ANNUAL REPORT ON
THE MINING AND EXPLORATION ACTIVITIES IN ERL 83,
HOWLEY PROJECT AREA – 1989/90

by R. Russell

for

Metana Minerals N.L.

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# FIGURE

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# ENCLOSURE

**ENCLOSURE 1**  
SUMMARY

The ERL 83 is a lease in the central part of Metana's Howley Project Area where mining of gold bearing alluvial gravels has been carried out since 1986. The ERL covers drainage systems shedding northeastward off the mineralised Howley Anticline. Field mapping, costeaging and pan sampling have generally indicated that most of the gravels in the two main creek systems in the ERL (informally named 'Horse Creek' and 'Army Creek') are auriferous while the thinner gravels in small tributaries in the ERL are barren or sub-economic. The best prospects were identified by geomorphological analysis in the deeper parts of the two main creeks (Enclosure 1). During the year 1989-90, bulk sampling, road building and maintenance have been the main activities.

Three bulk samples totalling 6,000 LCM's were taken from two pits in the ERL over the past year (Enclosure 1). At $5 per LCM, the total cost of the sampling is estimated at $30,000. This report summarises the past years work in ERL 83 (1989/90). It provides some background information on the Howley Project Area, and gives details of the gravels in the ERL.
2 INTRODUCTION

The Howley Project Area is situated about 30km southeast of Adelaide River on the Stuart Highway (Fig. 1). It consists of a group of Exploration Leases, Mining Leases and Claims held by Northern Gold N.L. Metana Minerals have negotiated a production agreement with Northern Gold for the alluvial mining rights. Alluvial mining began in 1986 using a 100 cubic metre per hour plant situated about 1km east of Chinese Howley. Ore was run through the plant which had been mined from mining claims in close proximity to the plant site. In 1987, a second 100 cubic metres per hour plant was added giving an annual mining capacity of 800,000 cubic metres. Exploration for more gravels in the surrounding EL's has continued and mining has been carried out on Mining Claims further from the plant site. Bulk testing of gravels from Exploration Leases has continued.

The ERL 83 is a lease in the central part of the Howley Project Area (Fig. 1) which was originally part of the much larger EL 4737. The ERL lies about 2km east of the hard rock deposits on the mineralised crest of the Howley Anticline at Chinese and Big (Metro) Howley. Much of Metana's earlier mining activities were concentrated on the alluvial gold sheddng eastward from Chinese Howley into Plant Creek to the southwest of ERL 83. Metana's original pan sampling and geomorphological evaluation indicated that good gold grades in Plant Creek probably extended into the creeks to the northeast in ERL 83. The main creeks in the ERL are Horse and Army Creeks and although the coarse gravels are buried beneath silt, costeaneing and bulk sampling indicate that much of the gravel in the ERL contain economic gold grades.

3 GRAVEL DEPOSITS IN ERL 83

Initial photo-mapping was based on 1:15,000 colour air photographs and was carried out as part of an overall survey covering the whole Project Area. The photo-mapping focussed on fluvial geomorphological features and the mapping was carefully checked in the field and corrected where necessary. The mapping shows creek systems draining northeastward and southwestward off the Howley Ridge. The major drainages swing northward as they move away from the main ridge into the Howley Creek to the east and Bridge Creek to the west. From the mapping and a detailed examination of the gravels in costeane exposures and in creek incisions, it has been concluded that the alluvial deposits are poly-cyclic with two main phases of deposition:

i) An early alluvial phase in which a thick layer of coarse, poorly sorted material was deposited. Matrices are clay-rich and the gravels are indurated and compact. Gold occurs throughout the profile but the best results are obtained on or near the floor. Grades of 0.6 LCM
have been obtained in this material. Most of the gravels on the floor of the main creeks in ERL 83 probably consist of this material. They have been generally compacted by lateritisation.

ii) A later fluvial phase in which a thinner, better sorted layer of gravels was laid down. These materials are lighter and more rounded than the older gravels, matrices are sandy and the gravels are loosely compacted. Good gold grades are panned from the contact between the upper and lower gravel layers (about 0.3 to 0.6 g/LCM) but higher in the upper gravel layer, the grades drop off. Most of the surface gravels in the upper reaches of the creeks in the ERL consist of this material and belong to the later fluvial phase. They are generally sub-economic or completely barren.

4 EXPLORATION AND MINING

The bulk of the work in ERL 83 in the year 1989/90 involved bulk sampling in order to test gold grade in the upper (southwest) part of the ERL. Costeaning and sampling done in the past years in ERL 83 showed that a thick layer of heavy, mudflow type gravels occurred at the bottom of the gravel profile in the two creek systems (Enclosure 1). The main Army creek channel bifurcates in the southwest part of the ERL and a distributary spills over the (present) watershed eastward into Horse Creek. This spillway contains high grade gravels and one of the exploration pits excavated in 1990 was located here (Pit A, Enclosure 1).

Two samples were taken from Pit A. An upper sample was taken from the top 1.5 metres and a second sample from the bottom 1.5 metres. Each sample was about 1,500 LCM's. A third sample was excavated from the shallower gravels in Pit B and a total of 3,000 LCM's was taken here. The samples are being processed at present and gold grades are not yet available. At a cost of extraction of about $5 per LCM, the total cost of the sampling is about $30,000.