



WATER RESOURCES RESEARCH GRANT PROPOSAL

Title: The effect of education and increased training in operation and maintenance and improved water quality analysis on water consumption within a small water supply system

Focus Category: EDU, WS, WQL

Keyword Numbers: Benefit-cost Analysis , Distribution Range, Water Quality Monitoring, Water Use Data

Duration: Starting Date: March 1, 2000 Ending Date: February 28, 2003

Fiscal Year 2000 Federal Funds:	<u>\$9,600</u>	<u>(\$9,600)</u>	<u>(N/A)</u>
	Total	Direct	Indirect

Non-Federal Funds Allocated: (N/A) (N/A)

Name, university, and address of principal investigator:

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Congressional District of university performing the research: NA

Statement of Critical Regional Water Problems

Kosrae State residents are served by several independent municipal water systems. All of these systems currently use untreated, unfiltered surface waters. Contamination of these surface water sources is a frequent problem due to sedimentation during periods of heavy rain and bacterial contamination from animal waste (*i.e. E. coli* and *leptospirosis*). It is strongly suspected by the medical community that many health problems experienced by Kosrae residents can be traced, at least in part, to the poor quality of the water provided by the public water system. Nonetheless, repeated attempts to pursue projects to improve the water quality to potable standards (*e.g.* construction of a modern water filtration plant) have failed because of a widespread public perception that improved water quality is not worth the cost.

This demonstration project will help break down the public barriers against water quality improvement programs and build public confidence in the need for water system improvements. The project will provide evidence of the scope of contamination of Kosrae's untreated water supply and also determine the potential for a modern maintenance program to reduce wasted water and thereby minimize the increased cost of providing public water with a treatment/filtration system. The interim results of the study will be used to educate the public about the importance of safe water and the necessity for routine maintenance of water systems.

Statement of Results, Benefits, and/or Information Expected

This demonstration project is designed to reduce wasted water through a combination of improved maintenance and public education. In this regard, it will prepare the systems and the people served by those systems to move toward improved water systems with potable water supplied to all homes within the system. The metering program will provide concrete data regarding the present water use and the effect of improved maintenance on that level of use. This information will be critical in planning for future improvements to the water systems.

The laboratory component of the project is designed to assess the current quality of the water on Kosrae on a biweekly basis. Although Kosrae formerly had some water-testing capabilities, because of government work force cutbacks, that program ceased to exist several years ago. This project will provide information that will be used to educate the public about the quality of local water and the necessity to provide potable water for Kosraeans. This part of the project will also provide hands-on laboratory experience for Kosraean High School students working with the Principal Investigator and Research Assistants. In this way, Kosraean High School students may be spurred to aspire to higher education.

Nature, Scope, and Objectives of the Research: The major objectives of this study are to determine the effect of improved maintenance on the municipal water systems and to educate the public about the need for clean, safe water. Specific objectives are:

1. To determine the current water use and to determine water use rates after improved maintenance;
2. To educate the public about the importance of proper maintenance of the water supply system within the home;
3. To monitor and determine the specific water quality problems for each of the municipal systems;
4. To educate the public about the importance of safe Water;
5. To prepare the public for a move to safe water systems; and
6. To prepare those persons operating the water systems for the move to safe water systems by stressing proper installation and maintenance procedures.

Methods, Procedures and Facilities:

Determining current water use

Current water use will be determined by metering the current systems at the supply source or at pumping stations as determined appropriate by the Principal Investigator.

Improved maintenance of water systems

The Principal Investigator will conduct workshops for the personnel responsible for maintenance of the water systems. Replacement parts will be purchased using matching funds from the grant as needed to reduce leaks.

Determining water use after improved maintenance

Water use will be determined by metering after maintenance is improved.

Determining the quality of water currently available

Samples will be collected from the water system on a biweekly basis. Those samples will be analyzed based upon standards adopted by WHO or the U.S. Safe Drinking Water Act in the discretion of the Principal Investigator. Laboratory space exists in the Kosrae Hospital (the location of the former water testing lab). Any necessary supplies will be purchased with grant funds. Individuals will be able to have their home water tested upon request. All results of public water tests will be made available to the public.

Educating the public about safe drinking water

Using educational materials already available and the results of local research, the Research Assistants will develop and implement an educational program to inform the public of the importance of having safe drinking water and properly maintaining the system.

Related Research: Water quality has been a recognized problem on Kosrae for many years. Among the problems are the high leakage rates resulting from poor physical condition of the distribution pipelines, bacteriological contamination and lack of treatment facilities. (Kosrae State Master Plan: Water Supply Development at 4). This project will be the first to determine actual water use rates on Kosrae and monitor the quality of water on an ongoing basis.

Progress Review: NA