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IFALIK ATOLL FRESHWATER RESOURCES
RECOMMENDATIONS BASED ON FIELD OBSERVATIONS AND INTERVIEWS

by Danko Taborosi and Maria Kottermair

Please note that the information below is contained within the various documents submitted by the field team. It has been extracted and re-organized to create this overview. Refer to "Ifalik Atoll Water Usage by Type" document for insights into how the local people on Ifalik use water sources available to them to meet their needs.

Wells

The wells appear to be well maintained and most of them see regular use. Approximately 30%[1] of the wells possess a raised rim, which blocks the runoff from the surrounding land surface and prevents contaminants from entering the well. Wells that do not possess such a rim should be modified by creating at least a low rock wall around them. Far fewer wells, just about 10%[2], are covered. We recommend that all wells are kept covered when water is not being accessed. This prevents plant debris, small animals, and waste from falling into the well and improves groundwater quality.

We also recommend that the current cemeteries be used as they have been until now and that tendencies from other parts of Micronesia for burials outside of cemeteries (in private residences and land plots) are not accepted. If burials must take place outside of the current cemeteries, consideration should be given only to sites down hydrologic gradient from wells.

Sanitation

We recommend no changes to the current toilet practices. The absence of pit toilets on island and the cultural patterns that match that fact represent a blessing for the local groundwater and its quality. This should not change if the groundwater is to be retained as a clean and viable source for showering, washing, and cooking, as well as an emergency source for drinking water. We would only recommend that when using the beaches and shallow seawater for going to the toilet, the predominant location is the island's ocean side. The lagoon side should be used sparingly because we have encountered possible evidence of eutrophication during low tide. At such time, circulation with the ocean is reduced, solar heating of the water is increased, and water can hold less dissolved oxygen. When algal metabolism removes oxygen at night it can cause fish to suffocate. Algal growth in the lagoon is boosted by excessive nutrient input from human waste. Local people have reported that dead fish washes up on the beach following very low tide events on the lagoon side of the island.

[1] 30 out of 99 wells.
[2] 9 out of 99 wells.

Rainwater catchment tanks

Private rainwater catchment sites can be improved by improving gutter efficiency, increasing catchment area, and keeping all elements of the catchment systems clean. In general, it would be good if each compound was in possession of two PVC tanks so that they can be cleaned interchangeably: a tank can be emptied and cleaned when the other one holds water. At present, many families have just one tank so they cannot clean it unless it becomes empty or unless it is drained and the water wasted. Families that notice that water in their tank is contaminated face a risk of draining the tank and cleaning it but then having little rain to meet their needs in a subsequent period. However, for most families on Ifalik, acquiring additional private tanks is logistically and financially unrealistic.

This challenge can be met by community tanks. Dependable community tanks would relieve the pressure of individual families to acquire additional private tanks. Currently, however, the island lacks reliable community catchment systems. The large concrete tank at the school is prone to damage and is extremely difficult to maintain. Other large tanks on the island that have seen public use in the past are also made of concrete and are no longer used due to constant leakage even after repeated repairs. Our recommendation -- the single most important recommendation -- is that Yap State Government or another entity provides several large capacity rainwater catchment and storage systems for community use. That includes tanks, gutters, and catchment areas (best to be stand-alone catchment areas made as roofs for the tanks themselves and sized appropriate to tank volume). Ideally, there would be four tanks, one for each village, with storage capacity of 2,000 gallons[3]. Each tank should be made of PVC and with design that allows it to be easily emptied, tipped over, and entered by an adult for inside cleaning. It is vital that these community tanks are not made of concrete. Previous local experience indicates that concrete tanks fail to provide a reliable service to the community. They also blight the landscape, incapacitate the land they occupy from agricultural and other use, and supply mosquitos and other possible disease vectors with places to complete their life cycle. Community leaders and community members expressly reject the making of additional concrete tanks on the island and we concur based on inability to move, difficult maintenance and cleaning, and the high likelihood of cracking on dynamic and generally poorly consolidated atoll terrain.

Once Ifalik is supplied with an array of four 2,000 gallon PVC tanks for public use, the leadership should devise access and maintenance rules for the community. We recommend that the tanks are cleaned three times per year, which is the frequency by which the most careful families on the island clean their private tanks, and that the cleaning is organized in a rotation so that one of the four tanks is cleaned every month. Should a drought commence soon after a tank has been cleaned, people from that village should be given access to the other three tanks. This regular draining and cleaning of the tanks is essential because the community tanks would not see regular use unless there is a water shortage experienced at private tanks. If such a system is implemented, Ifalik would at all times have at least an additional 6,000 gallons of backup drinking water that has stagnated for a maximum of 4 months in clean tanks.

[3]This is a minimum value given Ifalik's population just under 600 people. With three tanks full and one tank assumed to be not full because of recent cleaning (see continuation of text), this minimum value would give the population a backup source of 10 gallons per person, which is enough to provide about 50% of drinking water needs per day per person for over 1 month (=1 liter / person / day). Water could not be taken for any other use and hydration would have to be supplemented by drinking of coconut liquid.