ANNUAL REPORT ON THE MINING ACTIVITIES IN
MCN 745 AND 746, HOWLEY PROJECT AREA - 1989/90.

by R. Russell
for
Metana Minerals N.L.

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1 SUMMARY

The Mining Claims MCN 745 and 746 cover part of a northeast trending palaeochannel on the east side of the Howley Ridge downslope from Chinese Howley. The palaeochannel probably dates from the Pleistocene and contains gold bearing gravels derived from quartz veins in the Chinese Howley area. The gravels in the bottom of the channel were probably emplaced by mudflows while the later gravels are of fluvial origin. The orebody is covered by a layer of silt up to 1 metre thick. The total volume of gravels remaining in the claims are 25,000 BCM 'probable' and 15,000 BCM 'possible'. 70,000 LCM have been mined in the two claims at a grade of 0.3 g/LCM.
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 such as the MCN's 745 and 746. The claims cover a palaeochannel which flowed eastward from the Howley Ridge. This report deals with exploration and evaluation in the MCN's in the year 1989 to 1990.

GRAVEL DEPOSITS IN MCN's 745 and 746

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 geomorphological features and the mapping was carefully checked in the field and corrected where necessary. The mapping shows a palaeochannel running northeastward through the Mining Claims informally named the 'Army Creek' channel. 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 material in the lower part of the profile in the Army Creek palaeochannel consists of this 'old' material.

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.
ALLUVIAL OREBODY IN MCN's 745 and 746

Exploration in the general area of MCN's 745 and 746 began in 1986 with detailed air photo interpretation at a scale of 1:15,000 as mentioned above. The photo-maps were field checked and photo-enlarged to form a base map, a section of which is reproduced in Fig. 2. The work in the claims under discussion has been carried out as part of the wider exploration programme in surrounding leases in the Howley project area.

The initial photo-mapping and pan sampling of gravel exposures suggested that the main northeast flowing palaeochannel bifurcates immediately west of the Stuart Highway as it crosses MCN's 745 and 746 (Fig. 2). The northern part of the channel follows approximately the alignment of the modern Army Creek while the southern part flows northeastward into the Horse Creek valley. Costean excavations were carried out both upstream and downstream of the claims (see reports on ERL 83, 15/8/88, and MCN 1175). These costeans generally confirmed that deep, gold bearing gravels occur in MCN 745 and 746 in excess of 1.75 metres deep below a surface silt layer of up to 1 metre thick. The palaeochannel runs through the central parts of the mining claims. Exploration work has shown that beneath the silt, a bedrock high forces the channel to bifurcate. The best volumes and grades are found on the northern side of the high in MCN 745.

VOLUME, GRADE AND MINING ACTIVITY

Estimates of the volume of the gravels and the gold grade are based on the work done in surrounding claims and from the mining and costeining within the two claims. From the results of the mining, we are confident that the grades for the entire orebody in the two MCN's average close to 0.3 gms per loose cubic metre. Volume of gold bearing gravel in the MCN's is divided into three categories as in Table 1. They are, the volume of gravels mined in the year 1989-90, the probable volume still to be mined and the possible reserves requiring further exploration. These values are given in Table 1 and the location of the orebody is shown on Fig. 2.

<table>
<thead>
<tr>
<th>Mined Volume</th>
<th>Probable Resource</th>
<th>Possible Resource</th>
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<tr>
<td>70,000 LCM</td>
<td>25,000 BCM</td>
<td>15,000 BCM</td>
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Fig. 2  Gravel Deposits in MCN 745 and 746