NORTHERN TERRITORY GOLD MINES NL

RENNER SPRINGS PROSPECT - EL 5745

ANNUAL EXPLORATION REPORT

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1.0 - Summary

EL 5745 encloses folded mid-Proterozoic clastic sedimentary rocks of the Tomkinson Creek Beds subdivision of the Tennant Creek Inlier.

An examination of the prospect showed that the central and eastern sectors were occupied respectively by a 3 km wide belt of massive quartz sandstone, and a broad, black-soil covered plain underlain by Cambrian flow basalts. Both conceptually and by examination these areas are considered to have no mineral potential.

The western sector encloses the eroded core of a small anticlinal dome within which a siltstone and shale unit that lies stratigraphically below the sandstone is occasionally exposed. An examination of this unit for auriferous quartz veining associated with axial plane shearing was unsuccessful.

Samples of the shale/siltstone unit were tested for base metals, but with no anomalous results. It was determined that the host rocks were deposited in a shallow marine or littoral environment, with no evidence to date for volcanic members, rendering the setting unfavorable for syngenetic base metal deposits.

No further work is recommended for the prospect.

2.0 - Tenement

The Renner Springs prospect consists of a single Exploration Licence EL 5745, comprising 37 minute blocks with a total area of some 120 square kilometres, and shown on Helen Springs tenement Sheet 46/1.

The licence is registered in the name of Lone Pine Gold Pty Ltd, and was granted on 12th May 1988 for a period of six years.

During 1988-89 EL 5745 was evaluated by Northern Territory Gold Mines N.L. on behalf of Lone Pine Gold with the intention of possible acquisition.

3.0 - Location and Access

The tenement is situated 150 km north-northwest of the town of Tennant Creek in the central Northern Territory of Australia.

EL 5745 is located near the Stuart Highway immediately east of the Renner Springs roadhouse, which provides a convenient base with accomodation, fuel and telephone services.

The prospect lies within the Helen Springs pastoral lease, and is

leading from the Stuart Highway. As many lie on black soil plains however, their use is limited to dry weather conditions.

The central portion of the Exploration Licence is occupied by a broad belt of quartz sandstone, with bouldery outcrop and thick kerosene bush scrub making this area inaccessible to vehicles.

4.0 - Geology

The geology of the prospect and its regional setting is shown on the HELEN SPRINGS 1:250,000 sheet (SE/53-10), published by the Bureau of Mineral Resources.

EL 5745 encloses a sequence of folded sandstones and siltstones assigned to the mid-Proterozoic Tomkinson Creek Beds of shallow marine sediments which comprise the northern sector of the Tennant Creek Inlier. The Tomkinson Creek Beds unconformably overlie the early Proterozoic Warramunga Group turbidites, cherts and felsic volcanics which outcrop in the Tennant Creek area some 150 km to the south, and host the major gold deposits of that area.

The Tomkinson Creek Beds have not been studied in detail, and mapping by the BMR to date has been confined to lithological subdivision only, with no attempt at definition of a stratigraphic column beyond the recognition of a basal unit named the Hayward Creek Formation which outcrops on the TENNANT CREEK sheet (SE/53-14). The Tomkinson Creek Beds are technically a lithological group in their own right, and a stratigraphic subdivision will no doubt be carried out in due course.

The Tomkinson Creek Beds occur as a broad belt of low-lying hills and dissected valleys known as the Ashburton Ranges, which outcrop above flat-lying plains underlain by Palaeozoic and Mesozoic platform sediments of the Wiso and Georgina Basins. On HELEN SPRINGS the Tomkinson Creek Beds reach outcrop widths in excess of 60 km, and have been subdivided and mapped on compositional grounds as fine-grained sandstones, coarse-grained to conglomeritic sandstones, siltstones, and subordinate calcareous sediments.

The succession is folded into several large, upright folds with amplitudes of several kilometres along axial planes trending north to north-northwest. Gentle cross-folding has produced a series of gentle anticlinal dome and synclinal basin structures, both of which have been extensively disrupted by major strike-slip faults and lesser transverse faulting.

Within EL 5745 the Tomkinson Creek Beds are represented by two prominent units, the major one being a white, massively bedded, fine-grained quartz sandstone which outcrops as a belt up to 3 km wide along the centre of the tenement, and is folded about the nose of a north-plunging anticlinal fold to the north. This main

sandstone unit is underlain by a poorly exposed unit of siltstones, shales and subordinate sandstones which outcrop occasionally in the core of the anticline where they have been exposed in the erosional basin of the Renner Creek system (see Plate 1).

In the eastern sector of EL 5745 the sandstone is unconformably overlain by basalts and basal sandstones and breccias of the Cambrian Helen Springs Volcanics. This unit occupies a broad synclinal trough in the Proterozoic basement, and is largely overlain by Quaternary black soils.

5.0 - Mineralization and Exploration History

There is no known mineralization within EL 5745, the nearest in the vicinity being some small manganese shows associated with lateritized carbonaceous sediments some 16 km to the west of the prospect.

The Tomkinson Creek Beds to the west and southwest of EL 5745 have been unsuccessfully explored for base metals by Clifford Minerals Limited in the early 1980's. This work was based on a proposition that the Tomkinson Creek Beds represented a western extension of the McArthur Basin, and comprised an exploration target for base metal deposits similar to the HYC deposit at McArthur River.

6.0 - Northern Territory Gold Mines N.L. - 1988-89 Work Programme

EL 5745 was acquired on the basis of a proposal that the folded Proterozoic sedimentary rocks of the Tomkinson Creek Beds had some potential to host auriferous quartz veining along anticlinal fold axes similar to that of the South Alligator Group of the Pine Creek Geosyncline.

As the only structure in the tenement with any potential in this regard was the eroded siltstone unit at the core of the anticline, this area was examined for outcropping quartz, or quartz float along the bed of the Renner Creek system and its tributaries.

This search was unsuccessful, with no observation of quartz material except for some minor stringers associated with lightly sheared siltstones at sample location 321063.

With no visible evidence for lithologies favorable for gold mineralization, consideration was given to a base metal potential within the siltstone unit which represented the best conceptual host for mineralizaton on both lithological and structural grounds. This area was tested by sampling of both creek bed boulders and outcrop, with an emphasis on potentially gossanous material. A total of 15 samples (321054 to 321068) were collected and assayed for Au, Cu, Pb, Zn and Ag.

7.0 - Discussion of Results

The central and eastern sectors of EL 5745 consist respectively of a 3 km wide belt of massive quartz sandstone, and a broad black-soil plain underlain by flat-lying Cambrian basalts of the Helen Springs Volcanics. Both conceptually and by field examination these areas are considered to have no mineral potential.

The western sector of the tenement encloses the eroded core of the anticlinal structure described earlier, within which a siltstone and shale unit which lies stratigraphically below the sandstone is occasionally exposed.

The unit was examined for quartz veining, but as mentioned above, none of significance was observed.

Ten rock-chip samples of potentially gossanous material from this area were tested for gold as well as for syngenetic base metal mineralization. The assay results (Appendix-1) indicated only average background levels of Cu, Pb, Zn and Ag for the rocks in question.

8.0 - Conclusions and Recommendations

Conceptually the folded siltstone unit within EL 5745 could host auriferous quartz veining if other parameters are satisfied. An example might be the presence of gold in association with banded iron formation at a lower stratigraphic level of the Tomkinsom Creek Beds, and a granite intrusion in the vicinity that may have provided a heat source as well as a source of hydrothermal fluids, permitting a remobilization of gold upwards into structurally and lithologically favorable sites. Such parameters cannot be demonstrated within the local geological setting, hence the lack of quartz veining is expected.

Syngenetic copper-lead-zinc mineralization may occur in association with shales if the latter were deposited in anaerobic conditions, i.e. in a reducing, deep marine environment, with a metal contribution to the system from concurrent volcanism elsewhere in the sedimentary basin. The Tomkinson Creek Beds by contrast are consistent with deposition in a shallow marine to littoral environment, and there is no evidence to date for any volcanic rocks within their stratigraphy.

In the absence of either real or conceptual evidence for gold or base metal mineralizaton in EL 5745, no further work is recommended.

9.0 Expenditure

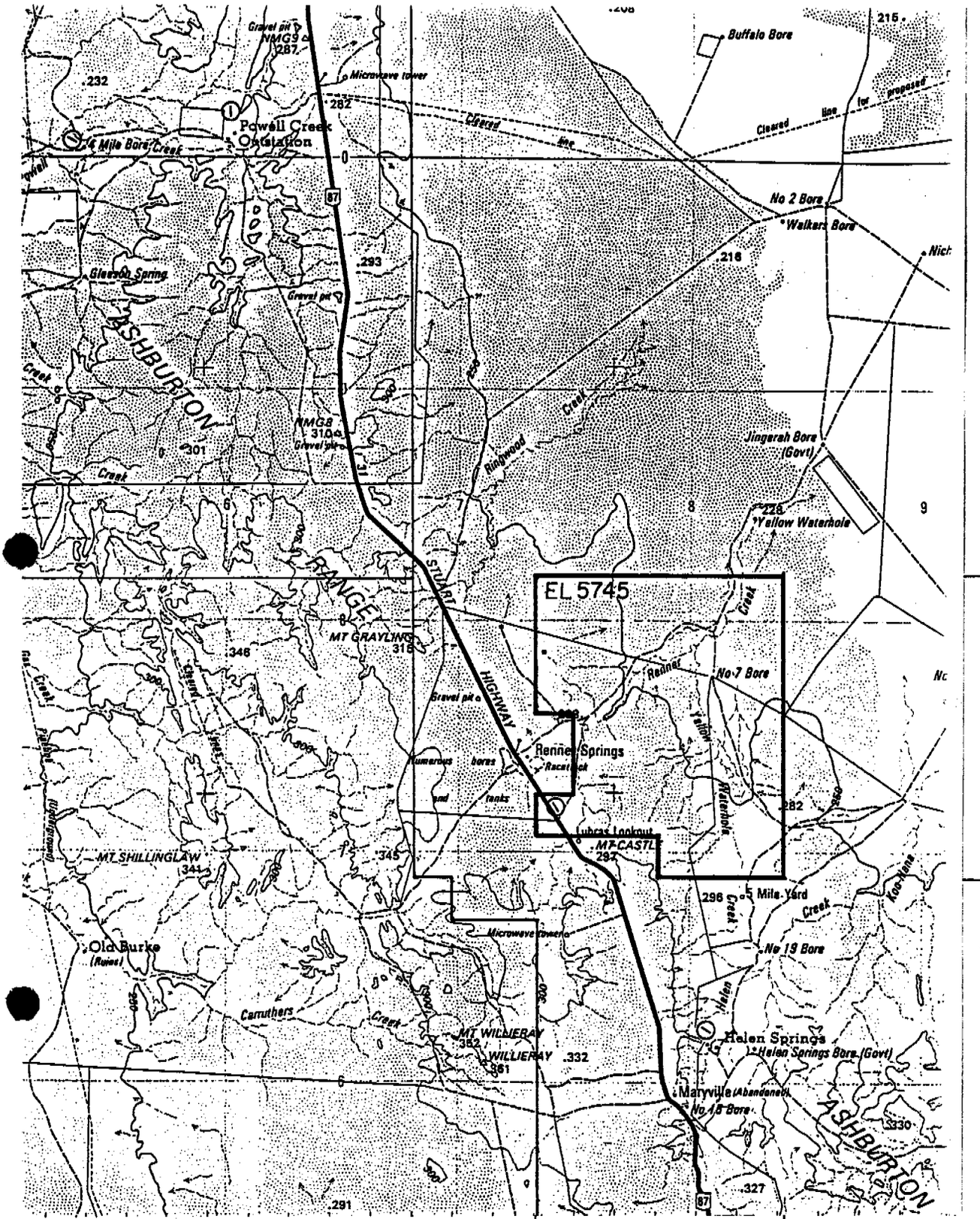
	$
Geologist	1,750.00
Field Assistant	700.00
Accommodation/meals	1,200.00
Vehicles	720.00
Fuel/Services	280.00
Assays	450.00
Reports/drafting	1,170.00
Overheads	758.50
Total	7,348.50

APPENDIX 1

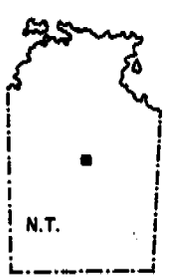
Appendix - 1

Sample Inventory

Sample No.	Description	Au	Cu	Pb	Zn	Ag
321054	Ferruginous siltstone breccia (float)	0.036	10	5	25	<0.05
321055	Sheared pale grey siltstone (outcrop)	0.036	10	5	100	<0.05
321056	Foliated pale brown siltstone (outcrop)	0.060	25	5	15	<0.05
321057	Laterite	0.036	10	40	5	<0.05
321058	Ferruginized basalt (Cambrian)	0.048	15	20	60	<0.05
321059	Ferruginized basalt (Cambrian)	0.048	40	10	15	<0.05
321060	Ferruginized shale below laterite.	0.024	5	<5	10	<0.05
321061	Laterite	0.048	5	25	15	<0.05
321062	Ferruginized shale	0.036	15	35	<5	<0.05
321063	L. grey brecciated siltstone with minor quartz stringers.	0.036	10	5	75	<0.05
321064	Ferruginized shale below sandstone contact.	0.036	10	15	5	<0.05
321065	Lateritized micaceous siltstone.	0.036	10	15	5	<0.05
321066	Ferruginized basalt (Cambrian)	0.040	30	5	10	<0.05
321067	Ferruginized shale	0.024	10	<5	15	<0.05
321068	Ferruginized shale	0.024	10	<5	20	<0.05



Scale 1 : 250 000

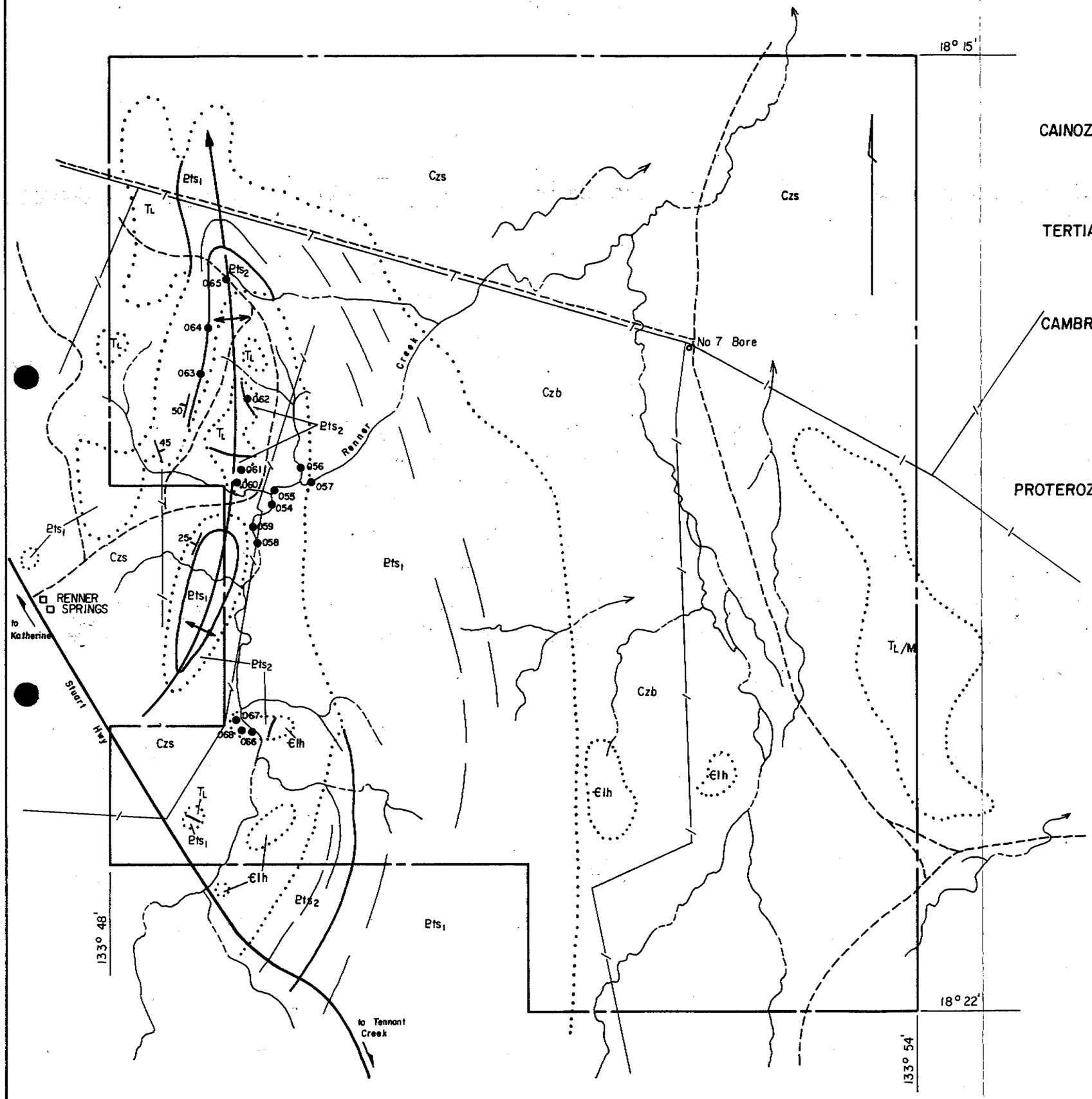


NORTHERN TERRITORY GOLD MINING N.L.

LOCATION MAP

RENNER SPRINGS EL 5745

FIGURE 1



LEGEND

CAINOZOIC

- Czs — Sand, sandy soils, alluvium
- Czb — Black / grey sandy soils

TERTIARY

- T_L — Laterite, lateritic soils
- T_L/M — Laterites over Cretaceous Mullaman bed sandstones

CAMBRIAN

- €lh — Helen Springs Volcanics. Lower Cambrian flow basalts. Includes unit of broad sandstones, conglomerates and breccias.

PROTEROZOIC

- Ets — Tomkinson Beds. Lower Proterozoic sedimentary sequence
- Ets_1 — Sandstone. White, massively bedded, silicified quartzite. Fine to coarse grained, often conglomerate at base
- Ets_2 — Siltstone; minor shales. Underlie Ets_1

- 055 — Sample location and number, prefixed 321
- Anticline
- Geological contact
- Outcrop boundary
- 45 — Bedding strike and dip
- Trend lines
- Track
- Drainage, fence

Scale
0 1 2 Km
1 : 50 000

NORTHERN TERRITORY GOLD MINING N.L.

GEOLOGY AND SAMPLE LOCATION

RENNER SPRINGS EL 5745

PLATE I