GENPELLI MISSION WATER SUPPLY.

FIELD TRIP REPORT.

by the

WATER RESOURCES BRANCH OF THE NORTHERN TERRITORY ADMINISTRATION.

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MISSION GENERALLY:

The staff population at the mission at present is 10 adults and three children, with approximately 250 natives average residing at the Mission. The stock population is approximately 400 head of cattle, 150 head of horses, 200 head of goats and 6 donkeys.

All buildings apart from residence number four and the school are at ground level. Proposed future staff residences will be built above ground level on approximately 8' stilts. The new hospital and native dining room will be at ground level. The native village, to be located near the old air strip, will be for a population of 250 average. A plan showing the existing and proposed residences and the proposed expansion exists, and it is believed that Mr. V. Sully of the Welfare Branch holds the original. The sketch held by Mr. Sully is probably only freehand and not to scale. Possibly D.C.A have a plan showing the residences located as regards position accurately and in relation to the airstrips.

2. EXISTING WATER SUPPLY DETAILS:

(a) Mission house, single girls quarters. Hospital and stockmen's quarters are supplied by a well situated between the mission house and the single girls quarters, equipped with a windmill, delivering to a 2000 gallon tank on about a 12 ft. timber stand - well about 25 ft. deep - water level at the end of the dry season declining to about 20 feet, turning slightly brackish. This well is connected by pipeline to the billabong pump house.
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(b) Situated at the rear of the single women's residence is another well of similar dimensions to the first well mentioned, equipped with a small geared Southern Cross mill. Alongside the mill is a small concrete foundation floor which has been laid to carry a Braithwaite steel tank. At the moment this mill is used to supplement the garden irrigation system.

(c) The domestic supply for number four house is from a 20 ft. deep well, water being pumped into an overhead storage tank on a wooden stand by a 1½" centrifugal pump driven by a five horsepower Southern Cross diesel engine. The capacity of the overhead tank is 1,000 gallons. Number four house and tank are at least 400 ft. away from the original tank mentioned. The laundry for number four house is supplied from another well 20 ft. deep, not equipped.

(d) Irrigation water is supplied by pipe to the head of channels then by surface irrigation to the crops.

(e) The school is at present supplied from the pump which supplies irrigation water from the billabong. The pipe connecting the school is approx. 1½" diameter, 3.W.I. pipe.

3. GARDEN AND ORCHARD:

Approximately 10 to 15 acres of garden and orchard is located between residences one to three and the billabong. Pipes carrying the water from the billabong to the irrigated areas are 3" and 2" diameter, 3.W.I. The pump house, located on the bank of the billabong, is equipped with a 10 horsepower Southern Cross diesel unit driving a 4" centrifugal pump and a 2" centrifugal pump. Both pump deliveries are 3" diameter. The 2" pump will also operate as a separate unit delivering into a 2" diameter
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Delivery pipe. The two suction pipes come from a well just outside the pump house approximately 50 ft. from the edge of the billabong. During the 1959 dry season a 2" diameter suction pipe was extended approximately 40 ft. into the billabong as the well had become filled with debris and could not be used. The billabong is extensive in area and at the end of the 1959 dry season still retained 4 to 5 feet of water. This billabong has never been known to go dry and should be regarded as a permanent water source.

The following items of produce are grown in the garden: cashew trees, bananas, sweet potatoes, limes, custard apples, guavas, cow peas, corn. Tomatoes are also grown in season under intense irrigation. About 8 or 9 acres of the garden area is under orchard, the remainder being under crops.

4. POWER AND LIGHTING.

The 10 horsepower Southern Cross pumping engine on the billabong also supplies power for a 5KVA lighting plant. 110 volt power is reticulated to all houses. Another 9 KVA unit is situated in the workshop. It is hoped to have a 240 volt system operating shortly.

5. IMMEDIATE IMPROVEMENTS:

It is hoped this wet season that the stock yards will be moved alongside the new airstrip behind the existing native cottages. Water will be required for these new stock yards. The new goat yard is at present being constructed adjacent to the existing stock yard and water will also be required there.
6. **FUTURE IMPROVEMENTS:**

Future mission development will be along the banks of the billabong towards the school and towards the old airstrip area which will be used for native cottages.

7. **WATER SUPPLY REQUIREMENTS:**

The Water Supply requirements will be a common reticulation system operating from the billabong pump house to supply:

1. Domestic water supply to existing and new residences.
2. Garden water supply irrigation.
3. Stock yard water.
4. Native village.

When wind is available it is thought that the existing mill adjacent to the billabong pump house would be able to supply water direct to an overhead Braithwaite tank - capacity 4,600 gallons - on a tank stand adjacent to the existing concrete tank base. The excess water from the Braithwaite Tank would flow into a 25,000 gallon tank on the existing concrete tank base which would act as a reservoir. With this scheme, but without wind, the billabong pump would pump water direct to the irrigation reticulation, Braithwaite overhead tank and storage tank.

Alternative schemes are:

1. Adjacent to the Braithwaite tank erect a windmill which will draw water from the ground storage tank to the Braithwaite tank to supply water for domestic purposes under pressure. I would recommend that irrigation water only be supplied from the billabong
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direct by pumping and not from storage tanks as this would require a number of tanks to supply a reasonable area of garden. Approximately 40,000 gallons per week per acre being required at the end of the dry season for irrigation purposes.

(2) Water for stock purposes be supplied from an independent well placed adjacent to the new stock yard. This may be feasible as groundwater apparently exists close to the surface in this area. This would be in addition to the billabong supply.

(3) Build tank on the adjacent hill overlooking the existing native camp. The name of this hill is Argluk. This scheme has two disadvantages:-

(a) It is to one side of the existing mission and away from the proposed development.

(b) The possible expense of such a scheme. This would need to be investigated further.

8. WATER QUALITY.

It has been requested that water samples be collected monthly from each of the wells and also from the billabong for analysis. This is necessary as the quality of the water in each of the wells appears to deteriorate (becomes hard) towards the end of the dry season. This will be checked over a series of samples.

9. ADDITIONAL WORK TO BE DONE:

A detailed survey (levels) will be carried out over the Mission settlement area as soon as weather conditions permit.

From this survey, a common water reticulation system will be laid out to serve existing and future requirements.