

Report for 2004GU37B: . Groundwater Development and Utilization for Emergency Drinking Water Supply on Fais, Yap State, FSM

- Conference Proceedings:
 - MacCracken, R.S. 2005, Creating a GIS of Fais Island, College of Liberal Arts & Social Sciences Annual Conference, University of Guam, Mangilao, Guam.

Report Follows

Project Title: Groundwater development and utilization for emergency drinking water, Fais Island, Yap State, FSM

Problem and Research Objectives

The objective of this project is assess of the physical resources and sociocultural factors that must be considered to ensure a reliable source of drinking water to meet emergency needs of the residents of the small (2.6 km²), remote island of Fais, Yap State, Federated States of Micronesia. Fais's permanent population of about 320 people currently relies almost exclusively on rainwater catchments to meet its potable water needs. However, on average once a decade a major storm destroys or damages existing catchments, most recently in November 2003. In light of the small size and subsistence economy of Fais and the prevailing traditional social organization and land tenure, technical recommendations for development and protection of water resources must be compatible with the island's social traditions, cultural values, and indigenous authority. The central objectives of this study are therefore inventorying and mapping the key karst features that relate to groundwater availability and making an inventory of patterns of usage, storage, and sharing of water from existing rainwater catchments and other sources. These data will be used to developing recommendations for an appropriately balanced approach to management of rain catchment and groundwater resources to meet emergency needs.

Methodology

The study employed the classical methods of geological field investigation, including exploration and mapping of selected geological features. Because no previous geological study has been made and no maps or orthophotographs of Fais have been published, we are building our own base maps for this projects from a set of aerial photos that Dr. Rubinstein has in his collection from previous work on the island. In addition to mapping caves and searching for coastal seeps and springs, we are also mapping major sinkholes, fractures and features that may influence the capture and transport of water in the aquifer. Sociological methods of investigation build upon Dr. Rubinstein's 35 years of association with residents of Fais, assuring excellent access and trust from island leaders. Specific procedures involve participant-observation and open-ended interviewing following semi-structured question protocols, using an opportunity sample of island adults and social leaders.

Principal Findings and Significance

This project has been continued into a second year. Observations from the first year's fieldwork showed that the residents have a strong preference for rain catchment water sources because of the convenience of using and storing it at the household or village catchment source rather than having to carry it from a well. The primary limitation on emergency supply appears to be lack of sufficient storage capacity for rainwater. We are therefore returning to obtain complete information on storage capacity versus actual household requirements under emergency conditions, to include availability of other alternative sources, including coconuts and well water. The current work will also complete the inventory of karst features, to include mapping caves that were not accessible because of weather and surf conditions during the first year.