ANNUAL REPORT ON THE MINING ACTIVITIES IN
THE EXPLORATION LEASE EL 4736,
HOWLEY PROJECT AREA.
1988/89

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for
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ENCLOSURE 1 Alluvial Mining Operations, 1988 to 1989, EL 4736, Howley Project Area.
1 SUMMARY

The EL 4736 is a large lease in the south of Metana's Howley Project Area where mining of gold bearing alluvial gravels has been carried out since 1986. The EL covers drainage systems shedding southwestward and northeastward off the mineralised Howley Anticline. Field mapping, costeaining and pan sampling have generally indicated that most of the gravels are barren or sub-economic in the central and southern part of the EL which is surprising given that Cosmo Howley, the most mineralised section of the anticline, is enclosed by the EL. The best prospects were identified on Army Creek, a major modern drainage system on the northeast side of the Howley Ridge in the north of the EL. During the past year, two major bulk samples have been taken from this drainage system within EL 4736 to test grade. A total volume of 16,000 LCM's were extracted.

This report summarises the past years work in EL 4736 (1988/89). It provides some background information on the Howley Project Area, gives some details of the gravels in the EL and presents a breakdown of the bulk samples taken from Army Creek together with costings.
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 such as the work described in this report.

The EL 4736 is a large lease in the southern part of the Howley Project Area (Fig. 1). The EL encloses the Cosmo Howley hardrock gold deposit (Dominion Mining). However, pan sampling has indicated that very low grade alluvial gravels are shedding from this source. Generally, the southern parts of the Howley Anticline appear to produce barren or low grade gravels and it is only to the north in the Chinese Howley area, that the gold mineralisation becomes a good source for alluvial gold. Paradoxically, Cosmo Howley in the southern part of the anticline is, to date, the only economically viable hardrock deposit on the Howley trend.

3 GRAVEL DEPOSITS IN EL 4736

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 costean 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 Army Creek channel in the north of EL 4736 consists of this material. It has been generally compacted by laterisation.

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 lower reaches of the creeks in the EL consist of this material and all of the gravels in the upper headwaters belong to the later fluvial phase.

4 MINING ACTIVITIES

Mining activity in the past year (1988/89) has been carried out in Army Creek in the north-central part of the EL. Two bulk samples were extracted (Table 1) in which a total of 16,000 LCM's were tested at an average grade of 0.35 g/LCM. Permission for the extraction of the bulk samples was obtained in 1986 but due to operational difficulties the samples have only been taken this year. The location of the bulk sample sites is indicated on Enclosure 1.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Volume LCM's</th>
<th>Grade</th>
<th>Cost $</th>
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<tbody>
<tr>
<td>1</td>
<td>8 344</td>
<td>0.307</td>
<td>100,128</td>
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<tr>
<td>2</td>
<td>7 656</td>
<td>0.4</td>
<td>91,872</td>
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<tr>
<td>TOTAL</td>
<td>16 000</td>
<td>0.35</td>
<td>192,000</td>
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