WATER RESOURCES DIVISION
Assessment Branch
Groundwater Section

BORE COMPLETION REPORT
BORE 23572
GURKAWUY OUTSTATION

October 1985

DK:JA:235

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INTRODUCTION

This report provides details of construction and pumping recommendations for a bore drilled on Gurkawuy Outstation.

The Outstation is located 65 km south of Nhulunbuy at AMG co-ordinates 663200 8564500 (Caledon 1:100,000 sheet 6272)

Bores 23393, 23394, 23395, 23396, 23397, 23398, 23399, 23400, 23570,23571 and 23572 have been drilled. Bore 23572 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.

HYDROGEOLOGY

The Outstation is situated in the central part of the Arnhem Block. It is underlain by the Caledon Granite of Lower Proteronic age covered by undifferentiated Cainozoic deposits. The Cainozoic deposits are composed of sand, residual soil, clay, laterite and ferruginous cemented detritus.

All bores were drilled in Cainozoic sediments and encountered a shallow aquifer with a small supply.

RESULTS

Eleven bores were drilled, only bore 23572 was constructed with PVC casing and perforations.

A five hour constant discharge test and a recovery test was conducted on bore 23572 and water samples taken.

The water from Bore 23572 is of high chemical quality but has low pH. The water is suitable for domestic use after treatment to raise the pH to an acceptable level. If the water is not treated there is a possibility that metal water fittings will be corroded.

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WATER RESOURCES DIVISION

TEST REPORT — BORE RN. 23572

Bore location: GURKAWUY
Client/owner: Aboriginal Community
Client's reference:
Purpose of supply: Domestic

Map: CALEDON 1:100 000 Map Sheet 6272
Grid reference: 663200-856450

RECOMMENDATIONS

Pumping rate: 1.0 L/s. Pump setting: 12 m below ground level
General recommendations are given on the reverse side.
The aquifer and bore can/cannot sustain higher pumping rates with deeper pump settings or for short periods in favourable seasons. Further advice can be obtained from: Water Resources Div. Sasco House, Darwin
(In all correspondence refer to the bore's RN number).

BORE DATA

Finished depth: 18.80 m Completion date: 2/12/84
Standing water level 7.55 m on 2/12/84
Construction details:

Interval (m)	Description
0 m to 12.80 m	100 mm PVC Casing
12.80 m to 18.60 m	100 mm PVC Perforated Casing
18.60 m to 18.80 m	Open hole

AQUIFER TEST

Test date: 2/12/84
Test rates: 1.5 L/s
Test duration 5 hrs

Notes: 1. Top of casing as constructed was 0.20 m above ground
2. All depths are measured from natural ground level
3. Test rates are not indicative of safe long term pumping rates.

WARNING: MINIMUM INTERNAL BORE DIAMETER IS 100 mm

COMMENTS (LITHOLOGY)

0 m to 2 m	topsoil
2 m to 4 m	gravel
4 m to 6 m	clay: red, white
6 m to 8 m	clay: white, brown
8 m to 14 m	clay: red
14 m to 18.6 m	laterite

WATER QUALITY

See water laboratory report (Analysis No. 85-86/0687)

WRD1000

RECOMMENDATIONS FOR FINISHING, OPERATING AND PROTECTING GROUNDWATER 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.

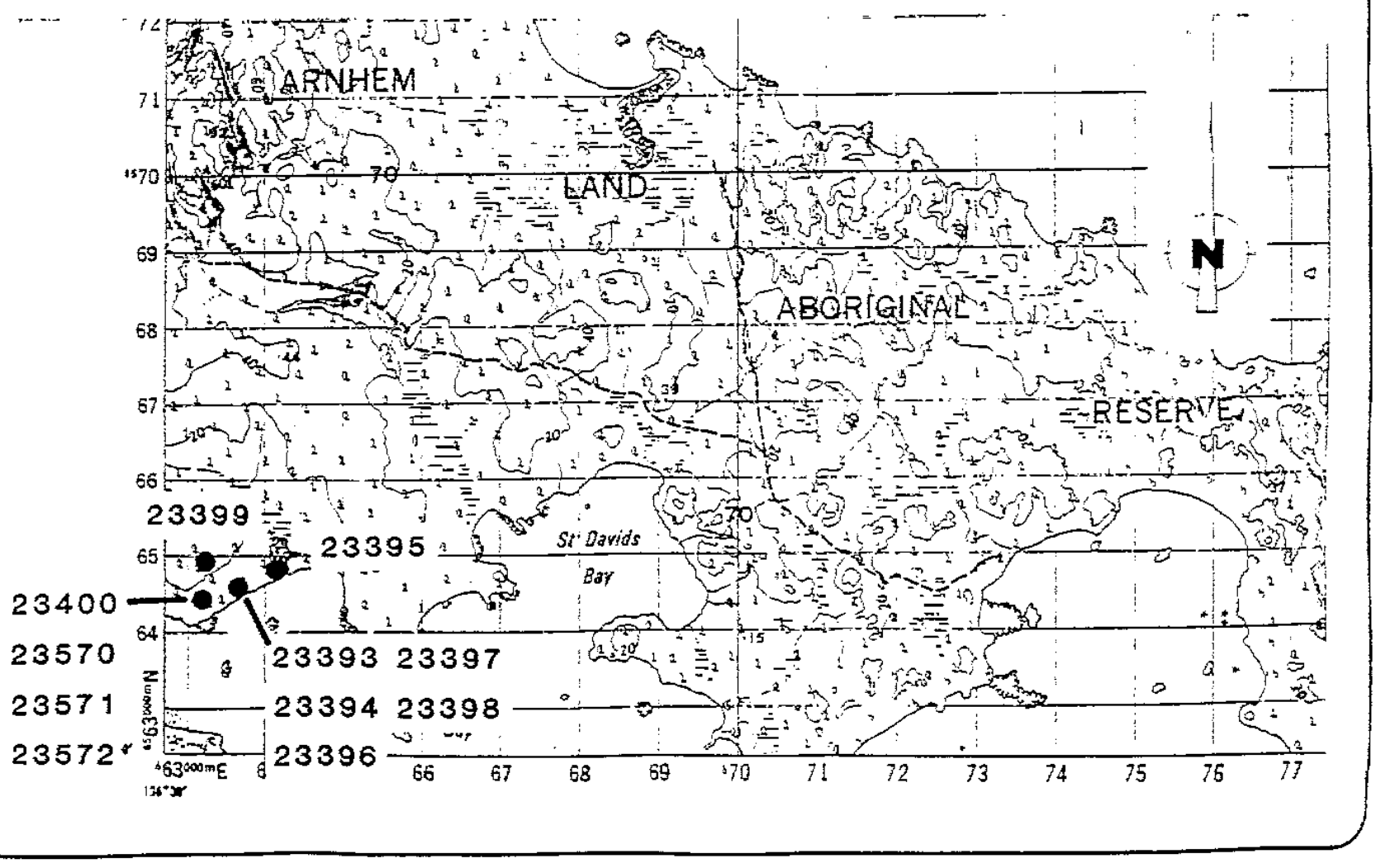
1. Construct a concrete apron around the bore head to prevent surface flow, seepage and waste from entering the bore.
2. Seal the space between the casing and pump equipment to prevent entry of vermin, dirt and pollutants.
3. Maintain pumping equipment in good order to prevent pollution. Prevent spillage of fuel and oil on the ground around the bore. Store fertilizer and other chemicals at least 50 m away.
4. Keep stock away from the bore head. Discourage domestic activity at the bore. The first tap on the pipeline should not be less than 5 m from the bore head.
5. Pumping the bore at higher than recommended rates may fork the bore leading to instability or pump maintenance problems. Seek the professional advice of an hydrogeologist or groundwater engineer.
6. If the bore is no longer required, the casing is to be removed or securely capped and the bore backfilled with clayey material. A cement plug may be required in some instances.

In addition, please ensure that the BORE IDENTIFICATION TAG is retained securely at all times. The registered bore number is Water Resources Division's only reference to the scientific and engineering data on this bore, and hence important to WRD's further advice to bore owners.

Recommended pumping rate is based on a 5 hour constant discharge test at 1.5 L/s and assumes that hydrologic conditions remain constant.

Provision to obtain water samples at the bore head should be incorporated in any reticulation.

BORE LOCATION MAP



WATER ANALYSIS

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

WR 4/1A

Laboratory Register No. 85-86/c687

Date received in Laboratory 17/9/85

Bottle No.	Time of sampling	Date of sampling
SV04	1235	12/9/85

LOCATION AND DETAILS GURKAWOY PROD 1 R/N 23572 Depth 12m Disch 0.1LPS
MAP 5272 GR633644 RWT 344 RSP 1806

Proposed water use:- Domestic, Stock, Irrigation, other (specify)

ANALYSIS — PHYSICAL

☑ pH	5.5	☐ Colour (Hazen units)	
☐ Specific conductance (microsiemens/cm at 25° C)	418	☐ Turbidity (NTU's)	
☐ Total dissolved solids (mg/L - by evaporation at 180° C)	236	☐ Suspended solids (mg/L)	

ANALYSIS — CHEMICAL (mg/L)

☐ Sodium, Na	47	☐ Chloride, Cl	106
☐ Potassium, K	5	☐ Sulphate, SO_4	15
☐ Calcium, Ca	7	☐ Nitrate, NO_3	<1
☐ Magnesium, Mg	10	☐ Bicarbonate, HCO_3	12
☐ Total Hardness (as $CaCO_3$)	59	☐ Carbonate, CO_3	
☐ Total Alkalinity (as $CaCO_3$)	10	☐ Fluoride, F	<0.1
☐ Iron, (total) Fe	<0.1	☐ Orthosphosphate, PO_4	
☐ Silica, SiO_2	22	☐ NaCl (calc. from chloride)	

ANALYSIS — ADDITIONAL (mg/L)

☐ Copper, Cu	☐ Lead, Pb	☐ Arsenic, As
☐ Manganese, Mn	☐ Zinc, Zn	☐ Cadmium, Cd
☐	☐	☐

THE SAMPLE AS ANALYSED COMPLIES/DOES NOT COMPLY WITH NORTHERN TERRITORY DRINKING WATER STANDARDS AS RECOMMENDED BY THE NORTHERN TERRITORY DEPARTMENT OF HEALTH.

Analysed By: A. HARRISON Date 24 / 9 /85

Boxes marked thus ☒ indicate levels considered undesirable for drinking water by the Northern Territory Department of Health.