WATER DIVISION
Investigation Branch
Groundwater Section

BORE COMPLETION REPORT
BORE 23490
GAMARDIE OUTSTATION

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HYDROGEOLOGIST
DECEMBER 1985

7:KARP
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Registered Bore No. 23490

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Registered Bore No. 23490

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Registered Bore No. 23490

DISTRIBUTION

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Department of Community Development
Darwin

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Water Division Bore Data File

1
1. INTRODUCTION

This report provides details of construction and pumping recommendations for a bore drilled on Gamardie outstation.

The outstation is situated 418 km east of Darwin at AMG co-ordinates 611-502 (Milingimbi 1:100 000 sheet 5873).

Bore 23490 was drilled and was successful.

The work was carried out in November 1984 on behalf of the Department of Community Development and involved preliminary investigation, construction and testing of the production bore.

2. HYDROGEOLOGY

The outstation is located in the northern part of the Arafura Basin. It is covered by the Elcho Island Formation of the Upper Proterozoic age consisting of flaggy micaceous glaucanitic sandstone interbedded with friable medium-grained white quartz sandstone.

3. RESULTS

Bore 23490 was drilled and constructed with steel casing and stainless steel screen.

A twenty-four hour constant discharge test and a recovery test were conducted and water samples taken.

The water quality is considered suitable for human consumption.
4. RECOMMENDATIONS

Recommendations for pumping

The recommendation for pumping of the bore are presented in the table below.

<table>
<thead>
<tr>
<th>BORE</th>
<th>MAX. CONTINUOUS PUMPING RATE</th>
<th>MAX. PUMP SETTING BELOW GROUND LEVEL</th>
<th>MIN. INTERNAL BORE DIAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>23490</td>
<td>1.0 L/s</td>
<td>45.0 m</td>
<td>127 mm</td>
</tr>
</tbody>
</table>

These recommendations are based on available hydraulic and hydrologic data considered safe, but not conservative.

Exceeding the pumping rate will fork the bore which may lead to pump problems.

Recommendations for finishing and protecting of bores

Attention to the following points will ensure a long and safe life for the bore supply and help prevent pollution of the groundwater resource.

(1) Construct a concrete apron around the bore-head approximately 2 m in diameter.

(2) Prevent drainage of surface flow and waste water to the bore in the vicinity of the bore.

(3) Prevent spillage of fuel and oil on the ground around the bore.

(4) First tap on the pipeline should not be less than 5 m from the bore-head.

(5) Seal the space between casing and pump equipment to prevent ingress of vermin, dirt and pollutants.

(6) If the bore should be no longer required, the casing is to be securely capped and the bore backfilled.

(7) Maintain pumping equipment in good order to prevent pollution.

In addition, please ensure that the BORE IDENTIFICATION TAG is retained securely when the bore is equipped. This is best done by setting the bore cap into the concrete surround when it is cut off to allow equipping of the bore.

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PUMPING PERFORMANCE CURVE
THIS DIAGRAM SHOWS THE EXPECTED DECLINE OF GROUNDWATER LEVEL AT VARIOUS PUMPING RATES (Q). IT PROVIDES A GUIDE TO SELECTION OF PUMP SETTING.

TIME

DEPTH FROM GROUND LEVEL (m)

SWL 12.20m FROM TOP CASING
0.60m ABOVE GROUND LEVEL

MAXIMUM PUMP SETTING 45m

PUMPING PERFORMANCE - BORE 23490
DEPARTMENT OF TRANSPORT AND WORKS
WATER DIVISION

WATER ANALYSIS
Department of Transport & Works,
Water Division, Darwin, N.T.

LOCATION AND DETAILS
GARMS GUSTATION WATER SAMPLE IN 23490 DEPTH 45m BOREHOLE TEMP 30 DEG TEMP 10 COOR JD 11011152

Prepared water used: Distilled, Starch, Improver, other (specify)

ANALYSIS - PHYSICAL
- pH 5.6
- Colour (HAAS units)
- Specific conductance
- Turbidity (NTU's)
- Total dissolved solids
- Suspended solids (mg/L)

ANALYSIS - CHEMICAL (mg/L)
- Sodium, Na 5
- Chloride, Cl 6
- Potassium, K < 3
- Sulphate, SO4 7
- Calcium, Ca 3
- Nitrate, NO3 < 1
- Magnesium, Mg 1
- Bicarbonate, HCO3 16
- Carbonate, CO3 12
- Total Alkalinity (as CaCO3) 13
- Fluoride, F < 0.1
- Iron, Fe 2.4
- Orthophosphate, PO4 8
- Silica, SiO2 19

ANALYSIS - ADDITIONAL (mg/L)
- Copper, Cu
- Lead, Pb
- Arsenic, As
- Manganese, Mn
- Zinc, Zn
- Cadmium, Cd
- Cadmium, Cd

THE SAMPLE AS ANALYSED COMPLIES WITH NORTHERN TERRITORY DRINKING WATER STANDARDS AS RECOMMENDED BY THE NORTHERN TERRITORY DEPARTMENT OF HEALTH.

With suitable treatment the iron concentration may be lowered to an acceptable level. With suitable treatment the pH may be adjusted to an acceptable level.

ANALYSED BY:
J. COOK
Date: 18/12/84

Marked with #: indicate levels considered undesirable for drinking water by the Northern Territory Department of Health.