



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004GU37B

Title: Groundwater Development and Utilization for Emergency Drinking Water Supply on Fais, Yap State, FSM

Project Type: Research

Focus Categories: Groundwater, Hydrology, Climatological Processes

Keywords: Groundwater, Island Karst, Carbonate Island Aquifers, Water Supply

Start Date: 03/01/2004

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Non-Federal Matching Funds: \$0

Congressional District: n/a

Principal Investigators:

John Jenson

Donald Rubinstein

Abstract

We propose an assessment of the physical resources and sociocultural factors that must be considered to develop a reliable source of potable groundwater 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. Groundwater, however, has yet to be developed, even for emergency supply. To do so requires first making a general survey to locate prospective sites that could yield sufficient quantities of potable water under emergency conditions. Moreover, 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 groundwater must be compatible with the island's social traditions, cultural values, and indigenous authority. The central objective of this study will therefore be to map the key karst features that constrain the catchment, storage, and discharge of groundwater, and prepare preliminary maps of potential sources within the

inferred catchment areas that can serve for planning and engineering purposes in the immediate future. The supporting but equally important objectives of the sociocultural portion of the project include making an inventory of patterns of usage, storage, and sharing of water from existing rainwater catchments and other sources. Collection of demographic data, in addition, will provide a basis for evaluating foreseeable future water resource needs. The study will employ the classical methods of geological and anthropological fieldwork. The expected result will be a preliminary map of potential groundwater resources that could be developed for emergency needs, with recommendations for appropriate development and management approaches that will ensure that water from the developed sources will be available when needed. The principal investigators will draw, respectively from over 10 years of experience in studying the hydrogeology of similar raised carbonate islands in the region and 35 years of personal association with residents of Fais. Finally, the project will support a graduate thesis project in Environmental Science at the University of Guam for a graduate research assistant who will be trained on a broad range of graduate academic topics, including hydrology, hydrogeology, cultural anthropology, environmental economics and management, and the use of databases and GIS.