



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004GU51B

Title: A water quality study of river and ground water resources in Kosrae, FSM.

Project Type: Research

Focus Categories: Water Quality, Water Supply, Water Use

Keywords: Water quality, river water, drinking water, water analysis, water pollution, water borne diseases

Start Date: 03/01/2004

End Date: 02/28/2005

Federal Funds: \$26,138

Non-Federal Matching Funds: \$0

Congressional District:

Principal Investigator:
Puthiyaparambil Josekutty

Abstract

Kosrae, Federated States of Micronesia (FSM) is a small state comprising of a single island with a population of little over 10,000. Most of the population lives up to an elevation of 600 ft. from MSL though the highest elevation of the island (mountain) is 2500 ft. In Kosrae, river water is the drinking water for many households. Invariably, everyone use river water for all purposes. Small dams are built on the top of hills, and the river water is channeled through pipes to reach households. Neither water filtration nor chemical treatments are carried out to make the water safe for drinking and washing. Therefore, the water supplied is prone to contamination by potentially harmful bacteria and other microorganisms associated with human and animal wastes in the area. The small rivers (streams) have very little flow except during very rainy periods making the water more prone to contamination from extraneous sources. Waste from the many piggeries on the river-banks and other human wastes like food, plastics, chemicals etc makes bulk of the pollution. Also, there is no common cemetery in the island and the dead members of the family are buried close to the households posing a contamination threat to the underlying groundwater. Many households use water catchment to use when rain is sufficient. However in years of less rain like 2003, the catchments are not sufficient and river water supply becomes less. Even when the catchment water is

sufficient, it is necessary to check and ensure quality of the water is suitable for drinking. Shortage of trained manpower in the area of water quality testing and limited funding makes it difficult to implement regular monitoring of the island's drinking water resources. Equipment needed for water quality analysis are generally not available locally. There is one pure water company on Kosrae that sells clean, ground water but it is not affordable to majority of the households. A detailed survey of physical, chemical and biological water quality characteristics of Kosrae's drinking water resources has yet to be undertaken. Therefore this project will attempt a detailed water quality study for river waters from the various dams, downstream (human inhabited areas) and ground water from the four municipalities in Kosrae. The study will examine TDS, pH, alkalinity, hardness, nitrate, phosphate, sulfate, carbonate, several heavy metals, several coliforms and the fecal indicator bacteria E.coli and enterococcus. This information will greatly help the policy makers to come up with necessary resources for treatment facilities. Results will also benefit Kosrae State administration to formulate sound strategies for the protection reservoirs and habitat management to control water pollution. Commercially available test kits, and bacteriological growth media will be used to carry out the investigations. Samples for heavy metal analysis will be preserved on island and send to WERI, where test kits are not available for accurate analysis samples will be send to WERI, University of Guam, or other nearby centers for water quality analysis. One student from Kosrae will be trained in water quality analysis through this project.