ASSESSMENT REPORTS

Dawson M.D.

MAP No. 115 O 15 **TYPE OF WORK:** GEOLOGICAL, GEOCHEMICAL 091561

REPORT FILED UNDER	Dawson Eldorado Gold Explorations Ltd.
DATE PERFORMED	June , 1984 **DATE FILED:** June 27, 1984
LOCATION – LAT.	63°52'N Hunker Creek, Yukon
LONG.	138°55'W
CLAIM Nos.	KLOOK 1, 3, 5-20, 29-40 YA65751, 753, 755-781
	21-28 YA79149-156
WORK DONE BY	J.K. Mortensen (Archer, Cathro and Associates (1981) Ltd.)
WORK DONE FOR	Dawson Eldorado Gold Explorations Ltd.
REMARKS	

091561

Soil samples were collected along several regional soil lines and two detailed sample lines near some old workings, and were analyzed for 12 elements by ICP, and for Au and Ag by NAA. Both Au and Ag were anomalous but highly erratic in the vicinity of the known gold-bearing veins. Several anomalies were obtained in the south where Cominco had previously outlined an anomalous zone.

The gold-bearing veins are part of a strong en echelon sheeted vein system which have strike lengths in excess of 300 m. Gold values are erratic, although more sampling is need to confirm this. Geochemical sampling indicates the veins occur in a NNW-trending zone bounded by Lombard Creek and the Sulphur Creek road.

ARCHER, CATHRO
& ASSOCIATES (1981) LIMITED
CONSULTING GEOLOGICAL ENGINEERS

BOX 4127, 3125 THIRD AVENUE
WHITEHORSE, Y.T. Y1A 3S9

(403) 667-4415

Assessment Report

on

Klook 1-48 Claims

Dawson Mining District

NTS 115O/15

by

J.K. Mortensen, Ph.D.

Archer, Cathro & Associates (1981) Limited

June 13, 1984

091561

1016-510 WEST HASTINGS STREET, VANCOUVER, B.C. V6B 1L8

(604) 688-2568

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 $ 6,260.33.

D D Emond

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

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Introduction

The Klook 1-48 claims were staked by Archer, Cathro & Associates (1981) Limited on behalf of Dawson Eldorado Gold Explorations Ltd. during June, 1983 to cover known gold-bearing quartz vein systems in the area. Klook 2, 4 and 41-48 have subsequently been dropped. Geological mapping and geochemical sampling was carried out during 1983.

Location, Access and Vegetation

The property covers the ridge crest between Upper Dominion Creek and Lombard Pup, and between Left and Right Forks of Hunker Creek (Figure 1). It is traversed by the Sulphur Creek road between Hunker Summit and King Solomon Dome, which also crosses the extreme southwest corner of the claims. Further access is provided by a dirt road along the left limit of Upper Dominion Creek, as well as a road along the ridge crest between Dominion Creek and Lombard Pup.

Virtually the entire Klondike District, with the exception of the summit of King Solomon Dome, lies below treeline. Vegetation on south- and southwest-facing slopes consists of stands of aspen or mixed aspen and birch, with varying amounts of underbrush, which generally becomes denser at higher elevations. Permafrost is commonly absent on south-facing slopes, but is much more widespread on north-facing slopes. Such north-facing slopes are characterized by scattered scrub spruce or mixed spruce and aspen, with varying amounts of underbrush. The ground is commonly covered by very thick moss, which passes downward into frozen peat-like material and then into frozen soil.

History and Previous Work

The earliest staking was probably Pride of the Mountain claim (4218) by

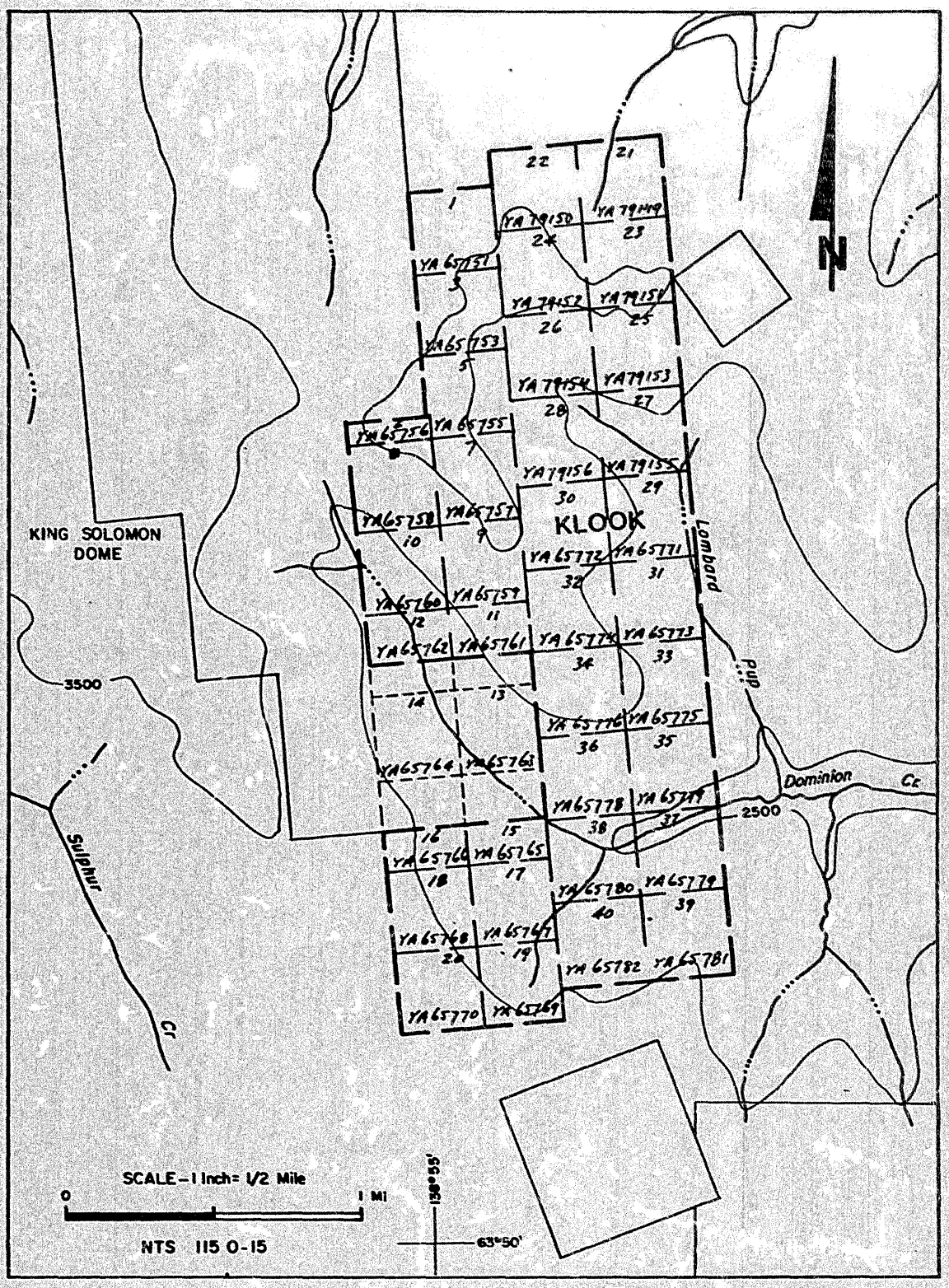


Figure 1

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

LOCATION MAP
KLOOK CLAIMS
KLONDIKE PROJECT

H.N. Coleman in June, 1900. The target was restaked as a forty claim property by Aaron Knorr, commencing with Discovery, etc (6926) in May, 1904, and was optioned to Dome Lode Development Co. Ltd., which traced four veins on surface for 1500 ft with 4 shafts (14 to 80 ft deep) and a number of trenches. In 1909 - 10, a 2600 ft crosscut was driven at a cost of $70,000. About 25 claims were taken to lease, including some up to two miles northeast. Sam Thurber blasted an open cut on the Hunker claim, adjoining to the east, in 1912. Near the road, one mile to the north, W.D. MacKay put in a 50 ft shaft and an open cut on the Jennie claim and J. Cameron did some trenching on the Summit claim, all prior to 1912.

The workings were restaked as Eleventh Hour claims (15037) in June, 1924 and Bridge, etc claims (39010) in September, 1937 by A.J. Matheson, who explored with hand pits until 1940-42, when he cleaned out and resampled the crosscut and drifted a further 122 ft.

The property was restaked as Dominion claims (86971) in August, 1965 by Orekon Ltd., which bulldozer trenched in 1966 and 1972 and was surrounded in January, 1980 by KSD claims (YA49490) by Cominco, which carried out mapping, geochem and IP surveys later in the year.

Regional Geology

The Klondike District lies within the unglaciated portion of the Northern Cordillera, and experienced strong surface weathering during the early and mid-Tertiary. As a result, bedrock exposure is extremely limited (considerably less than one percent), and surface weathering locally extends to depths of 80 m or more. The scarcity of outcrop necessitates a regional approach to understanding the geology of individual properties (many properties in the

Klondike have only one or two outcrops on them). In the following report, the property geology is discussed and interpreted in the light of regional mapping carried out by the writer during the 1983 field season. The bedrock geology of the property and adjacent areas is based on data collected from available bedrock and subcrop (which is usually confined to road cuts, placer workings, and ridge crests), as well as the distribution of various lithologies as rock chips in the overburden. Since solifluction and downslope creep are the only processes operating to transport the rock chips, the latter technique can be used (with caution) to approximately locate lithological contacts in overburden-covered areas.

The Klondike District is underlain by a series of thrust sheets that are separated by regional-scale thrust faults. Discontinuous lenses of altered ultrabasic rocks occur along the thrust faults. The rock units that make up the various thrust sheets are described briefly in Table I.

An early pre-thrusting, metamorphic foliation that parallels compositional layering is pervasive in all rock units except the ultrabasic rocks and the younger intrusions and volcanic rocks (units KTqfp, KTvs and Mzd). The thrust faults are deformed by at least three younger phases of deformation. The second phase event (F_2) produced west- to northwest-trending folds that are developed to varying degrees throughout the district. The third phase (F_3) includes northwest-trending folds and is only recognized in the northeastern portion of the district. Late, small-scale warping (F_4) is noted locally. Little evidence was seen for large-scale steep faulting in the area, although abundant topographic linears suggest that small-scale steep faults may be common.

Two distinct generations of quartz veins are recognized regionally in the Klondike District. The most abundant is an early generation of metamorphic

TABLE I

LITHOLOGIC UNITS IN THE KLONDIKE DISTRICT

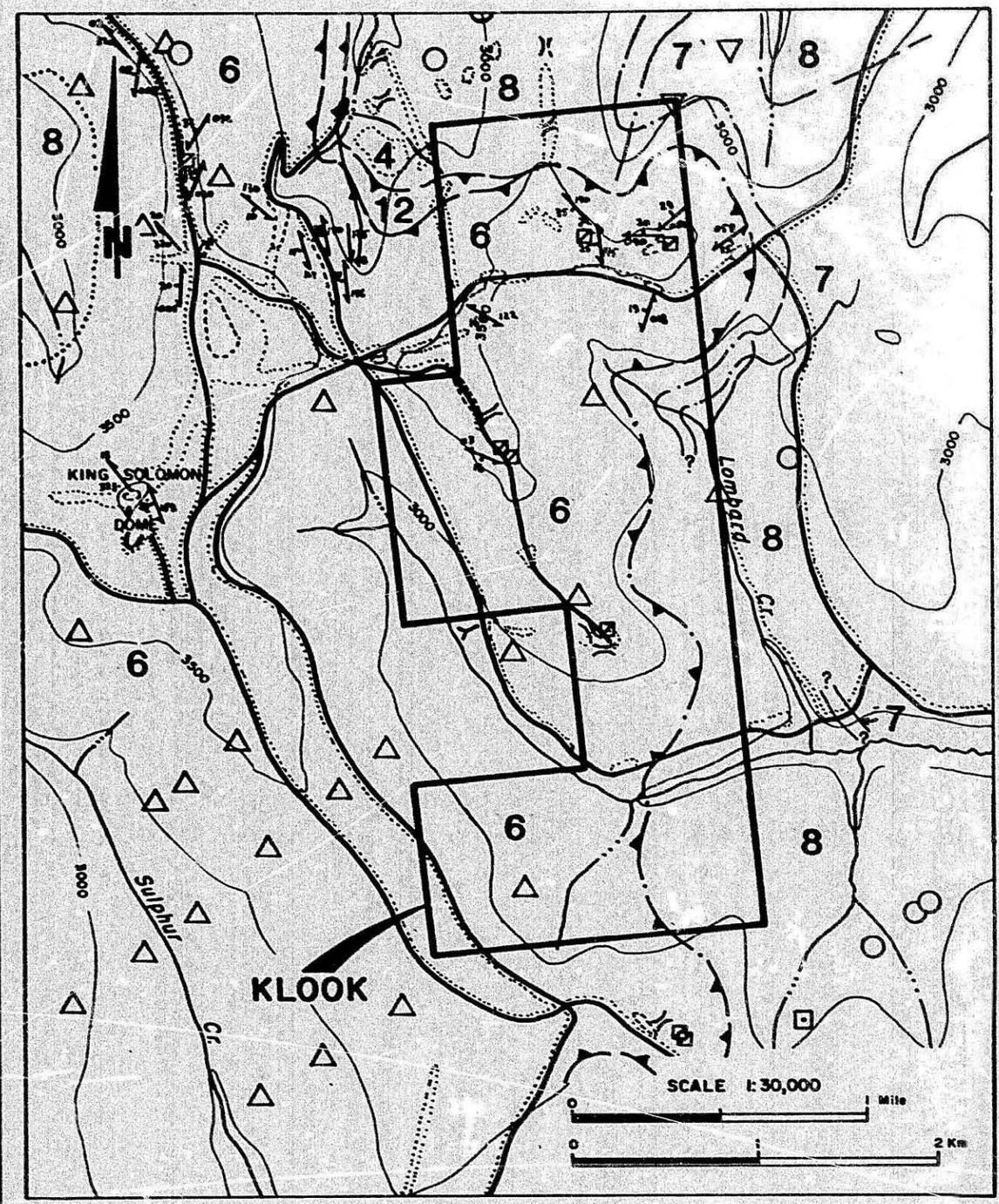
Unit	Map Symbol	Description
15	KTqfp	- unfoliated quartz-feldspar porphyry
14	KTvs	- interbedded immature clastic rocks and intermediate to mafic volcanic rocks
13	Mzd	- unfoliated hornblende diorite and quartz diorite
12a	Pzub	- variably altered ultrabasic rocks (serpentinite, talc-carbonate rock, and silica-carbonate rock)
12b	Pzgr	- massive to weakly foliated greenstone
11	Pzm	- schistose impure marble
10	Pzmq	- muscovitic quartzite
9	Pzqs	- carbonaceous quartz-muscovite phyllite and schist (locally includes minor 6 undifferentiated)
8	Pzmcq	- fine-grained muscovitic and chloritic quartzite
7	Pzqms	- tan to rusty weathering quartz-muscovite, muscovite-quartz, and muscovite schist
6	Pzcs	- chlorite and chlorite-quartz-muscovite schist (includes minor amphibolite)
5	Pzqe	- "quartz-eye schist" (quartz-muscovite schist with abundant clear to bluish quartz [±feldspar] augen)
4	Pzqd	- weakly to moderately foliated, medium-grained, quartz dioritic orthogneiss
3	Pzmg	- weakly to strongly foliated metagabbro
2	Pzmd	- weakly to strongly foliated metadiorite
1	Pzog	- strongly foliated granitic to quartz monzonitic orthogneiss

quartz sweats (referred to as "foliaform quartz") that comprise narrow lenses and pods parallel to the F_1 foliation. Minor amounts of ferroan carbonate, pyrite and white to pale pink feldspar occur locally in the foliaform quartz. A younger set of quartz veins (referred to as "discordant quartz") form tabular veins that crosscut compositional layering in the schists as well as the F_1 and F_2 foliations. These veins reach 2.5 m in thickness in parts of the Klondike District. Pyrite is commonly present, usually as narrow selvages. Other sulphides, notably galena, sphalerite, tetrahedrite, stibnite, chalcopyrite and arsenopyrite, and free gold occur in trace elements in the discordant veins. Manganese staining is common on weathered samples of vein material. Sampling of veins from throughout the Klondike has shown that gold is confined almost exclusively to the discordant veins.

Property Geology

A major thrust fault cuts across the property and separates two lithologically very distinct rock sequences (Figure 2). The rocks beneath the thrust are mainly muscovitic, fine to medium-grained quartzites and feldspathic quartzites (Unit 8) that weather tan to medium grey-brown. A band of tan to rusty yellow-orange weathering muscovite and quartz-muscovite schist (Unit 7) is interlayered with the quartzite in the northeast corner of the claim group. Similar bands occur east and south of the property. A small body of weakly to strongly foliated, strongly altered quartz dioritic orthogneiss (Unit 4) occurs in subcrop in the extreme northeast corner of the property. It lies immediately beneath the thrust fault, and is thought to be intrusive into the lower plate sequence.

The rocks above the thrust are mainly medium to dark green and greenish-brown chlorite (±actinolite) and chlorite-quartz-carbonate schists (Unit 6).



LEGEND

- thrust fault (defined, inferred)
- lithological contact (defined, inferred)
- outcrop and disrupted outcrop
- subcrop and local float in overburden
- lithological identification of rock chips in soil (Units 3, 5, 6, 7, 8, 9, 15 respectively)
- trench or hand pit
- adit
- shaft
- F_1 foliation, parallels compositional layering (strike, dip)
- F_2 foliation (strike, dip)
- F_2 crenulation lineation (trend, plunge)
- soil sample location (As content in ppm by ICP, Au content in ppb, NAA)
- silt sample location (" " ")
- geochemical sample of fines in waste dumps (" " ")

Figure 2

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

BEDROCK GEOLOGY

KLOOK PROPERTY AND VICINITY

KLONDIKE DISTRICT, YUKON

KLONDIKE PROJECT

Narrow discontinuous bands of moderately to strongly foliated metagabbro (Unit 3) are present in at least three localities within the chlorite schist. Traces of disseminated pyrite and magnetite occur sporadically in the rocks.

To the north of the property, the thrust zone itself is marked by a band of sheared and altered serpentinite and talc-carbonate schist. This band lenses out just inside the northwest corner of the claim group, and over the remainder of the property the thrust is mapped only by the marked contrast in lithology.

Outcrop is sparse on and near the property, but where it exists, compositional layering in the rocks above and below the thrust fault generally dips to the west at a shallow to moderate angle. The thrust surface itself also dips west. Some variation in the dip direction and angle suggests that minor F_2 and/or F_3 warping has occurred.

Foliaform quartz is common on the property, particularly in the chloritic schist, where it forms lenses and bulbous masses to 1 m in thickness.

Mineralization

Gold occurs in discordant quartz veins on and around the Klook claims. The veins located thus far appear to be confined to chloritic schists of the upper thrust panel. The Mitchell and Orekon veins, which lie north and northwest of King Solomon Dome, and the veins on the ridge between Upper Dominion and Lombard Creeks (Figure 2) occur as a large-scale en echelon sheeted vein system. Individual veins strike north-south and dip steeply to the east. Some of the veins in the Orekon system have faulted margins, but generally the veins appear to be simple fillings of extension fractures. The vein material consists mainly of white, coarsely crystalline quartz with minor ferroan carbonate and pyrite. Concentrations of galena with traces of chalcopyrite and sphalerite are present

locally. Traces of tetrahedrite and arsenopyrite have also been reported from the Mitchell vein. Free gold occurs sporadically in the veins, generally associated with sulphides. Wallrock alteration associated with the veins consists of widespread introduction of brown weathering ferroan carbonate and more restricted zones of pyritization. Silicification of the wallrocks within a few centimetres of the vein wall has occurred locally along the Mitchell vein. The pyritized wallrocks adjacent to the Mitchell vein are gold-bearing, the gold occurring within the pyrite grains.

Assay values from veins in the vicinity of King Solomon Dome vary widely. Values of up to 1.4 oz/ton Au and 305 oz/ton Ag have been obtained from samples of the Mitchell and Orekon veins, although most samples contain only trace amounts. The veins on the ridge between Upper Dominion and Lombard Creeks have received the most development work of any in the Klondike District. Four veins were uncovered on surface and were explored in the early 1900's by trenches and a shallow shaft. MacLean (1914, pp.112-114) examined the property in 1912 and sampled some of the surface showings. Three samples from trenches and shafts averaged 0.08 oz/ton Au and 0.1 oz/ton Ag. The 2600 ft tunnel was collared approximately 500 ft vertically below these showings. Between 800 and 2000 ft from the portal the tunnel intersected 6 veins ranging from 0.6 to 1.8 m in thickness. Very little information is available on the results of this work, but it was reported that assays of up to 25.01 oz/ton Au and 3.64 oz/ton Ag were obtained.

Quartz veins containing traces of galena and pyrite are also present in old trenches and shafts on the ridge immediately west of Hunker Summit. MacLean sampled quartz from two of these showings, but his highest assay was only 0.04 oz/ton Au.

Geochemistry

Soil samples were collected along several regional soil lines that pass across or near the Klook property, as well as two detailed sample lines near some of the old workings. These samples were analyzed for 12 elements by ICP, for Ag by AA and for Au by NAA. As and Au have proven to be the most reliable indicators of gold-bearing veins in the Klondike. As and Au content of the samples collected in the Klook area are shown in Figure 3. Calculated background levels for these elements in soils in the Klondike are 15 ppm and 5 ppb, respectively. Both elements are anomalous but highly erratic in the vicinity of the known gold-bearing veins. Several highly anomalous values were also obtained in the extreme southern end of the property, where Cominco had previously outlined an anomalous zone on one of its detailed sample grids.

Discussion and Conclusions

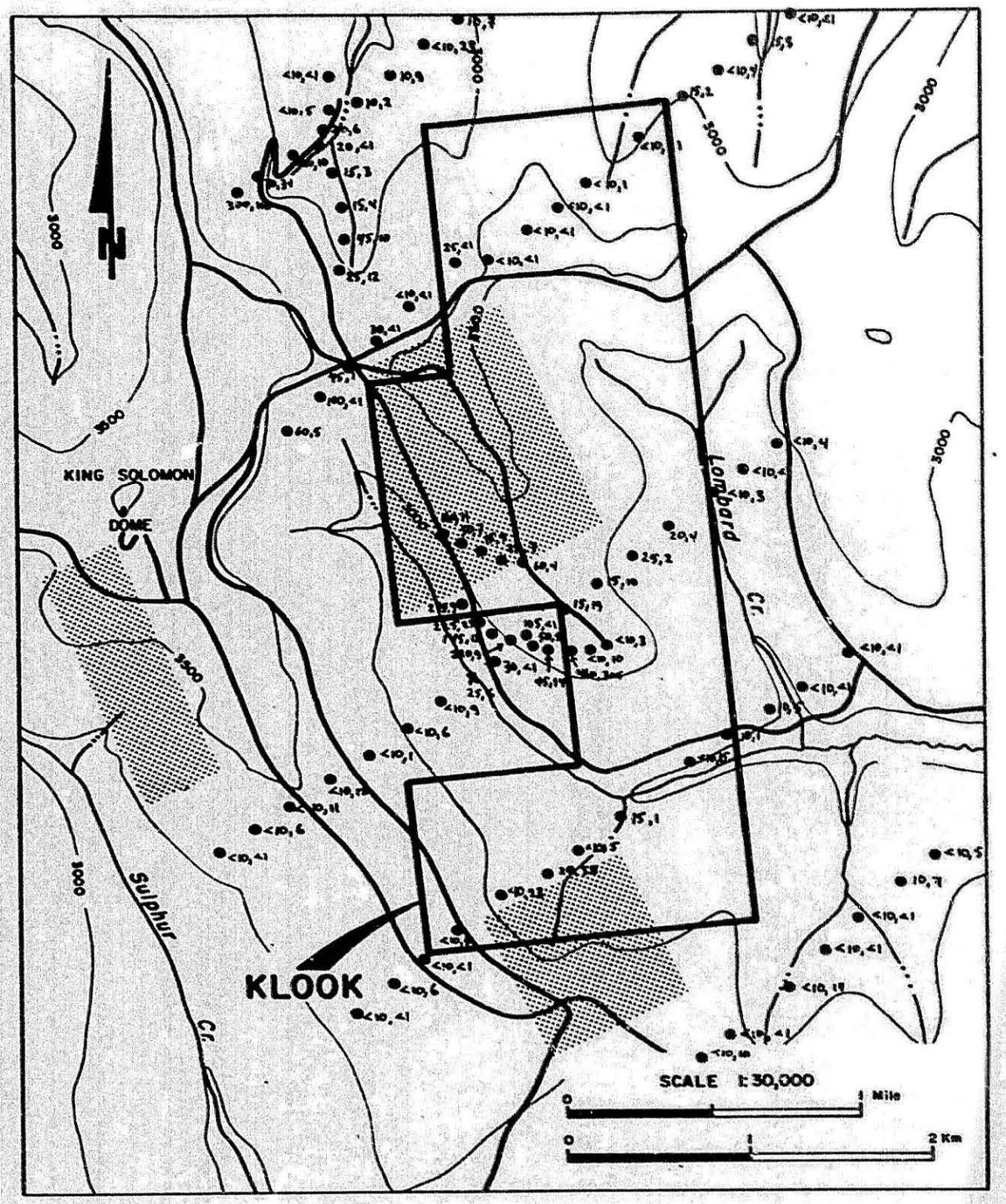
The gold-bearing veins in the Klook claims are part of a very strong system of en echelon sheeted veins in which individual veins have strike lengths in excess of 300 m. Gold grades within the veins, however, appear to be very erratic, although sampling has not been detailed enough as yet to firmly establish this. The results of the geochemical sampling indicate that the veins in this area occur in a NNW-trending zone bounded by Lombard Creek and the Sulphur Creek road. More detailed geochemical sampling followed by bulldozer trenching of anomalous areas will be required to better assess the potential of this property.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

/mjm

J.K. Mortensen, Ph.D.



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- 10, 8 soil sample location (As content in ppm by ICP, Au content in ppb, NAA)
- x 10, 8 silt sample location (" " ")
- □ 10, 8 geochemical sample of fines in waste dumps (" " ")
- detailed geochemical grids sampled by Cominco

Figure 3

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

SOIL AND SILT GEOCHEMISTRY

KLOOK PROPERTY AND VICINITY

KLONDIKE DISTRICT, YUKON

KLONDIKE PROJECT

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APPENDIX I

CERTIFICATE

I, James K. Mortensen, with residential address in Vancouver, British Columbia, do hereby declare

1. I am a geologist in the employ of Archer, Cathro & Associates (1981) Limited, 1016-510 West Hastings Street, Vancouver, B.C. V6B 1L8.

2. I am a graduate in geological engineering of the University of British Columbia (B.A.Sc., 1977, M.A.Sc., 1979) and graduate in geology of The University of California, Santa Barbara (PhD., 1983).

3. I am a member of the Geological Association of Canada and the Geological Society of America.

4. I am a registered Engineer-in-Training in the Association of Professional Engineers of British Columbia.

5. I have practised my profession as a geologist for the past eleven years.

6. I have supervised the work described in this report.

Respectfully submitted,

/mc

J.K. Mortensen, PhD.

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APPENDIX II

REFERENCES

Brock, R.W., 1910, in Geological Survey of Canada, Summary Report for 1909, reprinted in Geological Survey of Canada Memoir 284, pp.318-19

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APPENDIX III

April 17, 1984

Mining Recorder,
Dawson Mining District,
Box 249,
Dawson, Y.T.
Y0B 1G0

Dear Sir:

Re: Application of Regional Mapping Costs in Klondike District to Property Assessment

Part of the assessment work for 1983-84 filed on quartz claims in the Klondike area held by Dawson Eldorado Gold Explorations Ltd. or jointly by Dawson Eldorado and Archer, Cathro & Associates (1981) Limited consists of geological mapping outside of the individual properties for which the work was filed. We believe that this is justified because of the extreme scarcity of outcrop in the area and the lack of a detailed geological map of the Klondike which makes it impossible to interpret the geology of a particular property based solely on the very few bedrock exposures within the claim boundaries. In order to understand the bedrock geology of a claim group, it is therefore necessary to carry out more reconnaissance scale mapping in the general area of the property and extrapolate the regional geology onto the property.

Yours truly,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

/mc

J.K. Mortensen.

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