NTURIYA WATER SUPPLY
(TI TREE STATION)
RN 2450
2099

MAY 1993
The water needs of Nturiya community have for many years been met from two wells, RN 2449 and RN 2450. Figure 1 is a location diagram.

In 1991, concern over contamination of the wells and potential collapse led to the reconstruction of RN 2449 in June 1991. For full details see Report No. 20/91, Childs/Miller. The reconstruction was successful with little or no decrease in bore performance.

One of the recommendations of Childs/Miller (1991) was that Athol trees to the south of RN 2450 be removed as roots may block or damage the screen. As yet this has not been done and the trees should be removed as a matter of urgency before damage is incurred to the bore.

Rehabilitation of RN 2450 was also required and this was undertaken in April 1993. Similar reconstruction techniques to that successfully used on RN 2449 were used. See the attached technical note for full details.

Bacteriological problems have been noted at this bore and the stock yard and stock yard watering point directly south of the bore should be relocated at least 500 m from either of the bores. If this is not undertaken contamination problems may be expected. No chemical analyses are available as yet and the final EC was 2770 μS/cm. This is similar to previous results and indicates a TDS value of around 1600 mg/L.

No decrease in bore performance was noted after the reconstruction (compared to the 1983 test) and the recommended maximum continuous pumping rate is 1.0 L/s. If pumping hours per day are limited (eg, solar power supply) then the instantaneous pumping rate may be up to 1.5 L/s.
The pump should be set 14 m below the top of the cement seal.

I Matthews
Hydrogeologist
May 1993
File Note:

Rehabilitation of Ti Tree Well RN 2450
File note - REHABILITATION OF TI TREE WELL RN 2450

Acting on a request from the Technical Support Branch the test pump crew commenced reconstruction of the well on 19-04-93.

A standing water level of 11.0 m and a total depth of 14.95 m were recorded. The well was equipped with a single cylinder Lister engine, a Mono 310 pump and 38 mm pump column which was removed along with the 152 mm casing which housed the pump and column.

Having looked down the well it was clear of surface debris. A grappling hook was used to locate any loose debris but the bottom of the well was found to be reasonably clear.

The bore screen and PVC casing were run to the bottom of the hole. The well was backfilled with 50 m$^3$ of 20 mm aggregate to within 4.50 m of the top of the Humes pipe. 10 kg of chlorine was then mixed with water and poured down through the aggregate and another 10 kg poured down the inside of the casing.

20 cm of bentonite pellets were placed on top of the aggregate, sprayed with water and allowed to hydrate. The hole was backfilled with creek sand to within 30 cm of the top of the Humes pipe.

A 640 Mono pump and 63 mm pump column was run in the hole to 15 m from the top of the PVC casing. The SWL from the top of the PVC casing was 11.25 m.

A 3 x 100 minute step test was carried out. Results are as follows:

Step 1 - 1.3 L/s, Final Drawdown 0.70 m, EC 3770 μS/cm
Step 2 - 1.9 L/s, Final Drawdown 1.35 m, EC 2920 μS/cm
Step 3 - 3.0 L/s, Bore forked after 75 minutes.
The bore was pumped on the fork at 2.3 L/s for 15 minutes with the final EC being 2770 μS/cm.

The following recovery readings were recorded:

- 30 minutes - 1.31 m
- 60 minutes - 0.80 m
- 90 minutes - 0.73 m
- 120 minutes - 0.60 m

On comparing the pumping test results with the original test carried out in 1983, the performance of the bore has remained constant.

After the pump was removed, a 30 cm cement seal was placed in the annulus between the PVC casing and the Humes pipe. The PVC casing was capped with a steel plate tek screwed to the PVC.

RECOMMENDATIONS

1. The pump be set at 14.0 m from the top of the cement seal.

2. The bore be pumped at not more than 1.0 L/s continuously.

3. The stockyard and stock watering point ln close proximity to the bore should be relocated to a point at least 500 m from the bore. If this is not carried out bacteriological problems may continue.
4. It was also noted that recommendation No. 3 of Childs/Miller (1991) regarding the removal of the Athol pines around RN 2449 has not been carried out. This should be done as a matter of urgency.

Drill/Test Supervisor
Figures and Test Report
Scale 1:1000
(reduced from drawing
ASB 83195 dated Oct.1983)

RN 2449 and RN 2450
LOCATION PLAN

FIGURE 1
Concrete Block

Ground Level

760mm I.D. Humes Pipe

20mm Aggregate

Class 12 PVC
Outside diameter 314mm
Inside diameter 275mm

S.W.L. 10.10 metres

Stainless Steel Screen
4mm Aperture
Outside diameter of Screen 314mm

Sump

RN 2450

TI-TREE GARDEN WELL

FIGURE 2

3066-22-74
Bore Location: Mturiya Community, Ahakeye Aboriginal Land Trust
Client: TSB
Intended Use: Community Water Supply
Map: SP 53-9
Grid Reference: 321000 7551000

RECOMMENDATIONS

Pumping Rate: 1.0 L/s Pump Setting: 13.36 m below Ground Level.

General recommendations are given on the reverse side. The aquifer and bore cannot sustain higher pumping rates with deeper pump settings or for short periods. Further advice can be obtained from:

Water Resources Branch, Nth Stuart Highway, ALICE SPRINGS, NT. 0870

(In all correspondence please refer to bore’s RN number)

COMPLETION DETAILS

Finished depth: 14.1 m Completion Date: 21/04/93
Standing Water Level: 10.1 m on 21/04/93

BORE CONSTRUCTION

Interval (m) Description

0.0 - 13.4 275 mm ID Class 12 PVC
13.4 - 14.0 275 mm ID Stainless Steel Screens with 4 mm aperture

WARNING: Minimum internal bore diameter is 275 mm.

Notes: 1. Top of casing as constructed was 1.15 m above ground level.
2. All depths are measured from natural ground level.
3. Test rates are not necessarily indicative of sustainable long term pumping rates.

COMMENT

IMPORTANT: All measurements are taken from the ground level. The height of the cement block (Humes pipe) around the bore is to be added to the measurements for the purpose of pump setting.

The above recommendations are based on previous tests and a multi-rate re-test and assume hydrological conditions remain constant.

 Provision to monitor water levels and obtain water samples should be incorporated when equipping bore.

WATER QUALITY

To be forwarded when available.

Prepared by: D Miller

boredata
RECOMMENDATIONS FOR FINISHING, OPERATING AND PROTECTING GROUNDWATER BORES

Attention 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, oil 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 a 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.

BORE LOCATION MAP

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