
BAAN UNRAK

Sangkhlaburi (Kanchanaburi, Thailand)

Water well project for the Baan Unraak community

CUSTOMER



Baan Unrak Children's Home
99-1 Moo 1 Nonglu
Sangklaburi, Kanchanaburi 71240

Donata Dolci "Didi"

The community of Baan Unrak needs an amount of 200 liters per day of drinking water, 200 liters for food preparation and cleaning, other 200 liters each person for sanitary uses.

The Baan Unraak Children's Home in Sangkhlaburi hosts up to 200 children. The community is positioned far away from the aqueduct, therefore water supply is a major problem. Nowadays, the community gets water for food preparation and cleaning water from the hydraulic network of the municipality. Drinking water is delivered from a local private water supplier, with a significant expense for Baan Unraak, while water for sanitary uses is pumped from the lake and filtered.

The abstraction of water from the lake is influenced by the varying water level: studies have been made about the necessary treatments for its use for drinking purpose, but the required investment cannot be afforded by the community, and also the maintenance of this plant would exceed the technical knowledge of the staff.

The site of Baan Unrak has a surface aquifer, which is supplied by the surrounding lake and rivers, besides rainfall infiltration. According to the groundwater well drilling report provided by *SIAMGROUNDWATER COMPANY*, the water chemical analysis showed that water from the deep well is suitable for drinking (according to **WHO standards**). Thus, the well should be kept for this purpose. The yield is 0,3 m³/hr. The pumping cycle is for 2 hours and stop 1 hour, this can be controlled by timer. The pumping time per day will be 16 hours, with **4,8 m³** output. Anyway we would like to do a further analysis of the water, by an external company, in order to be sure of the validity of the results reported.

The underground water well project would cover Baan Unrak's drinking, food preparation and cleaning water demands.

Moreover, the water pumped in one day would be enough to cover 10% of the daily sanitary water demand.

To choose the most suitable water supply solution, the alternatives have been compared also from the economic point of view. The following costs have been estimated:

- The monthly cost of drinking water from the shop is 6.000 baht **(190,4 \$)**.
- The monthly cost of drinking water from the hydraulic network is 2.200 baht **(69,81 \$)**.
- The annual cost for drinking water is 98.400 baht **(3.122,22 \$)**.

The water supply infrastructure to be implemented consists in a water pumping system, with a well drilled in the surface aquifer, bringing water to the new kitchen.

Then the water is pumped, through an autoclave to the tank, with a volume of 4 cm, in the kitchen.

In this way, the pumped water can be stored for daily used: this is necessary both for an optimization of pumping (avoiding continuous startups and stops) and also because of the frequent voltage drops and blackouts in Sangkhlaburi. For the same reason, we have chosen a solar pump instead of a electric-grid power supplied one, although the pump will be also connected to the grid. This is definitely the most important and expensive part of all the system. A new solar pump would cost around 200.000 baht **(6.345 \$)** but we managed to find a second hand pump model *-SQF 1.2/2 580 Watt-* for 80.000 baht **(2.538\$)**, with photovoltaic panels included of 125 watt.

Project Estimate costs

The cost of the entire project will be 131.550 baht (**4.962 \$**), compared to a current spending of 98.400 baht (**3.122,22 \$**). The community will spend **1.840 USD** more for the first year, which will be recuperated already from the following year, by saving all the 3.122 USD paid commonly.

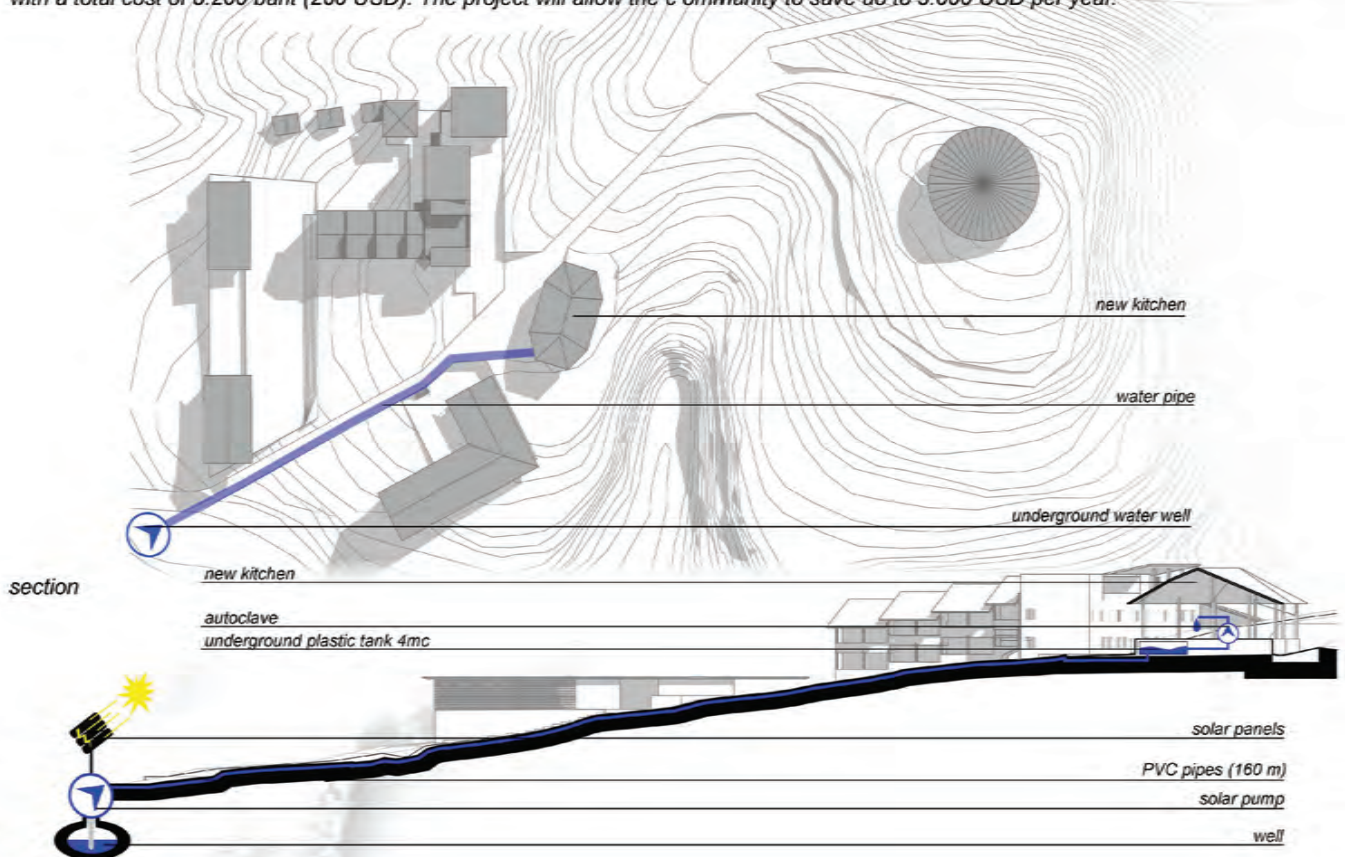
According to SIAMGROUNDWATER COMPANY, the well estimate life is around 20 years. That means that, in the most optimistic forecasts, Baan Unrak would save, during this period, around **60.000 USD**.

Even if the well life was much more shorter, by instance 5 years, the community would get important benefits. In 5 years Baan Unrak would save around **11.000 USD**, which is the necessary amount to support 10 kids of the community for one entire year. Moreover, the most expensive part of the project, the solar pump, would be easily reused to pump water from the lake, saving energy and money used for the actual diesel engine pump.

<i>COMPONENT</i>	<i>UNITS</i>	<i>PRICE/UNIT(baht)</i>	<i>TOTAL PRICE(baht)</i>
Plastic tank 4 m ³	1	14.000	14.000
HDPE pipes (100 meters lenght) 35 mm	2	6.500	13.000
Pipe joints	6	50	300
Check valve	1	250	250
Autoclave Grundfos CH 2-30 PT 450 watt	1	11.000	11.000
Tank floater	1	200	200
Electric cable(25 meters lenght) (2x10 mm)	1	7.000	7.000
Electric cable(100 meters lenght) (3x1,5 mm)	2	2.400	4.800
Solar Pump SQF 1.2/2 580 watt	1	80.000	80.000
Cement truck (6 mc)	1	16.000	16.000
Water analysis	1	3.000	3.000
Concrete pipe (lenght 1m diameter 60 cm)	15	150	2.250
Electrowelded wire mesh	1	3.500	3.500
Various	20	50	1.000
<i>TOTAL PROJECT PRICE(baht)</i>			156.300
<i>TOTAL PROJECT PRICE(USD)</i>			4.962

Project plan

Nowadays the community gets drinking water from the hydraulic network of the municipality and from a local private drinking water shop, with a total cost of 8.200 baht (260 USD). The project will allow the community to save up to 3.000 USD per year.



Section

