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GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL  
AND DRILLING REPORT  
ON THE  
TANTALUS RESOURCES LTD.  
TREATY CREEK PROJECT

ISKUT-SULPHURETS AREA  
BRITISH COLUMBIA

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January 8, 1990

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## SUMMARY

The Treaty Creek Project of Tantalus Resources Ltd. lies within the Iskut-Sulphurets area of northern B.C. (Figure 1), approximately 16 kilometres east of the Eskay Creek deposit of Calpine Resources Inc./Stikine Resources Ltd. and 10 kilometres north of the Sulphurets gold deposit of Newhawk Gold Mines Ltd./Corona Corp./Granduc Mines Ltd.

The focus of the 1989 field program on the Treaty Creek Project was to follow up and expand on spectacular gold values returned from the Konkin Zone in 1987 and 1988 in the nunatak area of the property. The Konkin Zone comprises two subparallel chlorite-epidote-gold horizons trending approximately east-west. The nunatak is also host to the Goat Trail and Southwest Zones, to the northeast and southwest of the Konkin Zone respectively. Reconnaissance work on the remainder of the property involved mapping, prospecting, soil, stream sediment, and rock sampling. The cost of this Phase I program was approximately \$300,000.

Trenching, chip sampling, VLF-EM and magnetometer surveys, and diamond drilling were completed over the Konkin Zone during August and September, 1989. Approximately 1.5 line kilometres of geophysical surveys were completed over lines spaced at 25 m intervals covering the Konkin Zone. Three trenches were established to test for an eastern extension of the northernmost, of two mineralized horizons, from which 21 chip samples were collected. Maximum values of 0.153 oz/t gold and 0.146 oz/t gold over 1.0 m were returned from trench samples. Chip samples over 1.0 m were collected from three alteration zones proximal to the Konkin Gold Pit producing assays ranging up to 760 ppb gold. Four diamond drill holes totalling 381.83 m were completed to test the two horizons delineated by previous work.

Intersections of up to 1.5 m of semi-massive pyrite were recorded from the drilling on the Konkin Zone. The best results were received from hole TA-89-3 which assayed 0.138 oz/t gold over 4.09 m, including 1.8 m of 0.249 oz/t gold. This correlates with the surface expression of a shallow dipping zone of chlorite-epidote alteration containing 10 to 50% pyrite and trace chalcopyrite. Elevated gold values were encountered over wide intervals in the sulphide zones in holes TA-89-2, 3 and 4. Hole TA-89-2 averaged 253 ppb gold over 30 m from 39.00 m to 69.00 m, TA89-3 averaged 310 ppb gold over 38 m from 71.00 m to 109.00 m and TA89-4 averaged 710 ppb gold over 18.6 m from 47.70 m to 66.39 m.

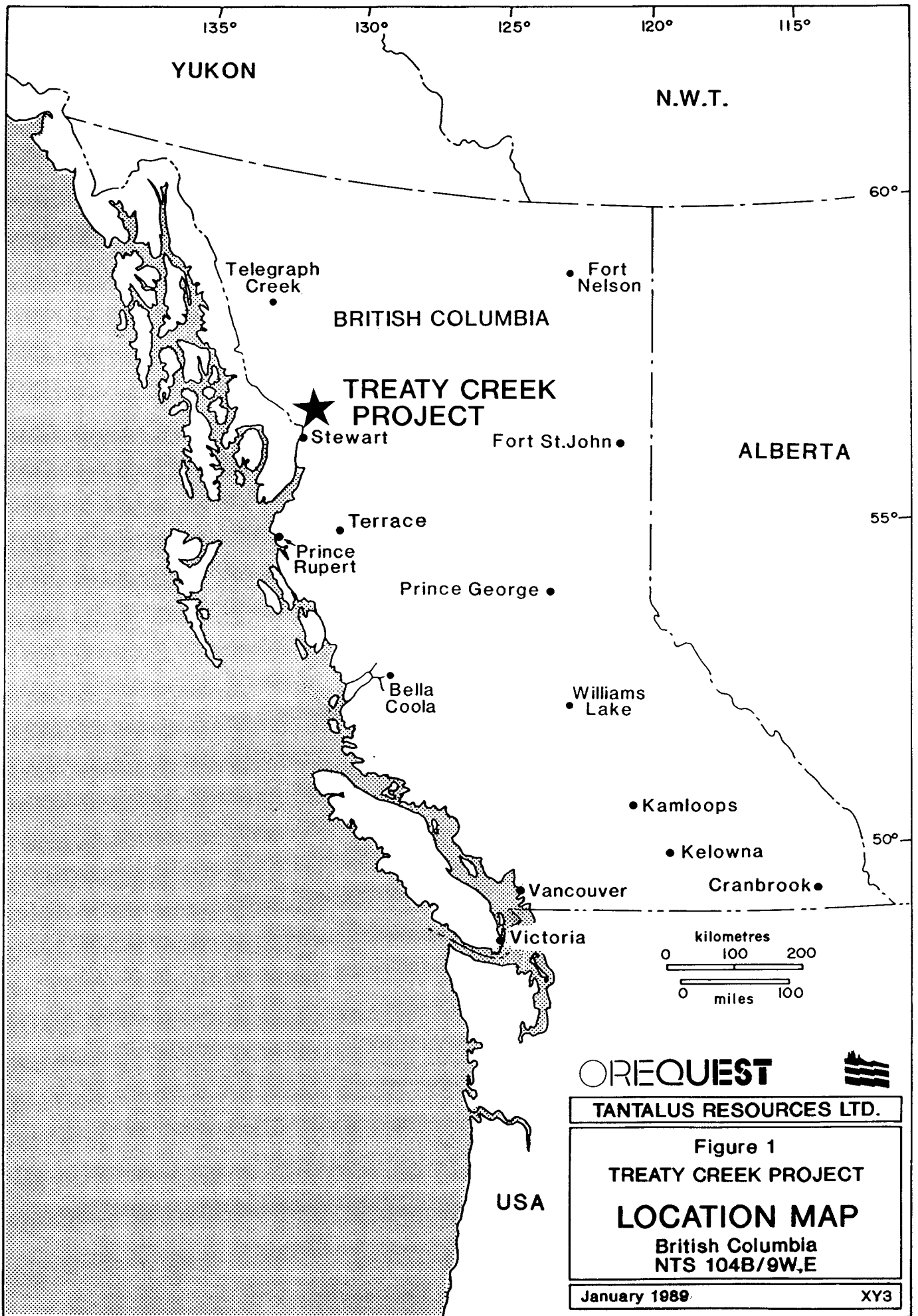
Topographic conditions on the Goat Trail and Southwest Zones necessitated rappel traverses to acquire continuous chip samples. These zones represent the northeast and southwest extremities respectively of an alteration feature that ranges up to 100 m in width and can be traced discontinuously along the length of the nunatak, approximately 2.5 km. Sample results of up to 0.127 oz/t gold with 4.78 oz/t silver, over 2.0 m and 0.287 oz/t gold over 3.4 m were collected from the Goat Trail and Southwest Zones respectively. In total 261 chip samples were collected from these two areas.

Property wide mapping, prospecting and sampling located several other zones of mineralization. The Treaty Gossan which is a 1 square kilometre area of intense sericite-limonite alteration was partially rock, soil and silt sampled in conjunction with mapping. Results of up to 0.043 oz/t gold were received from a grab sample of the gossan.

Data from an airborne electromagnetic and magnetometer survey were utilized along with prospecting to trace the projected trend of the Mt. Dilworth Formation

across the northern portion of the property. Reconnaissance grab samples returned negligible gold assays.

A Phase II program involving additional drilling is warranted on the Treaty Creek project to further define the attitude and extent of mineralization at the Konkin Zone. Several holes should also be drilled to test the Goat Trail and Southwest Zones. Follow up is also warranted on the Treaty Gossan and other targets generated by the current program. Costs of this work are estimated at \$500,000.



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## INTRODUCTION

Field work carried out on the Treaty Creek Project of Tantalus Resources Ltd. was performed by OreQuest Consultants Ltd. under the direction of Prime Explorations Ltd. This program was designed to follow up on the 1987 discovery of spectacular gold values from the Konkin pit on the nunatak within the TR 5 claim.

During the 1989 field season efforts were concentrated chiefly on the TR-8 and TR-5 claims, which encompass a nunatak (an isolated bedrock exposure surrounded by glacier ice). This comprises 3 main exploration targets: Konkin Zone, Goat Trail Zone (northeast end of the nunatak) and Southwest Zone (at the southwest end of the nunatak).

Concurrently with work on the nunatak, mapping, sampling and prospecting was carried out over the remainder of the property. This included the large, very distinct gossan (Treaty Gossan) which occurs between the Treaty and South Treaty glaciers. Prospecting and mapping were generally directed toward tracing and evaluating the Mount Dilworth-Salmon River Formation contact zone across the northern portion of the property, due to its association with the Calpine Resources Inc./Stikine Resources Ltd., Eskay Creek deposit. Follow up ground work was also carried out based on targets generated by an airborne geophysical survey flown earlier in the year.

The property is situated in the Iskut-Sulphurets area which has recently experienced a resurgence in exploration activity leading to the redevelopment of several existing gold deposits and the discovery of several new ones.



The information contained herein comes from supervision and execution of the work program, the references cited and familiarity with the Iskut-Sulphurets area gained by OreQuest Consultants Ltd. through work conducted on behalf of various companies in 1987, 1988 and 1989.

#### LOCATION AND ACCESS

The Treaty Creek Project is located about 80 kilometres north-northwest of Stewart, British Columbia in the Skeena Mining Division on claim maps 104B/9E and 104B/9W.

Access to the claims is by helicopter. Airstrips are located at the Johnny Mountain Mine, on Bronson Creek at the Snip deposit, both approximately 40 kilometres to the west, and at Snippaker Creek approximately 10 kilometres to the southwest. Float or ski-equipped aircraft can land on Tom McKay Lake, 20 kilometres to the west. The Bell-Irving Crossing (Bell II) on the Stewart-Cassiar Highway, approximately 25 kilometres to the east can also be used for shipment of supplies.

Frequent scheduled and charter flights from Smithers (330 kilometers to the southeast) to the Bronson Creek strip service the exploration and mining activity in the area. The Johnny Mountain airstrip is serviced regularly from Terrace. The Snippaker Creek airstrip would require improvement before use by small aircraft. Numerous helicopters are generally available in the area for casual charter during the summer field season. A year round winterized, helicopter supported camp has been established on the Eskay Creek property, 16 kilometres to the west.

### PHYSIOGRAPHY AND VEGETATION

Elevations on the Treaty Creek property range from 1500 m in the valleys at the east side of the property up to 2175 m on the peaks to the west. Slopes range from moderate to very precipitous.

Low lying regions are vegetated by mature mountain hemlock and balsam. This changes to subalpine and alpine vegetation consisting of stunted shrubs and grasses. The claims cover the icefield at the head of Treaty, South Treaty and Atkins Glaciers. Much of the property is covered by ice.

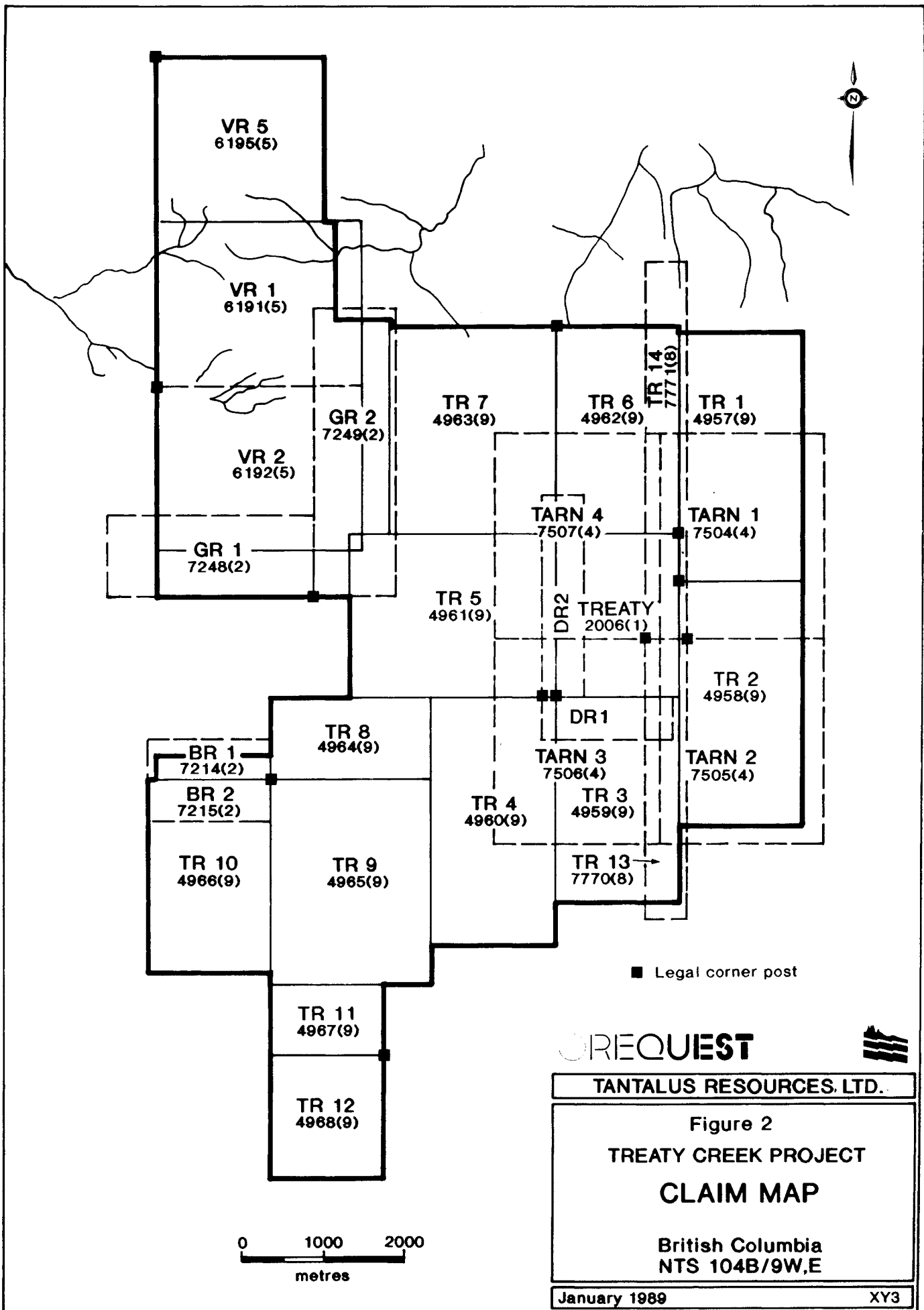
A nunatak, exposed at high elevation along the northwestern flank of the Treaty Glacier, constitutes the priority area of interest on the Treaty Creek property. Slopes on this nunatak range from moderate to very steep.

Climate in the area is severe, particularly at the higher elevations. Heavy snowfalls in winter and rain in the short summer working season are typical of the Iskut-Sulphurets area. Inclement weather conditions and reliance on helicopter transport make this a high cost area to explore for minerals.

### CLAIM STATUS

The property is located in the Skeena Mining Division on maps 104B/9E and 9W centered at approximately 56°35'N latitude and 130°07'W longitude (Figure 2).

The Treaty property consists of 28 modified grid claims, the status of which is as follows:



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Figure 2  
**TREATY CREEK PROJECT**  
**CLAIM MAP**

British Columbia  
 NTS 104B/9W,E

January 1989

XY3

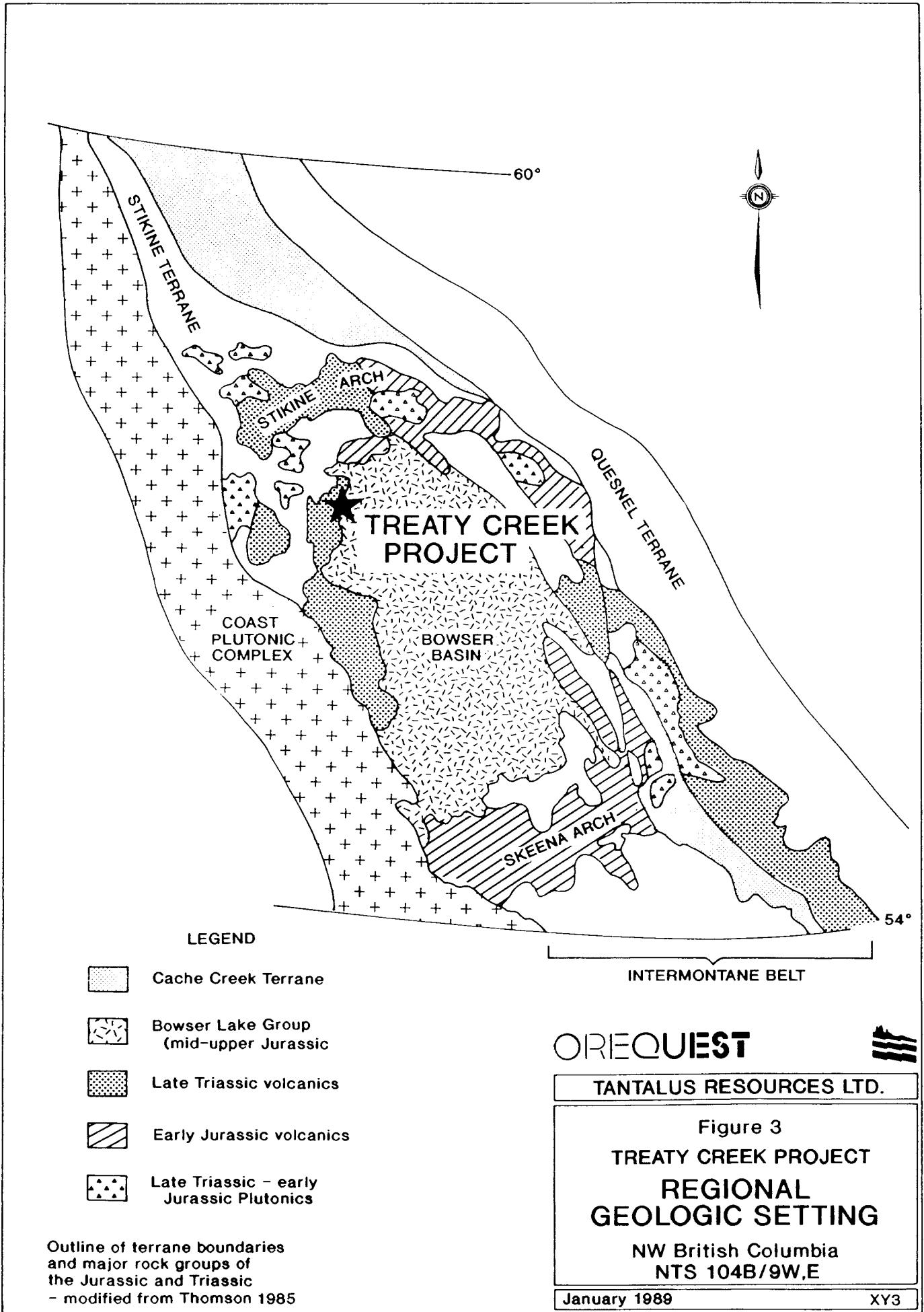
TABLE I - CLAIM STATUS

Claim Name	No. of Units	Record No.	Date of Record	Anniversary * Date
Treaty	12	2006	Jan. 9, 1980	Jan. 9/93
TR 1	18	4957	Sept. 30, 1985	Sept. 30/93
TR 2	18	4958	Sept. 30, 1985	Sept. 30/93
TR 3	15	4959	Sept. 30, 1985	Sept. 30/93
TR 4	18	4960	Sept. 30, 1985	Sept. 30/93
TR 5	20	4961	Sept. 30, 1985	Sept. 30/95
TR 6	15	4962	Sept. 30, 1985	Sept. 30/93
TR 7	20	4963	Sept. 30, 1985	Sept. 30/93
TR 8	8	4964	Sept. 30, 1985	Sept. 30/95
TR 9	20	4965	Sept. 30, 1985	Sept. 30/93
TR 10	15	4966	Sept. 30, 1985	Sept. 30/93
TR 11	6	4967	Sept. 30, 1985	Sept. 30/93
TR 12	9	4968	Sept. 30, 1985	Sept. 30/93
TR 13	8	7770	Aug. 6, 1989	Aug. 6/90
TR 14	8	7771	Aug. 6, 1989	Aug. 6/93
GR1	10	7248	Feb. 10, 1989	Feb. 10/93
GR2	14	7249	Feb. 10, 1989	Feb. 10/93
BR1	3	7214	Feb. 10, 1989	Feb. 10/95
BR2	3	7215	Feb. 10, 1989	Feb. 10/95
DR 1	4	7220	Feb. 10, 1989	Feb. 10/93
DR 2	5	7221	Feb. 10, 1989	Feb. 10/93
VR1	20	6191	May 25, 1987	May 25/94
VR2	20	6192	May 25, 1987	May 25/94
VR5	16	6195	May 25, 1987	May 25/93
Tarn 1	20	7504	April 7, 1989	April 7/93
Tarn 2	20	7505	April 7, 1989	April 7/93
Tarn 3	20	7506	April 7, 1989	April 7/93
Tarn 4	20	7507	April 7, 1989	April 7/90

\* Dates based on acceptance of current assessment filing.

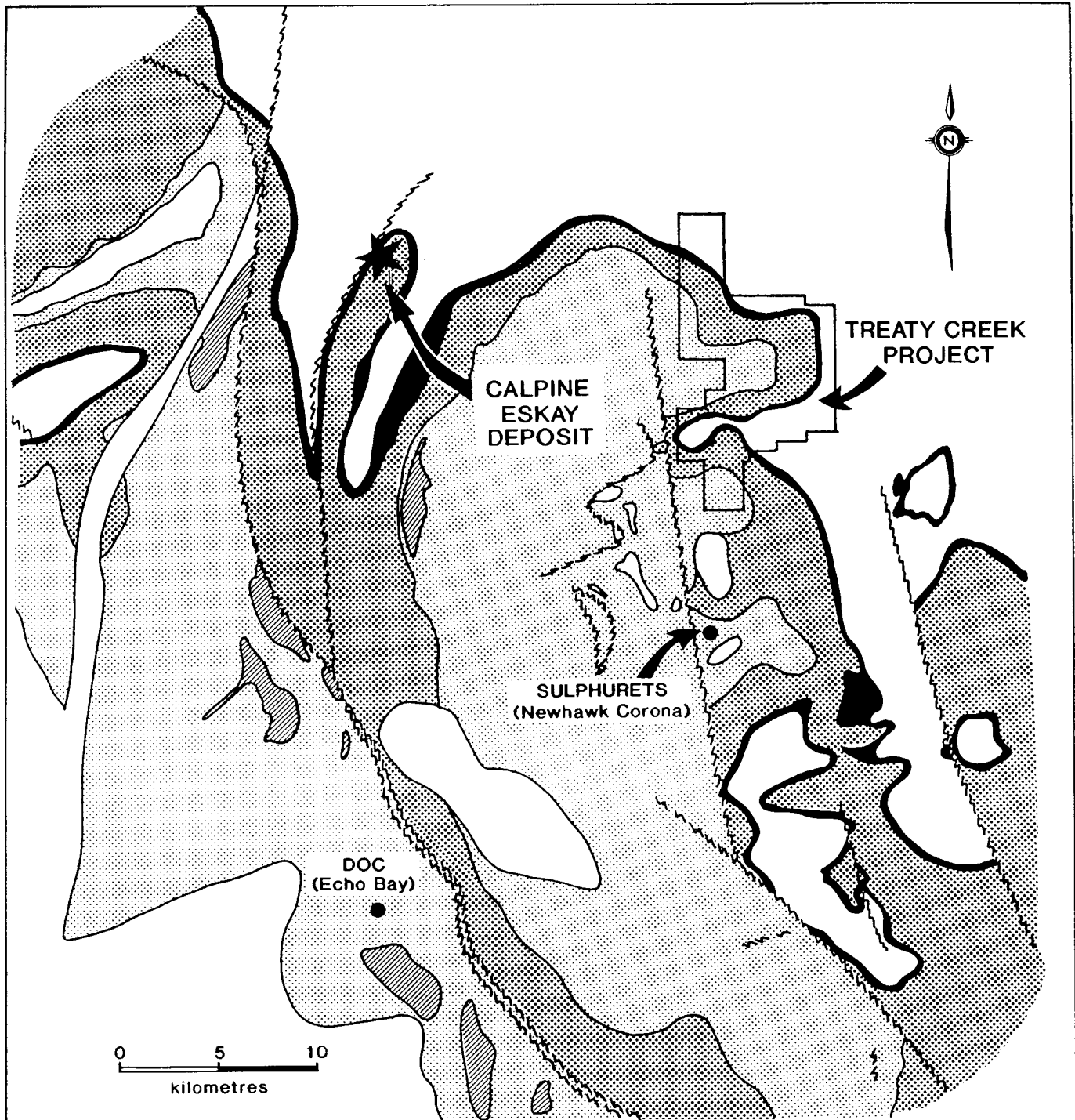
#### REGIONAL GEOLOGY AND MINERALIZATION

The property lies within the Intermontane Tectono-Stratigraphic Belt - one of five parallel, northwest-southeast trending belts which comprise the Canadian Cordillera (Figure 3). The claims cover the contact between the Stikine Terrane, which makes up most of the western half of the Intermontane Belt, and the unmetamorphosed sediments of the Bowser Basin.



Regional mapping indicates that the property is underlain by a large embayment of Upper Triassic to Lower Jurassic strata exposed along the western edge of the Bowser Basin which Grove (1986), who completed the first mapping and compilation of the entire region, has termed the Stewart Complex. This Complex is bordered by the Coast Plutonic Complex to the west, the Bowser Basin to the east, Alice Arm to the south and the Iskut River to the north.

The Stewart Complex is well known as the setting for the Iskut, Sulphurets, Stewart, and Alice Arm (Kitsault) precious metal mining camps (Alldrick, 1989, p.233). The oldest units in the Stewart Complex are Upper Triassic epiclastic volcanics, marbles, sandstones, and siltstones. These are overlain by sedimentary and volcanic rocks of the Hazelton Group. However, precise nomenclature for early to Middle Mesozoic strata is still evolving and several workers have proposed differing subdivisions within the Hazelton Group (eg. Grove, 1986; Alldrick, 1989). Most generally the Group has been subdivided into the Lower Jurassic Unuk River and Betty Creek Formations, Middle Jurassic Salmon River Formation and the Upper Jurassic Nass Formation (Grove, 1986). Upper Jurassic sedimentary rocks were identified as the Nass Formation by Grove (Grove, 1986) and included by him in the Hazelton Group. More recently the Salmon River Formation has been included in the Middle Jurassic Spatzizi Group, underlying the late Middle Jurassic Ashman Formation which is considered part of the Bowser Group (Alldrick, 1989). Alldrick has studied the facies changes within the Stewart Complex, using an andesitic stratovolcano model to establish proximal, intermediate and distal members, which accumulated in both subaerial and submarine environments, and added the Mt. Dilworth Formation between the Betty Creek and Salmon River Formations (Figure 4).



Regional Geology from Alldrick, 1989

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Figure 4  
TREATY CREEK PROJECT

**REGIONAL  
GEOLOGY**  
British Columbia  
NTS 104B/9W,E

PERIOD	FORMATION	GROUP
M. Jur	Ashman	BOWSER LAKE
	Salmon River	
L. Jur	Mount Dilworth	HAZELTON
	Betty Creek	
U. Tri	Unuk River	STUHINI

6 Km

January 1989

XY3

The Unuk River Formation consists predominantly of volcanic rocks and sediments which include lithic tuffs, pillow lavas with carbonate lenses, and some thin bedded siltstones. It forms an angular unconformity with the underlying Upper Triassic units. Betty Creek Formation rocks are characterized by bright red and green volcanoclastic agglomerates, with sporadic intercalated andesitic flows, pillow lavas, chert, and some carbonate lenses. These unconformably overlie the Unuk River Formation. The Mt. Dilworth Formation consists of dacitic to rhyolitic lapilli to ash tuffs and flows with argillaceous sediments. The Salmon River Formation is a thick assemblage of intensely folded colour banded siltstones and lithic wackes that form a conformable to disconformable contact with the underlying Betty Creek or Mt. Dilworth Formation. Weakly deformed dark coloured argillites and wackes of the Ashman Formation unconformably overlie the Salmon River Formation.

These volcanic and sedimentary successions were intruded by the Coast Plutonic Complex during the Cretaceous and Tertiary periods. A wide variety of intrusive phases is present including granodiorite, quartz monzonite, and diorite. Small satellite plugs from the larger batholiths can be important for localizing mineralization.

Major structural features of the Stewart Complex include the western boundary contact with the Coast Intrusive Complex. The northern boundary is at the Iskut River where extensive deformation has thrust Paleozoic strata south across Middle Jurassic and older units. Younger faulting has also occurred around the Iskut River. A line of Quaternary volcanic flows marks the southern limit of the complex and the Meziadin Hinge defines the eastern border.



The Stewart area has been mined actively since the early 1900's and is one of the most prolific mining districts in British Columbia (Grove, 1971).

Mineralization in this camp has been classified into three categories: precious metal bearing fissure and replacement veins, massive sulphide deposits and gold-bearing porphyry copper deposits (Grove, 1986)

More recent exploration and development activity has focused on vein and fissure vein gold mineralization in the northern part of the Stewart Complex in the Iskut River-Sulphurets area where several new discoveries have been made. As summarized by Alldrick et al (1989b):

*"Country rocks are Upper Triassic to Lower Jurassic Hazelton Group andesitic pyroclastics and related sedimentary rocks. Characteristic ore minerals include electrum, native gold and silver, as well as silver sulphosalts. Base metals are present in recoverable amounts in some deposits. The ore deposits and alteration assemblages are typical of mesothermal to epithermal vein systems in island arc environments. Combined age dates from lead isotope studies indicate that the early Jurassic volcanic and intrusive host rocks and the mineralization are essentially coeval; they formed about 195 million years ago. This age is similar to deposits in the Stewart and Alice Arm mining camps to the south, and the Toadoggone camp to the east - all hosted in Hazelton Group Rocks.*

*All original discoveries resulted from prospecting programs, although follow-up rock geochemistry surveys have identified additional mineral zones nearby and induced polarization surveys have successfully delineated high-sulphide areas within large alteration zones. Typical prospect evaluation involves initial sampling of blasted bedrock trenches followed by large-diameter diamond drilling. Regionally, the two mining camps stand out as strong geochemical anomalies in gold and silver, but associated or "pathfinder" elements differ between the camps: the Iskut area is anomalous in lead, zinc, copper, and cobalt; the Sulphurets area is anomalous in copper, arsenic, antimony, mercury, barium, and fluorine."*

The Iskut-Sulphurets belt is at a relatively early stage of exploration as new surface showings continue to be found. Despite its frontier status, two new gold mines have begun production (Skyline Gold Corp.'s Johnny Mountain Mine and Catear Resources Ltd.'s Goldwedge) and two more properties are in advanced stages of underground development and in-fill drilling (Cominco Ltd./Prime Resources Corp.'s Snip deposit and Newhawk/Corona/Granduc's West Zone). Reserves of the four largest Au-Ag deposits are to date moderate in tonnage but impressive in grade. All are at least partly open along strike and to depth.

The Iskut area originally attracted interest at the turn of the century when prospectors, returning south from the Yukon goldfields searched for placer gold and staked bedrock gossans. In the 1970's the porphyry copper boom drew exploration into the area. The new era of gold exploration began with the 1979 option of the Sulphurets claim block by Esso Minerals Canada and the 1980 acquisition of the Mount Johnny claims by Skyline Explorations Ltd. Skyline commissioned its mill in July, 1988. Cominco Ltd. and Prime Resources Corp. are projected to announce a feasibility decision on the adjacent Snip deposit in early 1990. There has been limited production from Catear Resources Ltd.'s Goldwedge Zone where the mill was commissioned in June 1988.

Beyond these projects, and except for limited early placer gold recovery from some creeks, the area has had no mineral production history. Since 1979, more than 70 new mineral prospects have been identified, though ground acquisition was relatively slow until the fall of 1987 when the promising results of summer exploration programs became known and the provincial government announced the upcoming release of analytical results from a regional stream sediment survey. By

April 1988, all open ground had been staked. More than 60 companies hold ground in the Iskut-Sulphurets belt but to date only small areas within this 40x80 kilometre district have received extensive exploration.

In the Sulphurets Creek camp, southwest of the Treaty Creek Project, near Brucejack Lake, the West Zone of Newhawk Gold Mines Ltd./Granduc Mines Ltd./Corona Corporation is reported to contain 854,072 tons grading 0.354 oz/t gold and 22.94 oz/t silver while the Snowfield Gold Zone and Sulphurets Lake Gold Zone are bulk tonnage low grade deposits containing 7.7 million tons of 0.075 oz/t gold and 20 million tons of 0.08 oz/t gold respectively (GCNL August 24, 1989). Catear Resources Ltd.'s Gold Wedge Zone is reported to contain 140,437 tons of 0.827 oz/t gold in a similar setting.

The Doc deposit, located to the southwest of the Treaty Creek Project, hosts 470,000 tons grading 0.27 oz/t gold and 1.31 oz/t silver, within a series of high grade but narrow quartz veins.

On the Snip property the Twin Zone, a 3 to 25 ft. thick discordant shear vein cuts a thickly bedded sequence of intensely carbonatized feldspathic wackes and siltstones. Twin Zone reserves in all categories have been reported as 1,032,000 tons of 0.875 oz/t ton gold (Prime Resources, 1989). This does not include additional reserves which may be developed outside the Twin Zone when mining begins. Twin Zone mineralization occurs in a banded shear zone comprising alternating bands of massive calcite, heavily disseminated to massive pyrite, crackle quartz and thin bands of biotite-chlorite.

At the Johnny Mountain deposit, reserves in all categories are estimated at 876,000 tons of 0.55 oz/t gold and 1.00 oz/t silver with copper, zinc, and lead (Northern Miner, Aug. 21, 1989). Five major areas of gold-bearing sulphide are known. The most important Stonehouse Zone consists of sulphide-potassium feldspar-quartz vein and stockwork systems which have been only partly explored.

The most recently discovered and perhaps the most exciting gold mineralization occurs on the Eskay Creek property, located 16 kilometres to the west of the Treaty Creek property. At the original 21 Zone discovery gold grading up to 0.73 oz/t over 96.5 ft, occurs in several distinct lithologies in a 300 ft. wide fault zone at a contact between Lower Jurassic Mt. Dilworth Formation volcanics and sediments (Northern Miner, 1988 p.20; Calpine Resources Incorporated News Release January 6, 1989). More recent results have returned 0.875 oz/t gold over 682.2 ft. (CA89-109), 91.8 ft. of 0.453 oz/t gold and 16.91 oz/t silver (CA89-93) and 55.8 ft of 0.867 oz/t gold and 19.92 oz/t silver (CA89-101 - Calpine news release, August 21, 1989). The 21 Zone has now been traced over a minimum strike length of 1300 m and remains open at depth and to the northeast.

The E & L deposit is also situated in the area west of the Treaty Creek property. This deposit was worked in the 1960's and early 1970's by trenching, drilling and 460 m of underground development, and has proven reserves of 3.2 million tons of 0.8% nickel and 0.6% copper (MEMPR, Minfile). Mineralization consisting of disseminated pyrrhotite, chalcopyrite with minor pentlandite, pyrite and bornite occurs in a small stock of altered coarse grained gabbro.

## HISTORY AND PREVIOUS WORK

The following is a chronological summary of the work completed on the present day Treaty Creek property as compiled from available reports.

- 1929-1930      Prospectors Williams and Knipple were reported to have discovered gold and arsenic mineralization from two unknown locations in the area now covered by the TR claims. Consolidated Mining and Smelting Co. visited the 57 claim property, took samples but did not continue the option on the claims.
- 1950's          Several prospecting syndicates explored the Treaty Creek area.
- 1953            Prospectors Williams and Knipple found a small silver bearing sulphide vein. In addition, several large float boulders containing tetrahedrite were found in the Treaty glacier; no source was located.
- 1966-1967      In an attempt to promote interest in the Portand Canal-Iskut area of B.C., the government Department of Mines carried out a regional mapping program. The government geologists reported discontinuous lead zinc veins on the present day property. A magnetic anomaly was also discovered at the junction of the Treaty Creek and South Treaty glaciers.
- 1967-1980      The claims were staked several times but were allowed to lapse with no recorded work.
- 1980-1981      E & B Explorations optioned the claims from E. Kruchkowski and carried out a regional prospecting and geological mapping program. No significant mineral occurrences were discovered.
- 1984            Teuton Resources Corp. acquired the claims and carried out a small program of prospecting and stream sediment sampling. One sample of a mineralized boulder returned a value of 5800 ppb Au. A silt sample taken at the junction of the Treaty Creek and South Treaty Glaciers contained 510 ppb Au.
- 1985            Further mapping, prospecting and a heavy mineral stream sediment survey was carried out by Teuton Resources. One heavy metal silt sample from the western portion of the property returned a value of 4200 ppb Au. Native sulphur mineralization was discovered in a pyritic alteration zone.
- 1986            Teuton carried out further rock geochemistry sampling which returned values as high as 925 and 990 ppb Au from the area southeast of the 1985 anomalous stream sample.

- 1987 Teuton continued exploration with more rock and silt sampling. Rock samples as high as 28.0 oz/t gold over 1.2 m enabled the company to expand to a detailed rock sampling, hand trenching and a 184.5 m drill program. Inclement weather limited the effectiveness of the detailed work and the program was prematurely shut down.
- 1988 Teuton followed up the successful 1987 program with blasting, trenching and sampling of the known mineralized zones. A grid was placed over the main area of interest on which a magnetometer survey and geological mapping were conducted. Several reconnaissance rock and soil lines were put in to test areas southwest, northeast and east of the main area of interest.

#### AIRBORNE GEOPHYSICS

In early 1989 an airborne geophysical survey was completed over the Treaty Creek property at a cost of \$69,427 as part of a larger regional survey carried out by Aerodat Limited. The data obtained included total field magnetics, VLF-EM (from the Annapolis transmitter station) and electromagnetic data (Figure 5). In addition, the magnetic vertical gradient was calculated from the total field magnetics and the apparent resistivity was calculated from the 4162 Hz coplanar coil EM data.

As summarized in the assessment report by Mallo and Dvorak (1989), the objective of the survey was to define areas of possible precious metal anomalies reflected by magnetic and electromagnetic surveys. The results were to provide a data base for a surface exploration program to be carried out at a later date. Nominal line spacing was 100 m and the flight direction was northwest-southeast.

The magnetic trends on the property are generally northerly to north northeast with a weak east west component in the southern portion of the area. The Konkin Zone itself occurs in the vicinity of an intersection of a northeast and north northwest trending magnetic high.



**SYMBOLS**

- ◦ ◦ EM ANOMALY
- MAGNETIC HIGHS
- — AIRPHOTO LINEAMENTS

**LEGEND:**

**JURASSIC**

8 SYN TO POST VOLCANIC INTRUSIONS

**VOLCANIC AND SEDIMENTARY ROCKS  
TRIASSIC TO JURASSIC**

**MIDDLE JURASSIC: SPATSIZI GROUP**

5 SILTSTONE SEQUENCE  
Salmon River Formation - sandstone, siltstone

**LOWER JURASSIC: HAZELTON GROUP**

4 FELSIC VOLCANIC SEQUENCE  
Mount Dilworth Formation - rhyolite to dacitic volcanics

3 PYROCLASTIC - EPICLASTIC SEQUENCE  
Betty Creek Formation - pyroclastic volcanics and sediments

2 ANDESITE SEQUENCE  
Upper Unuk River Formation - andesite sequence

1 LOWER SEDIMENTARY SEQUENCE  
(Lower Unuk River Formation) - clastic sediments

**SYMBOLS**

- GEOLOGIC CONTACT - approximate
- - - FAULT (defined, inferred)



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Figure 5  
TREATY CREEK PROJECT  
AIRBORNE GEOPHYSICS  
COMPILATION  
British Columbia  
NTS: 104 B/9E

December 1989

Drafting: RWR

As a result of the rugged terrain in the area of the Treaty Creek property, the apparent resistivity values which are strongly influenced by the elevation differences, provide an incomplete picture. There are no ready explanations for many of the resistivity features. High resistivity was observed over the iceflows on the Treaty Creek property, indicating substantial thickness of the ice.

As noted in the Dvorak report almost all resistivity lows on the Treaty Creek property are associated with linear magnetic anomalies. Those lows which do not correspond to topographic depressions or creeks are prospective targets as they may represent conductive mineralization associated with zone of structural weakness which could serve as conduits for hydrothermal fluids.

Severe changes in flying altitude also means that the picture of electromagnetic response may be incomplete. For example in areas of excessive flying height, anomalies might be missed. Weak EM anomalies are known to occur just outside the eastern boundary of the property, where they are underlain by fine clastic sediments near the contact with the projected Mt. Dilworth Formation. The anomalies are positioned relatively high on the valley wall in an area of extensive folding, indicating that the anomalies may reflect graphitic horizons. Individual anomalies may be poorly defined on adjacent lines due to variations in flying altitudes and subsequent loss of the electromagnetic signal.

Total field VLF-EM data does not show any anomalies. One of the reasons for this is that the flight line direction coincides with transmitter azimuth, making detection of conductors unlikely.



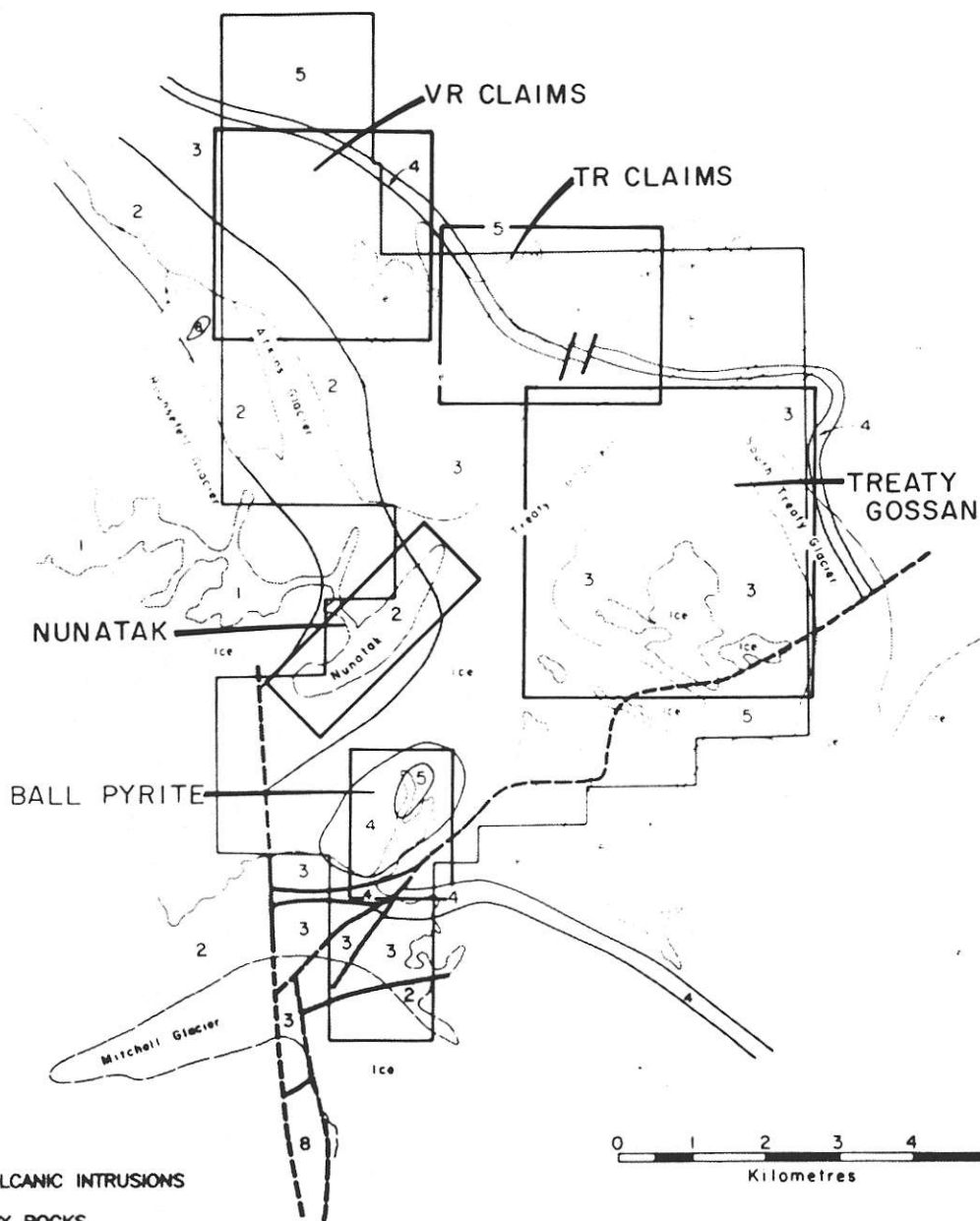
The known Eskay gold mineralization shows no airborne EM or resistivity anomaly definitely associated with the deposit. There are, however, weak, poorly defined anomalies in the general area which could be used elsewhere as a guide in locating similar targets.

The areas of interest discovered on the Tantalus property by the Aerodat survey were interpreted by Dvorak as; intrusives, 1) the zones of low and intermediate resistivity values (especially the zones present at the edge of the volcanic belt) and, 2) the EM anomalies in the southeast corner and off the east side of the property. Both types of areas of interest warrant follow up work. Dvorak in his report, commented as follows on the characteristics of gold mineralization in the area:

*"Gold mineralization in the general area is known to be related to relatively isolated magnetic anomalies. It does not respond to the electromagnetic excitation. It is, therefore, recommended to focus future exploration into areas containing localized magnetic features, particularly near the inferred structural features and their intersections, to the low and intermediate resistivity zones related to magnetic anomalies, and to areas of intersection of structural trends."*

#### PROPERTY GEOLOGY AND MINERALIZATION

The Treaty Creek property contains a range of rock types and formations which have been mapped by Kirkham (1965), Grove (1983), Kruckowski (1981), Alldrick and Britton (1988) and more recently by Walus (1988, 1989). These form an east-northeasterly younging sequence ranging from Lower Jurassic Unuk River Formation in the west through Betty Creek, Mt. Dilworth and Middle Jurassic Salmon River



**LEGEND:**

**JURASSIC**

8 SYN TO POST VOLCANIC INTRUSIONS

**VOLCANIC AND SEDIMENTARY ROCKS  
TRIASSIC TO JURASSIC**

**MIDDLE JURASSIC SPATSIZI GROUP**

5 SILTSTONE SEQUENCE  
Salmon River Formation - sandstone, siltstone

**LOWER JURASSIC HAZELTON GROUP**

4 FELSIC VOLCANIC SEQUENCE  
Mount Dilworth Formation - rhyolite to dacitic volcanics

3 PYROCLASTIC - EPICLASTIC SEQUENCE  
Betty Creek Formation - pyroclastic volcanics and sediments

2 ANDESITE SEQUENCE  
Upper Unuk River Formation - andesite sequence

1 LOWER SEDIMENTARY SEQUENCE  
(Lower Unuk River Formation) - clastic sediments

**SYMBOLS**

— GEOLOGIC CONTACT - approximate  
- - - FAULT (defined, inferred)

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Figure 56

**TREATY CREEK PROJECT  
PROPERTY GEOLOGY  
AND INDEX MAP**

British Columbia  
NTS: 104 B/9E

December 1989

Drafting: RWR

Formations in the east (Figure 6). Numerous andesitic to dioritic dykes are present throughout the property cutting all observed rock types.

All of the country rocks show evidence of folding with the main regional structure being a northeasterly trending anticlinal warp. The unconformably overlying Salmon River Formation sediments are notable in that they are tightly folded and generally dip north to northeast. Numerous steep generally northeast trending faults cut the rock sequence on the property.

A 1.5 kilometre diameter feldspar-hornblende porphyry (Atkins Porphyry) was outlined in the northwest corner of the claim block, which is the largest intrusive body noted.

#### Nunatak

The following descriptions of the geological package of rocks which comprises the nunatak has been broken down into east and west half descriptions to correspond to the accompanying maps (Figures 7 and 8). Much of the description to follow is from a 1988 report by D. Cremonese based on mapping by A. Walus in 1988.

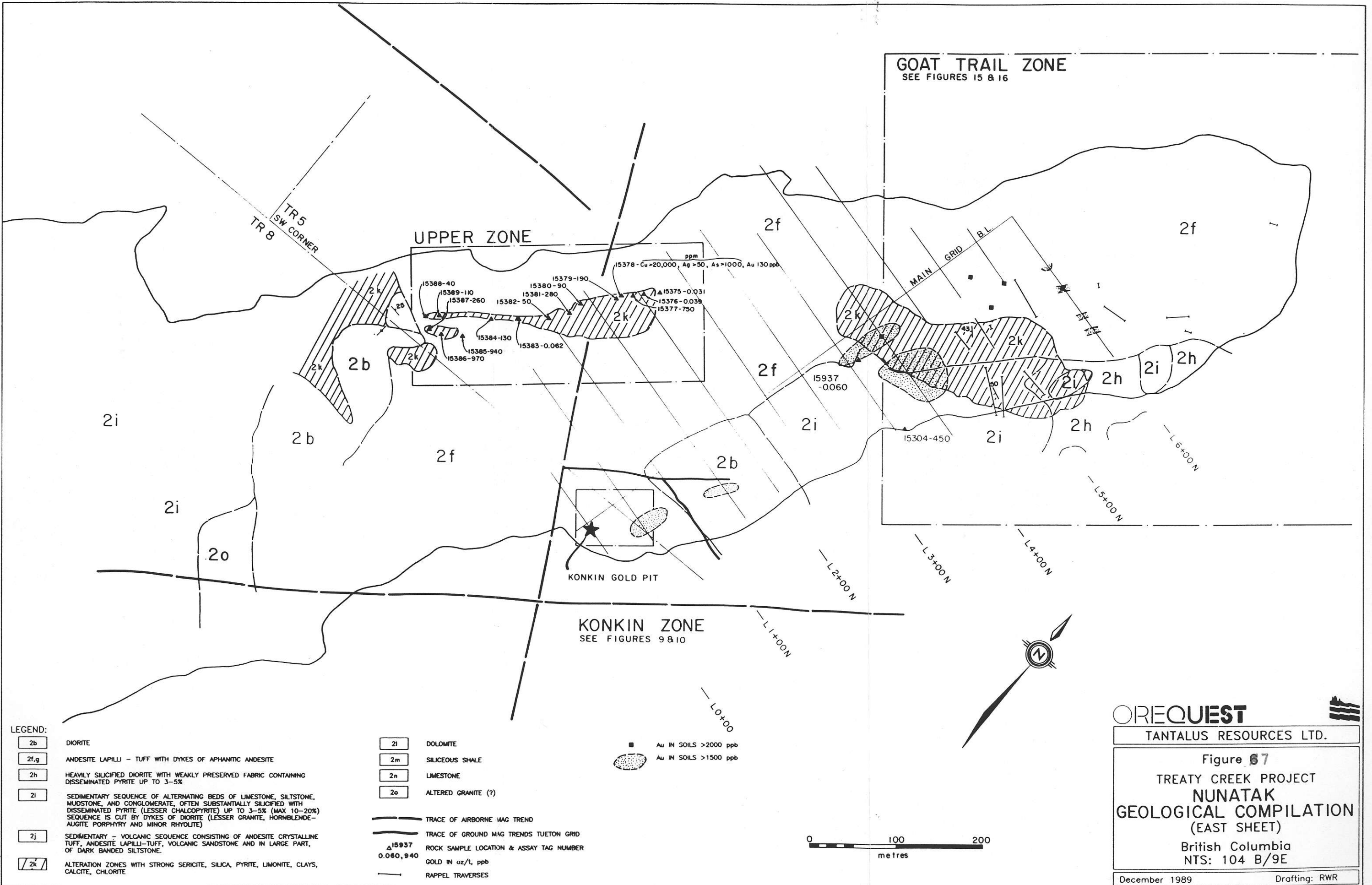
#### Nunatak Geology - East Sheet

Two distinct lithologies comprise the bulk of the nunatak (east) geology (Figure 7). At the base of the nunatak, lies a sedimentary sequence consisting of alternating beds of limestone, massive, greenish siltstone grading occasionally into more pelitic rock (possibly a mudstone) and minor conglomerate. All are substantially silicified with disseminated pyrite. Overlying the sediments is a volcanic unit consisting predominantly of andesite lapilli tuff which in a few

**GOAT TRAIL ZONE**  
SEE FIGURES 15 & 16

**UPPER ZONE**

**KONKIN ZONE**  
SEE FIGURES 9 & 10



**LEGEND:**

- 2b DIORITE
- 2f.g ANDESITE LAPILLI - TUFF WITH DYKES OF APHANITIC ANDESITE
- 2h HEAVILY SILICIFIED DIORITE WITH WEAKLY PRESERVED FABRIC CONTAINING DISSEMINATED PYRITE UP TO 3-5%
- 2i SEDIMENTARY SEQUENCE OF ALTERNATING BEDS OF LIMESTONE, SILTSTONE, MUDSTONE, AND CONGLOMERATE, OFTEN SUBSTANTIALLY SILICIFIED WITH DISSEMINATED PYRITE (LESSER CHALCOPYRITE) UP TO 3-5% (MAX 10-20%) SEQUENCE IS CUT BY DYKES OF DIORITE (LESSER GRANITE, HORNBLende-AUGITE PORPHYRY AND MINOR RHYOLITE)
- 2j SEDIMENTARY - VOLCANIC SEQUENCE CONSISTING OF ANDESITE CRYSTALLINE TUFF, ANDESITE LAPILLI-TUFF, VOLCANIC SANDSTONE AND IN LARGE PART, OF DARK BANDED SILTSTONE.
- 2k ALTERATION ZONES WITH STRONG SERICITE, SILICA, PYRITE, LIMONITE, CLAYS, CALCITE, CHLORITE

- 2l DOLOMITE
- 2m SILICEOUS SHALE
- 2n LIMESTONE
- 2o ALTERED GRANITE (?)
- TRACE OF AIRBORNE MAG TREND
- TRACE OF GROUND MAG TRENDS TUETON GRID
- ▲ 15937  
0.060, 940  
GOLD IN oz/t, ppb
- RAPPEL TRAVERSES

- Au IN SOILS >2000 ppb
- Au IN SOILS >1500 ppb

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Figure 67  
TREATY CREEK PROJECT  
**NUNATAK**  
GEOLOGICAL COMPILATION  
(EAST SHEET)  
British Columbia  
NTS: 104 B/9E

December 1989      Drafting: RWR

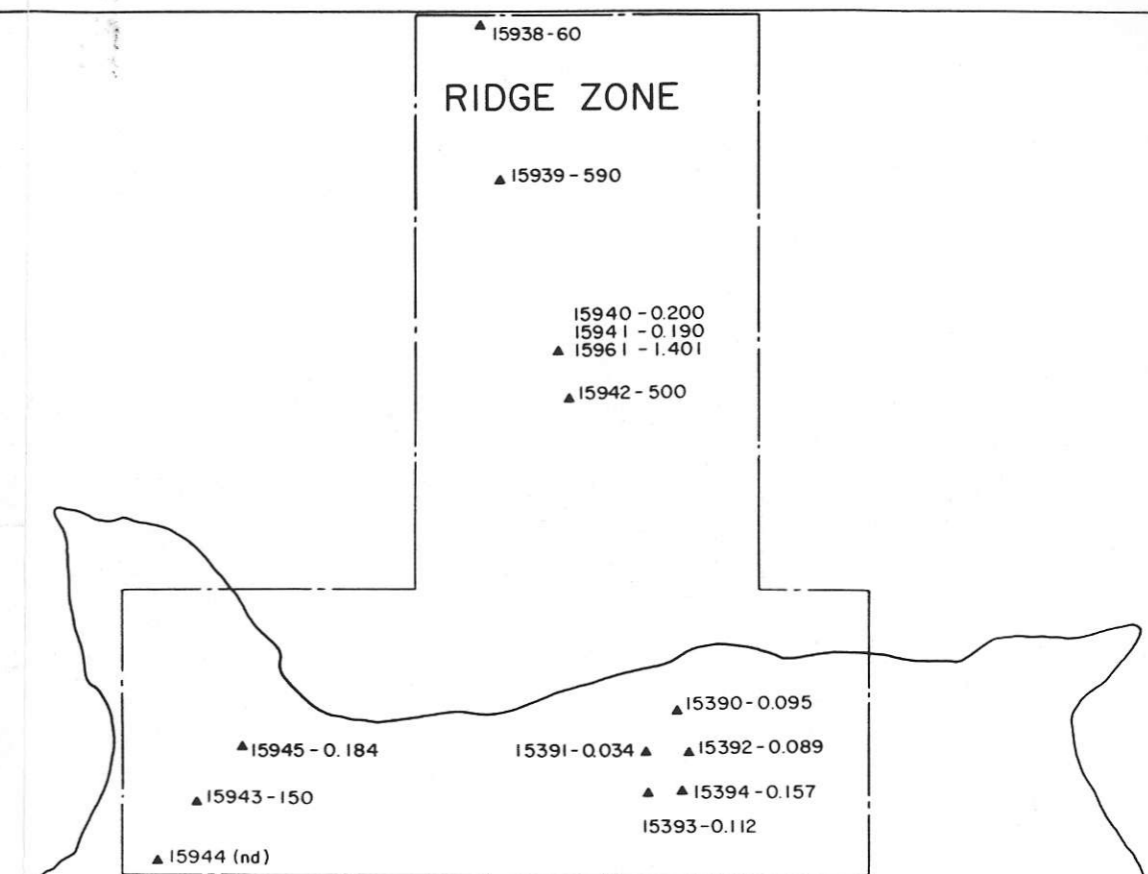
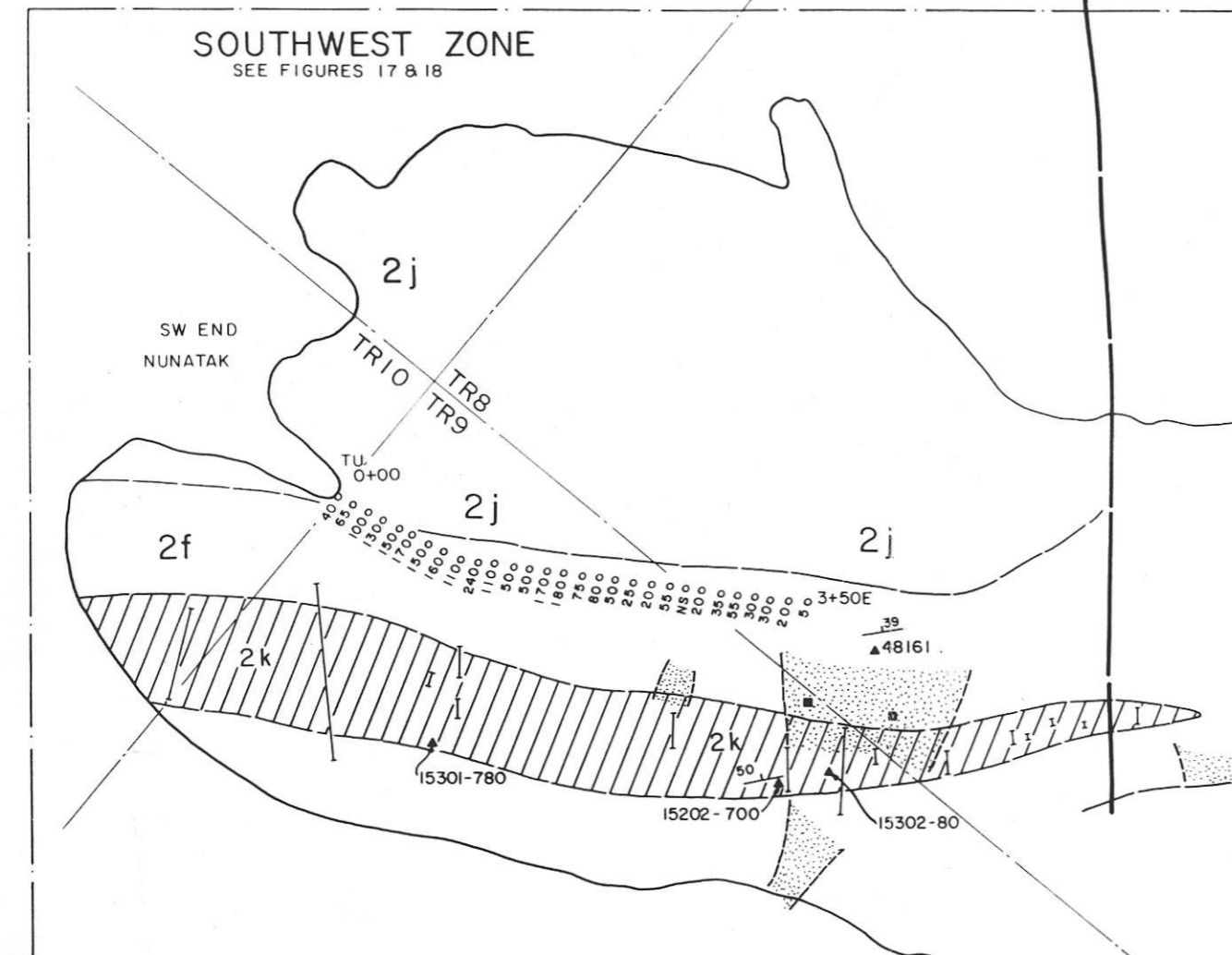
places passes into volcanic breccia and locally into a flow breccia. The former is cut by dykes of diorite (lesser granite, hornblende-augite porphyry and minor rhyolite), the latter by dykes of aphanitic andesite. Due to the strong cleavage, the lapilli tuff is in many places transformed to semi-schists. It is believed that the units are overturned, the sedimentary sequence being the younger of the two.

Both sedimentary and volcanic units have been intruded by a variety of plutons. In the northeast corner of the nunatak, a heavily silicified diorite contains approximately 3-5% disseminated pyrite. This is accompanied locally by low grade gold values. Due to the intensity of silicification, classification as a diorite is not certain, however, in places, the fabric of the plutonic rock has been preserved.

The east half of the nunatak is host to the Konkin, Goat Trail and Upper Zones, all of which are described in detail later on in this report.

#### Nunatak Geology - West Sheet

The western portion of the nunatak exhibits a similar volcano-sedimentary sequence overlain by a series of andesitic crystal tuffs, lapilli tuffs, volcanic sandstone and siltstone (Figure 8). In some places, the bands of siltstone are intercalated with thin layers of volcanic sandstone or even with andesite crystal tuff (with distinct laths of feldspar). The volcanic sandstone appears to be reworked andesite crystal tuff, since full gradation between the latter and andesite crystal tuff is present. Rocks in this area have been cut by abundant steep faults running approximately northeast-southwest to north south.



**LEGEND:**

2b DIORITE

2f,g ANDESITE LAPILLI - TUFF WITH DYKES OF APHANITIC ANDESITE

2h HEAVILY SILICIFIED DIORITE WITH WEAKLY PRESERVED FABRIC CONTAINING DISSEMINATED PYRITE UP TO 3-5%

2i SEDIMENTARY SEQUENCE OF ALTERNATING BEDS OF LIMESTONE, SILTSTONE, MUDSTONE, AND CONGLOMERATE, OFTEN SUBSTANTIALLY SILICIFIED WITH DISSEMINATED PYRITE (LESSER CHALCOPYRITE) UP TO 3-5% (MAX 10-20%) SEQUENCE IS CUT BY DYKES OF DIORITE (LESSER GRANITE, HORNBLende-AUGITE PORPHYRY AND MINOR RHYOLITE)

2j SEDIMENTARY - VOLCANIC SEQUENCE CONSISTING OF ANDESITE CRYSTALLINE TUFF, ANDESITE LAPILLI-TUFF, VOLCANIC SANDSTONE AND IN LARGE PART, OF DARK BANDED SILTSTONE.

2k ALTERATION ZONES WITH STRONG SERICITE, SILICA, PYRITE, LIMONITE, CLAYS, CALCITE, CHLORITE

2l DOLOMITE

2m SILICEOUS SHALE

2n LIMESTONE

2o ALTERED GRANITE (?)

— TRACE OF AIRBORNE MAG TREND

— TRACE OF GROUND MAG TRENDS TUETON GRID

▲ 15976 0.060,940 ROCK SAMPLE LOCATION & ASSAY TAG NUMBER

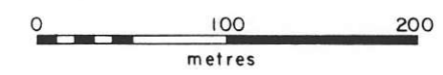
○ ○ ○ GOLD IN oz/t, ppb SOIL SAMPLE LOCATIONS

— RAPPEL TRAVERSES

■ Au IN SOILS >2000 ppb

◐ Au IN SOILS >1500 ppb

○ ○ ○ SOIL SAMPLE LOCATIONS



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Figure 8

TREATY CREEK PROJECT

**NUNATAK**

**GEOLOGICAL COMPILATION**

(WEST SHEET)

British Columbia

NTS: 104 B/9E

December 1989

Drafting: RWR

Two forms of intrusive are evident in the northeastern area of Figure 8, a diorite, and what appears to be an altered granite. Dykes of diorite, and to a lesser extent, granite, augite porphyry and rhyolite were also observed.

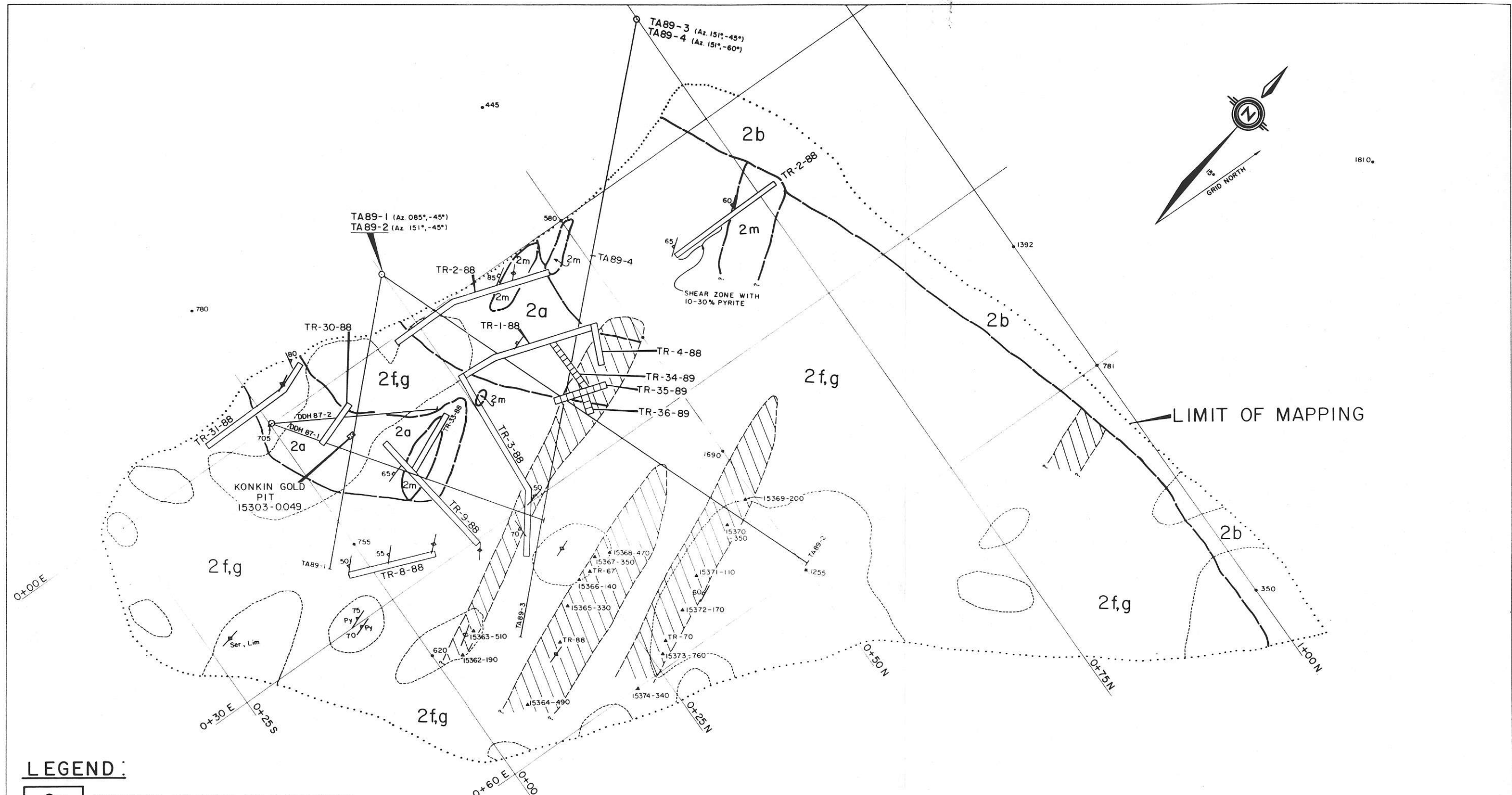
The west half of the nunatak is host to the Southwest and Ridge Zones both of which are described in detail later in this report.

#### Konkin Zone - Geology

The Konkin Zone (Figure 9) generally represents an andesitic package of rocks consisting of andesite lapilli-tuffs cut by numerous aphanitic andesite dykes. Both units are propylitized to varying degrees with chlorite, epidote, lesser calcite and pyrite as the major alteration products. This package is bounded to the north by a dioritic intrusion.

Two parallel mineralized horizons ranging from 12 to 20 m in width trend approximately east-west. Previous reports refer to these horizons as "skarns" however it is felt that this term is inappropriate as no typical skarn mineralogy has been recognized (ie. calc-silicates).

The Konkin Gold Pit, location of the spectacular 28 oz/t gold values, occurs within the southern mineralized horizon. To the west the horizons are covered by overburden and extend to the east approximately 30 m where they are probably cut off by north trending faults. Very small pods of siliceous shale and one small pod of limestone were noted within the andesitic package of rocks and also in the mineralized horizons. To the east of these horizons are three parallel northwest-trending alteration zones containing quartz, pyrite, sericite, clays and limonite.



**LEGEND :**

- 2a CHLORITE-EPIDOTE-GOLD HORIZON
- 2b DIORITE
- 2f,g ANDESITE LAPILLI TUFF WITH DYKES OF APHANITIC ANDESITE
- 2m SILICEOUS SHALE
- 2n LIMESTONE

- GEOLOGICAL CONTACT (APPROXIMATE)
- OUTCROP AREA
- SHEARS (inclined, vertical)
- JOINT (inclined, vertical)
- TRENCH
- DRILL HOLE COLLAR

- ROCK SAMPLE LOCATION  
Assay tag no. - Au (ppb)
- 1988 SOIL SAMPLE  
Au (ppb)



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Figure 9  
TREATY CREEK PROJECT  
KONKINA GOLD ZONE  
GEOLOGICAL COMPILATION MAP  
SKEENA MINING DIVISION  
British Columbia  
NTS: 104 B/9E

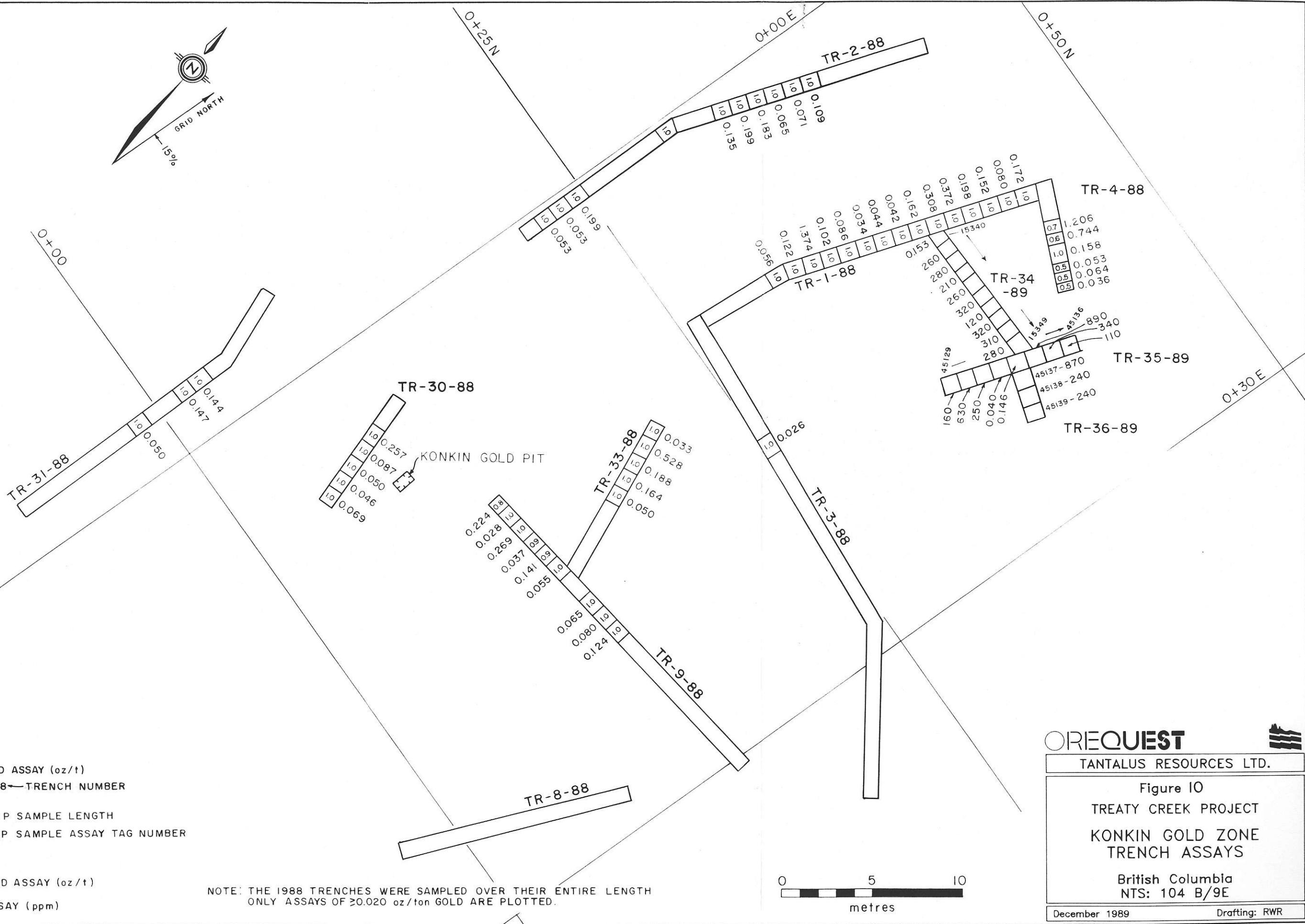
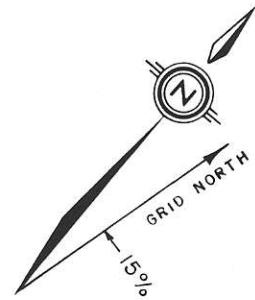
December 1989      Drafting: RWR



The so called gold pit "skarn" located on the western portion of southern mineralized horizon, is composed of chlorite and epidote with lesser calcite, quartz, pyrite and chalcopryrite. Also present are minor magnetite, hematite and traces of malachite-azurite, chrysocola, sphalerite, arsenopyrite and native gold. The bulk of the rocks in the mineralized horizons however has much simpler mineralogy consisting of chlorite and epidote with varying amounts of pyrite. Substantial parts of the horizons are altered to limonite, sericite and clays which in other reports have been referred to as "oxidized skarn". The entire Konkin Zone is cut by numerous steep north-northwest trending faults.

Sulphides, as represented primarily by pyrite, occur as disseminated, fine to coarse grained crystals, lesser massive bands and locally (chiefly in the western portion of the southern horizon) by blebby to massive chalcopryrite. Sulphide content ranges from 1 to 20% with the greatest concentrations occurring within the mineralized horizons (concentrations of up to 50% were noted locally). The horizons are a primary gold bearing rock and assays as high as 28.0 oz/t gold over 1.2 m have been reported. Other rocks in the Konkin Zone, ie. propylitized, pyrite bearing andesitic rocks and especially sericite-quartz-pyrite altered rocks contain lesser but significant amounts of gold. The sulphides, and to an even greater extent gold, are very erratically distributed.

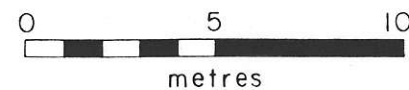
Three new trenches (#34, 35 and 36, Figure 10) confirmed the extension of the northern horizon 7.0 m to the east. Trenching in other areas proved to be impractical due to thick overburden and steep slopes. A total of 21 rock samples (chips across 1.0 m) were collected from these trenches, which indicate a variable gold content ranging from 100 ppb up to 0.153 oz/t.



**LEGEND:**

- GOLD ASSAY (oz/t)
- TR-30-88 TRENCH NUMBER
- CHIP SAMPLE LENGTH
- CHIP SAMPLE ASSAY TAG NUMBER
- GOLD ASSAY (oz/t)  
 GOLD ASSAY (ppm)

NOTE: THE 1988 TRENCHES WERE SAMPLED OVER THEIR ENTIRE LENGTH  
 ONLY ASSAYS OF ≥0.020 oz/ton GOLD ARE PLOTTED.



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Figure 10  
 TREATY CREEK PROJECT  
 KONKIN GOLD ZONE  
 TRENCH ASSAYS

British Columbia  
 NTS: 104 B/9E

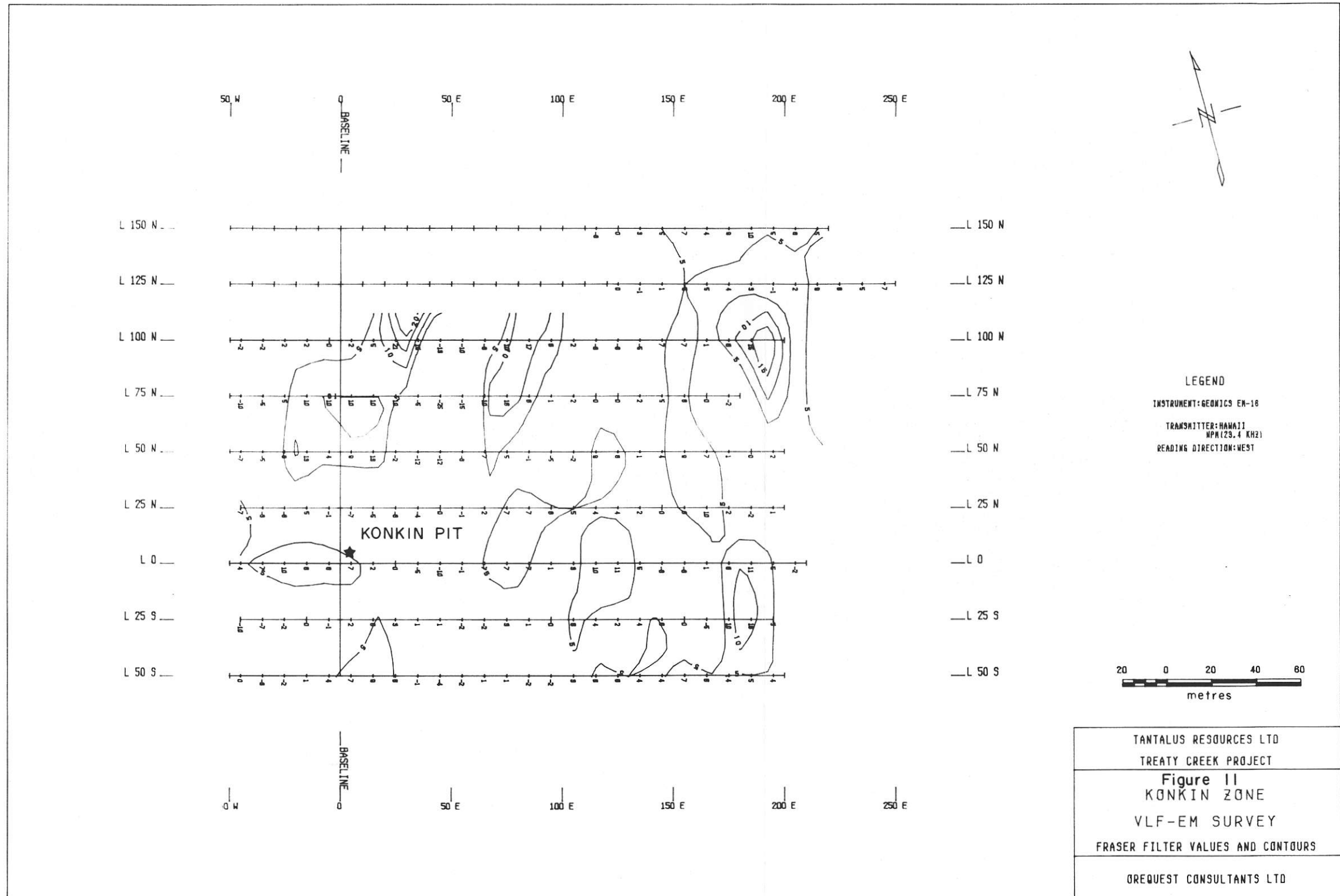
December 1989      Drafting: RWR

Thirteen grab and chip rock samples from the three alteration zones east of the mineralized horizons were collected, producing anomalous gold values ranging from 110 to 760 ppb gold. These samples are all chip samples over 1.0 m with the exception of sample #15364 which is a grab sample.

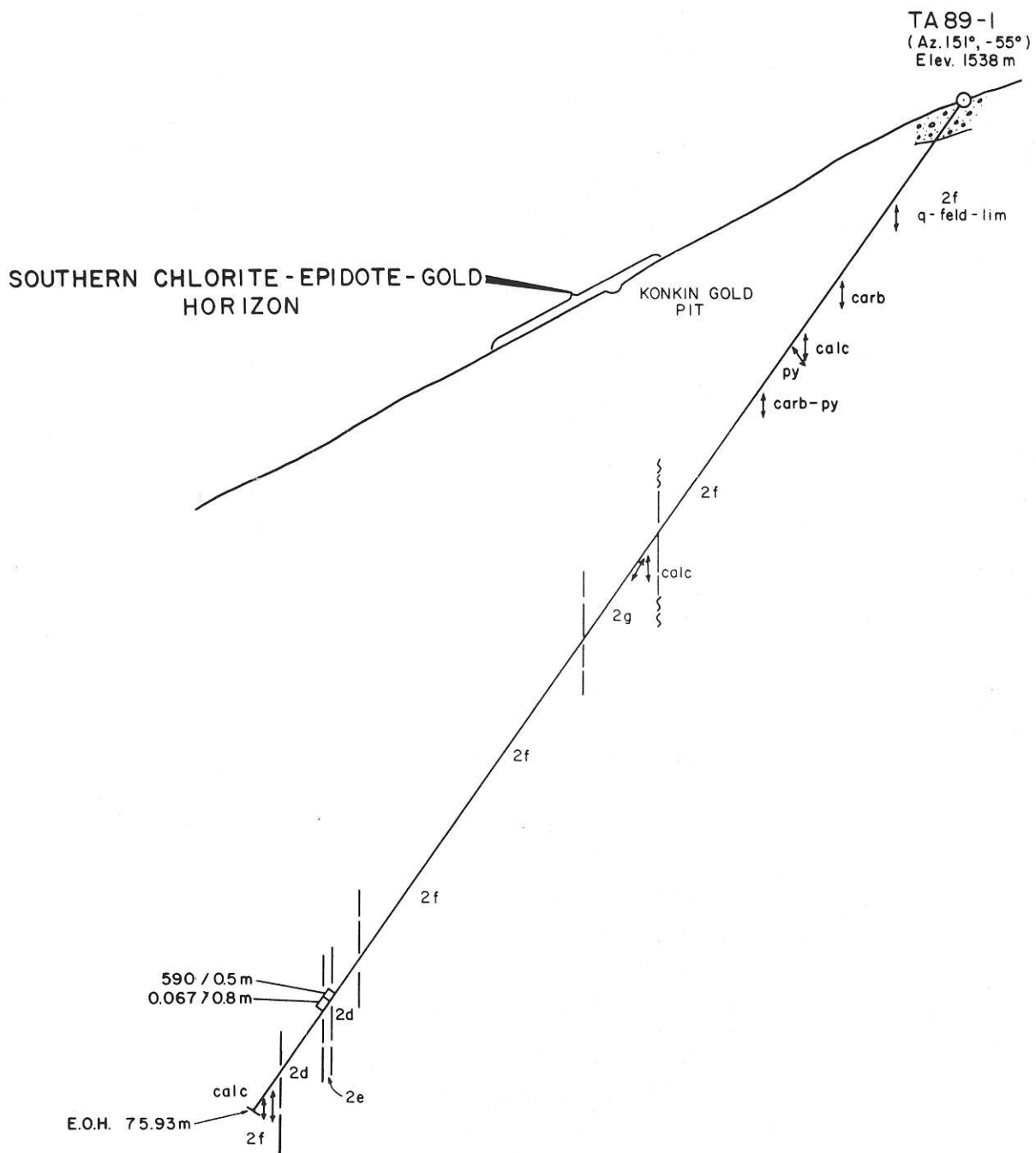
Ground magnetometer and VLF-EM surveys were carried out over a reestablished grid, first put in place by Teuton Resources Corp. in 1988. The surveys covered lines 0+50S to 1+00N, 0+50W to 2+00E with partial coverage of line 1+25N and 1+50N. Both methods failed to pick up mineralization exposed on the surface. The magnetic survey basically duplicated the results of the Teuton work and could not physically be extended far enough east over the ice to cover the airborne magnetic anomalies, so no map was generated from the 1989 data. The VLF-EM survey was carried out utilizing the Geonics EM-16 instrument. The transmitting station chosen was Hawaii (NMP, 23.4 kHz) with an instrument facing direction to the west. Readings were taken every 10 metres. The raw data was then Fraser Filtered and is presented as Figure 11.

#### Diamond Drilling

The primary goal of diamond drilling at the Konkin Gold Zone was to intersect the gold bearing horizons at depth and along strike, and also to test the three quartz-pyrite-sericite-limonite alteration zones located to the east of the Konkin Gold Pit. The drilling was carried out by Falcon Drilling Ltd. from August 22 to August 28, 1989. Four drill holes were completed totalling 381.83 m. The entire core of each hole was split into 1.5 m intervals, except for sections containing elevated sulphides which were sampled at smaller intervals. The core was logged, split and later stored at the old Teuton Camp just below the Konkin Zone. Samples



LOOKING SW



SYMBOLS

- VEIN
- FAULT
- LITHOLOGIC CONTACT
- 590/0.5m GOLD ASSAY (ppb) over INTERVAL (metres)
- 0.067/0.8m GOLD ASSAY (oz/t) over INTERVAL (metres)
- OVERBURDEN

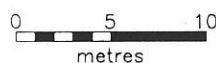
NOTE ONLY GOLD VALUES OF  $\geq 500$  ppb ARE PLOTTED

LEGEND:

- 2a** CHLORITE-EPIDOTE-GOLD HORIZON
- 2b** DIORITE
- 2c** DACITE - tr - 5% py
- 2d** DACITE - 5 - 20% py
- 2e** DACITE >20% py
- 2f** ANDESITE LAPILLI-CRYSTAL TUFF - tr -5% py
- 2g** ANDESITE LAPILLI-CRYSTAL TUFF >5% py

ABBREVIATIONS

- q QUARTZ
- feld FELDSPAR
- calc CALCITE
- carb CARBONATE
- ep EPIDOTE
- hem HEMATITE
- lim LIMONITE
- ser SERICITE
- cpy CHALCOPYRITE
- py PYRITE



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Figure 12  
TREATY CREEK PROJECT  
KONKIN ZONE  
DRILL SECTION TA-89-1

British Columbia  
NTS: 104 B/9E

December 1989

Drafting: RWR

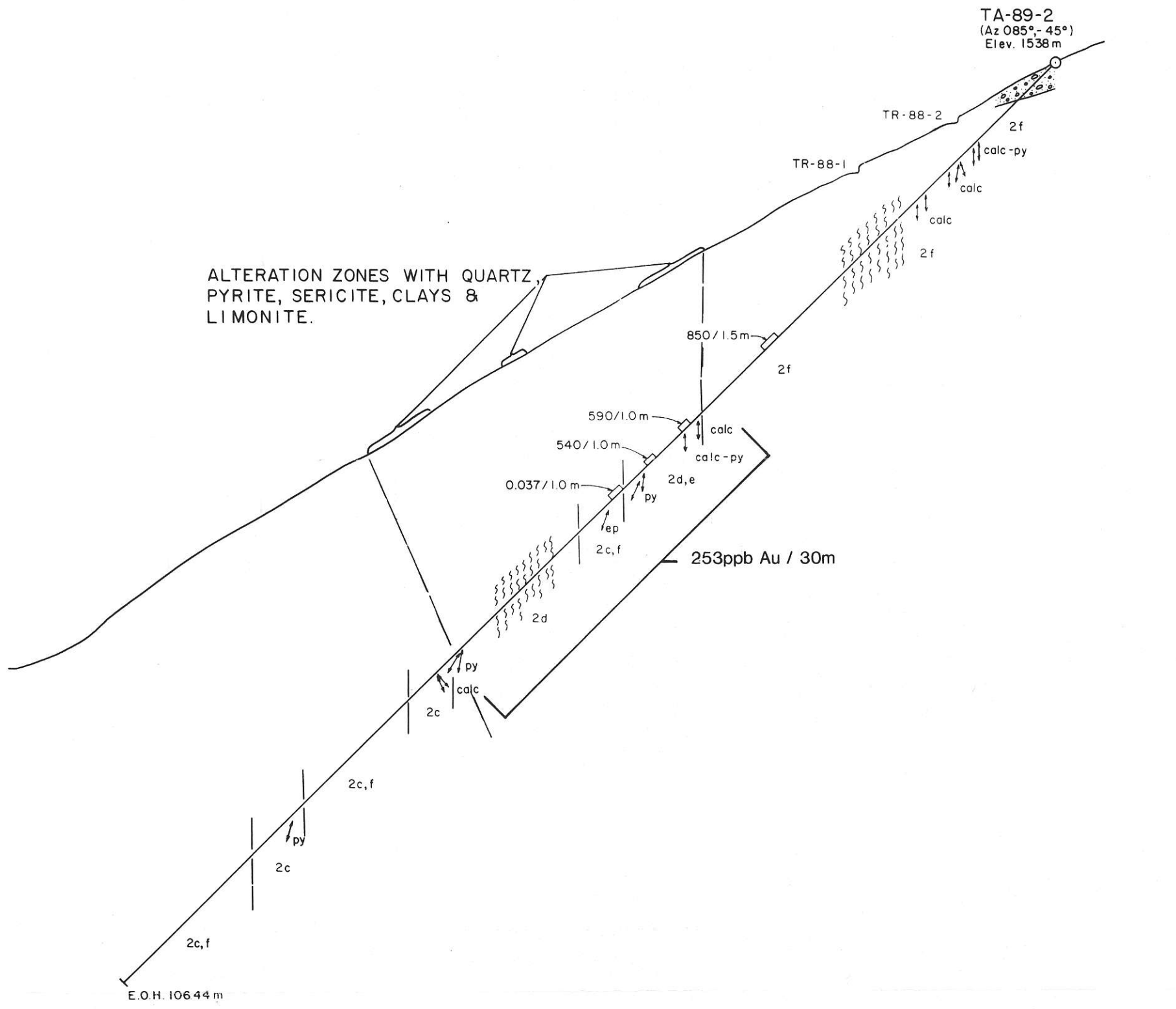
were assayed by TSL Laboratories for gold, silver, copper and arsenic. Drill site locations are presented on Figure 9 and the drill logs constitute Appendix A.

Hole TA-89-1 (151°/-55°, Figure 12) was planned to intersect mineralization below the Konkin Gold Pit from which came the most spectacular gold results. The hole failed to intersect the anticipated mineralization; similarly, a hole drilled by Teuton Resources in 1987, from 30 m to the south toward the Konkin Gold Pit also failed. The highest recorded gold values in 1989 are 590 ppb and 0.067 oz/t encountered in aphanitic, strongly silicified dacite from 67.00 m to 67.50 m and 67.50 m to 68.30 m respectively.

Hole TA-89-2 (085°/-45°, Figure 13) was to test the three quartz-pyrite-sericite-limonite alteration zones noted at surface. These individual zones were not distinguishable in the core however it is probable that a strongly siliceous and pyritiferous dacite horizon from 40.50 m to 69.00 m constitutes the equivalent of these zones. If so, this would imply an approximately vertical dip to this system. Anomalous gold values (greater than 500 ppb) were recorded in: andesite-lapilli tuff from 31.50 m to 33.00 m (850 ppb), aphanitic dacite from 41.50 m to 42.50 m (590 ppb) and 45.50 m to 46.50 m (540 ppb) and intercalated andesite and dacite, from 49.50 m to 50.50 m (0.037 oz/t).

Hole TA-89-3 (151°/-45°, Figure 14) encountered the northern chlorite-epidote horizon at 32.94 m to 42.09 m. The best gold assay from this unit was 0.138 oz/ton over 4.09 m from 38.00 m to 42.09 m, which includes 0.249 oz/ton over 1.8 m from 39.00 m to 40.80 m. The horizon is also enriched in gold at the upper contact, which assayed 0.051 oz/ton gold over 1.06 m from 32.94 m to 34.00 m.

LOOKING SOUTH



ALTERATION ZONES WITH QUARTZ,  
PYRITE, SERICITE, CLAYS &  
LIMONITE.

SYMBOLS

- ↔ VEIN
- ~~~~~ FAULT
- LITHOLOGIC CONTACT
- 590/0.5m — GOLD ASSAY (ppb) over INTERVAL (metres)
- 0.067/0.8m — GOLD ASSAY (oz/t) over INTERVAL (metres)
- OVERBURDEN

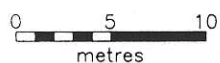
NOTE: ONLY GOLD VALUES OF ≥ 500 ppb ARE PLOTTED

LEGEND:

- 2a CHLORITE-EPIDOTE-GOLD HORIZON
- 2b DIORITE
- 2c DACITE - tr - 5% py
- 2d DACITE - 5 - 20% py
- 2e DACITE >20% py
- 2f ANDESITE LAPILLI-CRYSTAL TUFF - tr - 5% py
- 2g ANDESITE LAPILLI-CRYSTAL TUFF >5% py

ABBREVIATIONS

- q QUARTZ
- feld FELDSPAR
- calc CALCITE
- carb CARBONATE
- ep EPIDOTE
- hem HEMATITE
- lim LIMONITE
- ser SERICITE
- cpy CHALCOPYRITE
- py PYRITE



**OREQUEST**

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Figure 13  
TREATY CREEK PROJECT  
KONKIN ZONE  
DRILL SECTION TA-89-2

British Columbia  
NTS: 104 B/9E

December 1989

Drafting: RWR

A second anomalous gold interval was encountered well below the above mentioned horizon zone in a highly siliceous, aphanitic dacite containing 5-20% pyrite from 91.00 m to 95.00 m. Assays ranged from 640 ppb to 0.059 oz/ton with the entire zone assaying 0.041 oz/ton over 4.0 m, including 0.059 over 1.06 m from 93.94 m to 95.00 m.

Hole TA-89-4 (151°/60°, Figure 14) was drilled to test the downdip extension of mineralization encountered in Hole TA-89-3. As in the previous hole, two significant horizons were intersected. The first is in a chlorite-epidote-gold horizon from 21.04 m to 24.09 m with assays of 0.034 oz/ton and 0.133 oz/ton gold over 2.46 m and 0.59 m respectively. A weighted average of these two intervals gives 0.053 oz/ton gold over 3.05 m.

The second zone occurs in strongly silicified, weakly chloritized dacite that contains 15-30% pyrite from 47.70 m to 51.50 m. Assays range from 790 ppb to 0.081 oz/ton gold averaging 0.043 oz/ton over 3.8 m and including 0.081 oz/ton over 0.8 m. A third, shorter gold bearing horizon was intersected in a very strongly silicified dacite from 63.50 m to 64.80 m, which returned 0.069 oz/t gold.

The three zones averaged 710 ppb gold over 18.7 m from 47.70 m to 66.39 m.

## Discussion

Drilling carried out on the Konkin Zone in 1989 had the primary purpose of tracing the gold bearing chlorite-epidote altered andesitic horizons. The drilling indicates that these horizons are not as continuous or thick as indicated by surface exposures. Results are lower than expected with the highest gold values

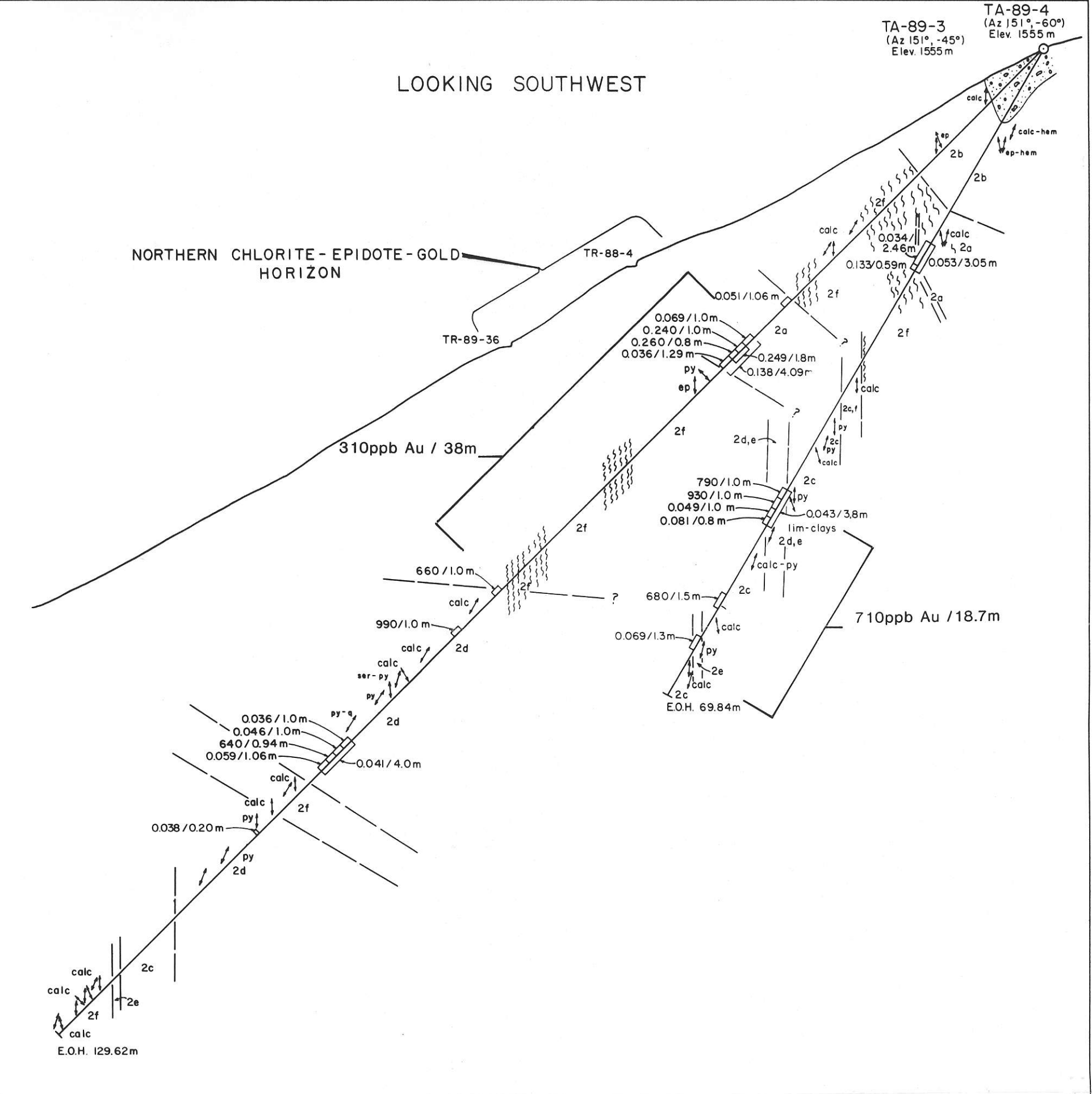


LOOKING SOUTHWEST

TA-89-3  
(Az 151°, -45°)  
Elev. 1555 m

TA-89-4  
(Az 151°, -60°)  
Elev. 1555 m

NORTHERN CHLORITE - EPIDOTE - GOLD HORIZON



LEGEND:

- 2a CHLORITE - EPIDOTE - GOLD HORIZON
- 2b DIORITE
- 2c DACITE - tr - 5% py
- 2d DACITE - 5 - 20% py
- 2e DACITE >20% py
- 2f ANDESITE LAPILLI-CRYSTAL TUFF - tr -5% py
- 2g ANDESITE LAPILLI-CRYSTAL TUFF >5% py

SYMBOLS

- VEIN
- ~~~~ FAULT
- LITHOLOGIC CONTACT
- 590/0.5m GOLD ASSAY (ppb) over INTERVAL (metres)
- 0.067/0.8m GOLD ASSAY (oz/t) over INTERVAL (metres)
- OVERBURDEN

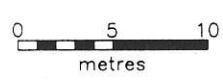
ABBREVIATIONS

- q QUARTZ
- feld FELDSPAR
- calc CALCITE
- carb CARBONATE
- ep EPIDOTE
- hem HEMATITE
- lim LIMONITE
- ser SERICITE
- cpy CHALCOPYRITE
- py PYRITE

**OREQUEST**

TANTALUS RESOURCES LTD.

Figure 14  
TREATY CREEK PROJECT  
KONKIN ZONE  
DRILL SECTION TA-89-3 & 4  
British Columbia  
NTS: 104 B/9E



NOTE: ONLY GOLD VALUES OF ≥ 500 ppb ARE PLOTTED

December 1989

Drafting: RWR

recorded being 0.249 oz/t over 1.8 m in hole TA-89-3, and 0.133 oz/t over 0.59 m in hole TA-89-4. Other gold bearing horizons occur in aphanitic to feldspar porphyritic, strongly silicified and pyritiferous dacite (not observed on the surface) with results ranging between 0.036 and 0.081 oz/t gold, over 1.0 m and 0.80 m respectively. Wide intervals of low grade gold are evident in this rock type with up to 38.00 m of 310 ppb in hole TA-89-3.

Gold is very erratically distributed, in some samples associated with elevated copper content and in others with increased arsenic content. No significant silver values were detected.

Sulphide mineralization is predominantly pyrite, as disseminated, euhedral to subhedral crystals up to 2-3 mm in size, and less often in a variety of massive styles:

- a: as blebs and irregular replacement patches.
- b: as sections of massive pyrite mostly several centimetres wide, but up to 80 cm wide, with indistinct, gradational boundaries which represent replacement veins.
- c: as thin (1-5 mm wide) pyrite and quartz-pyrite, calcite-pyrite fissure veins with clear, sharp walls.
- d: as healings in brecciated rocks (primarily in dacite) in the form of thin, very irregular stockwork-like veins.

Alteration observed in drill core includes chloritization, silicification, epidotization and locally K-feldspar alteration (?), clay alteration and sericitization.

#### Mineralization

The mineralized chlorite-epidote altered horizon is the principal gold bearing rock in the Konkin Zone and probably represents a very advanced stage of propylitization developed in andesitic rocks. The mechanism of gold enrichment in this rock is still not known. It is possible that fragments of limestone (a 1 m thick limestone bed was uncovered by trench #31) in andesitic rocks constituted centers of hydrothermal alteration and gold enrichment, which may be indicated by the very uneven, random distribution of gold and also by the fact that high gold values are associated with epidote.

Deposition of disseminated pyrite accompanied by pervasive chloritization and silicification appear to be the major factors contributing to gold distribution. These silicified rocks were in some areas brecciated and subsequently healed by quartz, calcite and gold bearing pyrite. In addition gold is also present in pyrite, quartz-pyrite and calcite-pyrite veins displaying varying attitudes, which suggest introduction along later fracture systems.

Faults may play a role in the formation of the mineralized chlorite-epidote horizons but their effect on gold distribution in other rocks seems to be minimal.

Most dykes of aphanitic andesite are almost devoid of sulphides which would imply post-mineralization emplacement. A few of these dykes however, which do

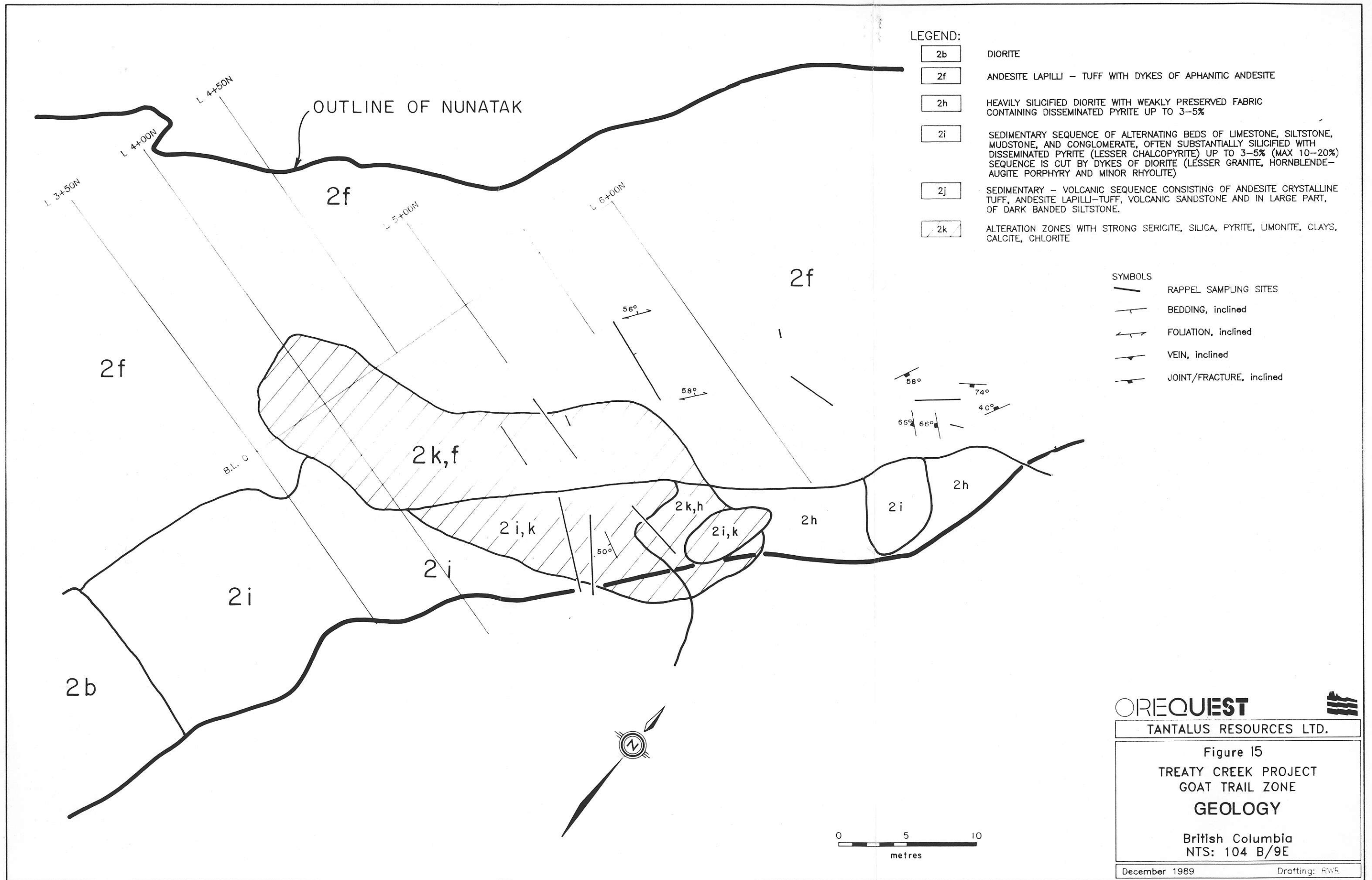
contain substantial sulphides may have originated before and/or simultaneously with the mineralization providing channels for introduction of gold. This seems to be the case in hole TA-89-4 between 47.70 and 50.70 m.


From the observations presented above it is evident that the introduction of gold into the Konkin Zone was highly complex and several factors were involved in the process. As a result the recognition of a general pattern controlling gold distribution has yet to be made.

#### Goat Trail Zone

This area includes part of the northeast section of the nunatak and is underlain by three distinctive lithological units (Figures 7 and 15). At the northeast end of the nunatak, the lowermost unit is a heavily silicified diorite (?) with weakly preserved fabric, containing disseminated pyrite up to 15-20%. To the southwest, the diorite is in contact with a sedimentary sequence consisting mostly of mudstones and carbonates, very often strongly silicified with disseminated pyrite up to 15-20%, as well as trace chalcopyrite. Overlying the mudstones is an andesite lapilli-tuff horizon cut by numerous aphanitic andesite dykes. The stratigraphy of this area is believed to be overturned with the sediments being younger than the volcanic units.

Two major alteration zones (the Upper Zone and the Goat Trail Zone) were mapped through this area (Figure 7). The Upper Zone, about 270 m long, lies approximately 200 m west of the base line, near the summit of the nunatak, between lines 0+50S and 2+00N and trends approximately northeast-southwest. It is composed of sericite and lesser quartz, with pyrite up to 10-15%, and is considerably



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Figure 15  
TREATY CREEK PROJECT  
GOAT TRAIL ZONE  
**GEOLOGY**

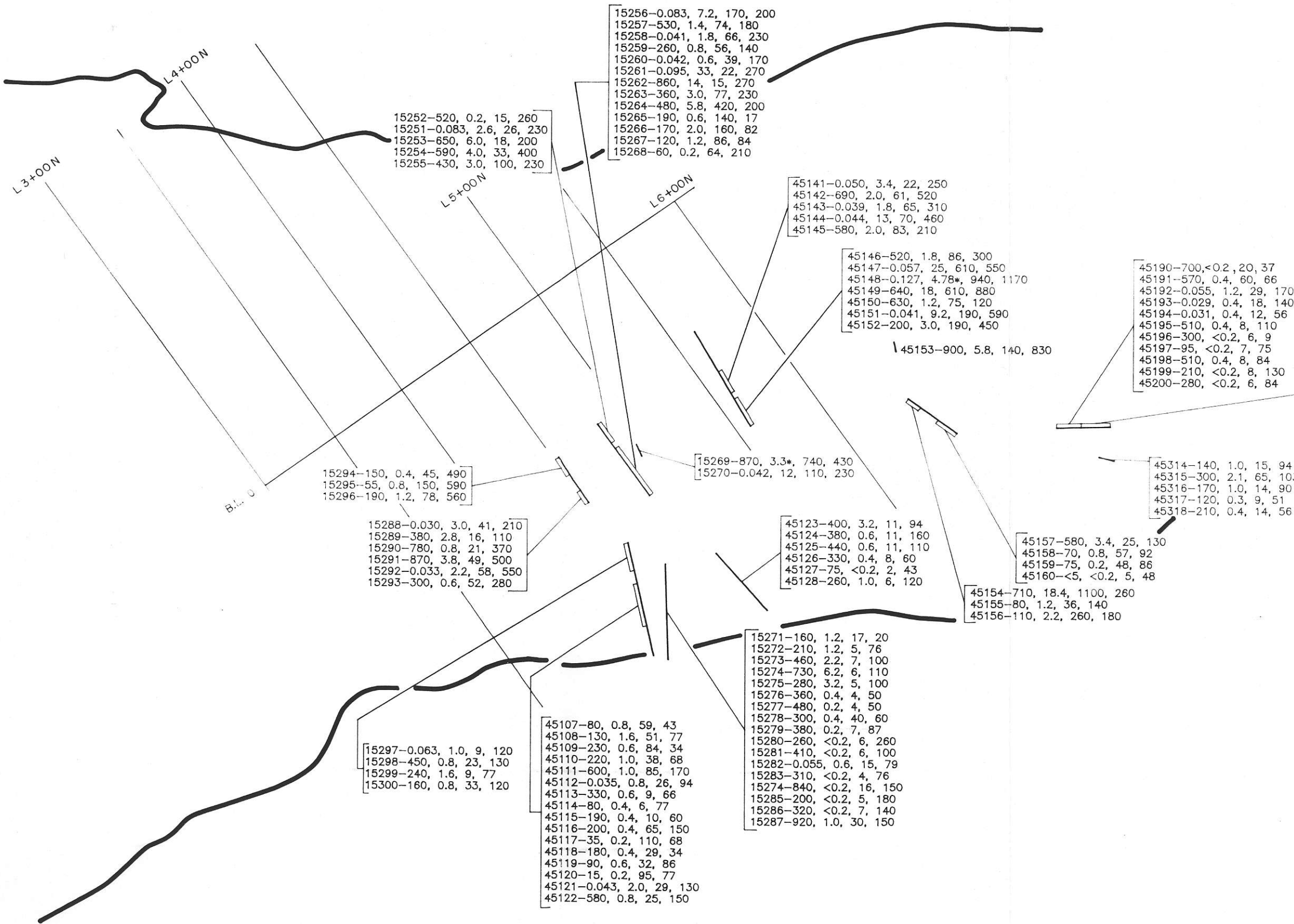
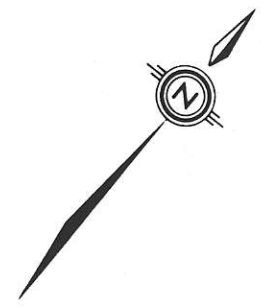
British Columbia  
NTS: 104 B/9E

December 1989 Drafting: RWS

leached. The second zone, about 300 m in length and between 60 and 110 m in width, comprises the Goat Trail Zone itself. It lies almost entirely east of the base line between lines 3+50N and 5+75N, trending approximately east-west. It is possible that the two zones constitute one continuous horizon as indicated by highly anomalous gold values (up to 1100 ppb) in soils and talus which separates them. The mineralogy of the Goat Trail Zone is more complex than that of the Upper Zone, perhaps reflecting differences in original lithology. Within the Goat Trail Zone a very strong sericite-quartz-pyrite alteration is developed mainly in andesite pyroclastics, while strong silicification is developed mainly in the diorite and sedimentary rocks. Additionally, in the area of trenches 19 to 22 (Teuton Resources, 1988) intense argillic alteration has developed. Pyrite occurs mainly as disseminated crystals comprising up to 15-20% of the rock, less frequently as a component of quartz-pyrite veins and pods, up to 15 cm wide, in which it constitutes as much as 60-80%. Many parts of the zone are strongly leached, especially in the sericite-quartz-pyrite rich portions.

The 1988 work program of Teuton Resource Corp. involved soil and rock sampling along with limited trenching. Trenching was carried out over soil anomalies or where topographic conditions would permit. Due to the steep terrain the strongest portions of the alteration zone were not sampled at that time. Values as high as 0.312 oz/t gold over 1.9 m were recorded, associated with both arsenic and lead-zinc-silver-antimony mineralization.

Rappel traverses in 1989 proved to be the only practical method of conducting systematic sampling in this area. Samples were taken along continuous chip lines, with sample lengths of one to two metres (Figure 16). Almost all of the assayed



45301-700, 1.6, 48, 448
45302-291, 0.7, 15, 290
45303-0.031, 3.8, 384, 387
45304-410, 2.0, 36, 160
45305-240, 1.2, 60, 119
45306-220, 0.8, 17, 109
45307-80, 0.5, 7, 57
45308-230, 0.7, 8, 61
45309-100, 0.4, 9, 50

**SAMPLE RESULTS**

SAMPLE No.	Au ppb	Ag oz/t	Cu ppm	As ppm
15288-300	7.87*	220	930	
or				
15288-0.017	18.2	220	930	

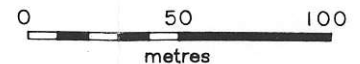
**SYMBOLS**

— RAPPEL SAMPLE SITE

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Figure 16  
TREATY CREEK PROJECT  
GOAT TRAIL ZONE  
**ROCK GEOCHEMISTRY**  
Au, Ag, Cu & As  
British Columbia  
NTS: 104 B/9E



samples returned gold values in the hundreds of ppb with some over 1000 ppb. The highest assay from the Goat Trail samples is 0.127 oz/t gold and 4.78 oz/t silver over 2.0 m from sample #45148. A few samples contained anomalous copper in the hundreds of ppm, and most of the samples contain elevated arsenic in hundreds of ppm, however gold and silver values do not appear to be directly related to arsenic or copper content.

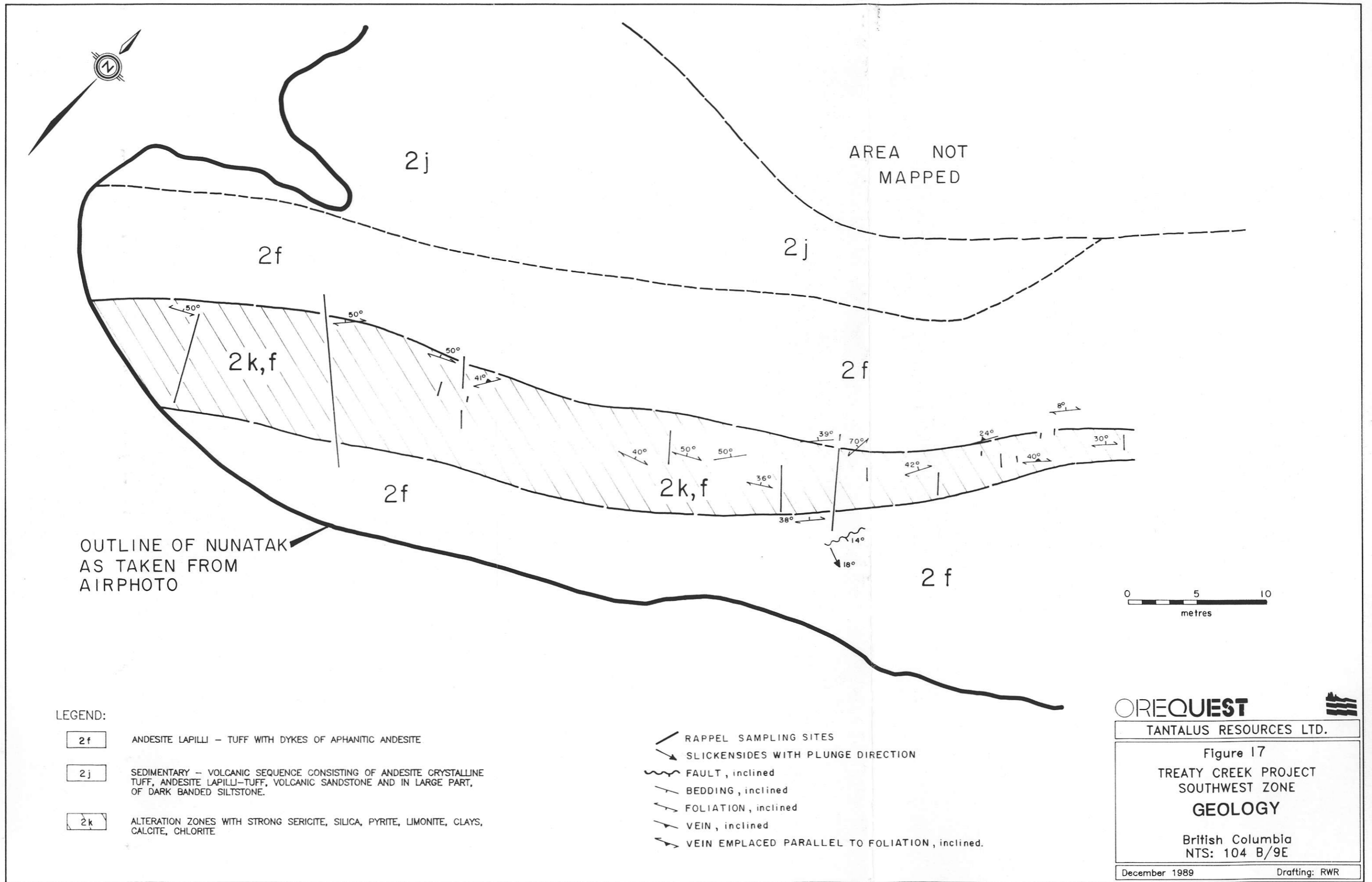
Fourteen rock samples were collected from the Upper Zone (located about 200 m west of the base line), composed mainly of sericite, quartz and pyrite. Three samples (chips over 1.0 m) recorded gold values over 1000 ppb (0.031, 0.039, 0.062 oz/t gold), while most of the other samples assayed in the hundreds of ppb (Figure 7). In this area gold values appear to be associated with elevated arsenic.

#### Southwest Zone

This portion of the nunatak features two different lithological units (Figure 17). On the west side occurs a distinctively bedded, sedimentary-volcanic, waterlain sequence consisting of andesite crystal tuff, andesite lapilli-tuff, volcanic sandstone and dark, banded siltstone which is also very likely composed of volcanic material. To the east, this sequence is in contact with the underlying andesite pyroclastics (chiefly andesite lapilli-tuff) which hosts the alteration zone. There are indications that the contact between these two units is fault controlled and continues to the northeast along the crest of the nunatak.

The alteration zone comprises several parallel subzones up to 6 m thick interbedded with comparatively less altered horizons having approximately similar thickness and is crosscut in several places by minor alteration zones of similar





composition. The zone in general trends northeast-southwest and dips moderately to the northwest. It extends 500 to 550 m northeast-southwest and ranges in thickness from 70 to 80 m at the southwest end, to 20 m at the northeast. The zone itself likely represents intensely sheared andesite pyroclastics replaced by secondary minerals to form sericite (+/- chlorite) - quartz-pyrite schists cut by calcite and quartz-pyrite veins. Pyrite occurs as fine, disseminated, euhedral crystals comprising as much as 15-20% of the schists. Quartz-pyrite veins and pods (usually 10-20 cm wide) locally contain 30-50% pyrite and more. Minor arsenopyrite, galena, chalcopyrite, chalcocite, bornite, sphalerite, malachite-azurite and scorodite were noted in these veins.

Systematic exploration of the area followed in the wake of the discovery of anomalous gold values (0.028 to 0.049 oz/t) accompanied by elevated arsenic content in samples taken by Teuton Resources Corp. in 1988.

As in the Goat Trail Zone samples were collected by means of rappel traverses to effect coverage along continuous chip lines across the zones (Figure 18). All samples returned anomalous gold values, many above 1000 ppb. The highest recorded value is 0.447 oz/t gold over 1.5 m; a 2.0m check sample from this site returned 0.095 oz/ton gold. Gold values in this area show a strong association with arsenic, which assayed up to 88,000 ppm. Silver seems to be less prevalent than gold, however, a few samples returned values over 50 ppm with the highest assay being 7.57 oz/t over 1.0 m. Copper is anomalous in almost all samples with values ranging from 24 to 2200 ppm; samples with high silver content generally have higher copper values associated with them. All sample locations and results are plotted on Figure 18.



45372-0.092, 3.0, 160, 4200  
 45373-610, 2.0, 69, 3500  
 45374-70, 1.8, 130, 240  
 45375-610, 2.2, 190, 2900  
 45376-280, 1.6, 190, 2600  
 45377-55, 0.6, 80, 580  
 45378-950, 2.0, 79, 5000  
 45379-0.108, 2.6, 31, 4900  
 45380-0.044, 2.04\*, 650, 3500  
 45381-20, 0.8, 150, 280  
 45382-50, 4.2, 310, 810  
 45383-20, 0.8, 190, 190

45364-720, 2.2, 99, 1100  
 45365-65, 3.2, 280, 330  
 45366-30, 3.6, 360, 520  
 45367-340, 3.4, 320, 440  
 45368-700, 6.4, 1400, 1600  
 45369-240, 4.0, 460, 620  
 45370-30, 2.0, 260, 140  
 45371-55, 1.4, 120, 580

45164-30, 0.8, 190, 16  
 45165-20, 0.8, 190, 27  
 45166-15, 1.0, 180, 6  
 45167-20, 0.8, 170, 21  
 45168-0.036, 2.4, 440, 500  
 45169-75, 1.0, 46, 38  
 45170-360, 1.2, 60, 230  
 45171-30, 1.4, 150, 130  
 45172-70, 1.4, 110, 160  
 45173-75, 1.6, 160, 220  
 45174-30, 1.4, 86, 65  
 45175-30, 2.2, 140, 87  
 45176-330, 6.6, 94, 240  
 45177-35, 0.2, 67, 130  
 45178-35, 0.2, 130, 110  
 45179-65, 0.6, 190, 310  
 45180-35, 0.4, 260, 170  
 45181-35, <0.2, 510, 100  
 45182-60, <0.2, 270, 76  
 45183-15, 0.2, 210, 76  
 45184-10, <0.2, 200, 42

45342-85, 5.6, 220, 560  
 45343-15, 2.4, 200, 86  
 45344-40, 3.8, 160, 520  
 45345-65, 4.2, 170, 760  
 45346-500, 14.8, 990, 12000

45331-200, 4.2, 270, 7300  
 45332-860, 8.2, 340, 11000  
 45333-220, 3.0, 190, 5100  
 45334-290, 3.6, 310, 10000

45328-0.030, 7.0, 510, 6400  
 45329-65, 3.8, 230, 720  
 45330-0.040, 7.57\*, 2200, 2700 ← KQ-89-150c

45335-240, 3.0, 210, 5400  
 45336-320, 4.2, 230, 9100  
 45337-15, 0.8, 120, 130

45339-90, 1.4, 240, 1600  
 45340-0.050, 3.55\*, 1300, 8700  
 45341-35, 2.8, 290, 260

45324-60, 1.4, 220, 760  
 45325-55, 3.6, 450, 590  
 45326-0.103, 25.6, 290, 14000  
 45327-0.030, 2.2, 150, 9900

15211-900, 1.6, 83, 1900  
 15212-200, 1.0, 64, 1300  
 15213-0.048, 1.4, 39, 2800  
 15214-0.032, 1.2, 73, 300  
 15215-0.077, 1.8, 64, 2700  
 15216-520, 2.6, 280, 2100  
 15217-430, 1.4, 88, 2600  
 15218-0.034, 2.6, 180, 1100  
 15219-680, 1.2, 130, 2100  
 15220-30, 0.6, 24, 58  
 15221-50, 1.4, 80, 1800  
 15222-290, 1.2, 53, 360  
 15223-60, 0.6, 60, 650  
 15224-130, 1.4, 59, 1300  
 15225-450, 1.6, 130, 1700  
 15226-0.037, 4.2, 660, 830

15236-90, <0.2, 88, 100  
 15237-250, 0.2, 88, 440  
 15238-300, 0.4, 140, 650  
 15239-590, 0.2, 86, 640  
 15240-0.040, 2.4, 97, 1000  
 15241-420, 1.2, 180, 930  
 15242-460, 1.6, 130, 860  
 15243-520, 1.2, 110, 580  
 15244-320, 0.8, 120, 1200  
 15245-0.041, 4.8, 230, 1300  
 15246-700, 1.0, 94, 2200  
 15247-0.045, 4.0, 87, 5300  
 15248-0.040, 1.8, 300, 4800  
 15249A-290, 0.6, 140, 1700  
 15249B-85, 0.4, 110, 700

45392-170, 2.4, 330, 800  
 45393-0.039, 5.4, 1500, 1200

45384-770, 2.6, 170, 6700  
 45385-260, 0.8, 100, 4500  
 45386-0.040, 4.0, 140, 2100  
 45387-730, 0.2, 130, 2700

45388-590, 5.0, 400, 2300  
 45389-660, 4.4, 330, 1900  
 45390-520, 5.0, 410, 1700  
 45391-280, 0.6, 140, 2500

KQ-89-150D →

45347-0.030, 3.0, 110, 3200  
 45348-20, 1.0, 160, 50  
 45349-0.073, 2.0, 120, 1200  
 45350-0.121, 4.9, 450, 740  
 45351-490, 0.8, 140, 190  
 45352-450, 1.8, 110, 330  
 45353-720, 4.8, 180, 5800  
 45354-590, 4.2, 150, 4600  
 45355-0.040, 7.6, 490, 19000  
 45356-240, 3.8, 180, 2100  
 45357-0.047, 10.6, 230, 19000  
 45358-620, 6.0, 310, 2200  
 45359-0.043, 10.0, 440, 14000  
 45360-0.057, 0.79\*, 270, 1700  
 45361-110, 5.4, 190, 340  
 45362-0.081, 5.0, 240, 4200  
 45363-50, 1.0, 170, 210

45185-850, 0.6, 160, 1500  
 45186-0.033, 1.8, 220, 1500  
 45187-270, 1.2, 81, 490  
 45188-610, 1.6, 110, 840  
 45189-120, 2.0, 150, 310

15232-0.447, 2.6, 45, 950  
 15233-0.136, 6.4, 160, 930  
 CHECK SAMPLES  
 45162-0.095, 3.8, 55, 1100  
 45163-0.087, 2.2, 91, 880  
 45234-0.059, 3.2, 240, 1000  
 45235-840, 5.6, 650, 1400

45338-0.082, 8.6, 75, 88000

**SAMPLE RESULTS**

SAMPLE No.	Au ppb	Ag oz/t	Cu ppm	As ppm
15288-300	7.87*	220	930	

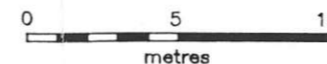
SAMPLE No.	Au oz/t	Ag ppm	Cu ppm	As ppm
15288-0.017	18.2	220	930	

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Figure 18  
 TREATY CREEK PROJECT  
 SOUTHWEST ZONE  
**ROCK GEOCHEMISTRY**  
 Au, Ag, Cu & As  
 British Columbia  
 NTS: 104 B/9E

**SYMBOLS**

— / — RAPPAL SAMPLE SITE

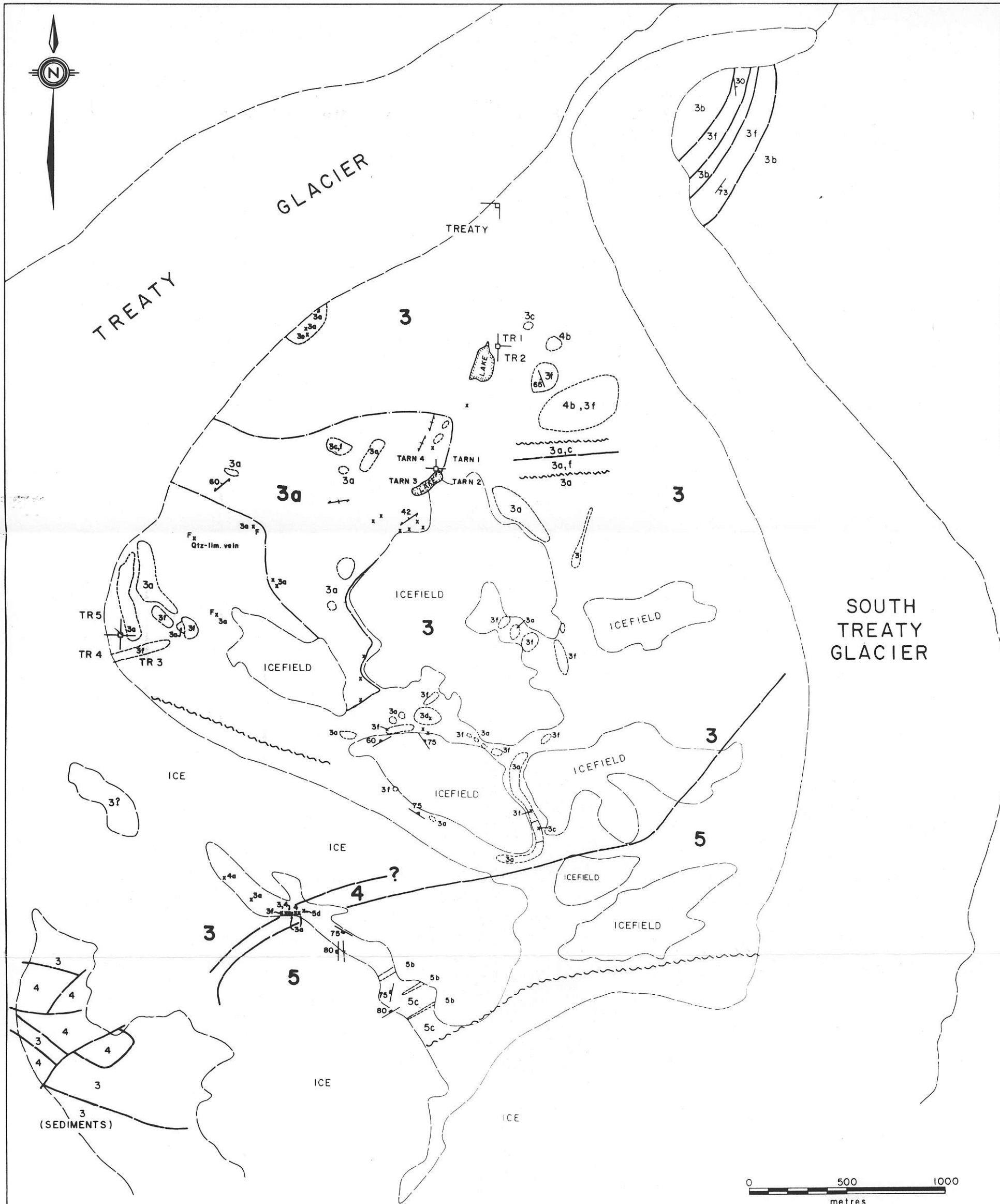


In addition to the rappel traverses, one 350 m soil line along the ridge slope (the only transversable area) was completed. Results reflect the same gold-arsenic association as noted in samples from the rappel traverses. Gold assays ranged from 5 to 240 ppb, with arsenic ranging from 210 to 1200 ppm. All gold assays of greater than 100 ppb have arsenic assays of greater than 500 ppm with one exception, where arsenic assayed 450 ppm.

Other claims within the Treaty Project were subjected mainly to prospecting and reconnaissance mapping to define property geology, which led to the discovery of new mineralized areas. Some claims, however, were prospected only very briefly and require more extensive work.

#### Treaty Gossan

The main feature of this area, situated on the east side of the property between the Treaty and South Treaty Glaciers (Figure 19), is a large alteration zone which is composed almost exclusively of sericite schists with auxiliary quartz, pyrite, minor carbonates, limonite, native sulphur and alunite. Pyrite occurs as euhedral, disseminated crystals making up as much as 15-20% of the rock by volume. Foliation measurements indicate a northeast strike and steep northwest to vertical dip. The zone is developed in andesite pyroclastics and andesite. Andesite pyroclastics range from tuffs to breccias, while the andesite occurs as flows, pillow lavas and pillow breccias. In a few locations rhyolite flows (sometimes with distinctive flow banding) were noted. Sedimentary rocks are represented by greywackes, argillites and shales and plutonic rocks by two small diorite plugs. The area is characterized by numerous and abrupt changes in lithology which suggest fault displacements. Outside the large alteration



**LEGEND**

**VOLCANIC AND SEDIMENTARY ROCKS  
TRIASSIC TO JURASSIC**

**MIDDLE JURASSIC: SPATSIZI GROUP**

- 5 SALMON RIVER FORMATION**
- 5b Rhythmically bedded siltstone
  - 5c Thickly bedded sandstone
  - 5d Limestone lenses
  - 5e Andesite tuffs

**LOWER JURASSIC: HAZELTON GROUP**

- 4 MOUNT DILWORTH FORMATION**  
Felsic volcanic sequence of dacitic to rhyolitic composition including dust tuff, crystal and lithic tuff.
- 3 BETTY CREEK FORMATION**
- 3a Massive, green and grey andesitic to dacitic tuff, lapilli tuff, tuff breccia and minor flows
  - 3b Bedded, heterogeneous, red, green, and grey volcanic breccia, lapilli tuff, crystal and lithic tuff, commonly hematitic.
  - 3c Basaltic to andesitic pillow lavas
  - 3f Bedded, hematitic siltstone, sandstone, and conglomerate; locally fossiliferous

**SYMBOLS**

- x OUTCROP, SMALL OUTCROP
- FOLIATION (vertical, inclined)
- BEDDING (vertical, inclined)
- FRACTURE
- VEIN
- GEOLOGICAL CONTACT
- FAULT
- ALTERATION ZONE: Pyrite-quartz-sericite ± carbonate ± clay, locally foliated to schistose.
- F FLOAT
- LEGAL CORNER POST

**OREQUEST**

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Figure 19  
TREATY CREEK PROJECT  
TREATY GOSSAN  
GEOLOGY  
British Columbia  
NTS: 104 B/9E

December 1989

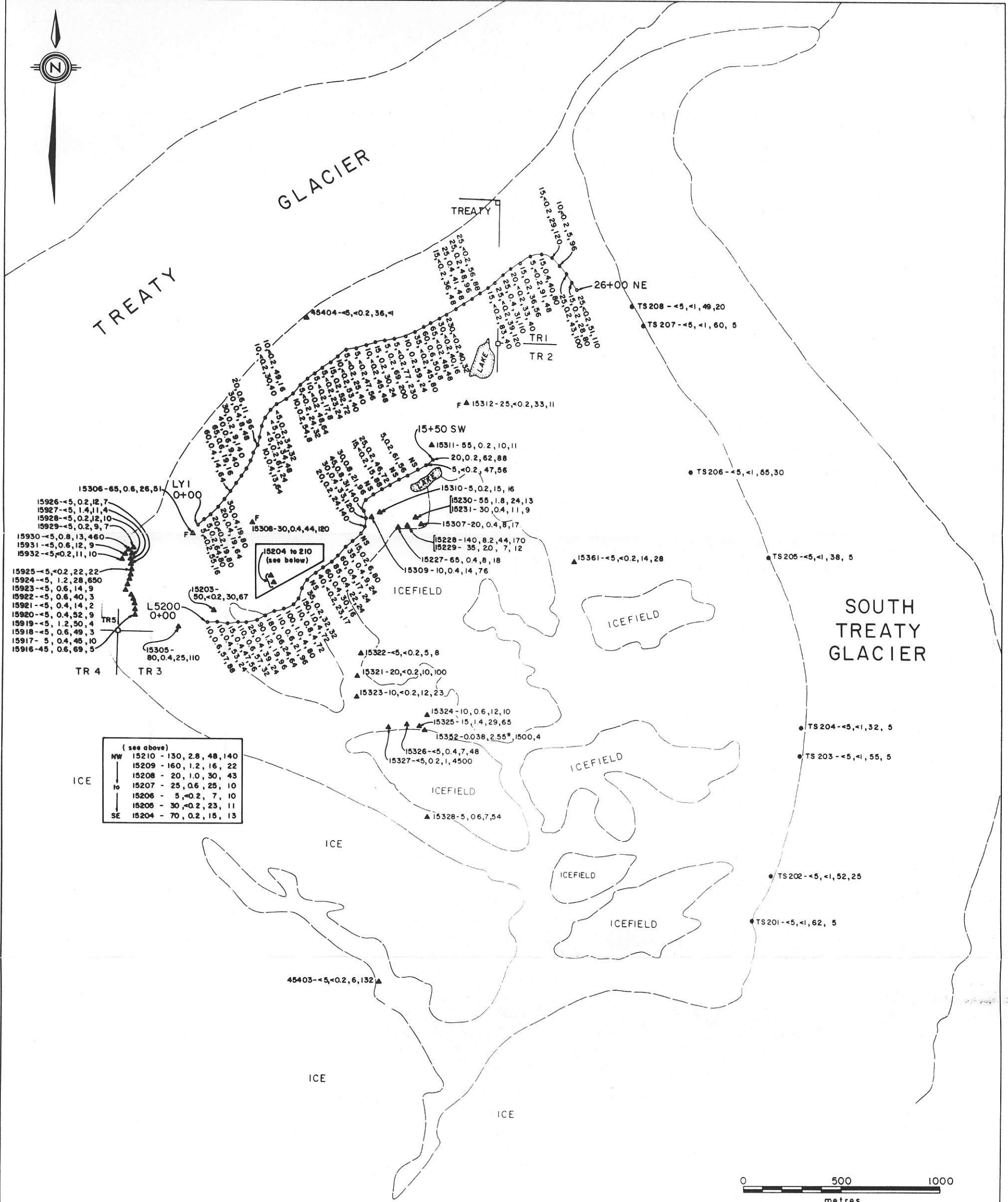
Drafting: RWR

zone several smaller alteration zones with no defined orientation, dominated by silicification and calcification, were found. Several calcite-limonite breccia-like veins up to 1-2 m wide, locally containing rock which may be considered as a sinter breccia, were noted.

The area was extensively prospected and numerous rock, soil and stream silt samples were collected. Almost all rock samples recorded insignificant gold values with the exception of sample #15352, 0.038 oz/t gold and 2.55 oz/t silver accompanied by a strong copper anomaly of 1500 ppm (Figure 20). This sample of a diorite (?) adjacent to a calcite-limonite breccia-like vein contained 3-5% galena, 1-2% pyrite and traces of chrysocolla. Soil samples were generally not highly anomalous although gold values, ranging from 90 to 180 ppb, were recorded from stations 2+50W to 5+00SW on contour soil line L5200. Stream silt samples did not produce any anomalous gold values. This is likely due to the extensive leaching of the surface exposures.

#### VR-1 and VR-5 Claims

In general the area of the VR-1 and VR-5 claims was only briefly prospected (Figure 21). It is underlain predominantly by volcanoclastic, waterlain andesite tuffs accompanied by siltstones and shales which are clearly identifiable as turbidites. The major plutonic rock unit in the area is feldspar-hornblende porphyritic andesite (Atkins Porphyry) in which a new mineralized zone was found (Atkins showing, eastern section of VR-1 claim). The zone trends approximately north-south over widths of 10 to 15 m and an exposed length of about 50 m. Alteration products include sericite, quartz, pyrite, chlorite and carbonate, but the zone is not homogeneous and contains areas of less altered andesite. Pyrite



(see above)			
NW	15210	- 130, 2.8, 48, 140	
	15209	- 160, 1.2, 16, 22	
	15208	- 20, 1.0, 30, 43	
to	15207	- 25, 0.6, 25, 10	
	15206	- 5, <0.2, 7, 10	
	15205	- 30, <0.2, 23, 11	
SE	15204	- 70, 0.2, 15, 13	

**LEGEND:**

- SOIL SAMPLE LOCATION
- TS 201\* SILT SAMPLE LOCATION & NUMBER  
130, 2.8, 48, 140  
Au Ag Cu As  
(ppb) (ppm) (ppm) (ppm)
- ▲ ROCK SAMPLE LOCATION  
15907 - 20, 0.8, 22, 13      0.038, 2.55\*, 37, 19  
Assay Tag Au Ag Cu As      Au Ag Cu As  
N# (ppb) (ppm) (ppm) (ppm)      (oz/t) (oz/t) (ppm) (ppm)
- F = FLOAT SAMPLE
- NS = NO SAMPLE TAKEN
- ⊕ LEGAL CORNER POST

**ORIEQUEST**  
TANTALUS RESOURCES LTD.

Figure 20  
TREATY CREEK PROJECT  
TREATY GOSSAN  
GEOCHEMISTRY  
Au, Ag, Cu, As  
British Columbia  
NTS: 104 B/9E

December 1989      Drafting: RWR

**LEGEND**

VOLCANIC AND SEDIMENTARY ROCKS  
 TRIASSIC TO JURASSIC  
 HAZELTON GROUP  
 LOWER JURASSIC

3 BETTY CREEK FORMATION

3a Massive, green and grey andesitic to dacitic tuff, lapilli tuff, tuff breccia and minor flows

3d ATKINS PORPHYRY Hornblende and feldspar porphyritic andesite

3f Bedded, hematitic siltstone, sandstone and conglomerate, locally fossiliferous

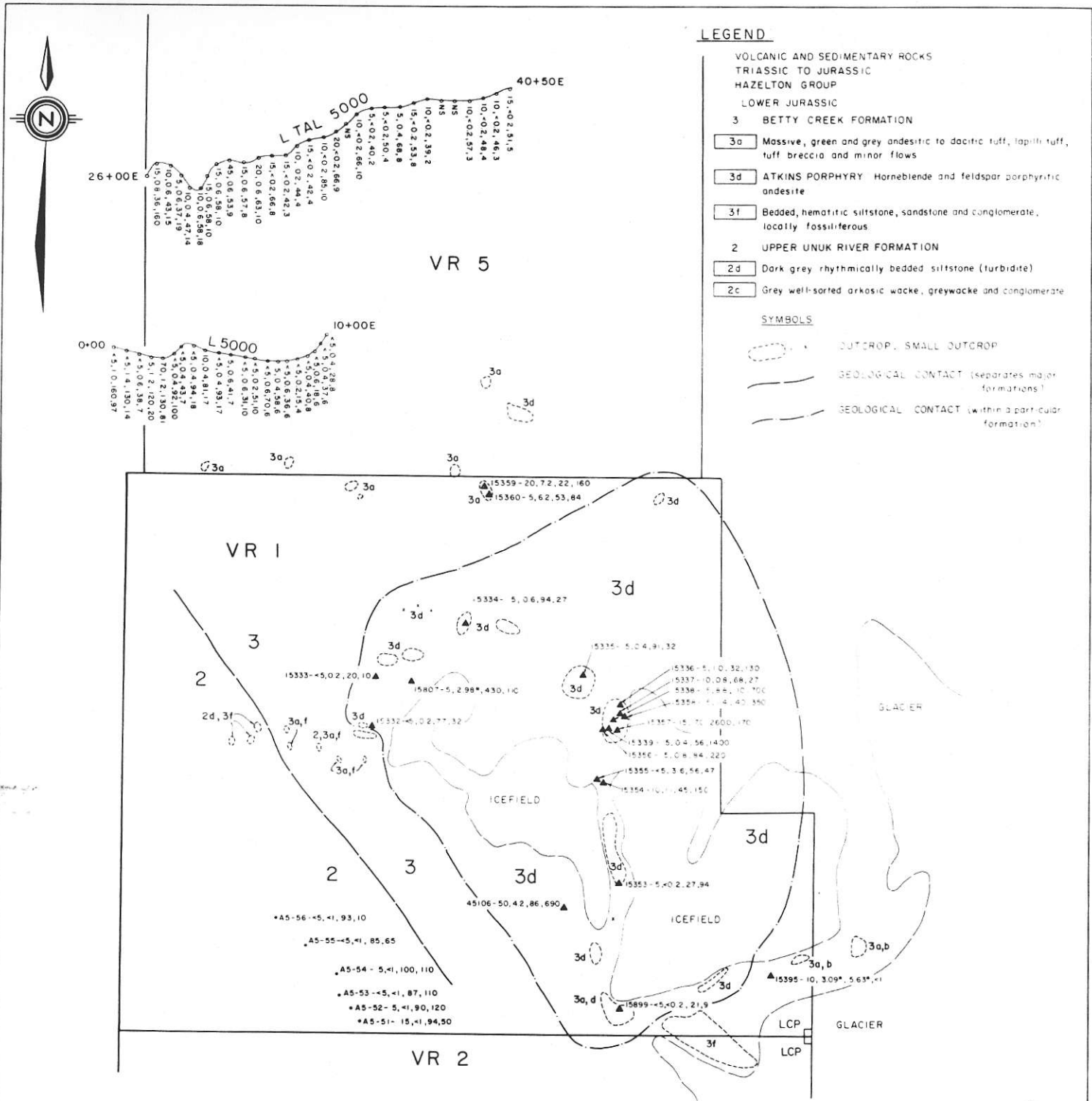
2 UPPER UNUK RIVER FORMATION

2d Dark grey rhythmically bedded siltstone (turbidite)

2c Grey well-sorted arkosic wacke, greywacke and conglomerate

**SYMBOLS**

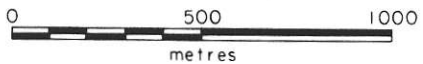
- OUTCROP, SMALL OUTCROP
- GEOLOGICAL CONTACT (separates major formations)
- GEOLOGICAL CONTACT (within a particular formation)



**GEOCHEMICAL LEGEND**

- SOIL SAMPLE LOCATION
- SILT SAMPLE LOCATION
- ROCK SAMPLE LOCATION
- NS NO SAMPLE
- LCP - LEGAL CORNER POST

NOTE All results are  
 5 . 0 2 . 7 7 . 1 0 4  
 Au Ag Cu As  
 (ppb) (ppm) (ppm) (ppm)  
 or  
 10 . 3 0 9 \* . 5 6 3 \* . 1  
 Au Ag Cu As  
 (ppb) (oz/t) (%) (ppm)



**OREQUEST**

TANTALUS RESOURCES LTD.

Figure 21

TREATY CREEK PROJECT  
 VR 1 & 5 CLAIMS  
 GEOLOGY and  
 GEOCHEMISTRY  
 British Columbia  
 NTS: 104 B/9E

December 1989      Drafting: RWR



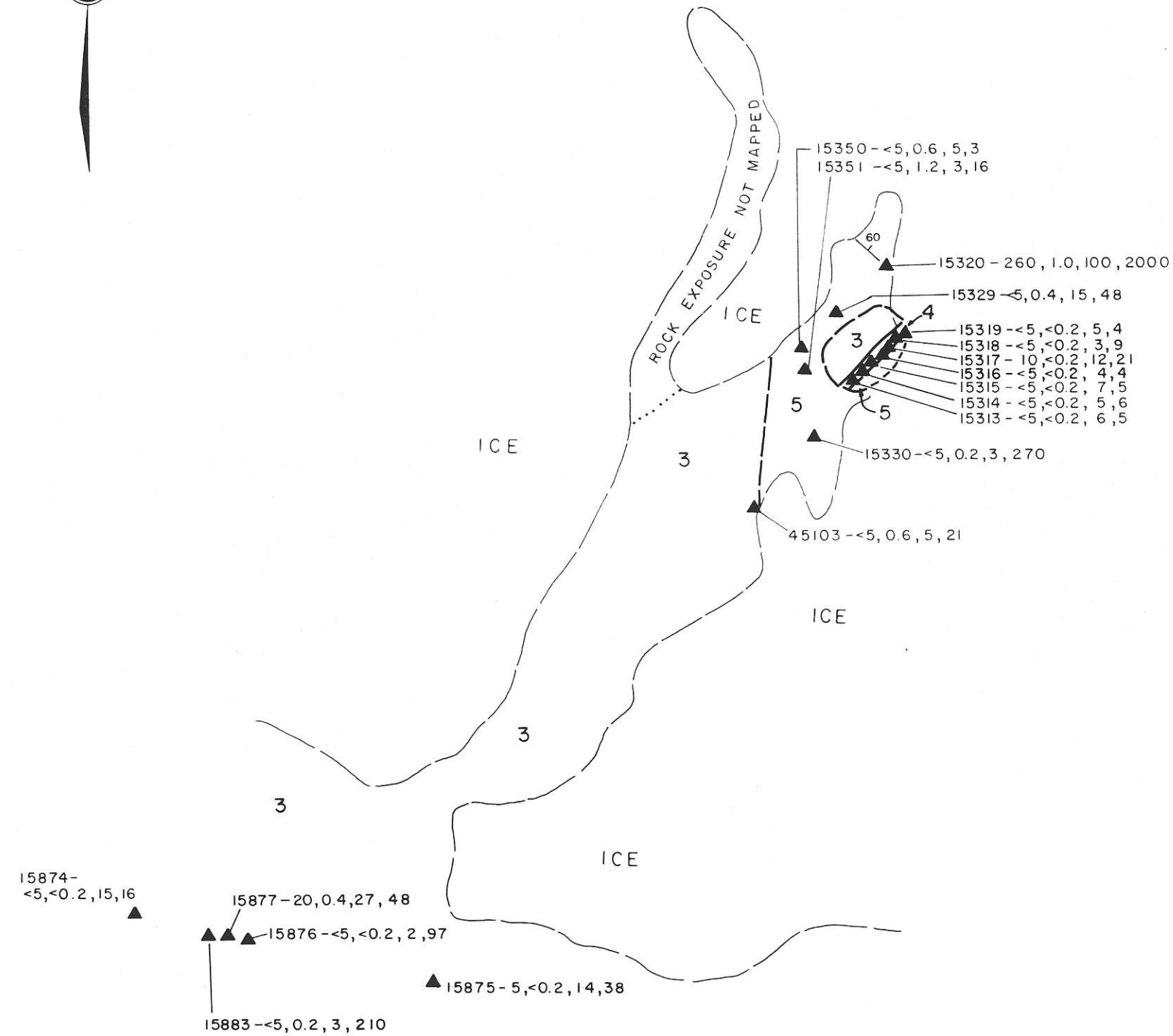
content varies from 1% to 50%, mostly disseminated but locally as massive quartz-pyrite veins and pods. Minor chalcopyrite along with malachite-azurite staining was noted. No anomalous gold values were received from rock samples taken from the zone but anomalous results were obtained in silver, copper and arsenic. Silver ranged from 0.4 to 8.8 ppm, copper from 32 to 2600 ppm and arsenic from 27 to 1400 ppm.

In addition to this zone, prospecting identified a dacite tuff boulder with a quartz-calcite vein fragment containing 1-2% massive tetrahedrite and 3-5% bornite. Sample 15395, a grab sample of this boulder assayed 3.05 oz/t silver and 5.63% copper. The area around the showing is underlain by sandstones, siltstones and argillites; and feldspar-hornblende prophyritic andesite (Atkins Porphyry). This likely represents the copper showing discovered by R.V. Kirkham while mapping this area in the 1960's.

Two contour soil lines, L5000 and TAL5000 on the VR-5, returned only weakly anomalous results. Some samples located close to the border of the property registered slightly elevated values of up to 70 ppb gold, silver up to 1.2 ppm, copper up to 130 ppm and arsenic up to 160 ppm.

#### Ball Pyrite Zone (TR-9 Claim)

This zone is underlain by black folded argillites and overlain by andesite pyroclastics (Figure 22). It trends north-northeast/south-southwest and dips moderately to the west over an exposed length of 60-70 m and a thickness of 8-10 m. The zone is comprised primarily of massive sericite; pyrite occurs as blebs and small balls, as well as fine disseminated grains, together with lesser amounts of



**LEGEND:**

TRIASSIC TO JURASSIC HAZELTON GROUP

MIDDLE JURASSIC

5 SALMON RIVER FORMATION - argillites

LOWER JURASSIC

4 MOUNT DILWORTH FORMATION - rhyolite to dacite

3 BETTY CREEK FORMATION - andesite tuff and lapilli tuff

..... LIMIT OF MAPPING

--- GEOLOGICAL CONTACT (defined, inferred)

60/ BEDDING STRIKE & DIP

▲ ROCK SAMPLE LOCATION

15319 - <5, <0.2, 5, 4  
 Assay Tag Au, Ag, Cu, As  
 No. (ppb) (ppm) (ppm) (ppm)



**OREQUEST**

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Figure 22  
 TREATY CREEK PROJECT  
 BALL PYRITE ZONE  
 GEOLOGY and  
 GEOCHEMISTRY  
 British Columbia  
 NTS: 104 B/9E

December 1989

Drafting: RWR

calcite, quartz and locally carbonaceous material. The overall pyrite content in the zone is 8-12%. The balls likely represent infilled vesicles in a rhyolite (?) flow. Although samples taken from this portion of the zone did not register anomalous gold values, its existence, is indicative of the potential for large mineralizing events in the area.

Outcrops of the Ball Pyrite Zone occur along a near vertical cliff with overhanging icefields rendering this a dangerous location to explore and should be given a low priority for follow up work.

#### Ridge Zone

A subcrop area of approximately 2000 square metres features numerous vein fragments containing up to 20% chalcopryrite, 50-60% galena, with minor pyrite, limonite, malachite-azurite and sphalerite (?). The vein fragments are arranged in several bands oriented northeast-southwest, perhaps indicating a series of underlying veins of this orientation. The area lies at the contact between andesite pyroclastics and sediments consisting of greywackes and impure limestone. Approximately 20-40 m to the northeast numerous pieces of float containing calcite-quartz stockwork veining were found. Five grab rock samples taken from the site returned the following gold values: 0.095, 0.034, 0.089, 0.112, 0.157 oz/t. Silver content in all samples was over 50 ppm (Figure 8).

About 200 m north of this showing (approximately on the property boundary) a 2 metre wide quartz-barite vein trending northwest-southeast was located containing galena, chalcopryrite, fine disseminated pyrite, minor sphalerite (?) and malachite-azurite staining. In places it is vuggy and contains abundant limonite and wad.

Two grab samples taken from the vein assayed 0.200 and 1.401 oz/t gold and over 50 ppm silver. A 2.0 m chip sample taken across the vein returned 0.190 oz/t gold and over 50 ppm silver (Figure 8).

These showings, although locally of high grade, are generally narrow (less than 1 m) and occur along a narrow ridge crest flanked on either side by ice fields, severely restricting exploration possibilities. The host rocks between the shear veins are quite unaltered and contain no visible sulphides. Follow up work in this area is therefore a low priority.

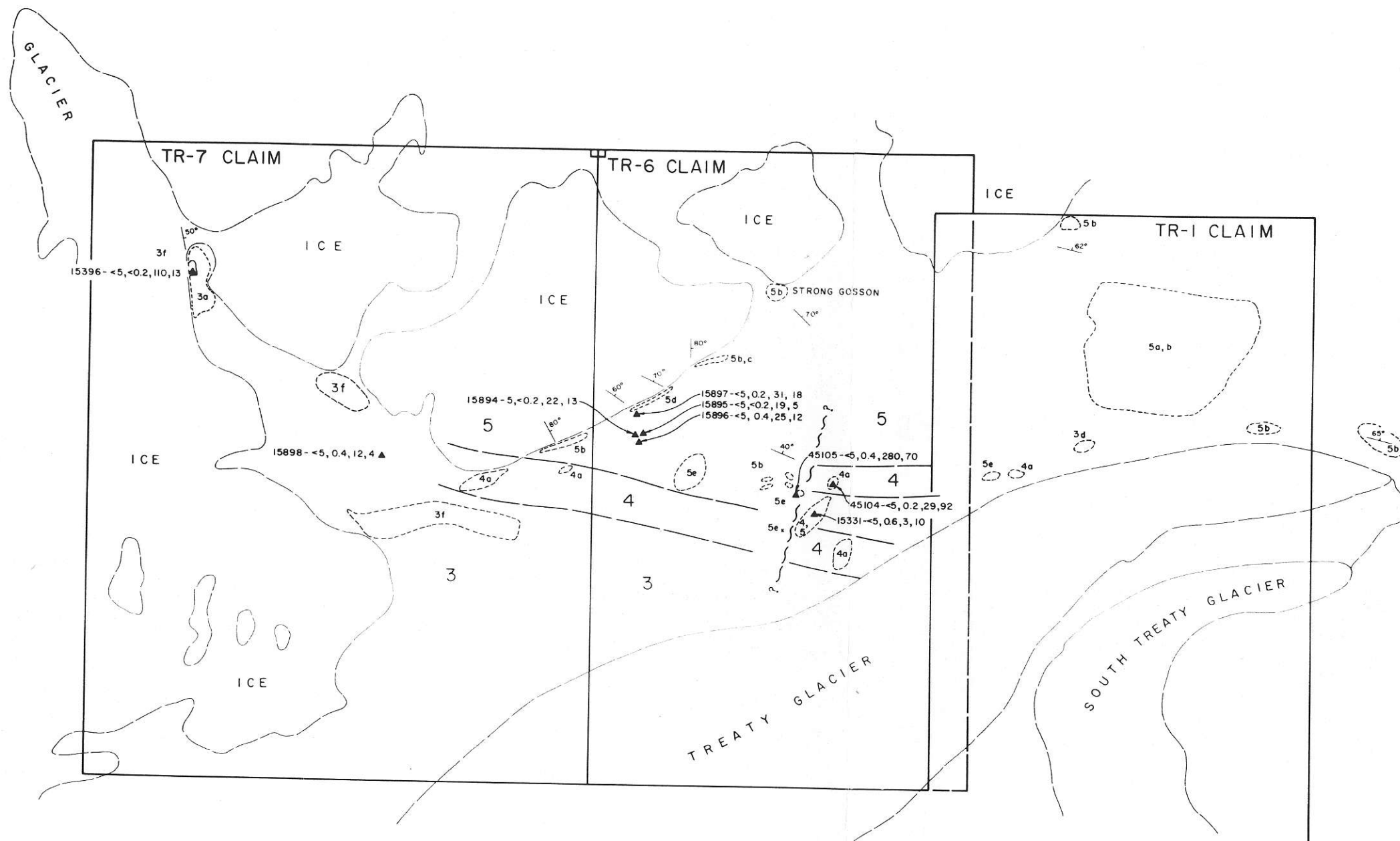
#### TR-1, 6 & 7 Claims

The area encompassed by these claims was briefly prospected and mapped. Much of the ground is a steep talus slope leading up to several small icefields at the higher elevations and down to Treaty Glacier at the base of the slope. Outcrops of the Mt. Dilworth Formation were found by the Treaty Glacier and at the southern edge of an icefield on the TR-7 claim. Tracing this unit proved difficult as it is either covered by talus or ice.

Only a few rock samples were collected during the surveys none of which yielded any anomalous results (Figure 23).

#### CONCLUSIONS AND RECOMMENDATIONS

The Phase I program of exploration was successfully completed on the Treaty Creek Project of Tantalus Resources Ltd. The bulk of the exploration program focused on the nunatak area of the property which contains the Konkin, Goat Trail, and Southwest Zones. Spectacular results from the Konkin Zone were obtained from



**LEGEND**

VOLCANIC AND SEDIMENTARY ROCKS  
TRIASSIC TO JURASSIC

MIDDLE JURASSIC: SPATSIZI GROUP  
5 SALMON RIVER FORMATION

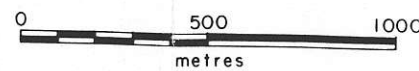
- 5b Rhythmically bedded siltstone
- 5c Thickly bedded sandstone
- 5d Limestone lenses
- 5e Andesite tuffs

LOWER JURASSIC: HAZELTON GROUP

- 4 MOUNT DILWORTH FORMATION  
Rhyolite to dacitic volcanics including  
dust, crystal, lithic and lapilli tuffs
- 4a Massive to bedded airfall tuffs
- 3 BETTY CREEK FORMATION
- 3a Massive, green and grey andesitic to dacitic tuff,  
lapilli tuff, tuff breccia and minor flows
- 3d Atkina Porphyry: hornblende and feldspar  
porphyritic andesite
- 3f Bedded, hematitic siltstone, sandstone,  
and conglomerate; locally fossiliferous

**SYMBOLS**

- Outcrop, small outcrop
- Bedding, inclined
- Geological contact
- Fault, assumed
- Rock sample location  
Assay tag no. - Au, Ag, Cu, As  
(ppb) (ppm) (ppm) (ppm)
- Legal corner post



**OREQUEST**  
TANTALUS RESOURCES LTD.

Figure 23  
TREATY CREEK PROJECT  
TR 1, 6 & 7 CLAIMS  
GEOLOGY and  
ROCK GEOCHEMISTRY  
British Columbia  
NTS: 104 B/9E

1987 and 1988 work programs and encouraging assays came from the Goat Trail and Southwest Zones.

Work this year was designed to follow up and expand on these zones with reconnaissance exploration on the remainder of the claims. Trenching, chip sampling, VLF-EM and magnetometer surveys, and diamond drilling were completed on the Konkin Zone. These surveys attempted to further define and trace the chlorite-epidote-gold horizons which host the best gold mineralization yet found on the property. Trenching returned maximum values of 0.153 oz/ton gold over 1.0 m. Chip sampling of three alteration zones proximal to the Konkin Gold Pit gave a high of 760 ppb gold. The geophysical surveys did not produce any recognizable signature over the Konkin zone which could be used as an aid to further trace mineralization or structural trends. Four diamond drill holes totalling 381.83 m were completed to test the chlorite epidote-gold horizons with one hole testing the three subparallel alteration zones within the Konkin Zone.

Intersections of up to 1.5 m of semi-massive pyrite were recorded from the drilling on the Konkin Zone. The best results were received from hole TA89-3 which assayed 0.138 oz/t gold over 4.09 m, including 1.8 m of 0.249 oz/t gold. This correlates with the surface expression of a shallow dipping zone of chlorite-epidote alteration containing 10 to 50% pyrite and trace chalcopyrite. Elevated gold values were encountered over wide intervals in the sulphide zones in holes TA89-2, 3 and 4. Hole TA89-2 averaged 253 ppb gold over 30 m from 39.00 to 69.00 m TA89-3 averaged 310 ppb gold over 38 m from 71.00 m to 109.00 m and TA89-4 averaged 710 ppb gold over 18.7 m from 47.70 m to 66.39 m.

Topographic conditions on the Goat Trail and Southwest zones necessitated rappel traverses to acquire continuous chip samples. These zones represent the northeast and southwest extremities respectively of an alteration feature that ranges up to 100 m in width and can be traced discontinuously along the length of the nunatak, approximately 2.5 km. Sample results of up to 0.127 oz/t gold with 4.78 oz/t silver, over 2.0 m and 0.287 oz/t gold over 3.4 m were collected from the Goat Trail and Southwest Zones respectively. Sampling of the Southwest Zone also produced arsenic anomalies in the tens of thousands (88,000 ppm arsenic #45338) of ppm associated with the high gold values.

Property wide mapping, prospecting and sampling located several other zones of mineralization. The Treaty Gossan which is a 1 square kilometre area of intense sericite-limonite alteration was partially rock, soil and silt sampled in conjunction with mapping. Results of up to 0.038 oz/t gold were received from grab samples of the gossan.

A Phase II program is warranted on the Treaty Creek property in light of the encouraging results received from the 1989 field program. This would involve additional drilling on the Konkin Zone to further define the attitude and strike extent of the mineralization associated with the Konkin Gold Pit. Additionally drilling should be carried out on both the Goat Trail and the Southwest Zones to identify the source of the strong gold values identified by the rappel traverses.

Regional follow up on anomalies generated in other areas of the property should focus on the Treaty Gossan as the priority target, with the other showings to be examined as time and resources permit. The estimated costs for this program are \$500,000.

BUDGET ESTIMATE

Mob/Demob	\$ 10,000
Personnel	60,000
Camp Support	30,000
Transportation	10,000
Drilling 2500 m 2 \$100/m	250,000
Analyses	20,000
Geophysics	15,000
Contingencies @ 10%	<u>39,500</u>
Subtotal	\$434,500
Prime Management Fee @ 15%	<u>65,000</u>
Total	<u>\$500,000</u>



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### STATEMENT OF QUALIFICATIONS

I, Jim Chapman, of 580 West 17th Avenue, Vancouver, British Columbia hereby certify:

1. I am a graduate of the University of British Columbia (1976) and hold a BSc. degree in geology.
2. I am presently employed as a consulting geologist with OreQuest Consultants Ltd. of 306-595 Howe Street, Vancouver, British Columbia.
3. I have been employed in my profession by various mining companies since graduation.
4. I am a Professional Geologist with the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
5. I am a Fellow of the Geological Association of Canada.
6. The information contained in this report was obtained from a review of data listed in the bibliography, a property examination and knowledge of the area.
7. I have no interest, direct or indirect in the securities of Tantalus Resources Ltd.
8. I consent to and authorize the use of the attached report and my name in the Company's Prospectus, Statement of Material Facts or other public document.

Jim Chapman  
Consulting Geologist

DATED at Vancouver, British Columbia, this 8th day of January, 1990.

APPENDIX A

DRILL LOGS

SEE PHASE II