hole no.		

Modified after Doherty, R.A., 1997.

ENGINEER MINING CORP.

SONORA PROPERTY

COMPILATION & GEOLOGY, SWEDE & SAM CLAIMS

Graham Davidson, Consulting Geologist

SCALE: 1 : 15,000	PROJ: UTM NAD 27	DATE: 2000.02.15
NTS: 115 I/12, 115 J/9	DRAWN:	FIGURE 6

MID-LATE CRETACEOUS
Ultramafic Sills, pyroxenite, gabbro, serpentininte

Mount Nansen and Carmacks Groups, felsic to mafic volcanic sills dykes and flows. Basalt, porphyry and breccia outcrop on the north side of the Hayes Creek valley. This unit weathers brown to reddish brown and is of variable composition from olivine rich to feldspathic.

6.2 Structure

Structural events in Jurassic time consisted of arc-continent collision. The principal stress direction was SE-NW (130-150°), which created dextral (right-hand) transcurrent faulting. The Tintina Fault is a prominent NW structure of regional proportions located one-hundred and fifty kilometres northeast of the Hayes Creek area and the Denali Fault located 75 kilometres west of Hayes Creek marks the western margin of the Yukon Tanana Terrane. The Big Creek Fault is also a WNW trending structure that has been interpreted as displaying a similar right-lateral faulting with up to 14 kilometres of displacement. The Big Creek and Hootchekoo fault zones trend along the Hayes Creek valley but are poorly exposed due to overburden. The Cretaceous Prospector Mountain Intrusive Suite was emplaced along zones of structural weakness like the Big Creek Fault and around the margins of the Dawson Range batholith. Emplacement along the NW faults caused local uplift and collapse features. Porphyry style mineralization (Cu-Mo) occurs in association with a quartz eye porphyry stock on the Sonora property. During the intrusion, both porphyry dykes and later stage mesothermal quartz veins and breccias infilled many of these NW faults. Continued fault movements are evidenced by slickensides and brecciation found within many veins and shears. Quartz-galena veining is a very late stage event within the porphyry system and appears to have been emplaced in breccia zones and along faults.

Three structural orientations with varying degrees of lateral displacement are interpreted:
1) 110-130° the dominant SE-NW structural trend on the property consistent with the Big Creek Fault zone.
2) 045-060° a secondary structural trend primarily as splays of the main NW features. Mineralized quartz veins occur in this trend although they are discontinuous and narrow.
3) 010° a third regional trend expressed as minor faults, fractures and joints.

TABLE IV

TABLE OF FORMATIONS

LATE CRETACEOUS to TERTIARY

Carmacks Group (Mount Nansen Group): **uKC,** undifferentiated mafic to intermediate volcanics with less felsic volcanic plugs and dykes, andesite dykes. This unit consists of mafic flows and agglomerates, dark green andesite and andesite stockwork and minor fine-grained flow banded rhyolite and fine-grained pink felsite to felsite stockwork. The felsic dykes are associated with stockwork mineralization at the Antoniuk deposit, Mount Nansen and Freegold Mountain; **uKIC & uKsC**, black sediments and volcanics; mainly graphitic siltstone (**uKsC**) with very minor silty sandstone; intercalated with and intruded by a number of highly altered porphyritic volcanic bodies (**uKIC**) composed of quartz and feldspar phenocrysts in a muscovite matrix. In places sericite mats replace the feldspar. The graphitic siltstone contains terrestrial fossils including grasses, stems, twigs and leaves. This unit hosts auriferous quartz veins at Caribou Creek.

MID to LATE CRETACEOUS

Prospector Mountain Plutonic Suite: **LKp**, undifferentiated shallow level intrusions; **LKmp**, quartz monzonite and quartz porphyry, pink feldspar porphyry, granite porphyry; **Lkup**, ultramafic sills, dun weathering, dark green to black, spinel peridotite, potassic gabbro, monzogabbro, diabase

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EARLY to MID CRETACEOUS

Dawson Range Batholith: **mKD**, granodiorite and quartz monzonite

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DEVONO-MISSISSIPPIAN

Wolverine Creek Metamorphic Suite: **DMW**, undifferentiated metaigneous schist and gneiss; includes augen orthogneiss; **DMWv**, orange to grey weathering, grey green to dark grey, fine grained, biotite and biotite hornblende quartz diorite and diorite schist and gneiss; **DMWvl**, intermediate to felsic metavolcanic and related finely layered metasedimentary rocks; **DMbW,** green weathering, black to dark green, medium to coarse grained amphibolite and metabasite; **DMsWq**, brown, orange and grey weathering, carbanaceous black to tan quartzite and micaceous quartzite

6.3 Mineralization

At Sonora the main types of mineralization present are; 1) structurally hosted oxide and sulphide mineralization consisting of gold bearing limonite and hematite in sheared and fractured quartz porphyry associated with NW trending faults and NE trending shear zones; and 2) quartz-carbonate-sulphide veins in shear zones, fractures and structures in quartz porphyry, metavolcanic rocks along the TVS, and in listwanite alteration zones around the ultramafic sills.

The quartz porphyry has been oxidized to depths of up to 80 meters. The gold bearing oxide zone lies in brecciated and variably altered quartz porphyry with strong manganese, hematite and limonite staining. The best target for oxide gold mineralization is the main structures and cross faults in the quartz porphyry body. Strong soil geochemical anomalies and VLF-EM responses are defined by the past exploration over the quartz porphyry.

The underlying hypogene zone contains gold bearing quartz arsenopyrite, sphalerite, galena and stibnite veins. Sulphide mineralization consists of up to 10 % pyrite disseminated in the quartz porphyry and in alteration zones. Narrow quartz sulphide veins, shear hosted and mesothermal quartz veins have a primary NW trend and a secondary NE trend. Near surface these veins are moderately to completely oxidized. Precious metal and quartz content tend to increase with sulphide content and depth. The strong silver and lead geochemistry appears to be caused by numerous narrow quartz sulphide veins with a NE trend.

Mineralization associated with the ultramafic sills includes tetrahedryte, malachite and azurite in listwanite alteration zones and quartz-sulphide veins in fracture zones. A small portion of this sill has been examined by surface exploration and drilling, finding WNW trending quartz-carbonate and quartz-sulphide veining in the wall rocks. Strong gold values over narrow widths were encountered in faults and veins hosted by quartz porphyry and metavolcanic rocks.

7.0 GEOCHEMISTRY

The soil geochemical surveys on the Sonora property outlined two main areas of multi-element soil geochemical values; Anomaly No. 1, a patchy Au-As-Bi-Sb anomaly across the centre of the claim block along an E-W trend covering part of the TVS, and Anomaly No 2, a broad Au-As-Sb anomaly trending E-W over the ridge top at the head of Sonora gulch. Both anomalous areas are open to the east. Three other anomalous areas (No.3-5) have been identified as significant.

Anomaly No. 1 is elongated in an E-W trend cutting across Sonora Gulch and coinciding with the hanging wall of the ultramafic sills. Strong Au-Ag-As-Te-Bi anomalies are exhibited.

Anomaly No. 2 is a strong Au-Ag-Pb response with smaller Bi-Te anomalies within the main gold zone. This area is underlain by quartz porphyry and the > 150 ppb gold values occur over a continuous 1.2 km length. The southern, topographically higher edge of the gold anomaly terminates abruptly correlating with a strong VLF-EM anomaly. This may be a fault contact between porphyry and metavolcanic rocks. A smaller tellurium anomaly reaches 35 ppm and elevated Bismuth values reach 24 ppm. The porphyry unit continues onto the Stone claims where a strong linear Cu-Ag-Pb anomaly is present.

Anomaly No. 3 is a strong Ag-Cu-Pb response with a weaker gold response at the head of Little Klines Gulch. A corresponding VLF-EM conductor indicates the source of this anomaly may be a vein fault however the copper values are fairly widespread, possibly indicating porphyry type mineralization. Drilling downslope intersected intrusive rocks described as quartz diorite.

Anomaly No. 4 occurs in the quartz porphyry body to the east of Anomalies No. 2 & 3 at the confluence of Little Klines Gulch and Hayes Creek. A small but strong Au-As-Ag-Cu soil anomaly coincides with the old adit. This anomaly is present where overburden is thin. Upslope to the west is a wide gravel bench with permafrost that may mask any underlying mineralization.

Anomaly No. 5 occurs on the Stone claims over a sliver of quartz porphyry that intrudes metavolcanic rocks on the east valley wall of Hayes Creek. A moderate strength linear Ag-Cu-Pb anomaly is present. No gold analyses were performed.

Of note is the lack of grid coverage over the ultramafic sills, approximately 80% of the sill area has not been covered by geochemistry or ground geophysical surveys

8.0 GEOPHYSICAL SURVEYS

The GSC flew the Hayes Creek area in a radiometrics, magnetometer and VLF-EM survey in 1994. The broad coverage survey had flight lines spaced 0.5 kilometre apart. The property shows a high magnetic gradient, and magnetic dipole, and VLF total field anomalies. The airborne magnetic plots show the outlines of two highly magnetic east-west orientated ultramafic sills that lie in metamorphic rocks of low magnetism. The NW trending TVS appears to divide the two sills. Deeper magnetic lows around the sills appear to show zones of listwanite alteration. Metavolcanic and metasedimentary rocks of the Wolverine Metamorphic Suite exhibit broad areas of low magnetism. A moderately magnetic response, south and east of the ultramafic sill identifies the quartz porphyry body that intrudes the metamorphic units. Several deep lows found along the margins of the quartz porphyry body are of interest for investigation. A broad magnetic high to the south of the claim block represents the Dawson Range batholith, mainly granodiorite. Several linear features (WNW) are interpreted to be faults of the Big Creek Fault zone and normal faults trending NE are local features.

A portion of the grid area on the Sonora property was surveyed in 1980-1981 with a ground magnetometer. The magnetometer survey outlined the ends of the two strongly magnetic ultramafic sills found on the airborne map but the ground coverage was inadequate to delineate the trend and extent of the sills and adjacent magnetic lows. The quartz porphyry intrusive was not covered by the ground magnetic survey. Elsewhere in the district magnetic surveys have outlined wider structural targets for gold mineralization. Manipulation and interpretation of the airborne magnetic data by a geophysicist would be a valuable process to define structure and lithology on the property.

VLF-EM surveys performed from 1978-1984 outlined several strong NW-SE conductors that represent faults and fault contacts. The TVS showed several parallel conductors over a good strike length. These features indicate a 100 m wide fault zone, probably the trace of the Big Creek Fault.

A second group of strong responses found on the south side of the property, located immediately upslope of Anomaly No. 1 is a possible structure marking the south margin of the quartz porphyry body and may be a splay of the Big Creek Fault.

Another VLF anomaly is coincident with geochemical anomaly No. 3, a feature that trends towards the mouth of Little Klines Gulch. The stronger responses are marked on Figure 7.

9.0 TRENCHING

Numerous bulldozer trenches excavated between 1978-1985 targeted geophysical and geochemical anomalies. To reach bedrock by trenching required several seasons of stripping, and approximately half of the trenches bottomed in overburden. In 1978 eighteen trenches were excavated and sampled. In 1981 one trench was excavated on a tellurium anomaly but the trench did not expose bedrock. In 1984 a lengthy trenching program saw 47 new excavations dispersed along geophysical and geochemical targets. Several of the 1984 trenches were deepened in 1985. Results for the 1978, 1984 and 1985 trenches are summarized in Appendix II-Table VI.

Trenches on the TVS cut a few narrow quartz sulphide veins. Of note is T84-32 where sample values ran 10.9 gpt gold and 2.3 gpt silver.

Trenches in the quartz porphyry expose oxide, shear and fault zones that carry elevated gold values. One trench, T78-01 at the east end of the airstrip cut a narrow carbonate-sulphide vein containing lenses of massive bournonite-boulangerite. Trench 78-08 cut a shear zone in the porphyry that assayed 2.3 gpt gold from a 2.2 m sample. Trenches 84-1 to 84-11 attempted to expose bedrock on the south margin of the porphyry body along the strong VLF-EM conductor upslope of soil Anomaly No. 2, unfortunately only trench

84-3 reached broken bedrock that did not adequately explain the VLF-EM and multi-element geochemical anomaly.

9.1 1997-1998 Trench Sampling

A total of 17 rock and 51 soil samples were collected form selected trenches to obtain 31 element ICP analyses to better define the exploration model for the property. The best results for the 1997 sampling were returned from T78-8 where eight samples produced gold values between 150-3000 ppb. In 1998, the best values were from a rock sample of a narrow quartz vein in T84-14, assaying 76.7 gpt gold.

Mr. Doherty of Aurum Geological Consultants Inc. conclude in his 1999 report "Resampling of old trenches in 1997 and 1998 has confirmed that the rhyolite porphyry (Quartz Porphyry) and the tetradymite vein system hosts anomalous gold in the 1-3 gram per tonne range in the rhyolite porphyry and in the multi-ounce range from the tetradymite vein system. The geochemistry of samples collected from the rhyolite porphyry and the tetradymite vein system are very similar and suggest that the rhyolite porphyry is the source of the mineralizing fluids at Sonora Gulch.

The geochemical signature of mineralization in both the rhyolite porphyry and the tetradymite vein system includes Au, As, Bi, Te, +/- Cu, Pb, Zn, Sb and also Mo and W."

10.0 DRILLING

Hudson Bay and Hayes Resources completed 26 drill holes from 1978-1984. Ten drill holes tested the quartz porphyry intersecting oxide mineralization consisting of hematite, limonite and goethite bands and veins; and quartz sulphide veins along fractures and shears. The more heavily oxidized sections assayed 400-1000 ppb gold and 3-7 ppm silver. High-grade veins were intersected in the oxide material.

Twelve drill holes targeted the TVS and a series of parallel VLF-EM conductors that coincided with narrow oxidized sulphide veins exposed in several trenches. Drill logs identify high grade gold values found in narrow quartz-sulphide veins and shear zones where quartz porphyry and rhyolite sills are found in the quartz mica schist and gneiss. Wider sections of 1-3 gpt gold also occur in the felsic sills and in shears and brecciated sections in the metavolcanics. Analyses for Bi and Te were consistently anomalous in direct correlation to high gold values.

A summary of the Sonora Gulch property diamond drill holes showing geology and selected analytical results is presented in AppendixII-Table VII.

11.0 DISCUSSION & RECOMMENDATIONS

The focus of the early work on the Sonora property was for porphyry copper style mineralization and later for gold bearing quartz-sulphide veins along the TVS and in the quartz porphyry intrusive. In the preparation of this report previous exploration work was compiled on a base map and summarized in tables. The new government geological and airborne geophysical data revealed the presence of ultramafic sills, a larger quartz porphyry body and the Big Creek Fault zone. Combining the soil geochemical anomalies, geophysical features and geology from the previous exploration programs with the new information identifies several highly prospective targets for further grid work and diamond drilling. Target areas outlined by the previous work include the margins of two ultramafic sills, veins and structures in the quartz porphyry body and the TVS or Big Creek Fault zone. Five target areas outlined by the compilation work are (see Figure 7 for target locations):

1. The margins of the ultramafic sills show up well on the airborne geophysical maps. The TVS or Big Creek Fault divides the two main sills. A small portion of the TVS and sill margins have been examined by exploration finding Au-Ag-As-Bi-Te-Sb geochemical anomalies, VLF-EM responses and fracture to fault hosted gold bearing quartz-sulphide veining; and listwanite style quartz-carbonate veining. The geochemical anomalies trend E-W along the hanging wall contact of the ultramafic sill. The VLF-EM anomalies trend NW-SE along the TVS. Several diamond drill holes and trenches in this area intersected good gold values in porphyry sills, quartz-sulphide veins, shears and fractures. Along trend to the east a strong Au-Ag-As-Te-Bi-Sb geochemical anomaly is untested and remains open to the east. This anomaly correlates with the hanging wall contact of the ultramafic sill and a deep magnetic low. To the west a second ultramafic sill evident on the mag maps remains unexplored.

2. A strong Au-Ag-As-Pb geochemical anomaly over a 2 km length occurs on the ridge top around the airstrip. Smaller patchy Te-Bi-Sb soil anomalies occur within the larger gold response. The gold geochemical anomaly is open to the east and occurs immediately downslope of a strong VLF-EM response. Also present are high Ag-Pb geochemical values indicative of the occurrence of galena veins, possibly of NE strike. The quartz porphyry body underlies this area and continues to the east for several kilometers, crossing Hayes Creek at Little Klines Gulch. Potential 110^0 main structures and secondary NE trending structures are primary targets for further exploration.

3. A strong Au-Ag-Cu geochemical anomaly coinciding with a VLF-EM conductor lies at the head of Little Klines Gulch.

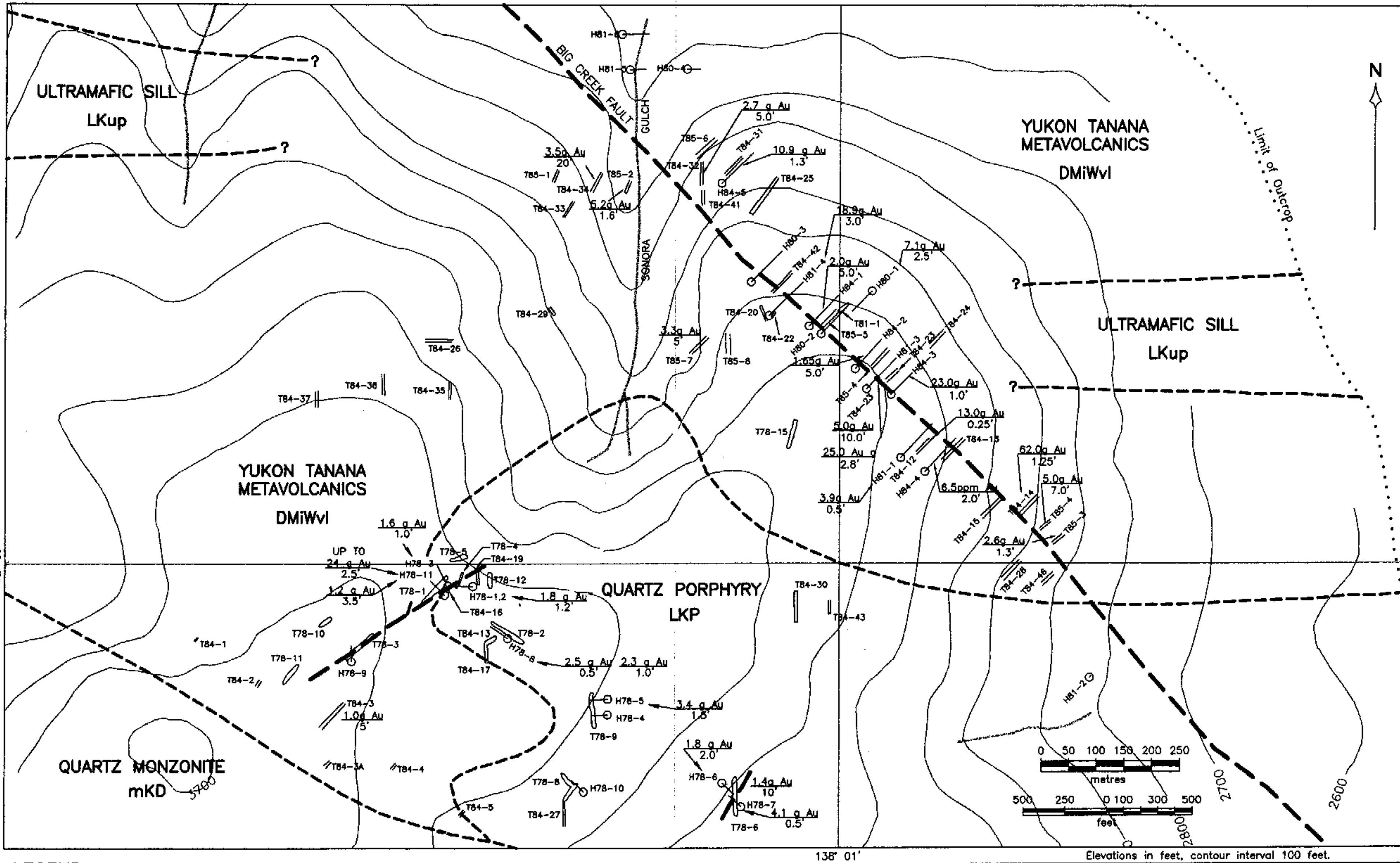
4. The historical quartz vein occurrence at the mouth of Little Klines Gulch coincides with a small but strong Au-Ag-As-Cu geochemical anomaly. Quartz porphyry outcrops along the bank of Hayes Creek but overburden thickens upslope to the west masking any underlying mineralization.

5. Further to the east on the Stone claims, the quartz porphyry unit is coincidental with a strong linear Ag-Cu-Pb geochemical response (gold analyses were not done in this area).

An initial surface program of $50,000 is recommended to expand grid coverage to the east and provide for geological, geochemical and geophysical surveys. Grid line 12+00N should be extended to the east and used as a baseline to run north-south gridlines to cover targets No. 1, 3 4 and 5. A second grid area to cover the No. 2 target should run a max-min survey along existing N-S cut lines. The two suggested grid areas are marked for examination. A Phase II diamond drill program at a budget of $200,000 is recommended to evaluate the targets defined by the Phase I and previous work programs.

11.1 Proposed Program Budget

Phase I Program: Surface Exploration, grid development, soil geochemistry, geological mapping and sampling, mag and VLF-EM surveys, transportation, camp and supplies. **Total Phase I Budget**	**$50,000**
Phase II Program:Diamond Drilling, mob and demob, drilling and support for a 1000 m program **Total Phase II Budget**	**$200,000**
TOTAL BUDGET	**$250,000**



LEGEND

- - - - - contact approximate
— — — fault approximate

bulldozer trench, trench no.
diamond drill hole, hole no.

H78-5 3.4 g Au 1.5'
H78-4
T78-9
Au, g/ton, width (feet)

mKD	QUARTZ MONZONITE
LKP	QUARTZ PORPHYRY
LKuP	ULTRAMAFIC SILL
DMiWvl	YUKON TANANA METAVOLCANICS

Modified after Doherty, R.A., 1997.

ENGINEER MINING CORP.

SONORA PROPERTY

TRENCH & DIAMOND DRILL ASSAY RESULTS

Graham Davidson, Consulting Geologist

SCALE: 1 : 10,000	PROJ: UTM NAD 27	DATE: 2000.02.15
NTS: 115 I/12, 115 J/9	DRAWN:	FIGURE 7

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13.0 CERTIFICATE

I, GRAHAM DAVIDSON, of 1 Boswell Cr., Whitehorse, Yukon, Y1A 4T2, HEREBY CERTIFY:

1. That I am a consulting geologist and that I reviewed published and private reports and maps on the Sonora property available in government assessment files and that I visited the property on June 12, 1999 accompanied by Mr. Martensson.

2. That I am a graduate of the University of Western Ontario (H. BSc., Geology, 1981).

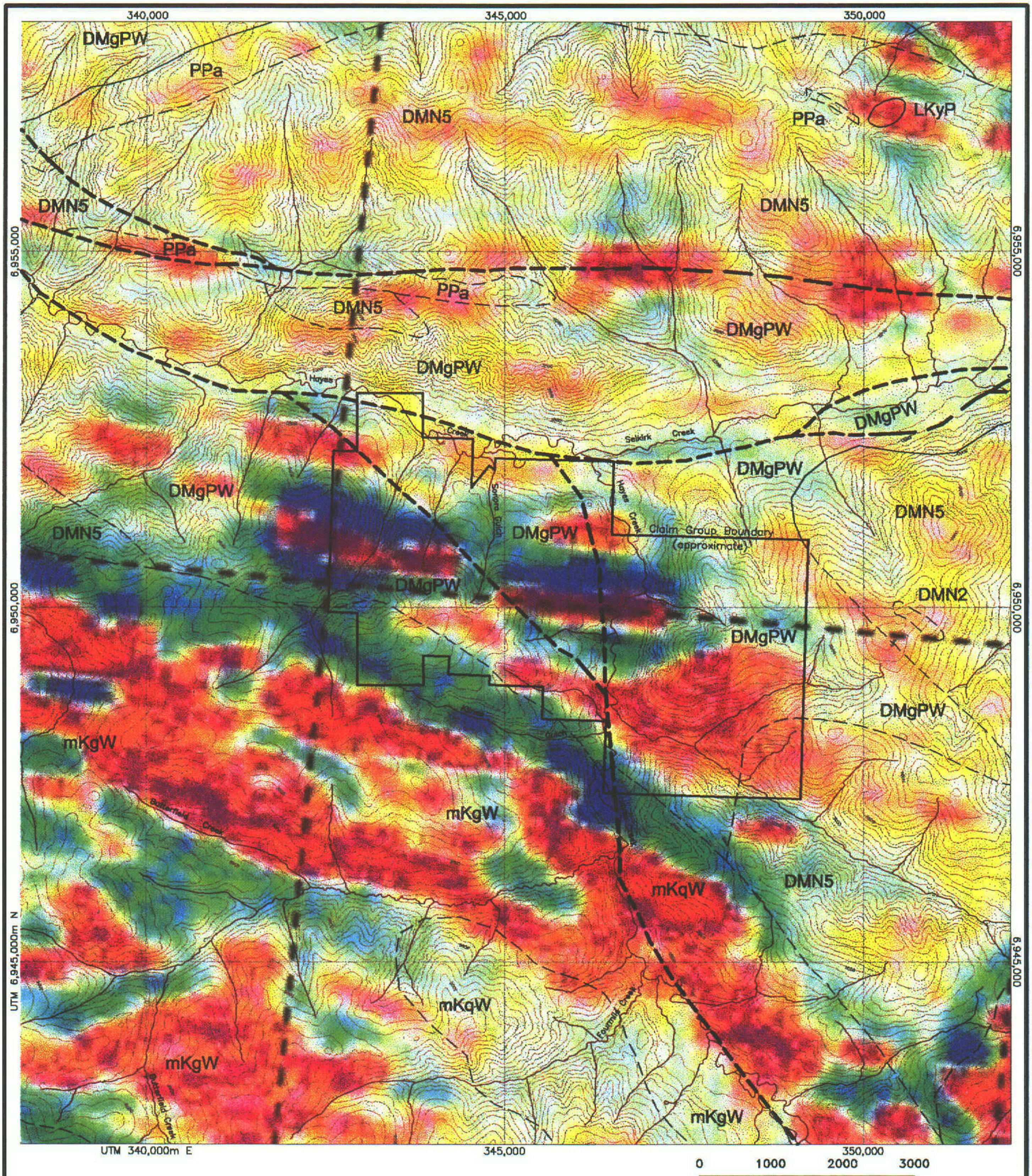
3. That I am registered as a Professional Geologist by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (No.42038).

4. That I have been engaged in mineral exploration for fifteen years in the Yukon & Northwest Territories, Alaska and British Columbia.

SIGNED at Whitehorse, Yukon, this 25th day of January 2000.

G. S. DAVIDSON, P. Geol.

APPENDIX I - FIGURES 8-11



CALCULATED MAGNETIC VERTICAL GRADIENT

MAXIMUM VALUE 0.440 nT/m (dark purple)

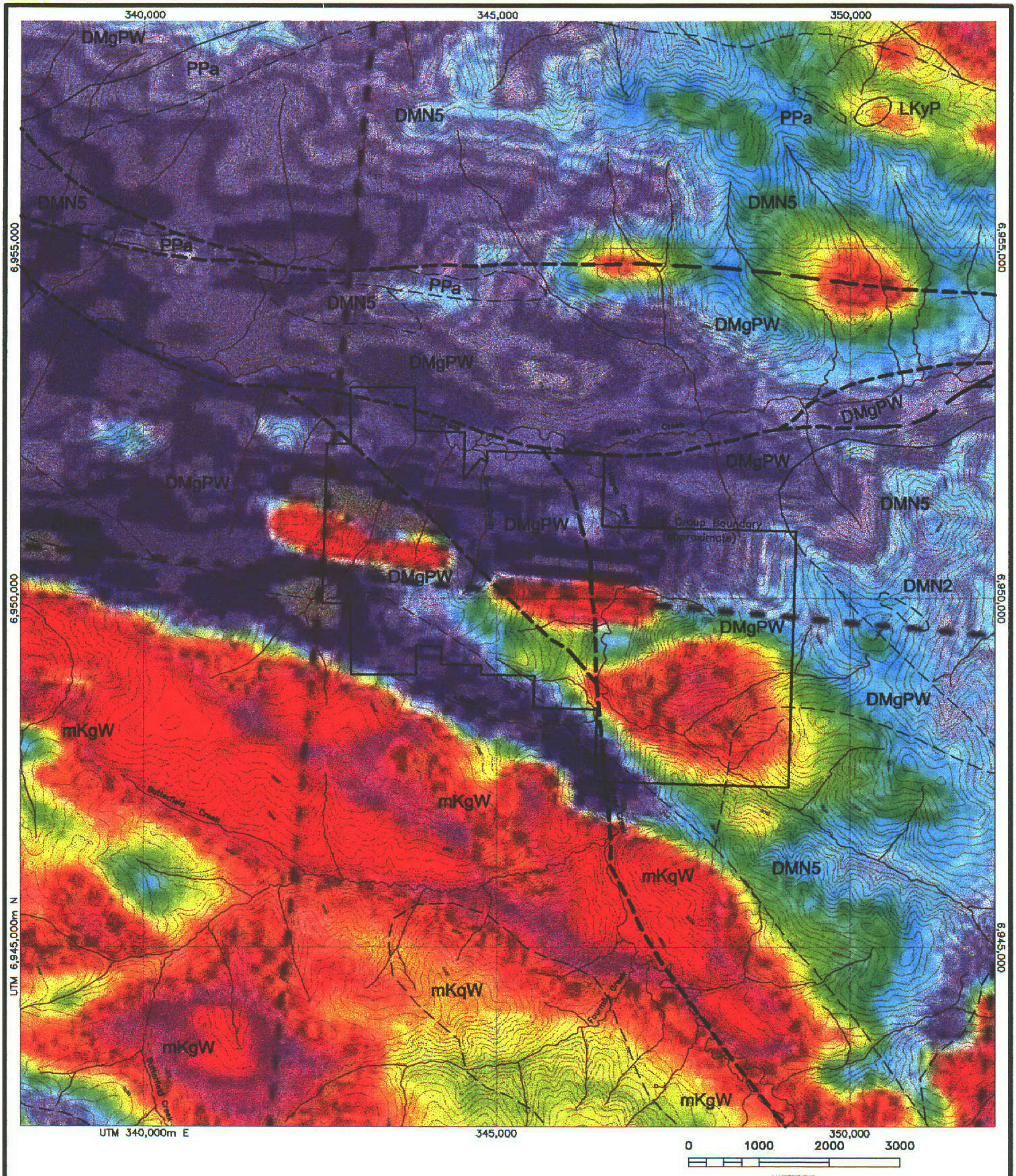
MINIMUM VALUE −0.400 nT/m (dark blue)

094123

SEE FIGURE 5 FOR GEOLOGY LEGEND

Airborne Geophysical Data – G.S.C. Open File 2816.
Geology modified after Gordey, S.P. and Makepeace, A.J., 1999.

ENGINEER MINING CORP.		
SONORA PROPERTY		
CALCULATED MAGNETIC VERTICAL GRADIENT		
Graham Davidson, Consulting Geologist		
SCALE: 1 : 75,000	PROJ: UTM NAD 83	DATE: 2000.02.15
NTS: 115 I/12, 115 J/9	DRAWN:	FIGURE 9



RESIDUAL MAGNETIC TOTAL FIELD

MAXIMUM VALUE 310.0 nT (dark purple)

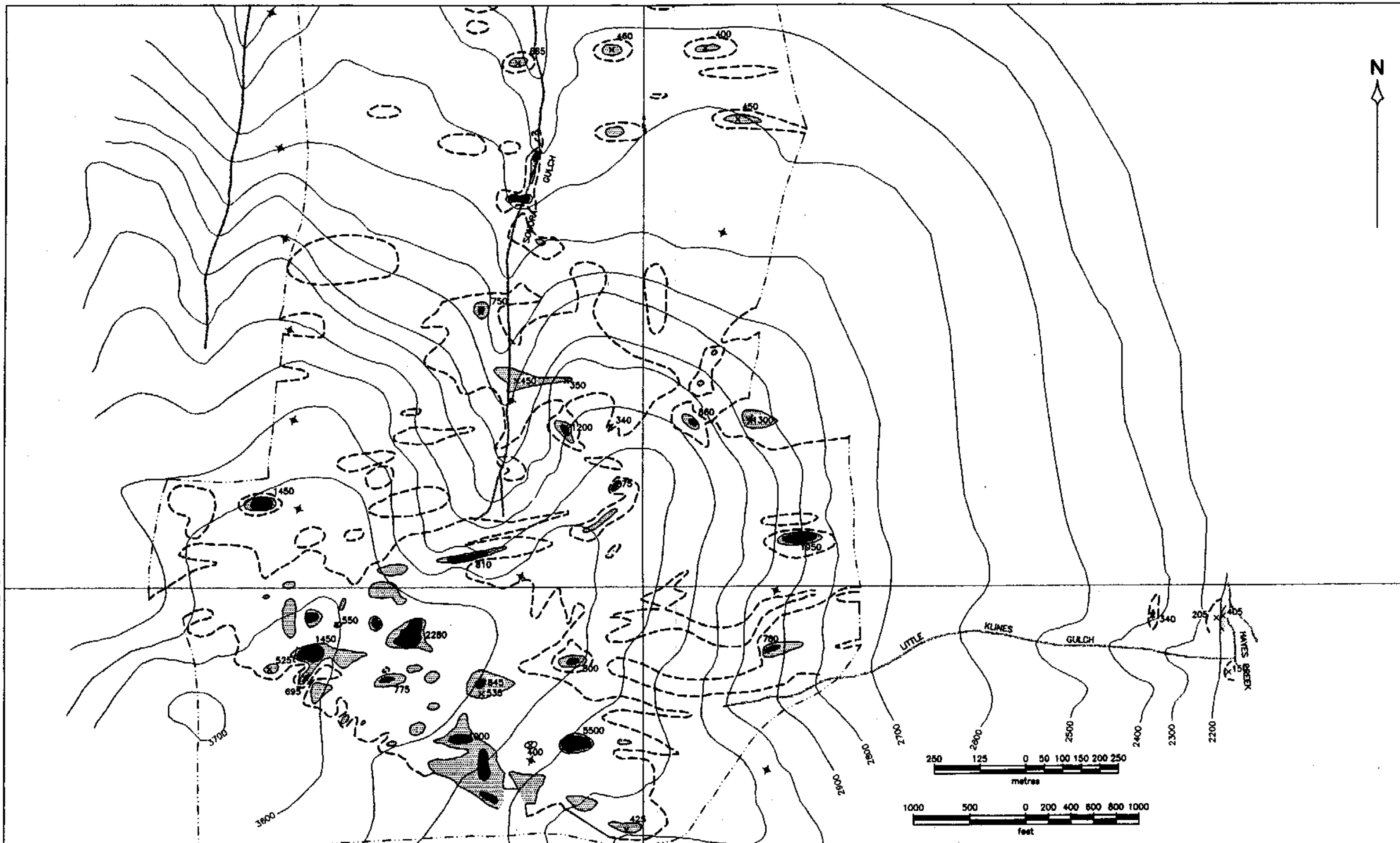
MINIMUM VALUE -180.0 nT (dark blue)

SEE FIGURE 5 FOR GEOLOGY LEGEND

094123

Airborne Geophysical Data – G.S.C. Open File 2816.
Geology modified after Gordey, S.P. and Makepeace, A.J., 1999.

ENGINEER MINING CORP.		
SONORA PROPERTY RESIDUAL MAGNETIC TOTAL FIELD		
Graham Davidson, Consulting Geologist		
SCALE: 1 : 75,000	PROJ: UTM NAD 83	DATE: 2000.02.15
NTS: 115 I/12, 115 J/9	DRAWN:	FIGURE 8



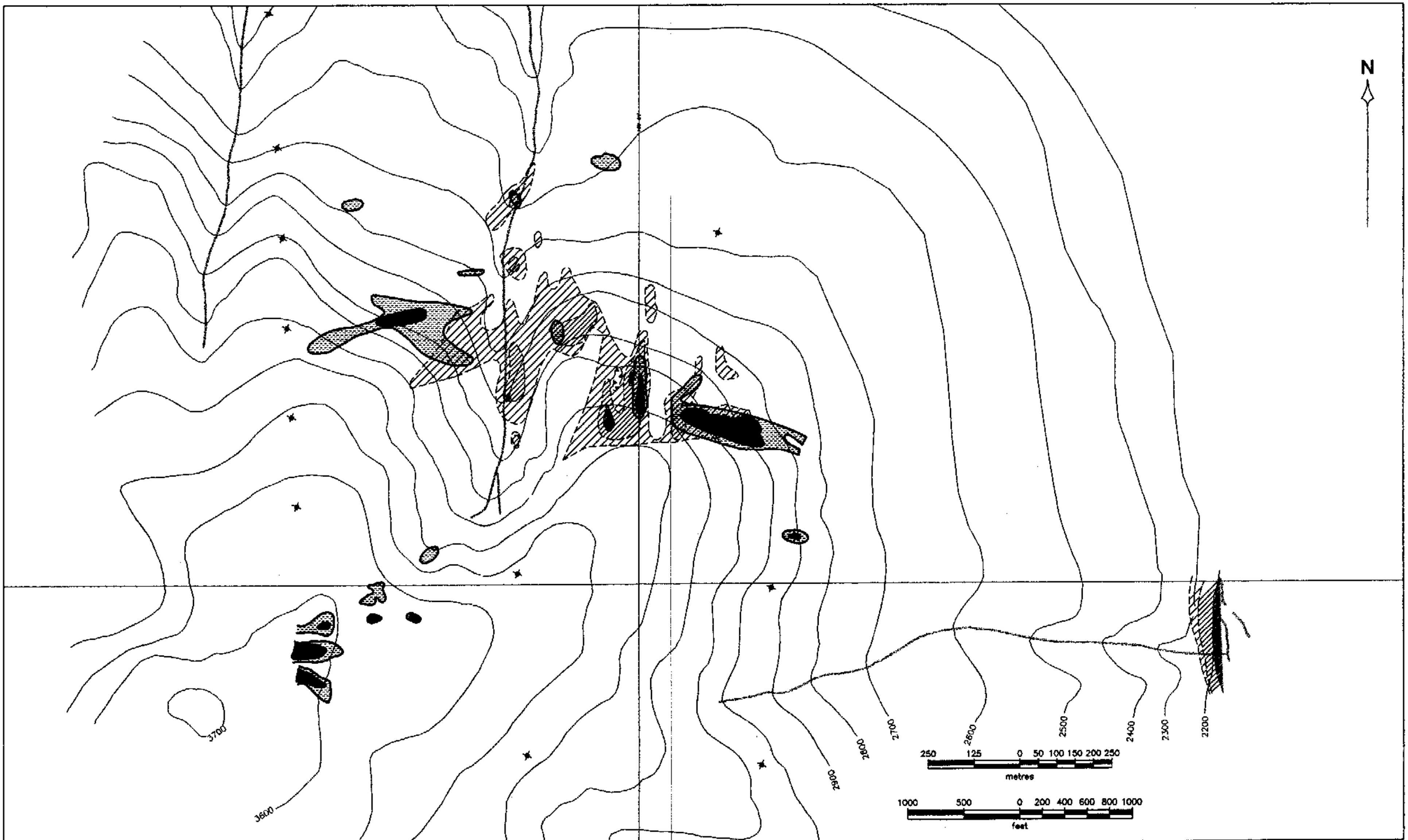
Elevations in feet, contour interval 100 feet.

LEGEND

	Au Soil Assay 75 – 300 ppb
	Au Soil Assay 300 – 600 ppb
	Au Soil Assay > 600 ppb
× 340	Au Soil Assay Value
	limit of Au geochem coverage
	claim post

Modified after Doherty, R.A., 1997.

ENGINEER MINING CORP.		
SONORA PROPERTY CONTOURED GOLD VALUES		
Graham Davidson, Consulting Geologist		
SCALE: 1 : 10,000	PROJ: UTM NAD 27	DATE: 2000.02.15
NTS: 115 I/12, 115 J/9	DRAWN:	FIGURE 10



Elevations in feet, contour interval 100 feet.

LEGEND

Bi Soil Assay 6 – 10 ppm

Bi Soil Assay >10 ppm

claim post

As Soil Assay 125 – 250 ppb

As Soil Assay 250 – 500 ppb

As Soil Assay > 500 ppb

Modified after Doherty, R.A., 1997.

ENGINEER MINING CORP.

SONORA PROPERTY

CONTOURED ARSENIC & BISMUTH VALUES

Graham Davidson, Consulting Geologist

SCALE: 1 : 15,000	PROJ: UTM NAD 27	DATE: 2000.02.15
NTS: 115 I/12, 115 J/9	DRAWN:	FIGURE 11

APPENDIX II- TABLE V-CHRONOLOGY OF PLACER and EXPLORATION ACTIVITY

1898- Placer gold discovered on Klines Gulch

1899-First Quartz claims staked at the mouth of Little Klines Gulch

1900-Adit near the mouth of Little Klines Gulch cut a 2.5 m quartz vein with values up to 13.7 gpt

Early 1900s-500 ounces recovered from Little Klines Gulch

1910-1929-a number of shafts pits and tunnels were excavated on the bench between Sonora and Klines Gulches

1940's-placer mining on Sonora Gulch

1945-Quartz claims staked, trenching reported from 1946-1951

1965-Coranex Limited staked the area

1969-1970-Dawson Range Joint Venture staked and performed exploration

1973-D.C. Syndicate staked area

1975-Swede claims staked by J. Martensson and A. McDiarmid, Sam claims staked by Anglo American Corporation

1976-1977-Soil geochemical and VLF-EM surveys by Anglo American

1977-Option agreement on Swede and Sam claims concluded by Anglo American Corporation with claim owners Martensson and McDiarmid

1977-Hudson Bay Exploration and Development Company Limited, Tombil Mines Limited and Anglo American enter joint venture agreement to explore the property

1978-11 hole drill program, total of 1606 ft, 18 bulldozer trenches, road building

1980-1981-VLF-EM surveys

1980-4 hole drill program, total of 1328 ft

1981-6 hole drill program, total of 2664 ft

1984-Hayes Resources Ltd. incorporated by Hudson Bay and takes over as operator on the property

1984-5 hole drill program, total of 2279 ft., 43 bulldozer trenches

1985-10 bulldozer trenches

1985-1997-Hudson Bay Exploration and Development Company Limited maintains title to claims by paying cash in lieu of assessment work

1997-title to claims transferred back to original owners Martensson and McDiarmid

1997-1998-Selwyn Minerals Inc. options property and contracts Aurum Geological Consultants Inc. to perform assessment work

1999-Selwyn Minerals Inc. ended its option and returns claim ownership to Martensson and McDiarmid

Exploration work programs are described in Assessment Reports by Bidwell 1978; Douglas 1977,1981, 1982, 1984 and 1985; Doherty 1998, 1999.

APPENDIX II-TABLE VI-TRENCH GEOLOGY AND SELECTED RESULTS

TRENCH NO.	GEOLOGY	SELECTED VALUES
T78-01	Rhyolite porphyry, oxidized, 2% py, 10 cm bournonite-boulangerite-calcite veins	good elevated gold and silver values
T78-02	Rhyolite porphyry, oxidized, hematite, goethite, jarosite	weakly elevated gold and silver values
T78-03	Gneiss and schist cut by a NE trending shear	weakly elevated gold and silver values
T78-04	Rhyolite porphyry, oxidized	weak gold and silver values
T78-04A	Rhyolite porphyry, oxidized, 5 m wide bleached argillic gouge zone, several narrow veins	highly elevated gold and silver values over narrow widths
T78-05	Rhyolite porphyry, oxidized, 2% py	weakly elevated gold and silver values
T78-06	Rhyolite porphyry, oxidized, highly altered, 2-5% py, gouge zone	highly elevated gold and silver values in initial trench were not duplicated when the trench was deepened
T78-07	Rhyolite porphyry, oxidized, manganese stain	weakly elevated gold and silver values
T78-08, 8A	Rhyolite porphyry, altered, py	elevated gold values, 2.2 m at 2.3 gpt
T78-09	Rhyolite porphyry, oxidized, 3% py, minor jamesonite	good elevated gold and silver values at south end of trench
T78-10	Yukon group, gneiss and schist	weak values
T78-11	Yukon group quartzite cut by mafic dyke	weak values
T78-12	Rhyolite porphyry, 2% py	background values
T78-13	Rhyolite porphyry, weakly oxidized	background values
T78-14, 16, 17, 18	Permafrost conditions	
T78-15	Yukon group quartzite	background values

TABLE VI-CONT.

TRENCH NO.	GEOLOGY	SELECTED VALUES
T84-3	Chlorite sericite schist, a few clay and py stringers	a few elevated gold and silver values
T84-12	Quartz-sericite-chlorite schist, quartzite, some oxidation, 3 inch boulangerite-booranonite vein	weak gold and silver values
T84-13	Rhyolite porphyry in contact with chlorite biotite schist, oxide band at contact	elevated gold and silver values at contact
T84-14	Quartz sericite schist in contact with granite, narrow red-brown oxidized vein	vein averages 0.576 opt, background values in schist
T84-15	Quartz chlorite sericite schist and gneiss, minor quartzite	weak values
T84-16	Rhyolite porphyry, hematite, clay bands, shears	moderately elevated gold and silver values
T84-17	Rhyolite porphyry	weakly elevated values
T84-18	Rhyolite porphyry, hematite, clay bands, boolangerite-bournonite-calcite vein	highly elevated gold and silver values
T84-19	Rhyolite porphyry, hematite	moderately elevated gold and silver values
T84-20	Quartz chlorite biotite schist	weakly elevated values
T84-21	Rhyolite porphyry, oxidized, shear zone	weakly to moderately elevated gold and silver values
T84-22	Quartz chlorite schist, limonite	background values
T84-23	Gabbro in contact with quartz sericite schist	background values
T84-24	Peridotite, quartz carbonate rock	background values
T84-25	Peridotite, quartz carbonate veins and breccia	background values
T84-26	Metagabbro in contact with quartz chlorite schist	background values
T84-27	Rhyolite porphyry, hematite	weakly elevated gold values
T84-28	Quartz chlorite biotite gneiss, and schist	background values
T84-29	Quartz sericite schist, rhyolite sill, narrow quartz veins and clay band	moderately elevated gold and silver values
T84-30	Quartz chlorite schist, a few clay seams	Background values
T84-31	Peridotite, quartz chlorite schist	Background values

TABLE VI-CONT

T84-32	Chlorite schist, peridotite sill, narrow sulphide vein	vein ran 0.326 opt gold and 4.83 opt silver
T84-33	Chlorite sericite schist	no values
T84-34	Quartz mica schist, red-brown clay band with quartz fragments	highly elevated gold values from vein zone
T84-35	Quartz chlorite schist, hematite	background values
T84-36	Quartz chlorite schist	background values
T84-37, 38, 39, 40	Overburden	
T84-41	Quartz carbonate rock, listwanite, fuchsite, minor malachite and azurite, limonite	background values
T84-42	Quartz mica schist, clay seams	background values
T84-43, 44, 45, 46, 47, T85-1	Overburden	
T85-2	Weathered biotite schist and calc-silicate, limonite hematite veins, malachite	good gold values over narrow widths
T85-3	Quartz sericite schist, limonite, 16 in clay-hematitic vein	vein ran 2600ppb
T85-4	Quartz chlorite sericite schist, clay seams, limonite	10ft clay and schist section ran 5000ppb
T85-5, 6	Overburden	
T85-7	Chlorite schist, hematitic clay	10ft hematitic clay section ran 3300ppb
T-85-8	Chlorite sericite schist, limonite	elevated values
T85-9	Chlorite schist, limonite and hematite	weak values
T85-10	Chlorite biotite schist and gneiss, calc-silicate rock, carbonate, limonite and hematite	weak values

Table VII

Drill Hole Summary

DRILL HOLE	GEOLOGY		ANALYTICAL RESULTS
			Footage Au ppb Ag ppm
78-1 17-93.5ft 93.5 -113.7 113.7-152	Quartz porphyry, limonite and hematite in fractures, minor pyrite, Fault zone, breccia, black clay seams Metagreywacke, up to 10% py		
78-2 7-37 ft	Oxidized quartz porphyry, moderate to heavy limonite in fractures, minor pyrite		15.2-16.4 1870, 36
78-3 8-105.7 ft 105.2-112.2 112.2-130.2 130.2-151	Oxidized quartz porphyry, limonite and hematite on fractures, narrow calcite-pyrite veins Metagreywacke Fault zone Quartz porphyry		23-24 1600, 43.0
78-4 8-151 ft	Quartz porphyry, limonite and hematite on fractures, patchy chlorite, epidote, py veinlets		
78-5 10-157 ft	Oxidized quartz porphyry, limonite and hematite on fractures, carbonate veinlets, minor py		spotty elevated gold values 200-830 ppb 144-145.4 3400, 1.4
78-6 0-82 ft 82-110 110-150	Oxidized quartz porphyry, limonite and hematite on fractures, pyritic sections, minor azurite and malachite Fault zone, carbonatized Quartz porphyry, limonite on fractures, 121.2-129 narow jamesonite veins		elevated gold and silver values 74-76 1800, 7.2 120-136.5 400, 5.0

Drill Hole Summary cont.

DRILL HOLE	GEOLOGY		ANALYTICAL RESULTS
			Footage Au ppb Ag ppm
78-7 8-155 ft	Oxidized quartz porphyry, limonite and hematite on fractures, pyritic sections, carbonate veinlets, minor sphalerite		elevated gold and silver values 90.5-91 4150, 12.6
78-8 12-200 ft	Oxidized quartz porphyry, limonite on fractures, carbonate veinlets, sulphosalt and pyrite stringers, minor sphalerite		elevated gold and silver values 135-136 2300, 17.8
78-9 0-48 ft	Quartz-biotite-chlorite schist, limonite and hematite on fractures		weakly elevated gold and silver values
48-55	Quartz sericite schist		
55-86	Quartz biotite chlorite schist		
86-151	Quartz chlorite sericite schist		
78-10 0-150 ft	Quartz porphyry, limonite and hematite on fractures, pyrite veinlets, poor core recovery		weakly elevated gold and silver values
78-11 0-152 ft	Quartz porphyry, limonite and hematite on fractures, pyrite veinlets, few calcite veinlets		elevated gold and silver values 116-119.5 1230, 36.0
80-1 13-245 ft	Listwanite, fine to medium grained gabbro, sections of quartz-carbonate veining, talc, variable magnetite content 1-10 %, core recovery averaged 75%		no values
80-2 14-197 ft	Variable quartz biotite chlorite gneiss, moderate to heavy limonite, narow quartz veins, disseminated pyrite, marcasite, a few galena stringers		patchy elevated gold and silver values 129-134 1945, 1.6 303-305 2545, 2.8 357-362 1945, 2.0
197-212	Fault, chlorite-calcite section		
212-222	Quartz sericite gneiss		
222-300	Quartz porphyry, limonite, pyrite and marcasite in fractures, carbonatized		
300-362	Quartz chlorite biotite gneiss, marcasite		
362-400	Listwanite, calcite and talc veins, disseminated magnetite		

Drill Hole Summary cont.

DRILL HOLE	GEOLOGY		ANALYTICAL RESULTS
			Footage Au ppb Ag ppm
80-3 14-48.5 ft 48.5-222 222-356 356-456 456-500	Quartz biotite chlorite gneiss Limonitized quartz muscovite gneiss, quartz pyrite veinlets Mixed listwanite and quartz muscovite gneiss, pyrite, magnetite, minor malachite Quartz porphyry, limonite, disseminated pyrite, minor chalcopyrite Listwanite		elevated gold and silver values, minor copper, lead 209-210 2155, 3.3 354-357 2400, 16.0
80-4 0-106 ft 106-152 152-183	Overburden, rock chips, schist and andesite Rhyolite or quartzite, very poor recovery, some breccia Quartz chlorite muscovite schist, limonite and hematite staining		
81-1 22-35 ft 35-68 68-193 193-439 439-509.5 509.5-521 521-567	Quartz biotite gneiss Quartz porphyry Variable quartz biotite chlorite sericite schist and gneiss Quartz porphyry, 1% pyrite and pyrrhotite, chlorite and epidote alteration Variable quartz mica schist and gneiss Fault zone, quartz carbonate veining, chrysocalla Quartz porphyry, chalcopyrite splashes to 1%		269.8-270.3 3990, 95opt Ag
81-2 14-169 ft 169-179 179-320 320-329	Diorite, minor quartz and carbonate veining, poor core recovery Feldspar porphyry, fault zone Variable quartz mica schist and gneiss Rhyodacite ?		

Drill Hole Summary cont.

DRILL HOLE	GEOLOGY		ANALYTICAL RESULTS
			Footage Au ppb Ag ppm
81-3 14-65 ft	Quartz biotite chlorite gneiss		Elevated values from 350-454 ft.
65-76	Feldspar quartz porphyry		
76-414	Quartz mica gneiss and schist, minor pyrite and arsenopyrite, quartz carbonate veining, several fault zones		351-353.8 .748opt Au, 39.0 420-428 .165opt Au, 4.0 440-446.5 1000, 2.9
414-430	Fault or contact zone		
430-440	Quartz porphyry and quartz vein		
440-475	Quartz mica chlorite schist		
475-508	Mafic volcanic, quartz-carbonate veining, margin of ultramafic sill		
81-4 19- 271 ft	Quartz mica chlorite schist and gneiss		395-398 18.9gpt Au, 6.9
271-362	Mainly Diorite with a few quartz sericite schist sections		398-399 6.5gpt Au, 5.7
362-375	Fault, quartz fragments in graphite, slickensides, minor pyrite		
375-417	Mafic volcanic to gabbroic rock, gneiss and schist layers		
417-442	Quartz biotite chlorite epidote schist		
442-474	Rhyolite, bleached with kaolinite and 2% pyrite, minor chalcopyrite		
474-531	Quartz biotite gneiss and gabbro		
531-550	Rhyolite, fractured, pyrite veins, chrysocalla		
550-593	Andesite, epidote and chlorite alteration, quartz-carbonate veining, listwanite zone		
81-5 0-188 ft	overburden		
81-6 0-227 ft	overburden		
227-479	Quartz feldspar biotite gneiss, some calcite veining, minor pyrite		
84-1 20-425 ft	Quartz chlorite biotite schist and gneiss, a few quartz and carbonate veins		280-281.7 3000, 7.2 288-294 2200, 0.4 375-377.5 7100, 11.0
425-445	Quartzite, fuchsite bearing, magnetite		395-400 3000, 2.5
445-455	Peridotite		424-424.5 3600, 9.1
455-484	Quartzite, fuchsite bearing		

Drill Hole Summary cont.

DRILL HOLE	GEOLOGY		ANALYTICAL RESULTS
			Footage Au ppb Ag ppm
84-2 15-362 ft 362-372 372-450 450-476	Quartz carbonate chlorite schist Rhyolite porphyry Biotite chlorite unit, altered schist, possible peridotite Peridotite, serpentine		225-230 1650, 8.3 310-315 1650, 4.0 335-339 1500, 64.0
84-3 22-244 ft 244-305 305-350	Quartz carbonate chlorite schist Rhyolite porphyry Quartz chlorite biotite schist		232-235 920, 49.0 190-195 1950, 1.3 282-283 0.681 opt Au, 11.0 285-290 1150, 0.4
84-4 30-65 ft 65-150 150-170 170-375 375-387 387-517	Quartz chlorite schist Quartz augen gneiss Rhyolite porphyry Quartz chlorite schist and quartz biotite gneiss Rhyolite Porphyry Quartz carbonate chlorite schist		270-272 6500, 19.75opt Ag 462-464 1350, 1.0 470-475 700, 7.8
84-5 10-45 ft 45-50 50-130 130-140 140-452	sheared altered rock Rhyolite porphyry sheared altered rock and chlorite carbonate schist Quartzite and peridotite Quartz chlorite sericite schist		

STATEMENT OF COSTS

Property Visit: on June 4, 1999 by Teck Exploration Ltd.
Accompanied by G. Davidson & J. Martensson

J. Paulter and assistant, 1 day		$600.00
Trans North Helicopters, 2.5 hrs @ $725/hr		1,812.50
Eco-Tech Labs, 13 rock samples		279.50
G. Davidson, 1 day		300.00
Truck & travel, 500km @ $.40/km		200.00
Fuel and expenses		80.00
	Sub Total	$3,272.00

Summary Report: dated Jan. 16, 2000

G. Davidson, data compilation and report writing, 9 days @ $300/day		2,700.00
Geological Drafting Services		1,663.29
Integraphics, printing & copying		159.54
	Sub Total	$4,522.83
	TOTAL COSTS	$7,794.83