

JAN 10 1993

**Assessing the Effectiveness of the Kosrae Island Resource  
Management Program (KIRMP) Implementation Strategy**

by

**Brady Allen Phillips**

Submitted To

**Marine Resource Management Program  
College of Oceanic and Atmospheric Sciences  
Oregon State University  
Corvallis, Oregon 97331**

1993

in partial fulfillment of  
the requirements for the  
degree of  
Master of Science

Commencement June 1993

**Assessing the Effectiveness of the Kosrae Island Resource  
Management Program (KIRMP) Implementation Strategy**

by

**Brady Allen Phillips**

Submitted To

**Marine Resource Management Program  
College of Oceanic and Atmospheric Sciences  
Oregon State University  
Corvallis, Oregon 97331**

1993

in partial fulfillment of  
the requirements for the  
degree of  
Master of Science

Commencement June 1993

**Islanders perceive their limits more easily than do continental peoples.**

-Kenneth Brower in  
*"With Their Islands Around Them"*

**Kosraeans depend on their farming and fishing to sustain themselves. When families no longer have their farming and fishing to fall back on, they will have suffered a loss beyond measure.**

-Committee on Resources and Development  
Kosrae State Legislature, 1992

**The true source of wealth for any nation or state is its population and how the people manage their resources to meet social needs.**

-John A. Dixon in  
*"Coastal Resources in Kosrae: An Undeveloped Economic Resource* (Auyong et al. 1989)

## ACKNOWLEDGEMENTS

This project was completed in partial fulfillment of the requirements for my Masters Degree program in Marine Resource Management. My time in Micronesia provided me a unique professional and cross-cultural experience that I shall never forget. I would like to express my appreciation for all of the people who made both my internship in Micronesia and my MRM Program at OSU a rewarding and meaningful experience.

My deepest appreciation goes out to my family. They have continually offered their support throughout my undergraduate and graduate careers. Most importantly, they have unconditionally encouraged me to explore my curiosity and reach for my dreams. Without this support, I would never of gotten as far as I have today - THANKS!

I would like to express my thanks for Maradel Gale and Julie Fischer at the University of Oregon Micronesia Program who made it possible for me to go to Micronesia. Additional thanks goes to Gerson Jackson, Kosaki William, the DRC and the TAC for their input and assistance with my project in Kosrae. A special "*kulo ma lulap*" to my friend and counterpart Likiak Wesley for his assistance with the project, and for incorporating me into his family which allowed me to truly experience Kosraean culture. My appreciation also extends to Greg Ringer and the families of Lupalik Wesley, Maung Maung, Norio Skilling and Ashley Jackson for making my stay in Kosrae memorable in so many ways.

I would also like to acknowledge my graduate committee -- Jim Good, Jeff Gonar and Jan Auyong -- for taking the time to review and comment on this report. Special thanks to Jim Good for offering his organizational and editing comments, and to both Jim and Jeff for advising me throughout my "tenure" at OSU. Thanks also to Donna Obert who could always make sense out of the many complicated forms and procedures this university requires.

Finally, I cannot even begin to express my gratitude to all of my fellow MRM and oceanography friends for their help and support, and for all the numerous diversions to make this program and life in Corvallis more bearable and humane.

## TABLE OF CONTENTS

INTRODUCTION . . . . .	1
BACKGROUND . . . . .	4
Environmental Setting . . . . .	4
Social and Economic Setting . . . . .	7
Political Setting . . . . .	11
KOSRAE ISLAND RESOURCE MANAGEMENT PROGRAM (KIRMP). .	15
KIRMP Genesis . . . . .	15
KIRMP Organization: Initial Structure . . . . .	18
KIRMP Implementation Strategy . . . . .	20
ASSESSING THE EFFECTIVENESS OF THE KIRMP IMPLEMENTATION STRATEGY . . . . .	31
Implementation . . . . .	31
KIRMP Implementation Assessment . . . . .	33
<u>Condition 1: Clear and Consistent Policy Goals and Objectives</u> .	34
<u>Condition 2: Sound Causal Theory</u> . . . . .	36
<u>Condition 3: Coherent Structuring of the Implementation Process</u>	40
<u>Condition 4: Commitment and Skill of Critical Implementing Officials</u>	46
<u>Condition 5: Continuing Support from Constituency Groups and</u>	
<u>Sovereigns</u> . . . . .	48
<u>Condition 6: Changing Socioeconomic Conditions (and Political Support)</u>	
<u>Over Time</u> . . . . .	49
Strengths and Weaknesses of the KIRMP Implementation Strategy .	51
Extent to Which Program Policies, Objectives and Goals were Met .	58
CONCLUSIONS . . . . .	62
RECOMMENDATIONS TO IMPROVE PROGRAM EFFECTIVENESS .	64
REFERENCES . . . . .	67
APPENDIX (KIRMP IMPLEMENTATION STRATEGY) . . . . .	70

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Kosrae State, F.S.M.. Location in the Western Pacific Ocean and island features.	5
2. Organization of Kosrae State Executive Branch	13
3. KIRMP Organizational Chart	19
4. Factors Causing Degradation of Kosrae's Coastal Resources - Implied Causal Theory	38

## LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Extent to Which the Implementation of KIRMP Met the Hypothesized Conditions of Effective Implementation	52
2. Extent to Which the Implementation of KIRMP Met the Program's Policies, Objectives and Goals	59

# ASSESSING THE EFFECTIVENESS OF THE KOSRAE ISLAND RESOURCE MANAGEMENT PROGRAM (KIRMP) IMPLEMENTATION STRATEGY

## Introduction

In summer 1992, I interned as a Technical Assistant with the Kosrae Bureau of Planning and Statistics, Kosrae, Federated States of Micronesia (F.S.M). The University of Oregon Micronesia Program sponsored the internship, which proved to be a unique professional and cross-cultural experience. The internship, initiated by Mr. Gerson Jackson, Director of the Kosrae Office of Budget and Planning, provided me the opportunity to work closely with Mr. Likiak Wesley, Chief of the Kosrae Bureau of Planning and Statistics, to begin the implementation of a new coastal resource management program.

The Kosrae Island Resource Management Program (KIRMP) was officially established under Kosrae State Law 5-56 in April 1992. The law created a new Development Review Commission (DRC) with broad responsibilities. These included assumption of the responsibilities of the former Environmental Protection Board, promulgation of regulations and procedures for a new development review permit and environmental impact assessment (EIA) process, preparation of land use plans, and coordination of all resource management activities on the island. Implementation of the law and the creation of three new administrative entities had not yet begun when I arrived in June, 1992. Gerson, Likiak and I mutually agreed that my technical assistance would be most useful if I helped to develop implementation mechanisms before the program was "officially" scheduled to be operational with the new fiscal year October 1, 1992.

The principle result of my internship was the *Kosrae Island Resource Management*

*Program (KIRMP) Implementation Strategy*, which was attached as an appendix at the end of this document. The *Implementation Strategy* summarized existing regulations, described the program's goals and objectives, outlined the responsibilities of the three newly created administrative entities and, most importantly, detailed the regulations concerning the development review permit and EIA procedures.

The primary tasks of the proposed *KIRMP Implementation Strategy* were to organize and coordinate the three new administrative entities created under KIRMP, and develop regulations that would guide their daily operational and decision-making responsibilities. The first task in the *Implementation Strategy* was to review the effectiveness of all existing resource management agencies and their regulations. This provided a way to assess what resource management tools were already in place and what needed to be created. To fulfill requirements of the law and plug a large gap in island resource management, the *Implementation Strategy* created a new development review permit and an EIA process. This part of the program became the foundation for the rest of the KIRMP. The *Implementation Strategy* also promoted public education and participation. Unfortunately, all aspects of the program could not be implemented because of time constraints. The creation of marine parks and conservation areas, land use plans and integrated resource planning had to be deferred until a future time.

Comprehensive resource management is relatively new to Kosrae, and to the Federated States of Micronesia (F.S.M.). In the past, resource management efforts focused on specific problems as they arose. This piecemeal approach to resource management does not work well when the degradation of resources stems from many sources. In Kosrae, coastal resources are being adversely impacted by many uses and activities:



coastal transportation (shoreline roads, ports and airfields on reefs), sewage and garbage disposal, dredging, sandmining, habitat destruction (filling), and poor land use practices (Rappa and Miller 1989). A program to deal effectively with these many sources will require more integrated strategies that cross sectoral boundaries and focus upon the interactions and interdependencies of all resources, and upon the processes that govern the ecosystems in which they occur (Juhasz 1991). Kosrae has recognized and responded to this need by undertaking one of the most ambitious resource management programs in the region -- the Kosrae Island Resource Management Program (KIRMP).

I was fortunate to be involved with the initial implementation of KIRMP, and see the program evolve from legislative mandates to an operational program. But ever since I departed Kosrae, I wondered what would become of this unique program that so many people wanted to succeed. It is well known that programs often fail because of deficient implementation methods, or they simply fail to meet their objectives (Lowry 1985). This report assesses the effectiveness of the *KIRMP Implementation Strategy*, drawing on six conditions for effective implementation used by Sabatier and Mazmanian (1983) to evaluate the effectiveness of the California Coastal Initiative of 1972. Ultimately, it is hoped this assessment will provide useful information for KIRMP program administrators.

## BACKGROUND

### Environmental Setting

Kosrae is the easternmost island in the Caroline Island chain, situated at 5 20' North latitude and 163 00' East longitude (figure 1). Located within the intertropical convergence zone, Kosrae has abundant rainfall (180-250 inches), warm air and sea water temperatures (average of 80 F), northeasterly trade winds from November through March, and typically southeasterly trade winds from March through October (Auyong et al. undated). Although rainfall can be heavy throughout the year, winter months (November-March) tend to be slightly drier than the summer months (May-October). Droughts occur infrequently, but tend to be more common and severe during El Niño events. Likewise, typhoons are normally rare in this part of the Western Pacific, but tend to be more common during El Niño years (Likiak Wesley, pers. comm.).

Kosrae is roughly triangular in shape and measures eight and one-half miles by ten miles (figure 1). With a 42 square mile landmass, it is the second largest island in the F.S.M., and the only single-island state. Kosrae is a lush, tropical island made up of two rugged basaltic mountain ranges rising to over 2,000 feet, whose slopes are scoured by deeply eroded valleys. Numerous rivers and streams carry sediments from the interior lands toward the sea, forming an alluvial plain that averages about one mile in width.

The alluvial coastal plains account for roughly 30% of the total land area. Mangrove forests occupy most of the lowlands subject to tidal action, and form a protective barrier against direct wave attack from the ocean. Mangrove forests represent 22% of Kosrae's forest cover (Birkeland et al. 1992). A mixture of coconut palms and other coastal vegetation covers the coastal plains inland of the mangroves. This lowland

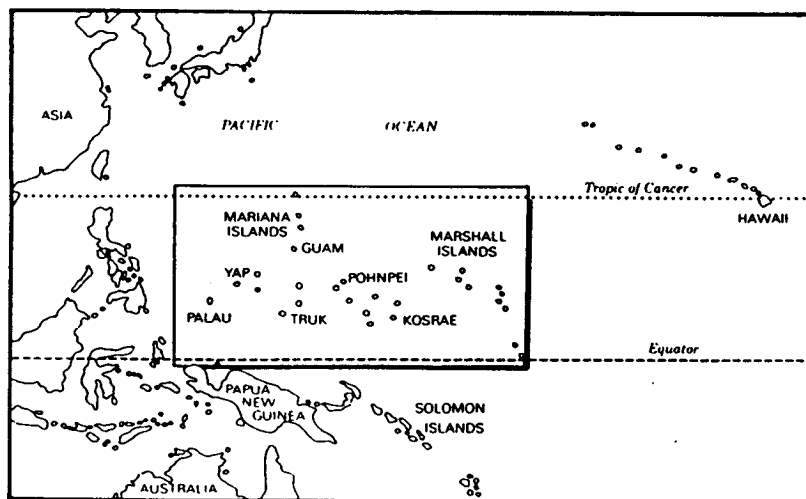
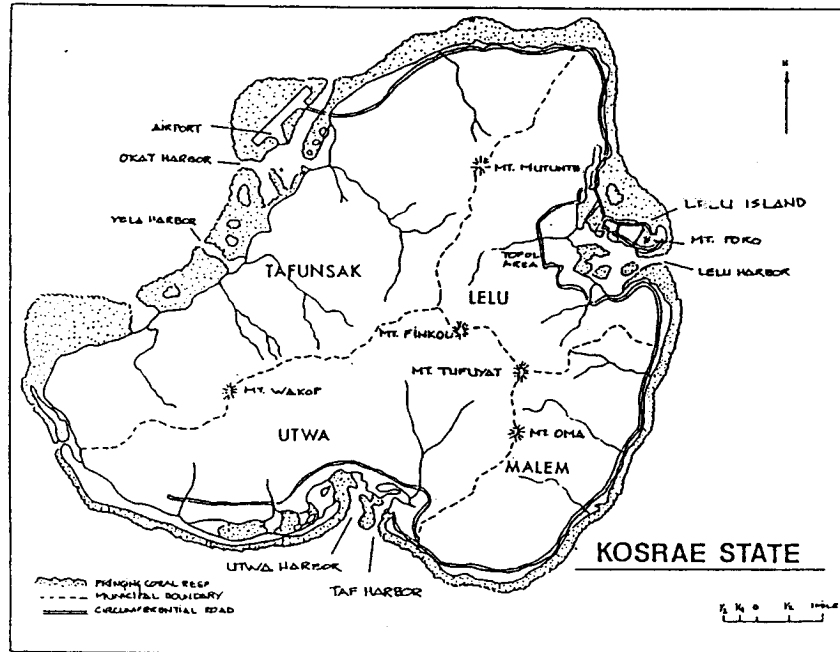


Figure 1. Kosrae State, F.S.M. Location within the Western Pacific Ocean and island features. Sources: Auyong et al. undated, and University of Oregon Micronesia Program (1992).

region is where most of the villages and farmlands are located, and are thus the most heavily impacted areas on the island. Sandy beaches have formed along the coast where there are no mangroves, and are currently experiencing significant erosion. Probable causes for the erosion include coastal development, modifications of nearshore currents, sand-mining, and sea level rise (Miller et al. 1992).

Freshwater swamps can be found inland from the mangrove and coastal strip vegetation. Within these swamp forests lie some of the largest *Terminalia carolinensis* (Ka) trees in Micronesia (Auyong et al. undated). On better drained soils, agroforestry dominates the landscape, particularly if access is made easier by roads. Agroforests cover approximately 23% of the island (Birkeland et al. 1992). Coconuts, bananas, breadfruit, citrus (oranges, tangerines and limes), hard and soft taro and various vegetables (cabbage, cucumbers and yams) are cultivated in this region.

The higher upland portions of Kosrae are characterized by densely forested valleys, hills and mountains. These upland forests account for 71% of all forest lands (Birkeland et al. 1992). Access to these upland forests is limited and as a result they remain relatively pristine. The tops of higher mountains are covered by dwarf cloud forests, that contain many plants endemic to this very moist microhabitat.

A healthy fringing coral reef platform extends two to five kilometers out from the main volcanic part of the island (Birkeland et al. 1992). The flat platform reef is nearly continuous around the island except where it is notched by three natural harbors -- Okat, Lelu and Utwe. The platform reef gradually slopes downward outside of the breaker zone, providing excellent habitat for coral reef communities. The reef extends to its widest point off Tafunsak and Lelu (out to 5 km), and is very narrow near Malem and Utwe (1-2

km). Eventually the reef drops off steeply into the abyss of the Western Pacific.

## **Social and Economic Setting**

### **Population Trend**

Kosrae is experiencing rapid population growth. The annual growth rate is estimated to range between 3.0 - 3.2 % per year, which translates to a doubling in the population every 23.5 years (F.S.M. 1989; Kosrae State 1992). Evidence for rapid growth can also be found in the age distribution of the population. In 1991, fifty percent of the population was under the age of 16.7 years (Kosrae State 1992). Even if birth rates are reduced in the near future, the population will continue to grow as the younger generation reaches childbearing years. The current population of about 7,600 persons is the highest that Kosrae has ever experienced (Kosrae State 1992). A graph showing the population since the early-1800s can be found on page 4 of the attached KIRMP Guidelines and Regulations Booklet.

### **Social Structure**

To adequately assess the implementation of KIRMP, it is important to recognize and understand the social structure and traditional lifestyle in Kosrae. Disease from contact with whalers in the mid-1800s reduced the population from about 4,500 to less than 300 (Kosrae State 1992). During this period of low population, New England Congregationalist missionaries were able to earn the trust of the Kosraeans and force out the whalers, and their associated western diseases and "heathenish ways" (Segal 1989). Despite many changes in the last 100 years under Spanish, German, Japanese and American rule, respect for the church has remained strong and has become a major force

in holding communities together through times of political change and a breakdown of traditional culture (Birkeland et al. 1992).

Some traditional social values have survived the many changes in administration and continue to influence modern-day society. One social value that remains strong is the sense of commitment to the family and community (Likiak Wesley, pers. comm.). A typical Kosraean extended family consists of many individual families living in close proximity. Mean household size averages 9.7 persons (Auyong et al. undated). The role of the family is extremely important in Kosrae. Families are a cohesive force, and are the basis for many social and community responsibilities and obligations. Families are also important economically, since family members are expected to help each other in their efforts to fish, obtain food from the family land, build homes and cook meals. In Kosrae, the precise relationship to a particular family can make a difference in how you are perceived and respected in the community. Not only do these relationships give people status in the community, but also a sense of security as well, since extended families can often number several hundred people. This extended network represents a significant reservoir of potential helping hands or people "looking out" for each other's interests. Furthermore, family obligations most surely influence political decisions throughout this small island.

Another important social value taught to the younger generations is respect for their elders (Segal 1989; Likiak Wesley, pers. comm.). Respect thus defines one's place in society; elders demand the most respect and are treated accordingly, while younger Kosraeans have less and tend not to be as influential. This tradition of respect is important in terms of its influence in modifying community behaviors or choosing a

particular course of action. Respect for elders also applies to siblings. The first-born child is usually born with a set of responsibilities to the family. This is especially true for the first born son, who is expected to provide for the parents until their death, and oversee the well-being of the family. First-born daughters also play an important role in the family, helping their mothers raise the rest of the family.

Respect also manifests itself in the complex relationships between men and women. From a young age, girls are taught to respect their brothers (Segal 1989). The gender roles follow those of a traditional patriarchal society. Kosraean men work in high level government jobs, offshore fisheries, construction or the family farm. Women traditionally take care of the children and household, glean the reef for food, work as secretaries in government offices or in the service sector. Although there are no written rules binding people to these social customs, the fear of embarrassing one's family provides powerful motivation to adhere to community values and expectations.

#### Property Ownership

The land tenure system in Kosrae is based upon individual private property rights (Birkeland et al. 1992). Only residents of Kosrae can own property on the island, though micronesians and foreign investors can lease lands from Kosraean citizens. Land can be owned by both males and females. It is generally divided among siblings upon the death of the parents, with the oldest son usually receiving the most land. Nearly all families (at least extended families) own land in Kosrae, but this is beginning to change (Likiak Wesley, pers. comm.). A few individual land owners have already sold their land in order to purchase automobiles and other material goods. The long-range implications of this practice may result social class differences, as certain families come to own most of the

land and other families are left landless. Land ownership is very important, because subsistence farming provides a significant portion of the daily supply of traditional foods.

### Economy

Kosrae's economy is roughly two-thirds currency based, and one-third subsistence. The present monetary economy is at least 90% dependent, directly or indirectly, on government expenditures and not on the production of marketed goods or services (Auyong et al. undated). Most of the government revenue comes from U.S. Compact Funds.

The importance of subsistence in the economy should not be underestimated. Subsistence agriculture and fishing provides most of the basic food for Kosraeans. Coconuts, breadfruit, hard and soft taro, bananas, cucumbers, cabbage, limes, oranges, tangerines, and a variety of marine fish and invertebrates provides people with an abundant and sustainable food supply. While some reefs areas have begun to show signs of overfishing, most agriculture production remains well below its potential (Birkeland et al. 1992).

The heavily reliance on subsistence fishing and farming creates a situation where only 12% (904) of the population works in the cash economy. Of those employed, 81% work for the government and 19% work in the private sector (Kosrae State 1992). Most households have one or more wage earner who usually has some type of government job that pays at a minimum \$1.35 per hour. Though the per capita income is low (\$1,668 per person per year), the combined value of cash income and subsistence consumption (defined as the value of food products taken from the local environment rather than purchased) comes to \$13,787 per household per year (Auyong et al. undated).



The extended family network efficiently circulates hard currency throughout the economy and fuels a greater demand for expensive imported foods and goods. The demand for imported foods and goods increases every year as the buying power of Kosraeans increases due to greater island employment and overseas family members sending money back to Kosrae. For example, the value of imported goods rose 20% from 1990 (\$5,946,974 U.S. Dollars) to 1991 (\$7,412,098) (Kosrae State 1992). Unfortunately, there is an enormous trade imbalance. In 1991, exports from trade totaled a mere \$102,903, while tourism generated \$306,075 (Kosrae State 1992).

The future economy of Kosrae will likely be more dependent upon a cash economy. Recently, the East-West Center completed an assessment for the potential of establishing a nature-based tourism industry in Kosrae, aimed at attracting needed currency, and at the same time promoting long-term resource conservation (Birkeland et al. 1992). In addition, the government of Kosrae is forging ahead with plans to construct a new tuna processor/cannery and cold storage facility. The plant is expected to employ 1,100 people at full capacity, and generate substantial income for workers and the state government (Miller et al. 1992; Likiak Wesley, pers. comm.). However, this \$30 million investment consumes most of the remaining Compact Development Funds for the remaining duration of their availability (10 years). This one-shot effort at economic self-sustainability will likely have large impacts Kosrae's environmental, social and cultural resources, particularly if foreign labor is imported.

### **Political Setting**

Kosrae has been administered by Spanish, German, Japanese and American governments over the last 100 years. From 1947 until 1986, the United States

administered Kosrae as part of the Trust Territory of the Pacific Islands. In 1986, the States of Kosrae, Pohnpei, Chuuk (Truk) and Yap signed a Compact of Free Association agreement with the U.S., giving them control of all internal and external affairs, except defense, and funds to help them establish a new democratic nation -- the Federated States of Micronesia (F.S.M.) (Segal 1989; Katter and Dahl undated). The Compact agreement is valid for fifteen years and is scheduled to officially terminate in the year 2001, but may also be extended. The Compact Funds are important because they are the only steady source of income supporting basic operations of the state and federal governments - \$5.5 million in 1991 (Kosrae State 1992). A dramatic reduction or complete loss of these funds could seriously impair all government functions, including basic infrastructure projects (roads, public utilities), economic development projects, general environmental conservation and protection, and employment for the people.

The F.S.M. government, including the individual state governments, are closely modeled after the U.S. system. Both state and federal governments have judicial, executive and legislative branches that operate similarly to those in the U.S.. The Executive Branch agencies for Kosrae are detailed in figure 2. At independence many of the former Trust Territory laws and regulations were incorporated, almost verbatim, into the F.S.M. government (McCarthy 1978). Kosrae also adopted many of these Trust Territory laws into its own state laws. In some cases, the laws and regulations have not been updated to reflect the new government or changes in attitudes that have developed since the Trust Territory era. This is especially true for environmental protection and conservation laws and regulations. Most of these laws and regulations were drafted by the Trust Territory Environmental Protection Board in the 1970s and early 1980s, and are still

## Organization of Kosrae State Executive Branch

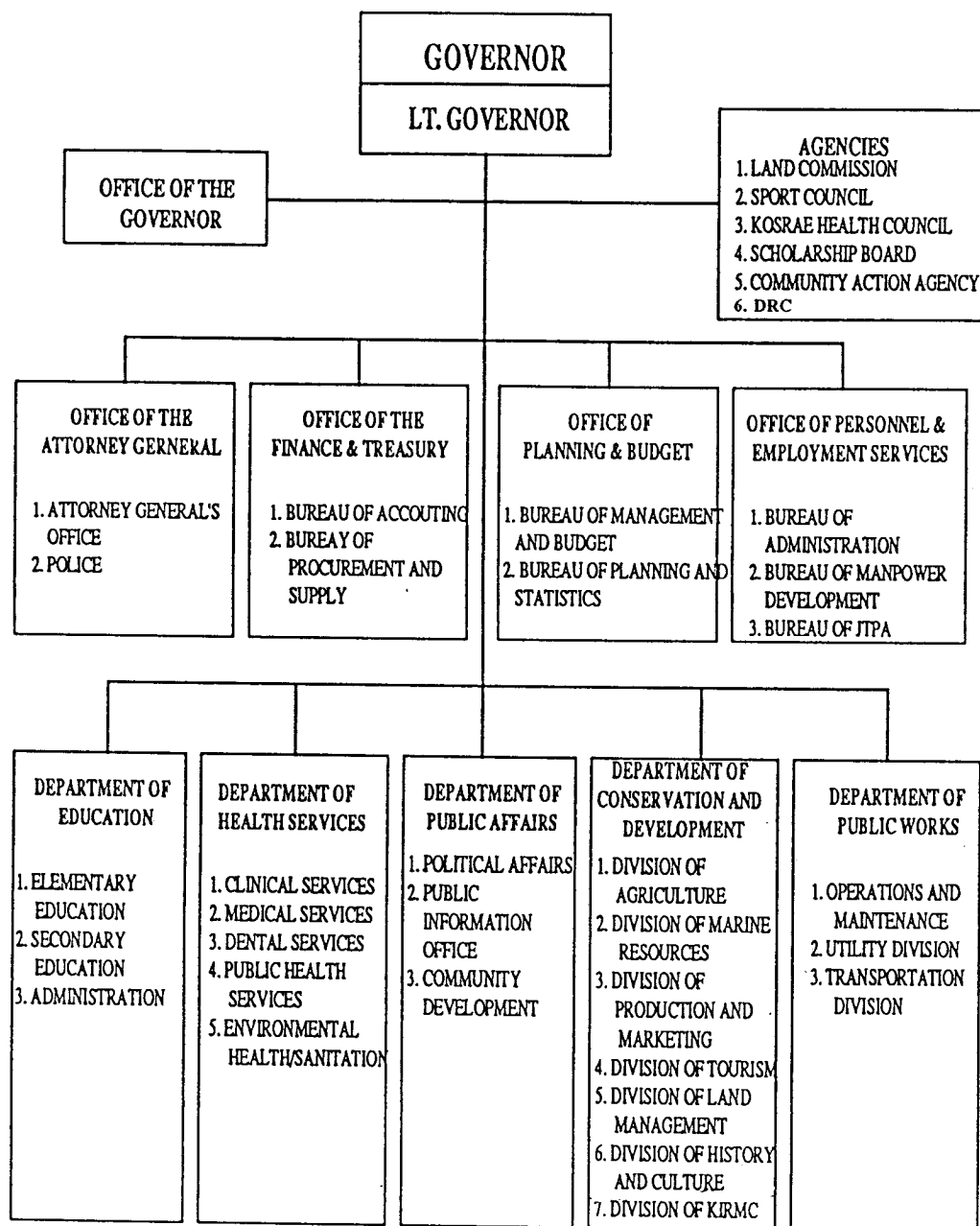


Figure 2. Organizational chart of the Kosrae State Executive Branch. Most resource management agencies are located in the Department of Conservation and Development. The DRC is not part of any organized line agency. Source: Kosrae Bureau of Planning and Statistics

used today. The Kosrae Island Resource Management Program represents an effort by Kosraean government officials to break away from these outdated laws and forge a new comprehensive coastal management scheme.

## KOSRAE ISLAND RESOURCE MANAGEMENT PROGRAM (KIRMP)

### KIRMP Genesis

Before KIRMP came into existence, the Environmental Protection Board (EPB) was the agency responsible for regulating and abating pollution on land, air and water. The Kosrae EPB operated from federal EPB regulations, which were derived from the U.S. Trust Territory Administration. The management of individual resources remained in the jurisdiction of sectoral agencies such as the Division of Marine Resources or the Division of Agriculture and Forestry. But sectoral resource management did not always prove effective, especially when jurisdictions overlapped. This was especially true for mangrove resources, which are under jurisdiction of both the Division of Marine Resources (mangrove crab and fish) and the Division of Agriculture and Forestry (mangrove forests).

Under authority of Planning Assistance to the States, the U.S. Army Corps of Engineers completed a coastal resource inventory and companion atlas for Kosrae (USACE 1989; Manoa Mapworks 1987). The purpose of the inventory was to describe the natural resources which had ecological, recreational, subsistence, cultural and commercial importance. The inventory contained information on physiography, flora, corals, invertebrates, fish, vertebrates, archaeological and historical resources, resource use and water quality. Ultimately, the report and companion atlas was intended to provide coastal resource planners and managers a way to "identify valuable resources so that future development can be planned as to minimize or avoid impacts on these resources" (USACE 1989).

The next step towards forming a comprehensive coastal resource management

program was initiated after Governor George requested assistance from the University of Hawaii Sea Grant Extension Program for recommendations on how to manage the environmental impacts resulting from future development projects in Kosrae (Birkeland et al. 1992). During the summer of 1989, the Hawaii Sea Grant Extension team conducted on-island studies, which resulted in a report (Auyong et al. undated) and several summaries (Dahl and Wilson-Molina 1991; Univ. of Hawaii - Pacific Island Network undated) outlining recommendations for a Kosrae Island Resource Management Program (KIRMP). Concurrently, Governor George organized a Coastal Resource Management Committee, composed of staff from many different Kosrae State agencies, to work with the Hawaii Sea Grant professionals, assist with the implementation of the recommendations, and help the legislature draft appropriate legislation. Previous to this survey, the Kosrae Division of Tourism prepared a five-year State Tourism Plan, focusing on small-scale, community-based development in accordance with Kosrae's unique cultural and natural resources (Wilson 1989). These two projects marked the first efforts to assess Kosrae's cultural and natural resources from an integrated, whole-island perspective (Birkeland et al. 1992).

Recommendations from the State Tourism Plan and the University of Hawaii identified nature-based tourism as a way to generate community-based employment and conserve natural resources over the long term. As a result, Governor George, who strongly supported conservation and small-scale approaches to economic development, requested further assistance to explore the potential of nature-based tourism in Kosrae. Despite a change in governors and philosophies on economic development, the East-West Center was invited to conduct a survey of the coral reef and mangrove areas in Okat,

Utwe and Walung villages to assess the potential for establishing conservation areas and nature-based tourism enterprises (Birkeland et al. 1992).

The Kosrae State Legislature also provided strong support for improved resource management and conservation. The Legislature's Committee on Resources and Development intended the bill to "improve the functioning of the State's environmental review process through a streamlined permit process that would allow responsible developers to carry out their activities in a timely manner" (Kosrae State Legislature 1992). The legislature clearly favored a program that balances environmental protection with development. The following passage is taken from a committee position paper (Kosrae State Legislature 1992).

The Committee on Resources and Development recognizes development as not only desirable but necessary. Environmental Protection and development can not only coexist but can also be mutually supportive. A healthy reef enhances the fishing and tourist industries. Persons and businesses dependent on these industries have a strong interest in taking measures to preserve the reef.

However, rampant, unhindered development risks the sustainability of Kosrae. Even with the inflow of Compact Funds, Kosraeans depend on their farming and fishing to sustain themselves. Damage of these resources on which these activities depend threatens not only the beauty of Kosrae but also the traditional sense of independence of the Kosraean family. When families no longer have their farming or fishing to fall back on, they will have suffered a loss beyond measure.

After many long months, and seven draft versions, the legislature and the governor reached a mutual agreement, and signed into law Kosrae State Law 5-56 in April, 1992, thereby officially creating KIRMP. The purpose of this legislation was to "create a Development Review Commission (DRC) that will be responsible for overseeing the wise use and protection of Kosrae's resources, balancing the needs of economic and social

development with those of environmental quality and respect for our traditional ways" (Kosrae State Legislature 1992). The next section will detail how KIRMP was organized in this landmark legislation.

### **KIRMP Organization: Initial Structure**

One of the primary intents of the KIRMP legislation, was to replace the EPB with a more comprehensive resource management agency that had more power to respond to the problems and resource management situations that Kosrae faced. As a result, the Development Review Commission was created, in part, to:

Protect the environment, human health, welfare and safety, to abate, control and prevent pollution or contamination of air, land and water in accordance with this chapter and commission regulations by balancing the needs of economic and social development with those of environmental quality and adopting regulations and pursuing policies which, to the maximum extent possible, ensure that economic and social development are environmentally sustainable. (K.S.L. 5-56, Sec. 7.402(1))

The legislature required the DRC to "adopt and provide for the continuing administration of a development permit system, including the requirement of development proposals" for all projects that may significantly affect, directly or indirectly, natural or historic resources or be incompatible with surrounding uses (K.S.L. 5-56, Section 7.402(3)). The legislature also included a provision mandating project proponents to complete environmental impact assessments "prior to taking any action significantly affecting the quality of the human environment." (K.S.L. 5-56, Sec. 7.405(1)&(2)).

The DRC is a 5-member commission appointed by the governor and confirmed by the legislature. A DRC appointment is only a part-time position, and members meet whenever a proposal is submitted for review or as often necessary to carry out other



responsibilities. To assist the DRC in its numerous responsibilities, a Technical Advisory Committee (TAC) and program office were also created (figure 3). The TAC is a ten-member committee comprised of agency staff representing many different sectors of government. The TAC serves two main functions: (1) to provide multi-disciplinary technical guidance to the DRC in the review of development proposals and environmental impact statements, and (2) improve coordination among member government agencies. The program office was set up to be staffed by two full time resource professionals who would assist the DRC and TAC with daily administrative duties, and streamline the permit process.

Though KIRMP legislation (K.S.L. 5-56) clearly identified the main duties and

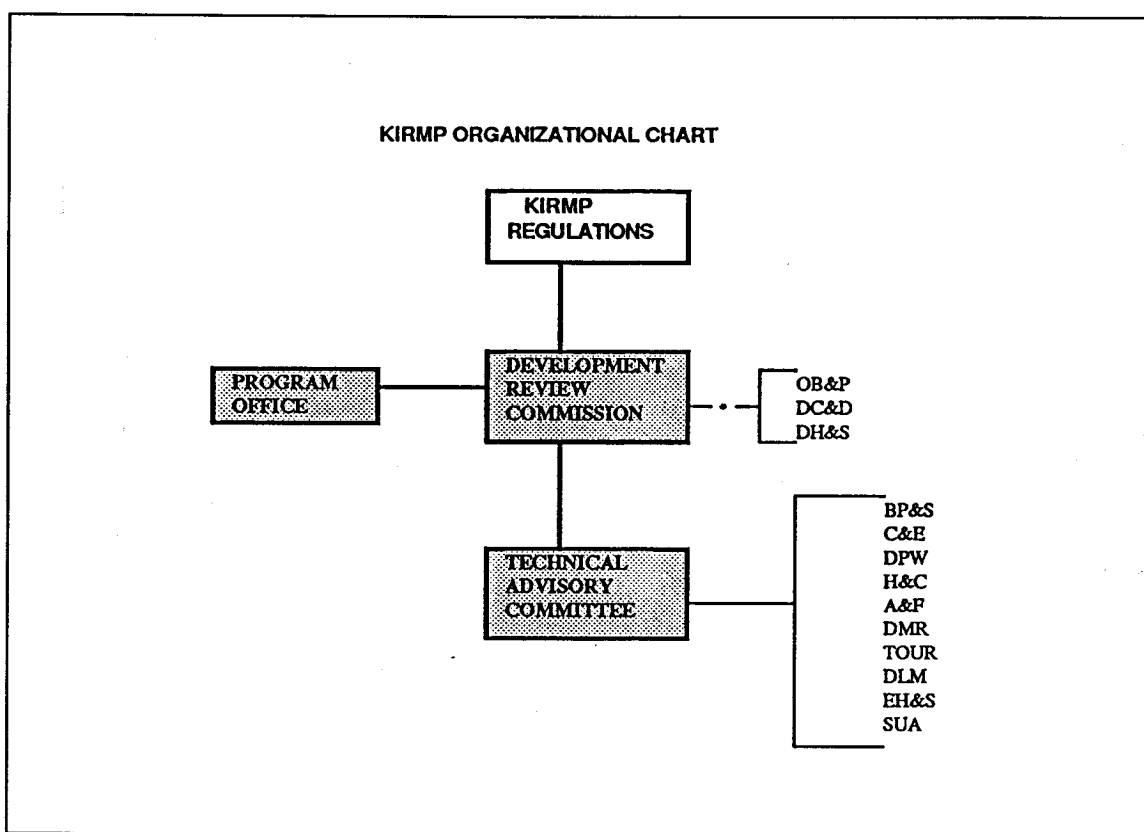


Figure 3

powers of the three administrative bodies (DRC, TAC and program office), it did not explicitly specify the program goals, clarify program objectives or link together different parts of the program. The lack of initial funding and staff also hindered KIRMP's initial implementation. Funding for KIRMP, including salaries for the Program staff, were not obtained until after the start of the new fiscal year, October 1, 1992. The total funds secured to initiate the Program and pay salaries was only \$25,592 (U.S. Dollars). The delay in hiring permanent staff and selecting the TAC and DRC members caused the implementation and organization of KIRMP to be delayed until my arrival in June, 1992. The remaining sections of the paper will review the implementation strategy that was formulated during my stay in Kosrae, and assess its relative success.

### **KIRMP Implementation Strategy**

Soon after my arrival in Kosrae, I discovered that Gerson Jackson, Director, Office of Budget and Planning, and Likiak Wesley, Chief, Bureau of Planning and Statistics wanted me to assist them implement KIRMP before the new fiscal year started. Their goals were to organize the new administrative bodies (DRC, TAC and program office) and promulgate regulations that would allow KIRMP to become at least partially operational. With these broad goals in mind, I began to organize what would eventually become the *KIRMP Implementation Strategy*. This strategy represents the culmination of my efforts as a University of Oregon Micronesia Program Technical Assistant, and is included as an appendix at the end of this report.

### Clarifying Program Policies, Objectives and Goals

The first task in developing KIRMP's implementation strategy was to clearly identify the program's policies, goals and objectives. This was difficult to do from the exact wording of the law. K.S.L. 5-56 explicitly states that the purpose of the legislation is to create a Development Review Commission which was to be "responsible for overseeing the wise use and protection of Kosrae's resources, and balancing the needs of economic and social development with those of environmental quality and respect for traditional ways" (K.S.L. 5-56, Sec. 1). This statement identified the purpose of the program and defined one of the main program policies. The closest approximation to program objectives listed in the law are the fourteen descriptions of the DRC duties and powers (K.S.L. 5-56, Sec. 2). Program implementers inferred these statements to represent program objectives, since more specific objectives were not defined. The legislature also failed to provide adequate guidance on how the DRC should specifically achieve these policies and objectives or how to balance between the needs of economic development with the needs of environmental and cultural conservation.

Clearly written policies and objectives are important to the successful implementation of a program because they help guide the decision-making process. They also help administrators evaluate the program, serve as unambiguous directives to implementing officials, and as a resource available to supporters of those objectives (Sabatier and Mazmanian 1983). Fortunately, KIRMP policies, goals and objectives were already clearly defined in recommendations by the Committee on Resources and Development (Kosrae State Legislature 1992) and the University of Hawaii Sea Grant Extension (Dahl and Wilson-Molina 1991; Univ. of Hawaii - Pacific Island Network

undated). These policies and objectives were developed to address twelve major coastal issues of concern in Kosrae (Univ. of Hawaii - Pacific Island Network undated). In order of priority, they include:

- Construction and Infrastructure Development
  - Road alignment
  - Land clearing and earthmoving
  - Dredging
  - Sand mining
  - Filling of wetlands and coral reef flats
- Resource Extraction
  - Inshore fishing
  - Harvesting mangrove wood
- Population and Economic Growth
  - Sewage
  - Solid waste
  - Shoreline construction
  - Oil product spills
- Natural Hazards
  - Shoreline erosion

It should be noted that this list was completed during 1988-89, and does not include concerns over the environmental and social impacts associated with the new tuna cannery or recent foreign development projects. Though the policies, goals and objectives are listed on pages 4-6 of the KIRMP Guidelines and Regulations Booklet, they are listed again as they will be referred to throughout the rest of this report.

*(a) KIRMP Overall Policies:* Overall policies are broad statements of desired ends or outcomes seeking to alleviate a perceived problem. The Kosrae Coastal Resource Management Committee (University of Hawaii - Pacific Island Network undated) developed the following policies for KIRMP to ensure that:

- Coastal ecosystems will always be maintained to provide optimal benefits to all citizens of the state by balancing resource utilization for economic development, subsistence, and recreation with resource conservation. Important decisions about resource use shall be made with public input from the state and municipal governments and the general public;
- The living resources, ecosystems, and environment, including those within shoreline property, mangrove areas, seagrass beds, coral reefs, waterways and air space, will always be maintained in a manner that does not adversely affect future utilization;
- Nonliving resources and environment, including air, water, earth, and especially cultural and historic resources, will always be maintained in a healthy and useful condition; and
- A mechanism will be established to prevent or minimize conflicts both among users of coastal resources and among the ways in which these resources are used.

(b) *KIRMP Objectives*: Objectives are the specific (and usually) measurable statements of action that, if taken, will lead toward or be consistent with a goal. The Kosrae Coastal Resource Management Committee (University of Hawaii - Pacific Island Network, undated) intended the following fifteen statements to serve as KIRMP objectives. Some of the statements could also be taken to represent overall policy statements (e.g., prevent pollution).

- Minimize siltation of rivers, streams, and coastal waters resulting from earthmoving activities.
- Prevent significant coastal erosion due to sand-mining operations.
- Minimize filling operations that destroy valuable wetland habitats, including mangrove forests, freshwater swamps, and seagrass beds.
- Minimize damage to coral reef habitats from dredging activities.
- Prevent significant new construction on rapidly eroding shorelines.
- Ensure that shoreline construction does not accelerate shoreline erosion and that shore protection structures are built in a non-damaging manner.
- Prevent pollution.
- Prevent the overharvesting of renewable resources.
- Prevent the loss or destruction of important historical and cultural resources.
- Minimize environmental impacts resulting from the exploitation of mineral resources.
- Establish and maintain a system of conservation areas, including parks and protected areas.
- Encourage the restoration of environmentally degraded areas.

- Recommend planning and management guidelines.
- Encourage and sponsor public awareness projects for the wise use of island resources.
- Ensure that new development and land use are compatible with, and do not detract from, existing development.

(c) *Program Goals*: The program goals are a combination of specific implementation mechanisms and long-term goals, providing program administrators with the management tools and guidance necessary to achieve overall KIRMP policies and objectives. The following five program goals describe the overall purpose and scope of KIRMP (Dahl and Wilson-Molina 1991).

- 1) **Implement Project Review**: KIRMP will improve Kosrae's ability to develop the island by minimizing future damages to the island's biological, cultural and physical resources. The program will also help to ensure that the development projects reflect a balanced approach to resource use for economic development, subsistence, recreation and conservation.
- 2) **Improve Development Planning and Coordination**: KIRMP will improve coordination among government agencies in their efforts to plan economic development and manage natural resources.
- 3) **Integrate Renewable Resource Management**: KIRMP will assist existing government agencies in managing resource use so that future uses and harvests are sustained. This will include assisting the agencies to protect and conserve important habits and species for the future.
- 4) **Reduce Impacts from Natural Hazards**: KIRMP will help government agencies plan development so that damage from natural hazards, such as shoreline erosion and coastal flooding, is minimized. The program will also assist in efforts to educate the public about natural hazards and how to protect life and property against them.
- 5) **Improve Public Education and Input**: KIRMP will assist in the coordination of public environmental education efforts carried out by the state agencies. It will educate the public on program goals and procedures, as well as develop ways to involve the public in achieving program goals and objectives.

#### Assessing Existing Laws and Regulations

Once KIRMP's policies, goals and objectives were clarified, the next step was to assess the existing resource management framework for both the federal and state

governments. A complete listing of all Kosrae State and F.S.M. National laws and regulations are given in pages 12 - 16 of the KIRMP Guidelines and Regulations Booklet. Prior to KIRMP, all resources were managed sector by sector and administered by federal and state resource agencies. From my observations and communications with Kosrae State government personnel, I sensed there is a strong division between federal and state government, both in terms of management effectiveness and consistency.

A review of environmental laws and regulations would suggest that F.S.M. government plays an important role in environmental management (i.e., Environmental Health and Sanitation Permits, Environmental Protection Act, Endangered Species Act, Historic Preservation Act, Foreign Fishing regulations). In practice, however, the role of the F.S.M. government is significantly less, because many state agency personnel are either unaware of or ignore federal regulations. This problem is due partly to the fact that there are no federal offices or resource managers stationed in Kosrae to enforce or administer the regulations, or to coordinate with state officials. In addition, individual states see federal involvement as an intrusion into state affairs (Katter and Dahl undated). As a result, the individual state governments have more power at the local level than the F.S.M. government. Part of this stems from the fact that state government personnel are respected members of the community. The people tend to trust the government leaders, and the leaders feel a great sense of responsibility toward the people (Katter and Dahl undated). This relationship between government leaders and the public contributes to the island's unity and makes planning and management an easier task.

The assessment of existing laws and regulations also provided a quick assessment of the deficiencies in the current sectoral management regime. For example, the Division of

Agriculture and Forestry has few regulations and has no codified enforcement powers. This management constraint makes mangrove and upland forests extremely susceptible to development and degradation. The Division of Marine Resources (DMR) faces similar enforcement and regulation inadequacies. If a marine resource violation occurs, DMR staff must first get the police to issue a citation or arrest the offending party, since they have no power to do so. The DMR also lacks regulations and specific management plans for certain exploited fisheries and specific conservation areas. Regulations by these resource management agencies are normally drafted only after resource problems, such as depletion, has occurred. In general, resource management in Kosrae is reactive and lacks a forward-thinking or a preventive type of management ethic.

#### Development Review Permit

One of the greatest threats to Kosrae's environmental and cultural resources come from unhindered and ill-conceived development projects (Kosrae State Legislature 1992). In response to this threat, and the need for economic development, the Kosrae State Legislature required the DRC to balance economic development with environmental and cultural concerns by establishing a development review permit process. The permit and EIA requirements gave KIRMP administrators the necessary tools to regulate development, provided the regulations and administrative procedures could be clearly organized and promulgated. This comprehensive development review process is one of the most important components of KIRMP and serves as a foundation for the rest of the program (Univ. of Hawaii - Pacific Island Network undated).

The draft regulations for the development review permit and EIA/EIS process are provided in Appendix B of the KIRMP Guidelines and Regulations Booklet. The



development review permit process (see flowchart on page 11 of KIRMP Guidelines and Regulations) serves several important roles, including (1) streamline overlapping permits and administrative duties to one permit and one agency (DRC), (2) screen projects for significant environmental impacts, (3) integrate the EIA process early into the planning of a project to ensure timely consideration of environmental and social factors and to avoid delays.

Not all development projects are subject to the review process. Only those persons meeting the criteria listed in Appendix B, Section 3.1 are required to fill out the development review permit application (see Appendix D). Exemptions to the permit requirement are listed in Section 3.2 of the regulations and are based on a strong desire to require permits only for those activities that are potentially destructive (Katter and Dahl undated). The exemptions were considered necessary in order to gain public acceptance of the permit program. The strong recognition of private property rights by citizens and the government prevents the government from significant restrictions or controls on development or other damaging activities on private land (Likiak Wesley, pers. comm.). Although KIRMP legislation gives the DRC clear authority to regulate activities on private property, it was decided the best course of action in implementing this new program was to start out with modest restrictions. More restrictive criteria could be employed after the public accepts the program.

Once a project proponent completes and submits a development review permit, the comprehensive review process is initiated. The program office uses the criteria provided in Section 5.1 of the regulations to determine if the potential impacts of the project are "significant" to require a more comprehensive EIA, and completion of an EIS. The permit

is then forwarded to the Technical Advisory Committee for review. The TAC may also request that an EIS be completed, or recommend that conditions be placed on the permit before approval. The TAC also determines if the draft and final EIS meets appropriate standards set forth in Part 6 of the Regulations. Finally, the DRC will evaluate recommendations from the TAC and the public, before making a decision on whether or not to issue the permit. All DRC decisions, especially if made against recommendations and allow significant impacts, must be clearly explained in the Public Record. Project proponents can appeal the DRC to reverse their decision to deny a permit, and, if necessary, have the permit decision resolved through the courts.

The EIA process developed for KIRMP aims at logical and rational decision making and provides several benefits for KIRMP administrators. One benefit is an overall greater awareness of the project. By definition, EIA is:

"The process by which all environmental, social, cultural and economic impacts of a project, including alternatives, are identified and analyzed before the decision to approve a project are made. The EIA is intended to help planning to prevent or reduce adverse impacts to acceptable levels before investment is committed." (Regulations for Development Projects, Section 1.4(n)).

Not only does the EIS fully disclose the project impacts, but it provides a forum for resource planners and managers to formally review and comment on projects that would otherwise proceed without comprehensive scrutiny. The extensive review process also greatly improves interagency coordination, especially within the agencies that comprise the TAC. During my last few meetings with these groups, members were already actively discussing future plans for the program, and ways to address several controversial development projects, for example, a Japanese owned and operated dive shop and a large

tuna cannery in Okat. Good cooperation and communication between the program office, DRC and TAC is crucial to KIRMP's success, since many of the programs objectives concerning economic development, land-use planning, resource management and permit/EIS reviews all require extensive contact, coordination and input from members of these groups.

#### Public Involvement/Education

Even though the DRC and other state agencies have been given the responsibility to manage the island's resources for the benefit of present and future generations, all citizens have a responsibility to take an active role. Regulatory programs simply do not work if people are not willing to support them. Citizen non-compliance commonly occurs when requirements are excessively burdensome (detailed studies and reports, high costs), when people perceive they are being over-regulated or have animosity towards the program or its administrators, or when people are simply unaware of the regulations and program requirements (Sabatier and Mazmanian 1983). In contrast, citizens follow policies and regulations if they clearly understand (1) how their daily actions impact resources used by the entire community and (2) how the regulations can benefit them in the long- and/or short-term.

Public input was incorporated into the decision-making process throughout KIRMP's development. The public can voice their concerns during the permit or EIS review process, at public meetings, and during policy formulation. In addition, K.S.L. 5-56 requires DRC records to be available for public review. Unfortunately, public input was not solicited during the drafting of the regulations for development projects (Appendix B) by the time I departed in late September, 1992. However, a 30-day public review has

been completed since (Likiak Wesley, pers. comm.).

Broad environmental awareness and education is also needed before any resource management program becomes effective. Successful implementation of KIRMP will only result if people are aware of its existence and support its purposes. In response to this concern, a public education program describing KIRMP and the new permit requirements was launched while I was still in Kosrae. This proved to be successful, but only represents a start to promote program awareness.

A lack of education and understanding of basic ecological relationships contributes to many environmental problems. For example, garbage and sewage disposal, mangrove clearing and filling, earth-moving activities and pollution from animal husbandry all impact the quality of the coastal environment. Education would help lessen these problems. Kosraeans are well aware of their close ties to the environment and have a vested interest in conserving it, but many people are unaware that small actions, such as throwing garbage on the reef, can have significant cumulative impacts on the environmental quality. An environmental education plan (pages 22-26 in the KIRMP Guidelines and Regulations Booklet) attempts to address this problem by organizing an environmental education committee that would be responsible for overseeing the development of a specific agenda and program.

## ASSESSING THE EFFECTIVENESS OF THE KIRMP IMPLEMENTATION STRATEGY

### Implementation

Natural systems management involves making decisions about policy and resource use. More specifically, those decisions determine how resources are allocated and under what conditions or arrangements the resources may be developed (Lowry 1980).

Regulatory programs are frequently created to assist resource management agencies with this decision-making process and control impact-generating activities. Public reception of regulatory programs are generally mixed, depending upon the net benefits or costs incurred by each individual. Critics claim regulatory programs restrict individual freedom within a market economy, lead to an inefficient allocation of resources, are not equitable to all sectors of society, and most importantly do not often achieve their statutory goals and objectives (Sabatier and Mazmanian 1983). Although the first three criticisms are important, each can be alleviated or justified under certain circumstances. For example, it can be argued that restricting the harvest of a resource leads to inefficiencies in resource allocation and restricts personal freedom, but it may prove necessary if others use the resource and society as a whole benefits from the regulation. In contrast, arguments justifying the use of police powers and public funds will likely be difficult for program supporters if the program is not at least moderately successful in achieving its objectives, which is in turn dependent upon successful implementation.

Implementation refers to the act of transferring policy decisions into practice (Miles 1989). Ideally the decision identifies the problem(s) to be addressed, stipulates the objectives to be pursued, implies a causal theory in which the objectives can be attained, and structures the implementation process to reach its goals (Sabatier and Mazmanian

1983). Implementation is concerned primarily with the constraints on policy that result from natural, socioeconomic and political environments. Interactions between these environments modify the decision-making process so that what is implemented may be substantially different than what was intended or decided in the original policy.

The difference or inconsistency between a policy idea conceived at one level or branch of government, and the translation of that idea into specific actions at another level or branch is what Lowry (1985) terms an "implementation gap". Implementation gaps can ultimately cause a program to become ineffective or completely fail. In contrast, effective implementation greatly improves the chances that a program will function as planned. But what constitutes successful or effective implementation? Implicit in most program analyses is the assumption that effective implementation is synonymous with meeting statutory goals or objectives (Lowry 1985). While this assumption may prove valid, Sabatier and Mazmanian (1983) claim there are many other factors relating to the implementation process that can affect effective implementation as well.

The *KIRMP Implementation Strategy* represents an initial effort to organize a comprehensive resource management program so it can be effectively administered. The regulations, development review permit process, and administrative procedures developed as part of this implementation strategy address the major concerns and objectives identified by the program's creators (see page 21). More specifically, the most pressing concerns relate to the economic, social and environmental impacts resulting from unplanned development projects, and the ineffectiveness of the current management regime to deal with these problems (Kosrae State Legislature 1992).

Since the actual time I spent in Kosrae was limited to 3 months, the KIRMP

Implementation Strategy was constrained to those aspects which needed to be addressed promptly (development projects) and those components which provided a foundation for the rest of the program. As a consequence, the development review permit and EIA processes became the primary area of focus. Comprehensive resource management plans for specific resources (coral reefs and mangroves), and land-use plans were not completed, but the *Implementation Strategy* did review existing regulations and management procedures. These constraints in the implementation strategy should be considered throughout the following assessment.

### **KIRMP Implementation Assessment**

Two measures were used to analyze the effectiveness of the KIRMP Implementation Strategy. Sabatier and Mazmanian (1983) developed a set of conditions for effective implementation. They predict that implementation and the achievement of objectives will be enhanced if:

1. The enabling legislation or other legal directive mandates policy objectives that are clear and consistent or at least provides substantive criteria for resolving goal conflicts.
2. The enabling legislation incorporates a sound theory identifying the principal factors and causal linkages affecting policy objectives, and gives implementing officials sufficient jurisdiction over target groups and other points of leverage to attain, at least potentially, the desired goals.
3. The enabling legislation structures the implementation process so as to maximize the probability that implementing officials and target groups will perform as desired. This involves assignment to sympathetic agencies with adequate hierarchical integration, supportive decision rules, sufficient financial resources, and adequate access to supporters.
4. The leaders of the implementing agency possess substantial managerial and political skill and are committed to statutory goals.

5. The program is actively supported by organized constituency groups and by a few key legislators (or a chief executive) throughout the implementation process, with the courts being neutral or supportive.
6. The relative priority of statutory objectives is not undermined over time by the emergence of conflicting public policies or by changes in relevant socioeconomic conditions that undermine the statute's casual theory or political support.

Sabatier and Mazmanian (1983) note that the "strength" of each of the above conditions necessary to achieve policy objectives is dependent on several factors, including (1) the difficulty and expense of change required in target group behavior, (2) the predisposition of target groups toward the mandated change, and (3) the diversity in proscribed activities of the target groups. To summarize, effective implementation in the face of numerous changes or resistance, will only be met if the six Sabatier and Mazmanian conditions are "strongly" met.

The second measure used to assess the effectiveness of the *KIRMP Implementation Strategy* entailed a more detailed look at condition number one -- clear and consistent policies and objectives. Each of the program's policies, objectives and goals were assessed for how well the *Implementation Strategy* addressed them. The causal theory was listed for each case as well. The results of each of the assessments are summarized in Tables 1 and 2, and discussed in the following text.

#### Condition 1: Clear and Consistent Policy Goals and Objectives

Kosrae State Law 5-56 contained many ambiguous goals and objectives that had to be inferred from the purpose of the bill, and the DRC's powers and duties section (see K.S.L. 5-56, Sect. 1 and 7.402). The language of K.S.L. 5-56 was confusing because it did not specifically identify or prioritize KIRMP's policies or objectives. This unclear wording is surprising, since the policies, goals and objectives were clearly identified in previous



recommendations from legislative committees (Kosrae State Legislature 1992) and the University of Hawaii Sea Grant Extension (Dahl and Wilson-Molina 1991; Univ. of Hawaii - Pacific Island Network undated). The recommended policies and objectives significantly overlapped with those inferred from K.S.L. 5-36, so program implementors decided that either set adequately represented the intent of the legislature. To avoid confusion, implementors adopted the more clearly written recommended policies, goals and objectives as "official." These helped provide direction for program implementation and administration, and provided a useful means to assess the effectiveness of the program.

Since the statute requires meeting multiple objectives that are sometimes in conflict, Sabatier and Mazmanian (1983) suggest that some formal criteria (ranking or priority) or more detailed policy directives be provided for resolving those conflicts. Unfortunately, formal criteria, rankings or policy directives were not specified by the Kosrae State Legislature, so it was often difficult to determine the legislature's intent. For example, no criteria were given to help the DRC interpret what the legislature intended a "significant" impact to mean.

K.S.L. 5-56 also did not specify how to resolve potential goal conflicts. The DRC was given considerable discretion in deciding how to "balance social and economic development with those of the environment." The law simply stated that this "balance" was to ensure that "economic and social development is environmentally sustainable." The KIRMP policies identified by the Univ. of Hawaii - Pacific Island Network (undated) offered only a little help to interpret the "balancing" requirement. They suggest policies should balance "resource utilization for economic development, subsistence, and recreation

with resource conservation." Thus the DRC, and other implementing agencies, were left to develop their own balancing criteria.

The danger in allowing the DRC substantial freedom to interpret important sections of the Program comes from the political makeup and powers of the DRC. The DRC is not a technical or scientific commission, members may not even have any experience in politics or resource management. Thus, if the legislature does not provide guidance or clarify its intentions, the DRC will adopt regulations and policies as it sees appropriate. This may prove beneficial if the DRC is staffed by competent and skilled persons, or it may cause the program to be ineffective if management skills are deficient (Sabatier and Mazmanian 1983). During the implementation of KIRMP, the DRC was intensively assisted by the TAC and off-island professionals. This additional influence provided the necessary political and managerial skills necessary to initially implement the program.

#### Condition 2: Sound Causal Theory

Causal theory implies a means by which goals are achieved. Normally, the means are based upon a set of assumptions relating the achievement of goals to a set of factors responsible for the problem, and ultimately to the behavior of targets groups and other conditions subject to change (Sabatier and Mazmanian 1983). The causal theory assessed under this section deals with the initial implementation level, where management mechanisms are first established. An assessment of the actual goal achievement will not be known until there is a clear decision record -- five to ten years down the road.

For a comprehensive program such as KIRMP, the causal theory involves several mechanisms, each seeking to control a different type of action. One mechanism utilized the existing framework of the resource management agencies and their respective

regulations to control resource harvest problems. Program implementors consciously kept resource management in the domain of the individual resource agencies because they did not want to interfere in their jurisdiction, and because the resource agencies already had staff knowledgeable in these areas. The logic behind this theory is that specific regulations can effectively limit an individual's access to a resource (temporal, spacial, quantity, species) and thus prevent overharvesting. A major fault of this theory, however, was the lack of baseline information, staff and enforceable regulations.

Another means to achieve program goals was the completion of land use plans. Unfortunately, the process of coordinating the DRC and TAC to devise comprehensive land use plans or special area management plans had to be postponed due to time constraints. Likewise, a permit system for the discharge of pollutants in the air, land or water was never completed as mandated by K.S.L. 5-56. An initial assessment of former EPB pollution regulations found these to be adequate for the time being, but must be updated after other parts of the program are organized. These deficiencies mark crucial places within KIRMP that must be addressed in the near future if effective resource management is to become a reality.

In contrast to the above deficiencies, K.S.L. 5-56 specifically designed KIRMP to address more comprehensive resource problems resulting from unplanned and ill-sited development projects. KIRMP implementors modified an existing F.S.M. Earthmoving Permit, F.S.M. EIA regulations and Kosrae State Development Below the High Water Mark regulations to create the new development review permit and EIA process (see Appendix B, Sect. 3-7). The underlying theory behind this process was that the lack of project review and mechanism to mitigate harmful impacts was unnecessarily degrading

Kosrae's environmental and cultural resources (see figure 4). Adequate project review would allow program officials to identify potentially harmful impacts. The permit requirement empowered the DRC to condition (or deny) permits so that negative impacts are alleviated to the satisfaction of the DRC.

The development review and EIA processes provided a flexible means to assess

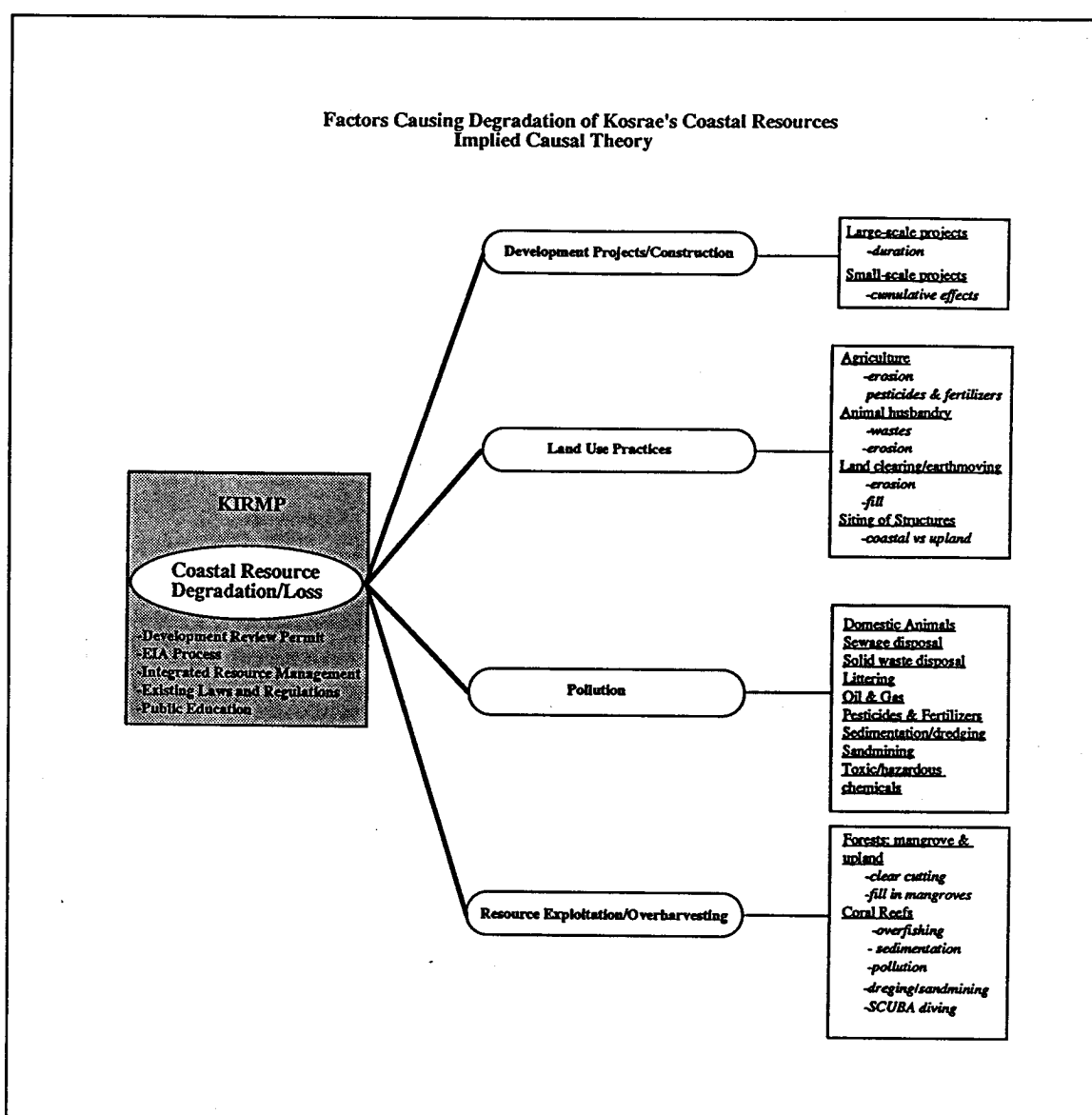


Figure 4

individual projects on a case-by-case basis. There are, however, several problems with this flexibility. First, the legislature provided no criteria or guidelines specifying how projects should be reviewed or even what projects (size, type, location) should be subject to the regulations. In regards to project scope, most Kosraeans perceive outside (foreign) development as the greatest threat to the culture and environment. But the law is written so that all activities, including private and public, are subject to KIRMP regulation. The development of minimum criteria (Appendix B, Sec. 3.1) requiring projects to go through the permit review or EIS requirement proved to be difficult and controversial. There is a delicate balance between the perception of government over-regulation and public acceptance -- the problem is finding it.

One other problem with the case-by-case permit system is that it introduces considerable subjectivity in reviewing cases. For large cases, a detailed review by the DRC, TAC, program office and public meetings will likely ensure proper scrutiny. In contrast, small, routine cases (e.g., a small fill) may be quickly approved by the TAC chairman and DRC commissioner without proper review. This is a real threat given the nature of family and community ties on the island. The DRC must be willing to exert its regulatory powers and obligations, despite this strong influence, if the program is to succeed. Of course, regulations and guidelines cannot be devoid of all subjectivity, nor should they. Some subjectivity is necessary to assess differences in individual cases. But too much subjectivity can lead to implementation and administrative deficiencies. Thus, the regulations (see Appendix B) were created for the *KIRMP Implementation Strategy* to provide criteria and guidelines, thereby making the decision-making process more technical and consistent (Miller et al. 1992).

### Condition 3: Coherent Structuring of the Implementation Process

Sabatier and Mazmanian (1983) assert that even the clearest objectives and soundest underlying theory will prove inadequate unless the statute also structures the implementation processes to maximize the probability that implementing officials and target groups will behave in a manner that is consistent with statutory objectives. They suggest target groups are more likely to comply with a statute if it: (1) assigns the implementation to a supportive agency that will give it high priority; (2) provides substantial hierarchical integration within and among implementing agencies by minimizing the number of veto/clearance points and by providing supporters of the objectives inducements and sanctions sufficient to assure acquiescence upon implementing officials and target groups with a potential veto; (3) provide adequate financial resources to the implementing agency to hire the staff and conduct the technical analyses involved in the development of regulations, the administration of permit systems, and the monitoring of target group compliance; (4) bias the decision rules of the implementing agencies in favor of adherence to statutory objectives; and (5) provide ample opportunity of for interest groups and sovereigns supportive of statutory objectives to intervene in the implementation process. Each of the above criteria were used to evaluate how well the agencies and target groups affected by the *KIRMP Implementation Strategy* complied with the Program's policies, goals and objectives.

#### *a) Assignment to a Sympathetic Agency*

The implementation of KIRMP was assigned primarily to a newly created state resource management agency -- the DRC. The creation of the DRC was in response to the failure of the former EPB agency, which lacked the jurisdiction, enforcement capability

and coordination to deal with comprehensive resource management problems (Katter and Dahl undated). The DRC, supported by a strong TAC and program office, made implementation of the program its highest priority. Strong natural resource and culturally orientated policies also ensured the program would be biased toward environmental concerns. The initial implementation of KIRMP, however, was completed by myself and Likiak Wesley, Chief, Bureau of Planning and Statistics and eventual Chairman of the TAC, in cooperation with the DRC. At the time of my arrival, the DRC, TAC and program office were not staffed, so organizing these agencies became a major part of the implementation strategy.

Although the DRC is currently sympathetic to KIRMP's policies and objectives, this is a politically appointed commission, in which members serve four-year terms. If a governor is elected that does not support KIRMP, the balance of the DRC can be considerably tilted since two to three new DRC members are appointed every two years due to the staggered appointment schedule. In addition, the effectiveness of the DRC will undoubtedly be influenced by family and community relationships.

*b) Hierarchically integrated implementing agencies with few veto points and adequate incentives for compliance*

K.S.L. 5-56 and the subsequent Development Review Regulations created a highly integrated decision process in which the DRC, TAC, and program office review all permit requests. The level of review and extent of interagency cooperation varies with the complexity of the project. Applications for small, simple projects would be reviewed individually by each of the TAC and DRC members. Larger projects require meetings among the individual agencies and between KIRMP agencies. Additional public input is

also required. Recommendations from these permit (or EIS) reviews are then summarized and forwarded to the DRC, who is the sole agency in charge of issuing permits. In sum, the process entailed a comprehensive review, with the final decision funneled down to one agency -- the DRC. Theoretically, this process avoided the conflicts associated with the requirement of multiple agency approval of a permit before it can be issued. But this type of single agency approval will only be effective if the DRC possesses the necessary political and administrative skills to run the program (Sabatier and Mazmanian 1983).

One weakness of the *KIRMP Implementation Strategy* is that it lacks the necessary hierarchical organization in the management of individual resources. The program was structured to retain the management authority of individual resources within the respective agencies. To date, the resource management agencies remain in charge of promulgating regulations as necessary to fulfill their management duties. The precise role of the DRC in this matter is remains unclear. It is envisioned that the DRC, with the assistance of the TAC and program office, will coordinate with the sectoral management agencies to develop more integrated and comprehensive resource management plans. The details of this interagency coordination have not been elucidated to date (Likiak Wesley, pers. comm.).

A major strength of K.S.L. 5-56 is that it gives clear enforcement powers to the DRC to ensure compliance from both public and private target groups (K.S.L. 5-56, Sec. 11.1302). The DRC, within reasonable bounds, may enter public or private property for the purpose of obtaining information, making inspections, taking samples or checking compliance with permit specifications and regulations. If the DRC finds persons in violation of KIRMP rules and regulations, they can issue a cease and desist orders, impose



civil penalties up to ten thousand dollars for each day of violation, or commence with civil actions to enjoin the violation. Persons failing to adhere to the DRC's requests will be turned over to the Attorney General's Office for additional court proceedings.

From the above enforcement provisions, sectoral agencies must not violate KIRMP regulations and rules. But this only holds true in the case of a violation. There still remains no clear understanding as to how the sectoral agencies will adhere to KIRMP directives in the day-to-day management and decision-making activities. This uncertainty may further hinder implementation or future administration of the program. Despite the fact that the TAC is comprised of personnel from the individual sectoral agencies, there is no agreement or process coordinating these different agencies. Conflicts could arise if the DRC attempts to "over-step" its boundaries by assuming some of the duties of these individual agencies. Only effective coordination and communication will prevent this from happening.

*c) Decision Rules Supportive of Policies and Objectives*

K.S.L. 5-56 incorporated decision rules that supported the program's policies and objectives. The Law empowered the DRC to make these decisions and formulate rules guiding these decisions. One important decision rule focused on "significant" impacts. All project proponents are required to submit development proposals (applications) for activities that may "*significantly* affect, directly or indirectly, natural or historic resources, or significantly alter the landscape or be incompatible with surrounding land or water uses" (K.S.L. 5-56, Sec. 7.402(3)). This requirement placed the burden on permit applicants to sufficiently detail their projects, so the program office, TAC and DRC could determine the "significance" of the impacts. The determination of "significance" was

removed from the subjectivity of the permit applicant, because it was agreed that most Kosraeans do not have adequate education or experience to adequately assess the different impacts, much less the significance. The Development Review Permits cannot be approved until the TAC and DRC are satisfied that "all significant environmental effects that can feasibly be avoided have been eliminated or substantially lessened" (Regulations for Development Projects, Sec. 3.10(2)).

The DRC administers and makes decisions regarding two other permits -- Toilet Facilities and Sewage Disposal Permit and Solid Waste Permit. It is also responsible for approving the land use plans. Thus, the DRC makes many important decisions affecting the implementation and daily administration of KIRMP. Since the DRC was created as a new agency specifically to implement and administer the program, it will likely support the statutory goals and objectives -- at least more than if the program was placed under an agency with multiple or conflicting responsibilities. Once again, it should be noted that DRC support of the goals objectives is dependent upon its political composition and influence by family and community members.

#### *d) Financial Resources*

Financial resources, or lack thereof, constitutes one of the major factors impeding smooth, and rapid implementation. K.S.L. 5-56 was passed by the legislature in March, 1992, and signed by the governor in April, 1992. No funds were allocated to implement the program until October 1, 1992. As a result, the organization of the DRC and TAC was delayed, and the program office staff could not be hired. My arrival and subsequent work on the *KIRMP Implementation Strategy* represented the first effort to organize and implement the program. Lack of funding, organization and lead implementing agency

prevented any earlier work.

All of the funding for KIRMP comes through legislative appropriations, which are dependent on U.S. Compact Funds and other F.S.M. sources. Ultimately, this means funding will be increasingly scarce as Compact Funds begin to be phased out unless some other source is provided. The legislature, after an appeal by the DRC Commissioner for more funding, granted only \$25,592 to the DRC and KIRMP for use in fiscal year 1993. This amount of money only funds one staff position and one secretary in the program office, and allows for the purchase of some office equipment. The Bureau of Planning and Statistics, Division of Sanitation, Department of Conservation and Development and the Division of Health and Sanitation are required to provide assistance, in the form of secretarial work, photocopying, vehicle use, etc. "only to the extent that it does not interfere with the performance of its own duties."

Despite funding limitations, the amount allocated will be sufficient if the program director is motivated and coordinates well with the other agencies. Outside funding sources are currently being sought for the program advisor position. Filling these two positions will help organize and coordinate the implementation process. Unfortunately, both of these positions remain vacant due to financial constraints and internal conflicts over filling the program director position (Likiak Wesley, pers. comm.).

*e) Formal Access to Supporters*

K.S.L. 5-56 clearly supports public input into the process. Drafters of the law mandated that all DRC meetings, and records of action, be open to the public. The public also has a 30-day opportunity to review and comment on all regulations drafted pursuant to this program. Public meetings are scheduled to be held in each municipality as well.

An appeal process, written into the law and specified in the regulations, is available for persons seeking to contest unfavorable permit decisions.

The regulations also directly incorporated public input into the development review permit evaluation and EIS process, but this is subject to DRC discretion. Discretion was incorporated to make the permit process more efficient. The DRC and TAC insisted that project activities inflicting minimal damage to the environment should be allowed to proceed as rapidly as possible. In Kosrae, public meetings are difficult to organize and require much time. Lengthy delays for the approval of small projects would be unpopular and create unnecessary animosity toward the program.

Thus, there are numerous places within KIRMP where public involvement is encouraged. Public involvement includes those persons who support the program and wish to participate effectively, and those who are aggravated and seek an outlet. Public involvement will only work if (1) the public participates and (2) the DRC provides adequate notice of when, where and how people can get involved.

#### Condition 4: Commitment and Skill of Critical Implementing Officials

There are no minimum criteria or requirements for persons to meet before they are appointed to the DRC. The governor selects the members, who must then be approved by the legislature. Thus, selection of the DRC members could be influenced by political considerations. There is no guarantee that DRC members will possess the necessary political and managerial skills to successfully direct the program. The commissioner, assistant commissioner and secretary of the DRC are elected from existing members. Politics associated with family and communities relationships plays a key role in this process. In contrast, appointment to the TAC is made by the directors of the individual

state agencies. The appointees would be expected to be knowledgeable about their respective agency's policies and regulations, and address these concerns in the TAC forum. A TAC chairman, vice Chairman and secretary are elected from the TAC members. The program office personnel are selected by formal government hiring procedures (application and interview) before they can be hired. It is in the best interest of the DRC to hire a person knowledgeable and politically respected, but family and community relations often play into this selection process as well.

As stated in many of the previous sections, the DRC is the crucial agency responsible for making and enforcing most of the decisions in the KIRMP program. Ultimately, it will determine the success of program. But the TAC and program office will also be important. These two groups are critical to KIRMP's implementation and provide a system of checks and balances among each other. If one group is deficient in their responsibilities and duties, another one can fill in or take up the slack. This is precisely what has already happened, since the DRC and TAC have assumed some of the roles of the unstaffed program office.

The current DRC is made up of individuals with varying degrees of experience in environmental affairs. All have some experience working in the government. During my stay, one member moved to Hawaii to take another job, so one seat remains vacant. The new DRC Commissioner is the former EPB Chairman. Although this means he is knowledgeable and experienced in environmental affairs, he has shown a tendency to rely on past procedures of the EPB. This may impede implementation of newly developed regulations and administrative procedures.

The multi-disciplinary TAC is staffed by many experienced individuals from a variety

of government agencies. This group has shown a considerable degree of cooperation and support for this program. Altogether, the DRC and TAC contain sufficient skill to successfully implement and administer KIRMP, but the program office staff are greatly needed to coordinate and network these two groups and the public.

#### Condition 5: Continuing Support from Constituency Groups and Sovereigns

Environmentalism in an island like Kosrae takes on a different form than in the U.S.. There are no formal on-island "environmental" groups that have been organized to date. However, there are many individuals who strongly support resource conservation because they are involved in nature-based tourism enterprises or depend upon the natural resources for trade. For example, a new organization called Discover Kosrae, founded by Madison Nena, was created to link the conservation of natural resources with low impact, revenue-generating tourism. In addition, since Kosrae is so dependent upon subsistence fishing and farming, most people will support KIRMP provided they are not overly restricted.

Several senators and at least three directors of government agencies are very strong supporters of KIRMP as well. Most of these people staffed the committees that established KIRMP. This strong support is a major factor leading to KIRMP's actual implementation. It takes strong political, financial, managerial and technical resources to eliminate an existing program and replace it with a far-reaching, comprehensive program like KIRMP (Thomas and Grindle 1990). With so much time, money and effort invested already, it should be no surprise that these supporters have a strong interest in seeing KIRMP function effectively.

Another source of support comes from international environmental groups such as Greenpeace or the Nature Conservancy. These groups are involved in helping establish a

nature-based tourism industry in Kosrae and establishing a system of marine conservation areas. The University of Hawaii, University of Oregon, University of Guam, Micronesia Community College, East-West Center, and various U.S. government agencies have all provided either financial support or technical assistance to assess the natural resources or help establish a resource management program. This broad support stimulates additional legislation and further support within the Kosraean government -- especially when funding is involved.

#### Condition 6: Changing Socioeconomic Conditions (and Political Support) Over Time

Political and public support for government programs tends to diminish over time (Sabatier and Mazmanian 1983). This is particularly true for regulatory programs that restricts an individual's freedom to use their land as they see fit. But public support will remain high as long as there is a perception that a problem truly exists (resource exploitation, pollution, foreign development, cultural changes), and the program is helping to eliminate or at least alleviate some of the perceived ill-effects. Support for regulatory programs also depends upon the interaction of various socioeconomic and political forces.

The current economy of Kosrae is heavily dependent upon subsistential fishing and agriculture. In order to feed the present and future generations, fishing and farming harvests must be sustainable over the long term. Sustainable resources are ultimately tied to the amount of resource available (land or reef), the quality of the resources, and the relative harvest rate in relation to the growth rate. Proper management is needed to assure that harvests and replenishment remain in equilibrium. Other constituency groups in support of KIRMP are those persons and organizations involved with nature-based tourism enterprises. They are highly dependent upon the long-term conservation and protection of

Kosrae's natural resources. KIRMP was designed to protect and conserve the resources which would sustain low-impact uses. Kosraeans will be more likely to support the program if they understand that it can help sustain their future resources.

Concurrent with the push for conservation and preservation of traditional ways, Kosrae is on the verge of economic change. Many people, including the governor, want to see Kosrae become more economically self-sufficient. Undoubtably, this will involve large-scale development projects and a greater reliance on a cash economy. Projects such as the \$30 million dollar tuna cannery will likely have profound effects upon Kosrae's economy, culture and marine resources. The more than one-thousand new jobs will give the people more buying power than they have ever experienced. Ultimately, this may erode the delicate and dependent relationship Kosraeans now have with the environment. As a result, support for KIRMP may diminish.

Another force effecting future support for KIRMP is politics. Political support for KIRMP will probably change somewhat with each new administration. Administrations with environmentally and culturally sensitive views will support KIRMP, while pro-development administrations will try to weaken portions of the program. Fortunately, KIRMP was designed to balance development and environmental concerns. While some administrations may have sufficient influence to swing the pendulum towards one side, the DRC, TAC and program office was created to complement and balance each other, and hopefully prevent the pendulum from swinging too far in either direction.



## Strengths and Weaknesses of the KIRMP Implementation Strategy

Table 1 summarizes the extent to which the implementation of KIRMP meet the Sabatier and Mazmanian (1983) conditions for effective implementation. The table deals primarily with the conditions affecting the permit and planning decisions during the initial implementation phase of KIRMP in June - September 1992. To a lesser extent, the table addresses how well some of the daily administrative decisions have met the criteria since September (Likiak Wesley, pers. comm.). Because sections of KIRMP will continue to be implemented over the next few years, this assessment is preliminary. The sections that have not been implemented distinctly show up as deficient in the assessment.

Overall, the KIRMP Implementation Strategy meets most of the conditions for effective implementation (see table 1). Almost all of the conditions have been attained at least moderately well. Unclear legislative directives, problems with interagency coordination, skill deficiencies and lack of funding all decrease the effectiveness of the *Implementation Strategy*. Table 1 affords a comparison of the strengths and weaknesses of the *KIRMP Implementation Strategy*. These are also described below.

### Strengths

There were many strengths of KIRMP that helped it become one of the most successful environmental programs in Kosrae and the F.S.M.. During the initial organization of KIRMP, it was decided that the program would need to address all resources and activities throughout the entire island. This whole-island jurisdiction of KIRMP allows program administrators to regulate upland activities that negatively impact the fragile coastal resources. Another important strength of the program is the priority given to controlling impacts associated with unplanned and ill-conceived development

**Table 1. Extent to Which the Implementation of the KIRMP Met the Hypothesized Conditions of Effective Implementation<sup>a</sup>**  
(modified from Sabatier and Mazmanian 1983)

Conditions of Effective Implementation	Overall Assessment	Discussion
Cond. 1. Statute contains clear and consistent policy directives	High/Moderate	Policy goals and objectives are ambiguous as stated in K.S.L. 5-56, but are more clearly defined in KIRMP Implementation Strategy. There are few guidelines for establishing priorities or balancing economic and social development with environmental and cultural conservation.
Cond. 2. Statute incorporates sound causal theory identifying sufficient factors and target groups to attain statutory objectives	Mixed: High for development projects, moderate for integrated natural resource management	Factors affecting statutory policies and objectives, and identified problems were well understood, but adequate casual theory was not always incorporated into statute. It remains unclear as to how DRC will integrate management objectives with sectoral agencies, who lack sufficient regulatory powers. Permit review and EIA requirements address many problems, but leaves broad administrative discretion in the decision making process.
Cond. 3. Statute not only provides jurisdiction over target groups but also structures implementation to maximize probability of compliance from implementing officials and target groups.	Mixed: High to Low	Regulatory jurisdiction spans the entire island. Adequate enforcement provisions written directly into K.S.L. 5-56, but enforcement powers for resource management agencies is lacking.
a. Assignment to a sympathetic agency	High/Moderate	Statute assigned implementation to the newly created DRC, supported by the TAC and program office, thus guaranteeing high priority. But DRC is a governor-appointed commission and may not always have technical knowledge and skill to accomplish all assigned duties. New DRC Commissioner is former EPB Commissioner who may rely on ways of past. Many projects are initiated by the Kosrae State government. This may lead to conflicts of interest when TAC reviews projects.

*Continued on next page*

Table 1--Continued

b. Hierarchically integrated implementing agencies with few veto points and adequate incentives for compliance	High/Low	DRC has final decision-making authority over all land-use plans, and projects subject to development review and EIS requirements. Unclear as to how DRC coordinates with sectoral agencies for management of specific resources or future conservation areas. Strong enforcement provisions to ensure target group compliance, but lacks incentives for sectoral agencies to participate.
c. Decision rules supportive of objectives	High	Burden of proof on permit applicants, however, TAC and DRC must determine "significance" of impacts. Approval of permits and DRC business requires a quorum to be approved.
d. Financial resources	Low	Initial funding was extremely low to develop and implement a program from scratch. Inadequate funds caused a delay in the implementation and in hiring staff.
e. Formal access to supporters	High	Requirements for public meetings during permit review and EIA process; but subject to DRC disgression. Public may also comment on EIS and promulgation of regulations.
Cond. 4. Commitment and skill of top implementing officials	Mixed/Low	Support for the program was enthusiastic within the government, but actual effort was limited. Initially, there was a lack of organization, but this dissipated with time as the TAC and DRC clarified their roles. Potential conflicts involved with enforcing new regulations in the face of strong community and family ties. The program office was not staffed during this period and remains vacant.
Cond. 5. Continuing support from constituency groups and sovereigns	High	Organized constituency groups are those persons or organizations dependent upon natural resources, and international environmental groups (Greenpeace & Nature Conservancy). Support is high from several universities, private resource conservation foundations and the U.S. government. Greater widespread public involvement needed.

*Continued on next page*

**Table 1--Continued**

Cond. 6. Changing socioeconomic conditions (and thus political support) over time

Unknown

The economy of Kosrae is heavily biased towards subsistential fishing and agriculture, but is rapidly changing. A large-scale tuna cannery will likely alter the economy towards a greater reliance on hard currency. This may ultimately change traditional values favoring conservation of natural resources. Concurrently, many Kosraeans are interested in developing a nature-based tourism trade, which would thus favor strong conservation-based policies and programs.

projects. The development review permit and EIA processes gave program administrators a flexible, but powerful tool to regulate and mitigate harmful activities associated with development activities. In addition, strong enforcement provisions ensured compliance from target groups.

K.S.L. 5-56 also sufficiently structured the implementation process to maximize the probability that implementing officials and target groups acted consistently with program objectives and goals. The implementation and administration of KIRMP was assigned primarily to the newly created DRC, with support from the TAC and program office. These groups were generally enthusiastic about KIRMP, but lacked some of the managerial skills necessary to effectively implement the program. The newly created Development Review Permit/EIA process also fostered a greater degree of review among the DRC, TAC and program office. This review process ultimately streamlined the decision-making process to the DRC, thereby avoiding lengthy delays and interagency conflicts over decision making authority. Effective decision making was strongly dependent on good communication and cooperation between the DRC, TAC and the program office. Frequent interaction and coordination between the KIRMP administrative bodies represents an excellent opportunity for these groups to mutually formulate and adopt new management regulations and programs. This cooperation also acts to balance political influence from changing administrations and family obligations.

Finally, a push to include public input and participation into the KIRMP process proved to be another major strength. Public participation in government decision making is a new concept in Kosrae. This program marks the first true effort to include the public as part of the decision-making process. The importance of citizen participation is probably

not realized by all those persons involved in KIRMP, but some people are beginning to realize the potential benefits. While in Kosrae, I had several government officials tell me they can now see how including the public from the start will make their job easier down the line. Hopefully, education will spread this concept to others as well.

### Weaknesses

Table 1 also identifies many of the weaknesses associated with the *KIRMP Implementation Strategy*. A problem that revealed itself throughout this assessment was the lack of coordination and cooperation between the individual sectoral agencies, and the DRC, TAC and program office. Comprehensive resource management planning and the development of land use plans have already been severely hindered by the lack of communication. The *KIRMP Implementation Strategy* does provide a forum for the DRC, TAC and program office to meet and discuss issues and management problems, but so far no comprehensive planning involving the sectoral agencies has occurred. This lack of cooperation is exacerbated by the vacancy of both positions in the program office. Part of the role of the program office is to coordinate the DRC and TAC activities, including comprehensive planning with the sectoral agencies (*KIRMP Guidelines and Regulations Booklet*, page 8). The sectoral agencies are also contributing to the problem since they have ineffective regulations and few enforcement powers. Clearly, this marks one area that needs further clarification.

Another deficiency in the *KIRMP Implementation Strategy* is that it gives broad DRC discretion in the decision-making process. This is mainly because the legislature rarely specified its intentions or gave guidelines structuring the implementation of important sections of the program. In order to guide the DRC, it was necessary to interpret the

legislature's intent by researching previous committee recommendations or by formulating criteria based upon professional and local knowledge. This trial-and-error method of promulgating regulations obviously introduces some uncertainty into the program, but also provides the flexibility which is needed in an island like Kosrae. This method will work as long as program administrators periodically assess the effectiveness of the criteria and regulations, and change them as needed, and when there are qualified people assisting with the structuring of implementation.

Related to broad DRC discretion is the significant decision-making authority of the DRC. Although this streamlines the decision-making process, it places a lot of power into an agency that may or may not be able to wield it effectively. One remedy would involve giving the TAC more authority in the approval process. Since the TAC is involved in reviewing all projects, it should not add much burden or undue complexity into the decision-making process. This additional check will also help to ensure that decisions are buffered against political and family pressures.

A final weakness is the overall lack of funding for KIRMP. Not only does this prevent hiring critical staff and purchasing necessary program supplies, but it curtails public education programs and the proper training of staff. Many years and dollars have been spent by numerous individuals establishing this program. Funding constraints during this critical stage will not only delay the implementation, but seriously reduce the overall inertia driving the program forward.

### Extent to which Program Policies, Objectives and Goals were Met

Table 2 affords an opportunity to assess how effective, and by what means, the *KIRMP Implementation Strategy* met program policies, objectives and goals. Certain trends are apparent. Those policies, objectives and goals that were not well met were ones that required extensive coordination among the KIRMP administrative bodies and the sectoral agencies. This coordination process was not specifically addressed in the *KIRMP Implementation Strategy*, but needs to be in the near future. The remaining policies, objectives and goals deal with impacts associated with development projects and were effectively addressed by the *Implementation Strategy*, and more specifically, the development review permit and EIA process. Successful implementation of these policies, objectives and goals implies that the causal theory accurately described and addressed the main threat -- impacts from development projects.

An interesting comparison can be made between the assessment methods that created Tables 1 and 2. Both tables offer a way to assess the effectiveness of the *KIRMP Implementation Strategy*. Table 2 indicates that the *Implementation Strategy* is successful, at this initial level, in creating the potential to meet statutory policies, objectives and goals. It also identifies the need for additional clarification in interagency coordination. In contrast, table 1 probes the relative effectiveness in more detail, and flags some important deficiencies in the program beyond interagency coordination. These additional weaknesses could seriously impair KIRMP's success if left unaddressed. Thus, it is important to assess a program not only by how well it meets its policies and objectives, but how effectively the program's structure, procedures and regulations promote compliance by the administrative agencies and target groups.



**Table 2. Extent to Which the Implementation of KIRMP Met the Program's Policies, Goals and Objectives**

KIRMP Policies, Objectives and Goals	Overall Assessment	Causal Theory
<u>KIRMP Overall Policies</u>		
1) Coastal ecosystems will always be maintained to provide optimal benefits to all citizens of the state by balancing resource utilization for economic development, subsistence, and recreation with resource conservation. Important decisions about resource use shall be made with public input from the state and municipal governments and the general public.	High	Development Review Permit/EIA Process; public input
2) The living resources, ecosystems, and environment, including those within shoreline property, mangrove areas, seagrass beds, coral reefs, waterways and air space, will always be maintained in a manner that does not adversely affect future utilization.	Moderate	Development Review Permit; sectoral resource management regulations (coordination needs clarification)
3) Nonliving resources and environment, including air, water, earth, and especially cultural and historic resources, will always be maintained in a healthy and useful condition.	Moderate	Development Review Permit; DRC Pollution Standards; Historic Preservation Act; sectoral resource management regulations
4) A mechanism will be established to prevent or minimize conflicts both among users of coastal resources and among the ways in which these resources are used.	High	Development Review Permit/EIA Process; public input; Coordination between DRC, TAC, Program Office and sectoral agencies (mechanism established but needs clarification)
<u>KIRMP Objectives</u>		
1) Minimize siltation of rivers, streams, and coastal waters resulting from earthmoving activities.	High	Development Review Permit; Erosion and Sedimentation Control Standards
2) Prevent significant coastal erosion due to sand-mining operations.	High	Development Review Permit
3) Minimize filling operations that destroy valuable wetland habitats, including mangrove forests, freshwater swamps, and seagrass beds.	High	Development Review Permit
4) Minimize damage to coral reef habitats from dredging activities.	High	Development Review Permit; Erosion and Sedimentation Control Standards
5) Prevent significant new construction on rapidly eroding shorelines.	High	Development Review Permit

*Continued on next page*

Table 2--Continued

6) Ensure that shoreline construction does not accelerate shoreline erosion and that shore protection structures are built in a non-damaging manner.	High	Development Review Permit; Erosion and Sedimentation Control Standards
7) Prevent pollution.	High	Development Review Permit; DRC Pollution Standards
8) Prevent the overharvesting of renewable resources.	Moderate	Sectoral resource management regulations; Forum for DRC and TAC coordination -- needs refinement
9) Prevent the loss or destruction of important historical and cultural resources.	High	Development Review Permit; Historic Preservation Act
10) Minimize environmental impacts resulting from the exploitation of mineral resources.	High	Development Review Permit/EIA Process
11) Establish and maintain a system of conservation areas, including parks and protected areas.	Moderate	Univ. of Hawaii and East/West Center recommendations; DRC & TAC coordination needed with sectoral resource agencies
12) Encourage the restoration of environmentally degraded areas.	High	Development Review Permit/EIS Process (mitigation); Erosion and Sedimentation Control Standards
13) Recommend planning and management guidelines.	Moderate	Forum for DRC and TAC to discuss issues, but no formal procedures yet
14) Encourage and sponsor public awareness projects for the wise use of island resources.	High	Education program initiated, but requires continued effort and planning
15) Ensure that new development and land use are compatible with, and do not detract from, existing development.	High	Development Review Permit

Program Goals

1) <b>Implement Project Review:</b> KIRMP will improve Kosrae's ability to develop the island by minimizing future damages to the island's biological, cultural and physical resources. The Program will also help to ensure that the development projects reflect a balanced approach to resource use for economic development, subsistence, recreation and conservation.	High	Development Review Permit/ EIA Process; individual resource agency regulations
--	------	--

*Continued on next page*

**Table 2--Continued**

2) <b>Improve Development Planning and Coordination:</b> KIRMP will improve coordination among government agencies in their efforts to plan economic development and manage natural resources.	Moderate	Forum for DRC and TAC established, but no formal procedures yet
3) <b>Integrate Renewable Resource Management:</b> KIRMP will assist existing government agencies in managing resource use so that future uses and harvests are sustained. This will include assisting the agencies to protect and conserve important habits and species for the future.	Moderate	Forum for DRC and TAC, but no mechanism for coordination management efforts
4) <b>Reduce Impacts from Natural Hazards:</b> KIRMP will help government agencies plan development so that damage from natural hazards, such as shoreline erosion and coastal flooding is minimized. The Program will also assist in efforts to educate the public about natural hazards and how to protect life and property against them.	High	Development Review Permit/ EIS Process; and Erosion and Sedimentation Control Standards
5) <b>Improve Public Education and Input:</b> KIRMP will assist in the coordination of public environmental education efforts carried out by the State agencies. It will educate the public on Program goals and procedures, as well as develop ways to involve the public in achieving Program goals and objectives.	High	Development Review/EIS Permit Process; public education program; DRC records open for public review; public meetings

## CONCLUSIONS

The *KIRMP Implementation Strategy* was designed to be an initial effort to organize the program so it could be operational by the start of the new fiscal year in October 1, 1992. Time constraints during the period I was in Kosrae forced us to concentrate on *Implementation Strategy* components identified to be high priority -- establishing the permit system and organizing the three newly created administrative bodies. The process of creating regulations for the Development Review Permit resulted in the successful establishment of an enforceable, interim management regime that addressed concerns about harmful impacts generated from poorly-planned development projects. This interim strategy was intended to serve as a foundation upon which the remainder of the program could be built.

The purpose of assessing the effectiveness of the *KIRMP Implementation Strategy* was to identify the strengths and weaknesses of the program. It is hoped that program administrators will use this information to resolve these deficiencies and make the program more effective. The assessment also provided a useful means to comprehensively evaluate how the different components of the program interact with each other and if they adequately target the groups they were intended to.

Overall, the *KIRMP Implementation Strategy* was successful at achieving the program's policies, objectives and goals. However, if the program is evaluated with greater scrutiny, such as the conditions of effective implementation by Sabatier and Mazmanian (1983), additional administrative and organizational deficiencies become obvious. But these faults should not overshadow the fact the most the conditions were at least moderately well-met. Meeting these conditions does not guarantee successful

implementation, but rather improves the chances of successful implementation (Sabatier and Mazmanian 1983). Ultimately, a complicated array of social, cultural, economic and political forces will influence the program's implementation and daily operation.

KIRMP will not succeed on its own, even if it has been successfully implemented.

KIRMP's large and comprehensive nature requires continual input and cooperation among the many agencies responsible for its administration and implementation. Quite simply, KIRMP's success rests with the participation and input from both the Kosraean government and the people of Kosrae. The development review process and comprehensive resource planning has the potential to be effective, but ultimately the Kosraean people and government must choose to make it work.

## RECOMMENDATIONS TO IMPROVE PROGRAM EFFECTIVENESS

The process of fully implementing KIRMP has only begun. The *KIRMP Implementation Strategy* marks the beginning of a long-term process to achieve a comprehensive and sustainable resource management scheme. As noted in the preceding sections, the *Implementation Strategy* adequately addressed some problems, and left others to be considered in the future. Listed below are some recommendations that will help program administrators focus on areas that need further clarification so the program is more effective at addressing the resource management problems facing Kosrae.

- (1) The DRC, TAC, program office and individual resource management agencies (Div. of Marine Resources, Div. of Agriculture and Forestry and Dept. of Conservation and Development) need to jointly review existing resource management and land use practices, so that more effective and integrated resource management techniques can be generated. This is especially true for the following critical management areas:
  - (a) Coral Reefs: A coral reef management plan, incorporating multiple-use provisions and protected areas, needs to be developed. Subsistence and recreational fishing, reef gleaning, shell collecting, SCUBA diving, boat anchoring and water quality maintenance all need to be addressed (see recommendations from Auyong et al. undated and Birkeland et al. 1992).
  - (b) Mangrove Forests: The conversion of mangroves to uplands, and commercial and subsistence mangrove clear-cutting is increasingly destroying these fragile resources and causing the degradation of adjacent coastal waters. Currently there are no regulations governing the utilization of mangrove areas. The Division of Agriculture and Forestry needs to work with tropical forestry experts to develop a comprehensive mangrove management plan (see recommendations in Auyong et al. undated and Birkeland et al. 1992).
  - (c) Upland Forests: Upland forests remain virtually pristine and have not been utilized except as areas for agroforestry operations. A new commercial sawmill will likely utilize some of the timber resources. The Div. of Agriculture and Forestry should investigate ways to promote sustainable uses of this nearly untapped resource. This would include better and more productive agriculture practices

and sustainable timber production. Timber cutting on steep slopes, along streams, and in endemic cloud forests should be prohibited.

- (d) Marine Parks and Conservation Areas: The creation of marine parks and conservation areas are necessary to foster a nature-based tourism industry. Conservation areas are envisioned to allow the traditional harvesting of resources and, at the same time, prevent overexploitation and damage from activities in the adjacent uplands (see recommendations in Birkeland et al. 1992). The establishment of parks and conservation areas should include participation by the KIRMP agencies, resource management agencies, the public and off-island experts. In addition, since most coastal properties are privately owned, the government should actively purchase coastal properties or easements and establish public beaches or park sites for locals and tourists.
  - (e) Land Use Plans: Land use plans were mandated to be completed within two years after K.S.L. 5-56 was passed in April, 1992. The land use plans should identify the existing uses of all land and water areas, and move toward limiting impact-generating development activities to upland areas more amenable to development. The land use plans will likely evoke strong public opposition, so the public should be included from the initial planning stages. The East-West Center has recommended several different methods of approaching land use planning requirements (Birkeland et al. 1992).
- (2) The DRC, TAC and program office should be provided with technical training in coastal resource management, environmental impact assessment and land use planning techniques. Experts from abroad should be encouraged to hold on-island training sessions.
  - (3) KIRMP administrators should periodically review program regulations and look for ways to improve the program's efficiency and effectiveness. All permit applications and administrative decisions of the DRC should be entered into a data base so that future evaluation of the program can be more easily accomplished.
  - (4) If the DRC proves ineffective in the decision-making process, the TAC should be given a joint decision making authority into the approval process. In addition, there should be some minimum criteria (leadership, government or environmental experience) that DRC members must meet before they are appointed.
  - (5) The DRC, TAC and program office should work with the F.S.M. government to keep abreast of many upcoming environmental regulations and requirements. A better relationship with federal resource management agencies needs to be established.

- (6) Public education and participation needs to be encouraged by KIRMP officials. Environmental education will help foster better compliance with program objectives and avoid some environmental degradation altogether. Public participation is crucial to the development locally acceptable land use plans and marine parks.
- (7) The DRC, TAC and program office should seek outside technical assistance to assess the cause of rapid coastal erosion. In addition, KIRMP officials should receive technical training dealing with appropriate methods of reducing coastal erosion threats. There is a belief that seawalls and rip-rap will stop all future erosion, when in fact, it may actually promote erosion in other areas. Since the entire coast off Tafunsak is scheduled to receive rip-rap as part of a lawsuit settlement (mitigation from erosion caused by construction of airport), the technical assistance should be sought before irreversible damage is done.
- (8) More funding needs to be allocated to the KIRMP program by the legislature. Outside assistance (financial and personnel) should also be actively pursued to help ensure the program is properly implemented.
- (9) The DRC, TAC and program office need to actively support sustainable development projects that utilize Kosrae's wealth of natural resources. Sustainable forestry, agriculture, fisheries, nature-based tourism and handicraft exports can all provide local jobs without intensively damaging the resources. These projects will also help reduce the great reliance on imported goods, since many imported goods can be produced with on-island resources (i.e. lumber, furniture, foods).



## REFERENCES

- Auyong, J., S. Cripe, K. DesRochers, J. Dixon, M. Ham and P. Lal. undated. Kosrae Island Resource Management Plan (Vol. II). University of Hawaii, Sea Grant Extension Service, Honolulu. 240 pp.
- Birkeland, C., N. Devoe, L. Hamilton, J. Maragos, M. Molina, P. Valentine and M. Wilson. 1992. Kosrae Island integrated coastal resources assessment for biodiversity/cultural conservation and nature-based tourism. Eds. A.M. Wilson and L.S. Hamilton. Kosrae State Government, Federated States of Micronesia and East-West Center, Environmental Policy Institute, Honolulu, HI. 121 pp.
- Brower, K. 1974. *With Their Islands Around Them*. Rinehart and Winston, New York. 215 pp.
- Carpenter, R.A. and J.E. Maragos. 1989. How to assess environmental impacts on tropical islands and coastal areas: South Pacific Regional Environment Programme (SPREP) training manual. Environment and Policy Institute, East-West Center, Honolulu, HI. 345 pp.
- Dahl, K., A.M. Wilson-Molina. 1991. Kosrae Island Resources Management Program Guide. Kosrae State Coastal Resource Management Committee. Tofol, Kosrae. 12 pp.
- Federated States of Micronesia. 1989. Kosrae State 1986 Census Report. Division of Statistics, Office of Planning and Statistics, Kolonia, Pohnpei.
- Federated States of Micronesia. 1992. A national environmental management strategy for the Federated States of Micronesia. F.S.M. Presidential Taskforce on Environmental Management and Sustainable Development. Palikir, Pohnpei. 47 pp.
- Juhasz, J. 1991. An international comparison of sustainable coastal zone management policies. *Marine Pollution Bulletin*, 23:595-602.
- Katter, J.K. and C. Dahl. undated. *Malama Kai*, care for the sea. Sea Grant and the Pacific Island Network in Kosrae. Volume I, No. 1. University of Hawaii Sea Grant Communications, Honolulu. 26 pp.
- Kosrae State. 1992. Kosrae State Statistical Bulletin, 1991, Volume V, No. 1. Bureau of Planning and Statistics, Tofol, Kosrae. 86 pp.
- Kosrae State Legislature. 1992. Letter to Asher Asher, Speaker of Legislature, from the Committee on Resources and Development summarizing recommendations for KIRMP legislation, dated February 13, 1992. Kosrae State Legislature, Tofol, Kosrae.

- Kosrae State Legislature. 1992. Kosrae State Law 5-56. Kosrae State legislature. Tofol, Kosrae. 9 pp.
- Lowry, K.G. Jr. 1980. Policy-relevant assessment of coastal zone management programs. *Coastal Zone Management Journal* 8(3):227-255.
- Lowry, K. 1985. Assessing the implementation of federal coastal policy. *Journal of the American Planning Association*. Summer 1985:288-298.
- Manoa Mapworks. 1987. Kosrae Coastal Resource Atlas. Prepared for the U.S. Corps of Engineers, Pacific Ocean Division by Manoa Mapworks, Honolulu. 61 pp.
- McCarthy, K. 1978. Guidelines (Digest) to T.T. EPB Regulations for the district environmental health staff. A report prepared for the Environmental Protection Board, Trust Territory of the Pacific Islands. University of Hawaii, Honolulu.
- Miles, E.L. 1989. Concepts, approaches and applications in sea use planning and management. *Ocean Development and International Law*, 20:213-238.
- Miller, J.N., P.J. Rappa, J. Maragos and A.A. Pangelinan. 1992. Mitigative measures in environmental impact assessment, a workshop held in Kosrae August 25 - 27, 1992. The Environmental Center, University of Hawaii, Honolulu.
- Rappa, P.J. and B.J. Miller. 1989. Coastal resource management planning in the U.S.-affiliated Pacific islands. In *Proceedings of the Sixth Symposium on Coastal and Ocean Management, Charleston, S.C., July 11-14, 1989*.
- Sabatier, P.A. and D.A. Mazmanian. 1983. *Can Regulation Work? The Implementation of the 1972 California Coastal Initiative*. Plenum Press, New York. 389 pp.
- Segal, H.G. 1989. *Kosrae, The Sleeping Lady Awakens*. Kosrae State Division of Tourism, Tofol, Kosrae. 382 pp.
- Thomas, J.W. and M.s. Grindle. 1990. After the decision: implementing policy reforms in developing countries. *World Development*, 18:1163-1181.
- University of Hawaii - Pacific Island Network. undated. Recommendations for a Kosrae Island Resource Management Program - Preliminary Report. University of Hawaii Sea Grant Extension Service, Honolulu, HI. 55 pp.
- U.S. Army Corps of Engineers. 1989. Kosrae Coastal Resources Inventory. U.S. Army Corps of Engineers, Environmental Resources Section, Honolulu. 187 pp.
- Wilson, M. 1989. Kosrae State Tourism Master Plan 1990-1994. Prepared for Division of Tourism, Department of Conservation and Development, Kosrae State Government, Federated States of Micronesia, Tofol, Kosrae. 177 pp.

Wesley, Likiak. 1992. Insight into local culture and government procedures was obtained from countless numbers of personal communications between June 17, 1992 and September 17, 1992. A recent communication via telephone occurred on December 9, 1992 provided the most recent update on the KIRMP program.

**APPENDIX**

**KOSRAE ISLAND RESOURCE MANAGEMENT PROGRAM (KIRMP)  
IMPLEMENTATION STRATEGY**

**KOSRAE ISLAND RESOURCE MANAGEMENT PROGRAM (KIRMP)  
IMPLEMENTATION STRATEGY**



Submitted to:

Office of Budget and Planning  
Kosrae State, Federated States of Micronesia

Submitted by:

Brady Phillips  
Technical Assistant  
University of Oregon Micronesia Program

September 1992

# Kosrae Island Resource Management Program (KIRMP)

## Implementation Strategy

### Table of Contents

#### A. Project Overview

I.	Introduction . . . . .	I
II.	Methodology . . . . .	II
III.	Description of Project Activities . . . . .	III
IV.	Recommendations . . . . .	VI

#### B. KIRMP Guidelines and Regulations

I.	Introduction . . . . .	1
II	Background . . . . .	1
III.	Kosrae Island Resource Management Program (KIRMP) . . . . .	4
	A. KIRMP Policy and Objectives . . . . .	5
	B. Program Goals . . . . .	6
	C. KIRMP Program . . . . .	6
	1. Program Structure . . . . .	7
	2. Key Components of KIRMP . . . . .	9
	3. KIRMP Permit Process Flowchart . . . . .	11
IV.	KIRMP Regulations and Future Needs	
	A. KIRMP Existing Laws and Regulations . . . . .	12
	B. Division of Marine Resources Regulations . . . . .	15
	C. Division of Marine Resources Recommended Regulations . . . . .	16
	D. Division of Forestry Recommended Regulations . . . . .	17
	E. Construction and Engineering Recommended Regulations . . . . .	18
	F. Division of Tourism Recommended Regulations . . . . .	18
	1. Map of Nature-based Tourism Sites . . . . .	21
	G. KIRMP Public Education Program . . . . .	22
	1. KIRMP Educational Brochure . . . . .	25
V.	DRC Regulations and Guidelines	
	A. Development Review Regulations . . . . .	27
	B. Earthmoving Regulations . . . . .	30
	C. Drinking Water Regulation . . . . .	32
	D. Water Quality Regulation . . . . .	34
	E. Toilet Regulations . . . . .	36
	F. Solid Waste Regulations . . . . .	38
	G. Pesticide Regulation . . . . .	40
VI.	Appendix	
	A. KIRMP Law (K.S.L. 5-56) . . . . .	A1
	B. Development Review Permit Regulations . . . . .	B1
	C. Environmental Impact Assessment Checklist . . . . .	C1
	D. Development Review Permit Application . . . . .	D1
	E. Development Review Permit . . . . .	E1
	F. Toilet Facilities/Sewage System Permit . . . . .	F1
	G. References Used for KIRMP Regulations & Guidelines . . . . .	G1

## I. Introduction

The University of Oregon Micronesia Program has operated in the Federated States of Micronesia, the Republic of Belau and the Republic of the Marshall Islands since 1990. The program is designed to provide technical assistance directly to Micronesian agencies involved in education, planning, resource management and public policy. Technical assistance requests from Micronesian governments are evaluated by the Micronesia Program Director and matched with qualified graduate students and professionals (technical assistants). The technical assistants are sent to the respective Micronesian agencies for a three month period to work closely with counterparts and supervisors. The major goals of the program are to promote institutional and economic self-sufficiency through the mutual transfer of skills between technical assistants and their counterparts; to complete and implement the identified project; and to promote a better understanding between the peoples of two distinct cultures.

A request for technical assistance from Kosrae State, Federated States of Micronesia, was made by Gerson Jackson, Director, Office of Budget and Planning. Both Gerson and my counterpart Likiak Wesley, Chief, Bureau of Planning and Statistics, have been intensively working on comprehensive resource management planning and economic development through a number of in-state and cooperative international projects (Auyong et al. N.D; Birkeland et al. 1992; Dahl and Wilson-Molina 1991). A major goal of both agencies is to attain economic self-sufficiency through island-wide economic development, while minimizing the negative impacts to natural and cultural resources.

Over the last 4 years, resource agencies in the Kosrae State Government have been working closely with the University of Hawaii- Pacific Island Network and the East-West Center to develop an integrated resource management plan that encourages carefully planned development in accordance with Kosrae's cultural and social values. In March 1992, the Kosrae State Legislature and Governor signed into law K.S.L. 5-56 establishing a Development Review Commission (DRC) charged with assuming the responsibilities of the Environmental Protection Board, preparing land use plans, and creating a development review permit process that incorporates environmental impact assessment procedures. This legislation empowered the DRC to promulgate rules and regulations necessary to implement the Kosrae Island Resource Management Program (KIRMP).

This past June, the Kosrae Legislature formally approved the Governor-appointed 5-member DRC, and the 10 member Technical Advisory Committee (TAC). As a result, the DRC officially replaced the Environmental Protection Board and became fully "operational", despite the lack of organization or regulations to guide the implementation of KIRMP. Kosraean officials wanted to develop regulations that clearly defined the permit process and the roles of the three administrative bodies involved with KIRMP by the beginning of the new fiscal year starting in October 1992.

KIRMP is broadly defined by a number of legislative-backed program goals, but contains no specific implementation plan to ensure its success and acceptance by the Kosraean people. Successful implementation will involve organizing the newly created Development Review Commission (DRC) and Technical Advisory Committee (TAC), clarifying the Development Review Permit and EIA processes and formulating specific regulations to carry out the program's intent. Kosraean officials have spent much time and effort initially creating KIRMP and have a vested interest in seeing it

succeed. In addition, since KIRMP is unique to Kosrae and the Federated States of Micronesia, many governments from around the region are looking at Kosrae's Program and awaiting the results of its implementation. Naturally, Kosraean government officials have a strong desire to prove themselves a regional leader in sustainable economic development and sustainable resource planning.

## II. Methodology

The *KIRMP Implementation Strategy* closely examined the Programs policies, goals and objectives, and identified sections that needed further clarification. The main goal of the implementation strategy was to develop specific and achievable administrative procedures and regulations that would allow KIRMP to be organized and fully operational by October 1, 1992. This purpose reflects the Office of Planning and Budget's goal to develop a straight-forward implementation process to ensure KIRMP's ultimate success and ease of administration.

Specific objectives of the *KIRMP Implementation Strategy* include:

A. Examine existing policies concerning natural resource management and economic development.

(i) Survey federal and state agencies having legislative jurisdiction over the concerned resources or development activities.

(ii) Identify new policies or regulations as necessary to implement and administer the program, and create a mechanism whereby new regulations can be formulated and incorporated into the program.

B. Coordinate and assist the newly appointed Development Review Commission (DRC) in:

(i) Formulating criteria used to assess environmental impacts resulting from development activities. This includes guidelines identifying the types of projects requiring a development permit and an environmental impact statement (EIS).

(ii) Designing content specifications for the EIS requirement.

(iii) Clarifying the Development Review Permit process.

(a) Clarify and coordinate responsibilities of the Development Review Commission, Technical Advisory Committee, Program staff and the public.

(b) Update the KIRMP guide to reflect new administrative procedures.

(iv) Defining the role of public input on the permit process and education.

C. Compile recommendations for specific use and geographic areas that require special consideration and management.

(i) Land use plans



## (ii) Conservation areas

D. Assist the agency in networking to international organizations for assistance in providing further technical assistance in the form of a temporary program advisor to assure successful implementation in the initial phases.

To accomplish these goals, I divided the project into the following sections: (1) assessment of existing regulations concerning natural resource management for Kosrae State and the F.S.M.; (2) consolidate and revise a new Development Review Permit Application and review process; (3) devise an Environmental Impact Assessment Process tailored to Kosrae's need; (4) clarify public input procedures and develop public education program; (5) network to outside agencies for additional assistance in the KIRMP Program (6) review requirements for the land use plan.

Since the bill creating KIRMP (K.S.L. 5-56) was passed this past March until the time I arrived in June, there has been no attempt to organize or implement the Program. Thus, the Program had to be organized virtually from scratch, incorporating existing institutional arrangements with newly created ones, so that a strong foundation was established. The *KIRMP Implementation Strategy* was designed to provide a mechanism in which development projects could be critically reviewed and resource management decisions made. Eventually, KIRMP will need to be expanded to encompass specific resource management plans for areas determined to be of special interest or hold exceptional ecological value (marine parks and sanctuaries, mangroves and coral reefs).

By the time of my departure from Kosrae in September, the regulations developed for KIRMP were providing the necessary framework to guide the environmental impact assessment and decision making process. Unfortunately, the effectiveness of this implementation strategy could not be comprehensively assessed because of time constraints. Even so, only time and the actual review of permits by Program staff will determine its ultimate success.

I stress that the regulations developed through this project are in draft-form only. They are still subject to a review by the Attorney General's Office and a 30-day public review. I will also emphasize that any regulations developed as part of this program should be critically reviewed as to their effectiveness once the program is up and working for a period of time. KIRMP Program administrators should feel free to change the regulations if sections prove to be unworkable or better alternatives exist. This is especially true for criteria used to screen certain types of projects.

## III. Description of Project Activities

Note: The "Guidelines" as used in the following sections refer to the KIRMP Guidelines and Regulations booklet that was completed as part of this project. They can be found after these initial overview pages.

### A) Review of Existing Laws and Regulations

All existing state and national laws were reviewed to determine which agencies have jurisdiction in natural resource management and what regulations guide their management decisions.

A summary of the regulations are listed at the beginning of Section IV of the Guidelines. The results of this process will make it easier for KIRMP staff to know which agency is responsible for managing particular resources and what regulations guide their management decisions. This review process also proved to be instrumental in identifying gaps in the management of certain resources and activities. Recommendations for additional regulations are summarized in section IV of the guidelines.

Section V of the Guidelines summarizes the F.S.M. Environmental Protection Board regulations that are now the responsibility of the DRC. With the exception of the Development Review Regulations, these summaries were taken from guidelines developed during the Trust Territory Administration (McCarthy 1978). The summaries were updated so they correspond to F.S.M. laws and regulations and not those of the former Trust Territory Administration.

B) Development Review Application

A new Development Review Permit Application was created for KIRMP. All persons proposing projects that meet the minimum criteria are required to complete this application before the project starts. This new application is a consolidation of several existing applications: F.S.M. Earthmoving, F.S.M. Toilet Facilities/Sewage System, F.S.M. Environmental Impact Assessment and the Kosrae Division of Land Management Development Below the High Water Mark. The purpose of the new Development Review Permit Application is to streamline several overlapping permits into one, and simplify the administration responsibilities to one agency -- the DRC. The Development Review Permit Application will be used to review projects and issue the new Development Review Permit and the updated Toilet Facilities/Sewage System Permit.

A systematic procedure was developed for the administration of the Development Review Permit. The process involves the cooperation and coordination between the KIRMP Program Office, DRC and TAC. The initial procedure was developed by Likiak and I, which was later reviewed by the DRC and TAC, so they could clarify their respective responsibilities in this review process. A summary of the resulting review process is shown in a flowchart at the end of Section III in the Guidelines.

Specific procedures and requirements for each of the KIRMP administrative bodies are fully given in the KIRMP Regulations for Development Projects and in summary in Section III of the Guidelines.

C) EIA Process

The major thrust of the KIRMP Implementation Program was to promulgate regulations that incorporate an Environmental Impact Assessment Process in the review of development projects. The EIA process developed for KIRMP is a conglomeration of F.S.M. Environmental Impact Assessment Regulations, F.S.M. environmental management strategies (F.S.M. 1992), U.S. NEPA procedures, information received from an Environmental Impact Assessment workshop held in Kosrae on August 25 - 27, 1992 (Miller et al. 1992; Carpenter and Maragos 1989), and professional judgement.

The EIA process was broken up into two parts -- the initial Environmental Assessment and the Environmental Impact Statement procedures. We determined that the initial Environmental Assessment will be satisfied upon the completion and subsequent review of the Development Review Permit Application. This initial review process will be used to screen projects for significant environmental impacts.

The second part of the EIA process involves the completion of Environmental Impact Statements. It was agreed by the DRC and TAC that only major projects that "significantly" impact the environment or traditional ways warrant an EIS. As a result, specific criteria were developed to identify projects that need an EIS. These criteria were discussed and approved by both the DRC and TAC. An environmental impact checklist from the F.S.M was included as an appendix to the KIRMP Regulations and Guidelines booklet to assist the Program Office, TAC and DRC in determining if a project will have "significant" impacts. In addition, the content requirements for persons completing an EIS were also developed for KIRMP. These specifications represent the compilation of EIS requirements from F.S.M and U.S. Environmental Impact Assessment regulations.

Another achievement in the development of regulations for the EIA/EIS process was to precisely define the administrative procedures for the DRC, TAC and Program office, and provide a forum for public input. This task also involved meeting with the DRC and TAC so they could comment on the process and approve the procedures. The procedures for the EIA/EIS process are detailed in the KIRMP Regulations for Development Project which can be found in the appendix.

#### D) Public Education

The importance of public education and involvement was stressed at every level in the implementation process. Some of the most important steps we took to include public input was in the Regulations. The Regulations have provisions for the public to comment on development projects in the early planning stages. For large and controversial projects, the public has a 30-day period to review Draft Environmental Impact Statements, and a 15-day period to review the Final EIS. In addition, the DRC's records are open to the public, as are all DRC meetings. The public will also have a 30-day period to comment on the Draft Regulations promulgated under this project.

An important part of KIRMP is public recognition and education. It is critical to the success of the program to have people aware of its existence and what it was set up to do. I worked with Likiak to develop a two-part education program aimed to increase people's knowledge of KIRMP and increase their overall environmental awareness. This education program can be found at the end of Section IV in the Guidelines. A brief summary is described below.

Phase 1 -- Public Recognition: I developed a new educational brochure that summarizes the goals of KIRMP and describes the new permit requirement. The brochure was completed in English, but should also be translated to Kosraean. Likiak also completed a Kosraean radio announcement that describes the KIRMP permit requirement and process, and the role of the DRC and TAC. The announcement aired throughout my duration in Kosrae. The DRC also plans to broadcast an announcement informing the public about their opportunity to review the Draft Regulations.

The KIRMP Guidelines and Regulations booklet found after this overview section can also be reproduced and distributed to those interested persons. These guidelines are more comprehensive than anything yet developed for KIRMP, and describes the many requirements and administrative processes within the Program.

Phase 2 -- Recommendations: Phase two has broader and more long-range education goals. This section was a compilation of some of the environmental education topics that need to be addressed. The overall goal of this section was to promote environmental education so that (1) people become more conscious of their actions, (2) people develop better stewardship principles to sustain the island's resources, and (3) given the knowledge, people may be more inclined to comply with the Regulations.

E) Networking

Gerson Jackson expressed a desire to assist them in seeking outside help in filling the position of KIRMP Program Advisor. He wanted a person with experience in coastal resource management programs to help direct the DRC and ensure KIRMP is set up properly. To date I have made inquiries with Larry Hamilton at the East-West Center in Honolulu and Maradel Gale at the University of Oregon Micronesia Program. Both inquiries, although in the initial planning stages, have come up with positive responses. Larry Hamilton indicated that he would help locate the financial resources and personnel to fill the position for three months, but was waiting for the KIRMP budget to be passed. Maradel Gale is working on a grant to assist KIRMP by having University of Oregon personnel come to Kosrae for two- to three-week periods and assisting the KIRMP staff. Both leads are still in the initial plans, and Likiak and Gerson will continue to follow up on both.

F) Land Use Plans

Due to the comprehensive nature of the Regulations, there was no time work on the land use plans as originally intended. However, much of the ground work for the land use plans has been completed by the University of Hawaii - Pacific Island Network (Auyong et al. N.D.) and the East-West Center (Birkeland et al. 1992). These plans offer several means to identify and manage particular areas of concern. I have suggested that adequate time be given to develop the plans, and recommend that a University of Oregon Technical Assistant assist the DRC in developing this plan.

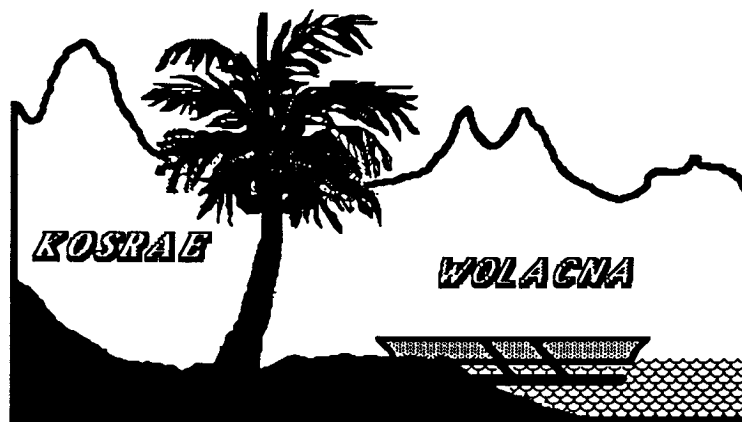
#### IV. Recommendations

- (A) All regulations developed under this program should be periodically reviewed by the Program Office, DRC and TAC to ensure they are functioning as planned. Changes should be made if the Regulations are precluding needed development activities or negatively impacting the environment.
- (B) The Program Office, DRC and TAC should meet regularly to review the functions of KIRMP and discuss new regulations that may be needed by the program.
- (C) Outside assistance for the KIRMP Program Advisor position should be aggressively sought.

A full-time person with experience in coastal resource management is greatly needed to provide guidance and assist this newly organized program.

- (D) All efforts should be made to provide technical training to the Program Office, DRC and TAC, especially in the areas of environmental and social impact assessment, sustainable resource management, and coastal processes. The Program Office should be responsible for finding and securing this type of training.
- (E) All permit applications should be reviewed and entered into the Quattro (or Lotus) database that was developed so that Program Staff have ready access to data concerning the type, size, cost, impacts and mitigation requirements.
- (F) The Utwe-Walung marine park site should be set up so that it has legal protection as soon as possible. This area is already used for nature-based tourism and holds a remarkable untapped potential for Kosrae's sustainable development. The Yela - Okat Trochus Sanctuary should be expanded to include marine fish and adjacent mangrove channels.
- (G) The Division of Forestry should develop more comprehensive regulations for managing mangrove and upland areas. There are no regulations governing commercial cutting despite ongoing clearcutting in certain areas. Some more specific forestry recommendations are listed in Section IV of the guidebook.
- (H) The DRC, TAC and Division of Marine Resources need to discuss some possible regulations for SCUBA operations. Recreational diving will likely become a major activity for the rapidly growing tourist industry. Some of the side-effects from diving operations such reef deterioration and foreign investment need to be addressed now, before diving operations are already established.
- (I) Public education and involvement should continue to be a priority for KIRMP. Once the Program Office is properly staffed, it should take an active role in providing environmental education and a greater environmental awareness for Kosraeans of all ages.

**KOSRAE ISLAND RESOURCE MANAGEMENT PROGRAM (KIRMP)  
GUIDELINES AND REGULATIONS**



Submitted to:

Office of Budget and Planning &  
Development Review Commission  
Kosrae State, Federated States of Micronesia

Submitted by:

Brady Phillips  
Technical Assistant  
University of Oregon Micronesia Program

September 1992

**Kosrae Island Resource Management Program (KIRMP)  
Guidelines and Regulations  
Table of Contents**

I.	Introduction . . . . .	1
II	Background . . . . .	1
III.	Kosrae Island Resource Management Program (KIRMP) . . . . .	4
	A. KIRMP Policy and Objectives . . . . .	5
	B. Program Goals . . . . .	6
	C. KIRMP Program . . . . .	6
	1. Program Structure . . . . .	7
	2. Key Components of KIRMP . . . . .	9
	3. KIRMP Permit Process Flowchart . . . . .	11
IV.	KIRMP Regulations and Future Needs	
	A. KIRMP Existing Laws and Regulations . . . . .	12
	B. Division of Marine Resources Regulations . . . . .	15
	C. Division of Marine Resources Recommended Regulations . . . . .	16
	D. Division of Forestry Recommended Regulations . . . . .	17
	E. Construction and Engineering Recommended Regulations . . . . .	18
	F. Division of Tourism Recommended Regulations . . . . .	18
	1. Map of Nature-based Tourism Sites . . . . .	21
	G. KIRMP Public Education Program . . . . .	22
	1. KIRMP Educational Brochure . . . . .	25
V.	DRC Regulations and Guidelines	
	A. Development Review Regulations . . . . .	27
	B. Earthmoving Regulations . . . . .	30
	C. Drinking Water Regulation . . . . .	32
	D. Water Quality Regulation . . . . .	34
	E. Toilet Regulations . . . . .	36
	F. Solid Waste Regulations . . . . .	38
	G. Pesticide Regulation . . . . .	40
VI.	Appendix	
	A. KIRMP Law (K.S.L. 5-56) . . . . .	A1
	B. Development Review Permit Regulations . . . . .	B1
	C. Environmental Impact Assessment Checklist . . . . .	C1
	D. Development Review Permit Application . . . . .	D1
	E. Development Review Permit . . . . .	E1
	F. Toilet Facilities/Sewage System Permit . . . . .	F1
	G. References Used for KIRMP Regulations & Guidelines . . . . .	G1

# Kosrae Island Resource Management Program (KIRMP) Guidelines and Regulations

## I. Introduction

This guide is intended to serve as a reference for those persons involved in the Kosrae Island Resource Management Program (KIRMP). The guide begins with a brief background of Kosrae's natural and physical environment. The remainder of the guide is dedicated to KIRMP, explaining the Program's policies, scope and structure. The guide also details the responsibilities for the three newly created administrative bodies -- the Development Review Commission (DRC), Technical Advisory Committee (TAC) and Program Office. Finally, the guide will summarize some of the more widely used regulations and offer recommendations for future needs of the program. An appendix section at the end contains the Development Review Permit Regulations and application form, an Environmental Impact Assessment checklist, Kosrae State Law (K.S.L.) 5-56, and the Development Review and Toilet Facilities/Sewage System Permits.

## II. Background

### A) Environmental Setting:

Kosrae is a lush, tropical island made up of two rugged basaltic mountain masses with sharp ridges and deeply eroded valleys. The steeply forested peaks rise to just over 2,000 feet. Many streams and rivers cascade from the mountains toward the sea, forming an alluvial coastal plain of varying width, but usually not greater than one mile.

The coastal plains, account for roughly 30% of the land area and are covered with either mangroves or a mixture of coconuts palms and other coastal vegetation (Auyong et al. N.D.). The mangroves typically form a protective barrier against the open ocean and extend several miles inland along the southern and western coasts. The Kosraeans live inland from the mangroves where there is a zone of tropical vegetation mixed with coconut, mango, and breadfruit trees. Wide sandy beaches are found in areas where there are no mangroves. A broad, fringing coral reef surrounds the island, except where it is dissected by three natural harbors -- Okat, Lelu and Utwe (Figure 1).

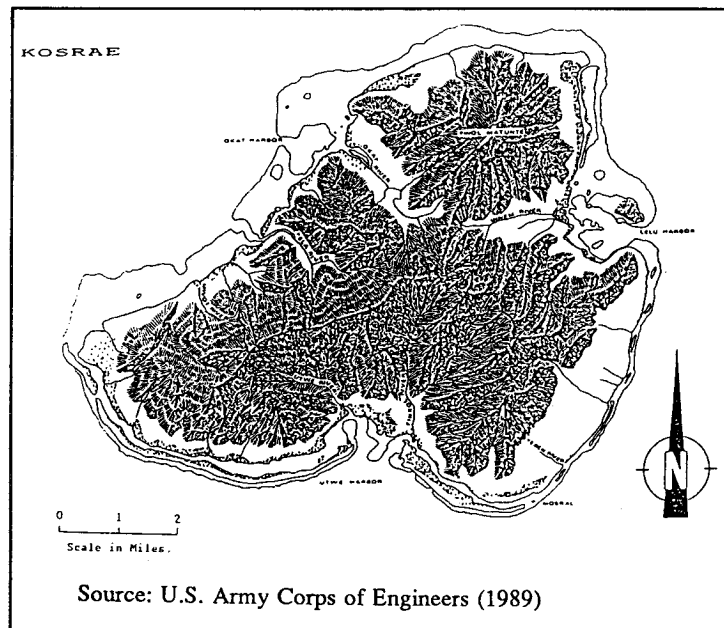
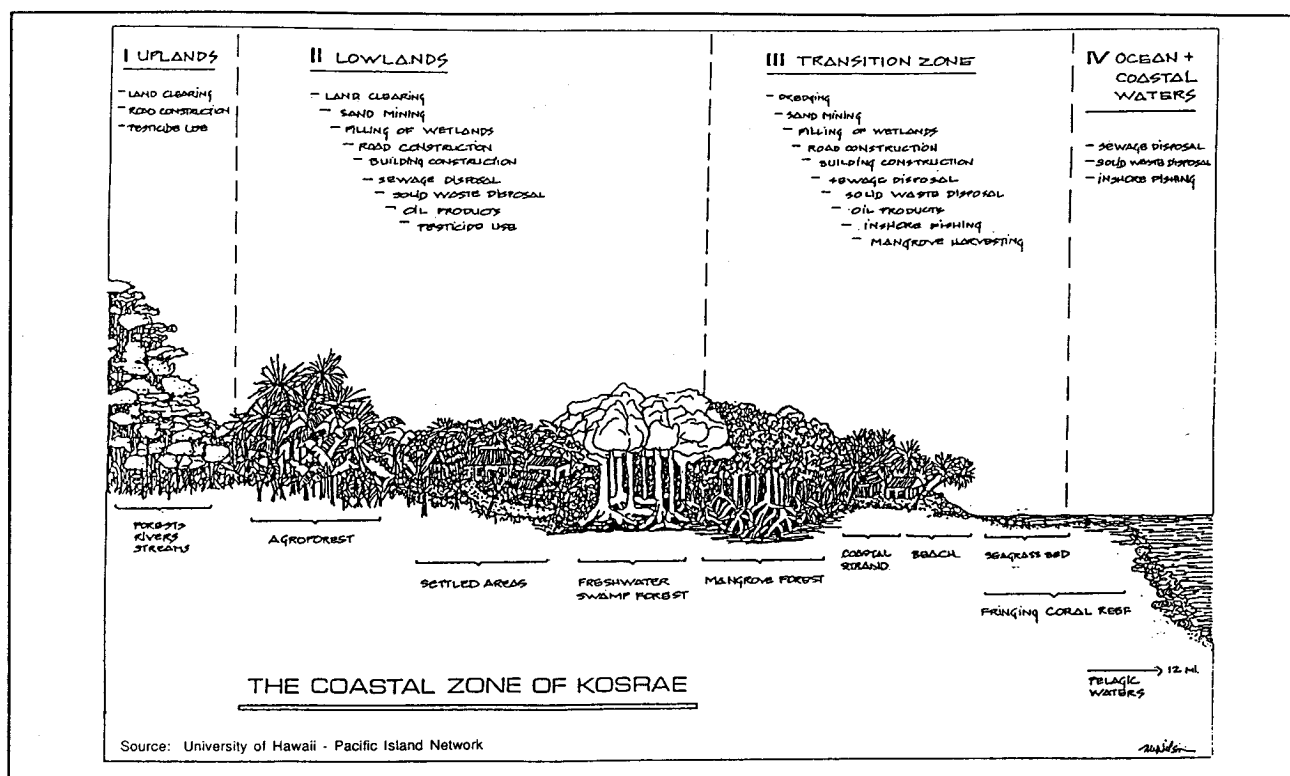


Figure 1

Kosrae is the easternmost island in the Caroline Island chain, situated at 5°20' North latitude and 163°00' East longitude. The forty-two square mile landmass makes Kosrae the second largest island, and the only single-island state within the Federated States of Micronesia. Its location within the intertropical convergence zone provides Kosrae with abundant rainfall (180-250 inches per year), warm air and seawater temperatures (average of 80°F), northeasterly trade winds from November through





**Figure 2**

March and typically southeastern trade winds from March through October (Auyong et al. N.D). Due to its favorable location, big storms are infrequent and typhoons are rare.

The entire island of Kosrae was designated to be included as part of the official coastal zone (Figure 2). The Coastal Resource Management Committee recognized that human activities almost anywhere on the island directly influences adjacent coastal waters. This coastal zone definition represents the geographic boundary of KIRMP's jurisdiction -- the entire island.

#### B) Land Area

Kosrae measures roughly eight and one-half miles by ten miles, and has a total land area of 42 square miles or 27,642 acres. Kosrae State is politically divided up into four municipalities. Tafunsak is the largest municipality in size followed by Utwe, Lelu and Malem (Figure 3). In terms of population density, Lelu has the most number of persons per square mile (337), followed by Malem (228), Tafunsak (131) and Utwe (99) (Kosrae State 1991).

#### C) Land Type and Ownership

The upland portion of Kosrae is dominated by forest lands (55%) (Figure 4). A breakdown of the forest lands is shown in Figure 5. Agroforests (includes coconut plantations) make up the next largest land type at 20%. At this time coconut plantations are not being fully utilized due to low world market prices, but forest lands are increasingly being cleared for banana plantations, which is profitable at this time. Secondary vegetation, which are the trees, shrubs and plants that colonize after forest clearing activities cease, comprise 10% of the land area. Non-forests lands, including barrens, cropland, grassland, freshwater, urban, and urban with agriculture, constitute about 2% of Kosrae's landscape. Fringing coral reefs that surround the island account for 4114 acres, or about 13% of the total land area.

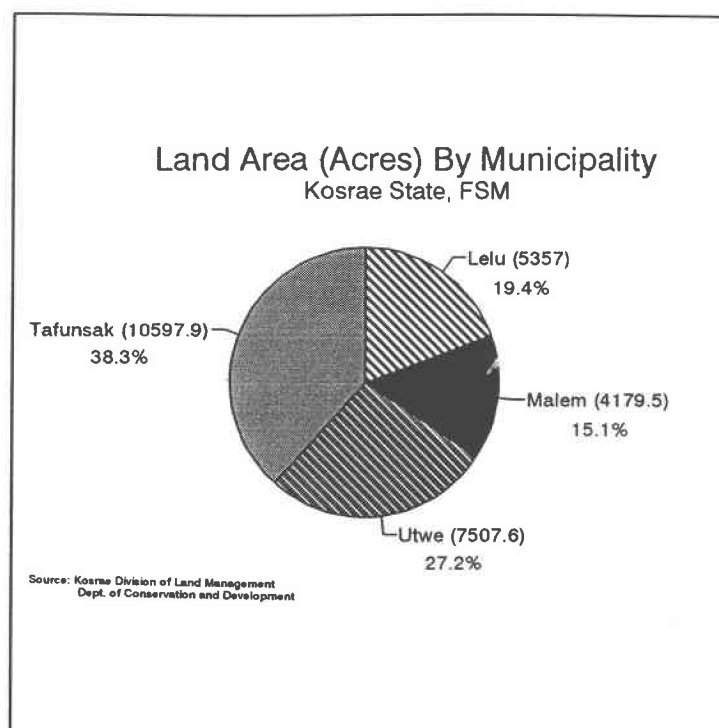
The land tenure system in Kosrae is based upon individual private property rights for residents of Kosrae State only. However, other Micronesian and Foreign investors are allowed to lease lands from Kosraean residents provided government approval is first secured.

Over 90% of the uplands are owned by private individuals (Kosrae State 1991). The Kosrae State Government owns just under 10% of the upland areas, most of which are located in the Tofol and Okat areas. Kosrae State Law states that all areas seaward of the high water mark, including mangrove areas, out to 12 miles are in public domain. The FSM government claims control of the Exclusive Economic Zone (EEZ) from 12 to 200 miles.

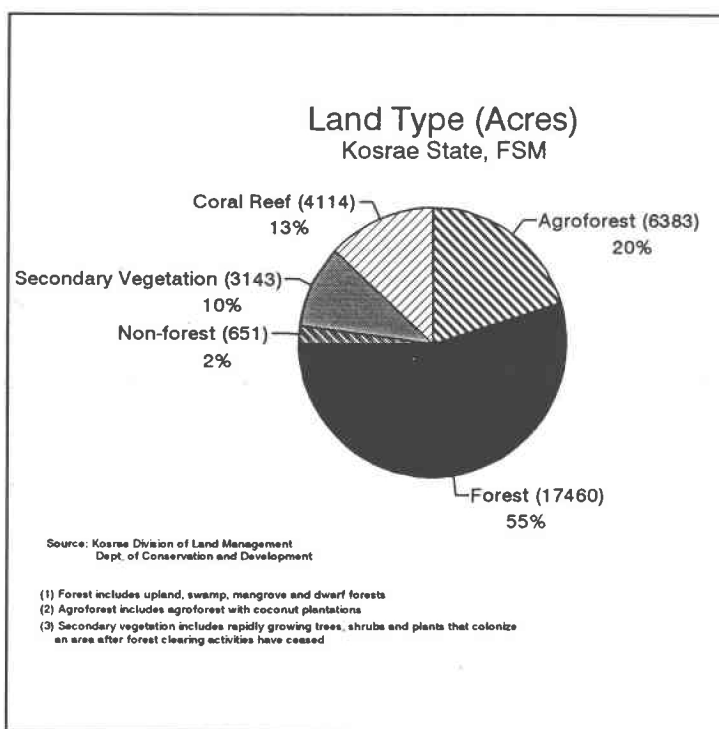
#### D) Human Population

Kosrae's pre-european contact population was estimated at between 3,000 - 6,000 (mean of 4,500) (FSM 1989). Contact with whalers and missionaries brought new diseases which decimated the population to near extinction -- only 300 people in 1891. Since about 1900, Kosrae's population has been rapidly increasing and reached the pre-contact population level in the early 1970s. The current population of about 7,600 is higher than that ever recorded (Kosrae State 1991) (Figure 6).

Although Kosrae remains the least populated State within the Federated States of Micronesia, data show that the population is increasing at a rate of about 3.0 - 3.2 % per year (FSM 1989). This is equivalent to a doubling in population every 23.5 years. Even if birth rates are reduced in the near future, the population will continue to grow as the younger Kosraeans (half of Kosrae's population is below the age of 16.7 years) reach childbearing years. Since Kosrae is only one small island with finite resources, the population should be closely monitored so it does not surpass the natural carrying capacity of the island or result in environmental quality problems.



**Figure 3**



**Figure 4**

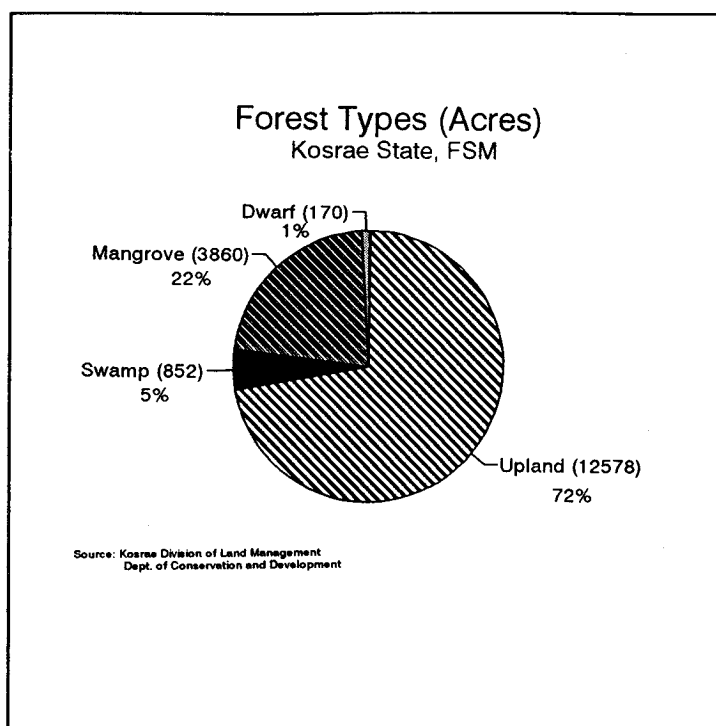
### E) Balancing Development and Traditional Lifestyles

Kosrae is at a crossroads both in terms of development and the preservation of traditional ways. Uncertainty about the continuation of Compact Funds after the year 2001 is forcing Government leaders to act quickly to attain economic self-sufficiency and complete badly needed infrastructure projects. At the same time private development projects, including many proposals from foreign investors, has brought forth many new projects for Kosrae.

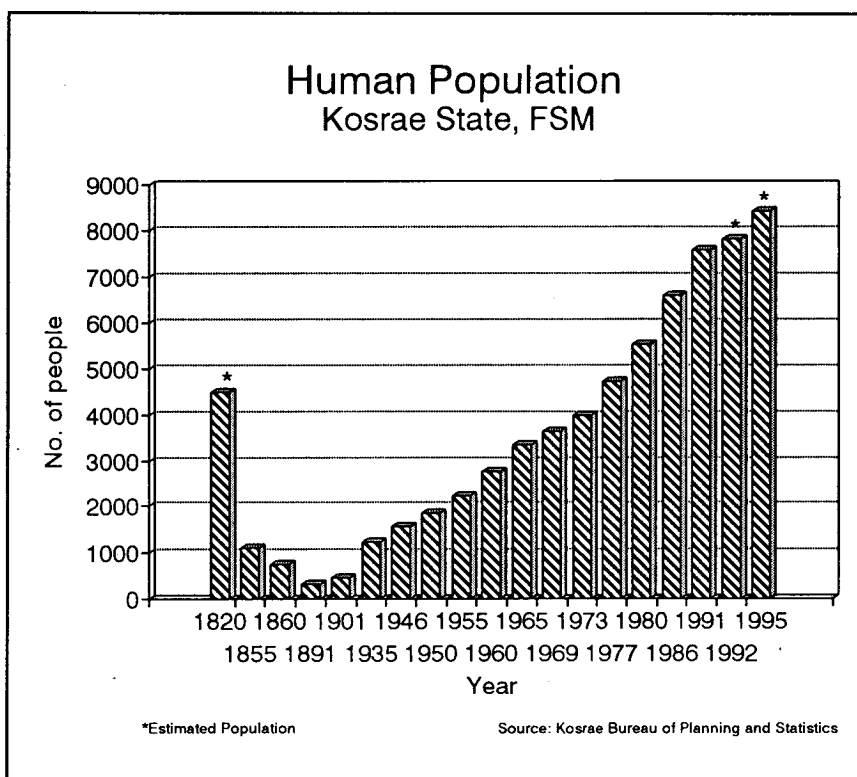
If left unchecked, many of these development projects are bound to negatively impact the lifestyle on Kosrae. Kosraeans place a high value on their traditional lifestyle -- a life that relies heavily upon the bounty of Kosrae's natural resources and strong community ties. Most Kosraeans do not want to lose this high standard of living to poorly planned development projects.

KIRMP provides a mechanism to balance economic development with Kosrae's traditional lifestyle and the environment. KIRMP was designed to critically evaluate all project proposals early in the planning stages for their environmental, social, and economic impacts so that harmful impacts can be avoided or minimized. KIRMP's intent is not to preclude development, but to minimize harmful impacts and ensure that the natural resources can sustain Kosrae's traditional lifestyle indefinitely.

### **III. Kosrae Island Resource Management Program (KIRMP)**



**Figure 5**



**Figure 6**

#### A. KIRMP Policy and Objectives

Policies and Objectives guide the decision making process. They offer broad guidance to policy makers and program administrators seeking to adopt, administer or evaluate specific legislation and regulations. Goals and objectives can also be used to measure the effectiveness and success of a program. The Kosrae Coastal Resource Management Committee (Univ. of Hawaii - PIN, No Date) developed the following policies for KIRMP to ensure that:

- Coastal ecosystems will always be maintained to provide optimal benefits to all citizens of the state by balancing resource utilization for economic development, subsistence, and recreation with resource conservation. Important decisions about resource use shall be made with public input from the state and municipal governments and the general public;
- The living resources, ecosystems, and environment, including those within shoreline property, mangrove areas, seagrass beds, coral reefs, waterways and air space, will always be maintained in a manner that does not adversely affect future utilization;
- Nonliving resources and environment, including air, water, earth, and especially cultural and historic resources, will always be maintained in a healthy and useful condition; and
- A mechanism is established to prevent or minimize conflicts both among users of coastal resources and among the ways in which these resources are used.

While policies broadly give direction and purpose to a program, specific objectives offer a means to attain a given policy. The Kosrae State Coastal Resource Committee has identified fifteen specific objectives for KIRMP to help achieve the above policies (Univ. of Hawaii - PIN, No Date).

- Minimize siltation of rivers, streams, and coastal waters resulting from earthmoving activities.
- Prevent significant coastal erosion due to sand-mining operations.
- Minimize filling operations that destroy valuable wetland habitats, including mangrove forests, freshwater swamps, and seagrass beds.
- Minimize damage to coral reef habitats from dredging activities.
- Prevent significant new construction on rapidly eroding shoreline.
- Ensure that shoreline construction does not accelerate shoreline erosion and that shore protection structures are built in a non-damaging manner.
- Prevent pollution.
- Prevent the overharvesting of renewable resources.
- Prevent the loss or destruction of important historical and cultural resources.
- Minimize environmental impacts resulting from the exploitation of mineral resources.

- Establish and maintain a system of conservation areas, including parks and protected areas.
- Encourage the restoration of environmentally degraded areas.
- Recommend planning and management guidelines.
- Encourage and sponsor public awareness projects for the wise use of island resources.
- Ensure that new development and land use are compatible with, and do not detract from, existing development.

#### **B. Program Goals**

Program goals are intended to narrow the focus and scope of a program, and provide a target to strive toward. The following five program goals describe the overall purpose and scope of KIRMP. These goals address the resource management problems that Kosrae faces now, and will continue to face in the future (Dahl and Wilson-Molina 1991). These goals can also be used to evaluate the effectiveness and success of the program.

- 1) **Project Review:** KIRMP will improve Kosrae's ability to develop the island by minimizing future damages to the island's biological, cultural and physical resources. The Program will also help to ensure that the development projects reflect a balanced approach to resource use for economic development, subsistence, recreation and conservation.
- 2) **Development Planning and Coordination:** KIRMP will improve coordination among government agencies in their efforts to plan economic development and manage natural resources.
- 3) **Integrated Renewable Resource Management:** KIRMP will assist existing government agencies in managing resource use so that future uses and harvests are sustained. This will include assisting the agencies to protect and conserve important habits and species for the future.
- 4) **Reduce Impacts from Natural Hazards:** KIRMP will help government agencies plan development so that damage from natural hazards, such as shoreline erosion and coastal flooding is minimized. The Program will also assist in efforts to educate the public about natural hazards and how to protect life and property against them.
- 5) **Improve Public Education and Input:** KIRMP will assist in the coordination of public environmental education efforts carried out by the State agencies. It will educate the public on Program goals and procedures, as well as develop ways to involve the public in achieving Program goals and objectives.

#### **C. KIRMP Program**

The Kosrae Island Resource Management Program is a networked program linking together existing state and federal laws for managing coastal lands and waters into a single, coordinated process. KIRMP was organized so that one agency, the Development Review Commission (DRC), was given the responsibility for overseeing the wise use and protection of Kosrae's resources, balancing the needs of

economic and social development with those of environmental quality and respect for traditional ways. The DRC is charged with not only making wise decisions about resource use, but resolving resource use conflicts by balancing the interests of government, the public, and the agents of development.

### 1) Program Structure

Three new administrative bodies were created under KIRMP (Figure 7). It is crucial that these three bodies work cooperatively and maintain an open communication line. Together they need to work to achieve the goals of better inter-agency coordination, effective development review and planning, and conserving the resources for future generations. The specific responsibilities for each of the three administrative bodies are summarized below in a modified version of the Kosrae Island Resources Management Guide (Dahl and Wilson-Molina 1991).

#### Technical Advisory Committee (TAC)

The TAC is a ten-member committee that serves two main functions: (1) provide multi-disciplinary technical guidance in the review of development proposals and environmental impact statements, and (2) improve coordination among government agencies. Representatives from the following Kosrae State agencies make up the TAC:

- Bureau of Planning and Statistics
- Construction and Engineering
- Department of Public Works
- Division of History and Culture
- Division of Marine Resources
- Division of Agriculture and Forestry
- Division of Tourism
- Division of Land Management
- Division of Environmental Health and Sanitation
- State Utilities Authority

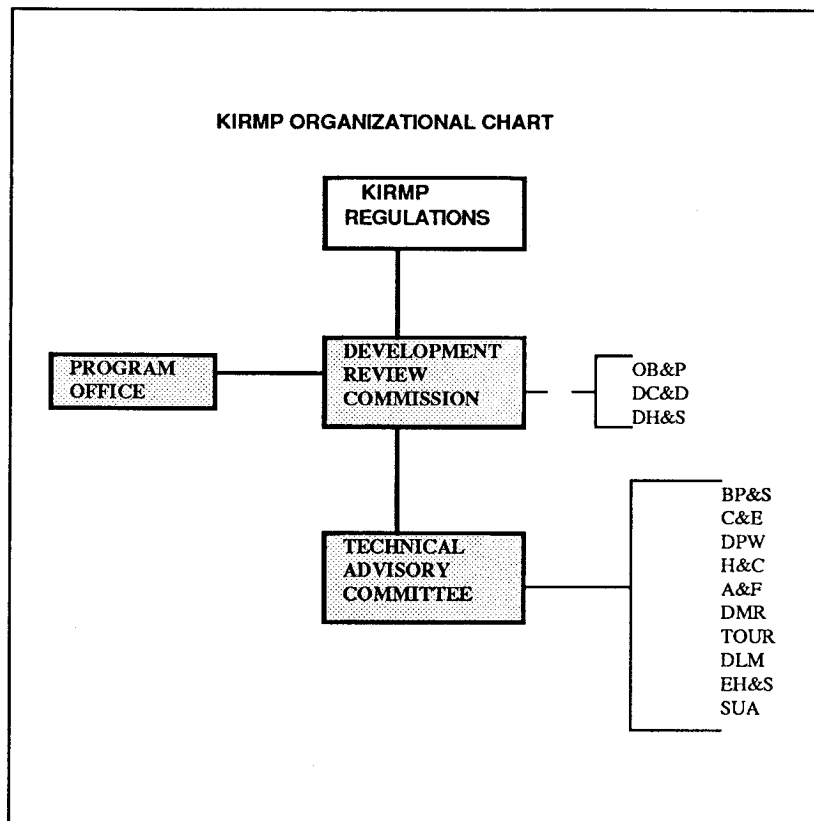


Figure 7

Each member of TAC will review proposed projects based upon the concerns of their agency, and the policies of KIRMP. Since TAC is comprised of members from 10 different agencies, a diverse range of concerns should be addressed. TAC will also check projects to determine if an EIS is needed. After the proposed project is completely reviewed, TAC will summarize and forward its recommendations and conditions to the DRC to assist them in making decisions on issuing permits. In

order for this decision making process to be successful, TAC and DRC should maintain good communication and cooperation with each other, as each entity was specifically created to complement one another, not work independently.

TAC may also, at the request of the Governor or DRC, assist in the development of guidelines and regulations for the Government on environmentally sound development and renewable resources management. TAC offers a means for agencies to talk about concerns with resource management problems and regulations in a productive way. It also creates a formal way for agencies to coordinate and cooperate on a daily basis. Finally, TAC may help identify and recommend public education programs which need to be implemented by the individual agencies or coordinated among them.

#### Development Review Commission (DRC)

The DRC is a five-member commission appointed by the Governor and confirmed by the State Legislature. It has assumed the responsibilities of the former Environmental Protection Board (EPB), which was eliminated under KIRMP, as well as some new responsibilities, such as developing land use plans for Kosrae State, and adopting regulations which ensure that economic and social development are environmentally sustainable.

One of DRC's main functions is to evaluate project proposals and Environmental Impact Statements based on recommendations from the TAC and the public. After evaluating all technical and public input, they will formally approve or disapprove the Development Review Permit Application. If the application is approved, DRC will issue a permit for the project to proceed. They may condition a permit to require changes in the siting, design standards or construction methods for a project in order to minimize damage to the environment. The DRC will also have the authority to deny permits for projects where careful review has identified that the resulting environmental damage far outweighs the project's economic benefits. Project proponents may appeal a DRC decision to deny a permit.

#### The Program Office and Staff

A two-person office was created to provide support for the DRC and TAC. The two positions are a Program Director, who also serves as executive director to the DRC, and a Program Advisor, who has training in coastal resource management principles and environmental impact assessment.

A major purpose of the Program Office is to help streamline project approval for potential developers. The Program Office will serve as a contact and source of information for project proponents. Based on criteria established in the Regulations, the Office staff will inform an applicant whether a specific project requires a permit and if an Environmental Impact Statement (EIS) is needed. The Office staff informs the project proponent on requirements for the Development Review Application and EIS, and assists them in preparing the application. The Program Office will remain a point of contact for project proponents throughout the development review process. They will also inform the project proponent of other permits that need to be secured before the Development Review Permit is approved.

The Program Office staff are responsible for periodically monitoring project sites to make sure all that all permit conditions and specifications are being followed and to document any acts of non-compliance. The Program Office will assist the State agencies, DRC and Attorney General's Office in enforcing KIRMP regulations.

In addition, the Program Office staff must submit a monthly operational report to the DRC and TAC chairpersons specifying the results of project site inspections, violations with regulations and any

other concerns with the Program. The Office staff will also prepare a final annual report that reviews the accomplishments and problems encountered with KIRMP activities.

## **2) Key Components of KIRMP**

**I. Existing Laws and Regulations.** Existing Kosrae State and FSM laws and regulations form an important part of KIRMP. Many of these laws and regulations already regulate various activities and natural resources on Kosrae. For example, the FSM Earthmoving and Toilet/Sewage Facilities regulations help ensure that construction activities do not excessively impact or threaten human health or the environment. The FSM also has Environmental Impact Assessment Regulations for federally funded actions significantly affecting the environment. KIRMP provides a mechanism to coordinate and administer these laws under one program. In the long-term this may promote development by making it easier for developers to know precisely what is required of them in terms of permits and regulations. This may also promote better compliance for the existing laws and regulations as well. A comprehensive listing of all applicable FSM and Kosrae laws is given at the beginning of Section IV.

**II. Development Review Permit Process.** Perhaps the most comprehensive regulations that were developed for KIRMP were those specifying the Environmental Impact Assessment process. This process helps assure that all information concerning a project or development is systematically compiled so that the significant impacts of the action on the natural and human environment can be determined prior to undertaking the action. The process also helps to identify ways to mitigate or reduce project impacts through better project design.

Project proponents should check with the KIRMP Program Office to determine if their project will require a Development Review Permit. If so, the project proponent will complete the application and return it to the Program Office. The Program Office will use specific criteria set forth in the Regulations to determine if an Environmental Impact Statement is required.

The Development Review Application and EIS, if necessary, are forwarded to the TAC for technical review. The TAC will determine if the information contained in the application is adequate. If inadequate, they may request more information, or an EIS if there is thought to be the potential for significant impacts. TAC will summarize and forward its recommendations to the DRC to use in its final decision making.

The DRC reviews the application and EIS, if necessary, to determine if the project is of sufficient controversy or concern to warrant a public information meeting. DRC will use the public and TAC input to help in its decision to issue a permit. DRC can place conditions on the approval of a permit. The conditions are intended to lessen the significant impacts to an acceptable level. Projects may also be denied if the project impacts are shown to be much greater than the benefits received from the project.

Projects will be monitored after the permits are issued to ensure the project proponent is following the conditions and specification in the application. The DRC has the power to enforce violations and issue fines.

The Development Review Regulations are a compilation of the FSM Environmental Impact Assessment and Earthmoving regulations, Kosrae's Development Below the Mean High Water Mark regulations and impact assessment strategies developed from an EIA workshop held in Kosrae. The



Regulations detailing the EIA process are given in Appendix B.

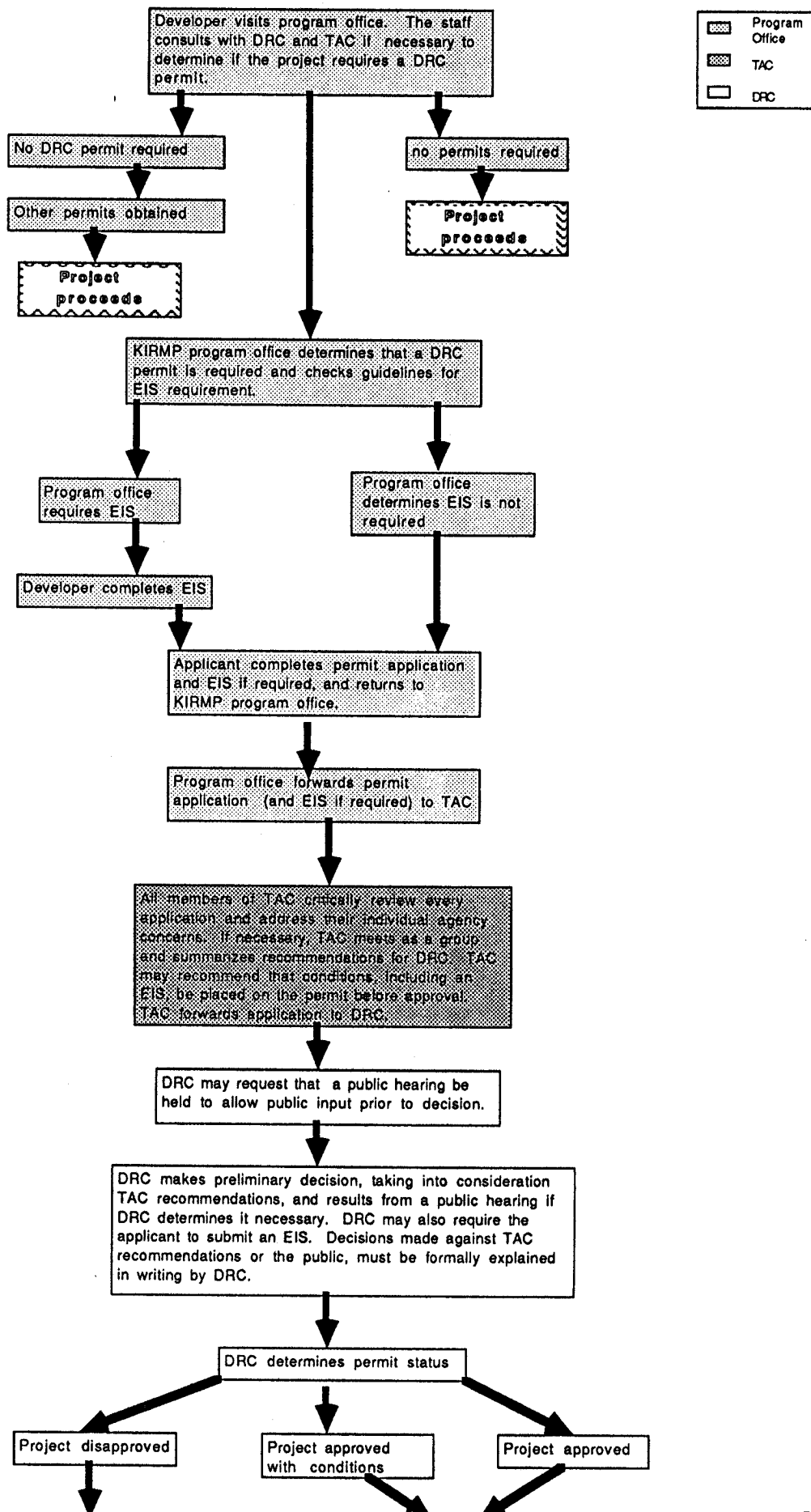
III. Land Use Districts/Plans. Resource or land use planning is a way of guiding the physical development of a community, reducing conflicts over the use of resources, and making the task of resource management somewhat easier (Univ. of Hawaii - PIN, No Date). The resource or land use plan creates criteria for review based on the location of the project. This is useful because some places or ecosystems are more sensitive to environmental impacts or have multiple uses that might be compromised by a particular use. The resource and land use plans also help identify uses that may be incompatible with each other, like mangrove cutting in a designated nature-based mangrove channel.

There are many ways in which land or resource areas can be classified. The University of Hawaii - PIN and East-West Center have recommended several options for a land use plan for Kosrae, including establishing areas of particular concern, specified use districts, protected area districts and resource planning districts (Auyong et al. N.D.; Birkeland et al. 1992). These recommendations should be consulted when specifying a land use plan that is required by law under K.S.L. 5-56 (KIRMP).

IV. Environmental Education and Public Involvement. While the DRC, and other government agencies, have been given the responsibility to manage the island's resources for the benefit of present and future generations, all citizens must share in this responsibility. Public compliance with existing laws and regulations will only be a reality if the people understand (1) how their daily actions can impact the resources used by everyone and (2) how the regulations can benefit them in the long and short-term. For example, any attempt to formally designate land use districts in Kosrae that restricts use and access to areas will likely generate substantial public opposition, as Kosraeans strongly support private land ownership rights. The development of such plans must involve the public from the initial planning stages. Conflicts and concerns can be dealt with informally, over the discussion table, instead of in the courtroom years down the road. An understanding of the goals and purpose of the program, combined with public input into the decision making process, will ensure the success of a program that best reflects the needs and concerns of the people of Kosrae.

Another important source of public input is the Environmental Impact Assessment process. The public has a right to attend all DRC meetings to discuss their concerns with the staff. The public also has a 30-day period to comment on Draft Environmental Impact Statements, which will be on reserve at the Kosrae Public Library. Project proponents writing the EIS must respond to all public comments and incorporate them into the Final EIS. The public will have an additional 14 days to comment on the Final EIS after it is published.

# KIRMP Permit Process



## **IV**

### **KIRMP Regulations and Future Needs**

Summary of Existing Laws and Regulations &  
KIRMP Education Program

A)

---

**Kosrae Island Resource Management Program (KIRMP)**  
**Existing Laws and Regulations**

---

KIRMP:

K.S.C.	Sec. 7.401	<u>Development Review Commission</u>
(KSL 5-56)	Sec. 7.402	<u>Powers and Duties of DRC</u>
	Sec. 7.403	<u>Technical Advisory Committee</u>
	Sec. 7.403	<u>Commission Staff</u>
	Sec. 7.405	<u>Environmental Impact Studies</u>

	Sec. 11.1301	<u>Right of Entry</u>
	Sec. 11.1302	<u>Enforcement</u> (also see Sec. 13.530)
	Sec. 11.303	<u>Court Proceedings</u>

Resource Conservation:

K.S.C.	Sec. 11.1601	<u>Endangered Species</u>
	Sec. 13.524	<u>Enforcement of Endangered Species</u>

F.S.M.C.	Title 23	<u>Resource Conservation</u> <u>Chap. 1:</u> Marine Species Preservation, Sec. 101-115 <u>Chap. 3:</u> <i>Endangered Species Act</i> , Sec. 301-317.
	Title 25	<u>Environmental Protection</u> <u>Chap. 2:</u> Env. Protection Board, Sec. 201-208. <u>Chap. 3:</u> Enforcement, Sec. 301-309 <u>Chap. 4:</u> Dist. Advisory Boards, Sec. 401-403. Sec. 13: <i>F.S.M. Environmental Protection Act</i> - EIS for federally funded projects

Marine Resources:

K.S.C.	Sec. 11.1101	<u>Trochus</u>
	Sec. 13.523	<u>Unauthorized Procuring of Marine Life</u> -hawksbill and green sea turtles -black-lip mother-of-pearl oyster -giant clam -prohibits use of explosives, poisons, chemicals and other substances used to catch marine life
	Pending:	-coconut crab -mangrove crab -lobster - <u>Underwater Cultural Resources</u> - <u>Underwater Natural Resources</u>

Recommended: -SCUBA operations (removing corals and marine life, diving operation permit and log)

Sec. 14.1301 Marine Space  
Sec. 14.1302 Foreign Fishing Agreement  
Sec. 14.1303 Foreign Vessel Fishing Permit

F.S.M.C. Title 24 Marine Resources  
Chap. 3: Mgmt. Authority, Sec. 301-306  
Chap. 4: Foreign Fishing, Sec. 401-416  
Chap. 5: Violation & Penalties, Sec. 501-514.  
Chap. 6: State Entities for Developing Marine Resources, Sec. 601-607.

Agriculture and Forestry:

K.S.C. Sec. 11.1501 Pig Control; seizure & disposition  
Sec. 11.1502 Pig Control; action at law; damages  
Sec. 11.1503 Pig Control; regulation

Commercial cutting of firewood in mangroves -Municipal PERMIT

Division of History and Culture:

*Kosrae Historic Preservation Act (review projects)*

K.S.C. Sec. 11.1401 Antiquities - Impact review  
Sec. 11.1402 Antiquities - Regulation

F.S.M.C. Title 26 Historic Preservation Act  
Sec. 301-305 - Historic Preservation Procedures  
Sec. 401-402 - Protection of Artifacts

Title 36 CFR Part 800 U.S. National Historic Preservation Act (Sec. 106 & 110) for U.S. funded projects

Land Management:

K.S.C. Sec. 11.501-11.512 Homestead  
Sec. 11.1201 Designation of Rivers

Regulation of Fill and Construction Below High Watermark - PERMIT

Environmental Health and Sanitation:

K.S.C.            Sec. 12.1201    Toilets, disposal of human excreta

Title 63, Chap. 13 (T.T.) or Title 41, Chap. 6 F.S.M.C.

All regulations below are administered by the FSM Environmental Protection Board (EPB).

Earthmoving Regulations (Subchapter III) - **PERMIT**

Toilet Facilities and Sewage Disposal Regulations (Subchapter V) -  
**PERMIT**

Solid Waste Regulations (Subchapter VI) - **PERMIT**

Marine and Fresh Water Quality Standard Regulations (Subchapter VII)

Public Water Supply Systems Regulations (Subchapter II)

Air Pollution Control Standards and Regulations (Subchapter VIII)

Pesticide Regulations (Subchapter IV)

Foreign Investment (K.S.L. 5-61):

K.S.C.            Sec. 15.304    Kosrae Foreign Investment Board - **PERMIT**

                  Sec. 15.305    Powers and Duties

## B) Division of Marine Resources - Regulations

---

### Sec. 11.1601. Endangered Species

By regulation the Director of the Dept. of Conservation and Development states an endangered species and provides for its protection. (Refer to Sec. 13.524 for enforcement penalties)

### Sec. 11.1101. Trochus niloticus (Tukasungai)

The Director of the Dept. of Conservation and Development has the power and duty to preserve and develop trochus resources for maximum economic and ecological benefit. The Director has established the following regulations:

- (1) trochus sanctuary located between Okat harbor and Yela
- (2) time, place and method of harvest controlled by permit system available at the Division of Marine Resources. Currently trochus can be hand harvested only - no SCUBA.
- (3) currently the minimum shell size is 3" diameter and maximum is 4". The maximum duration of the harvest season is 2 weeks.

### Sec. 13.523. Unauthorized procuring of marine life

#### 1) Sea Turtle

Hawksbill turtle (Chelonia mydas) and green turtle (Eretomchelys imbricata) cannot be harvested unless the shell length is greater than 27 inches (hawksbill) and 34 inches (green) when measured lengthwise over the top of the carapace. The taking or killing of sea turtles and their eggs while they are onshore is prohibited. Taking or killing sea turtles of any size are prohibited during June, July, August, December, January.

#### 2) Black-lip mother-of-pearl oyster (Pinctada margaritifera)

Taking or killing a Black-lip mother-of-pearl oyster from Aug. 1 to Dec. 31 and/or whose shell is less than 6 inches in maximum diameter, measured along the largest dimension across the outside of the shell, is prohibited.

#### 3) Giant Clam (Tridacna gigas; T. maxima; Hippopus hippopus)

A giant clam sanctuary is located at the seaward side of the Lelu Causeway adjacent to Yenar Island. The purpose of the sanctuary is to provide protection to giant clams and to promote the expansion of the giant clam population in the State.

#### 4) Coconut Crab (Birgus latro)

Legal harvestable size must be at least two inches (5.1 cm) in tail length. Females with eggs are not to be taken.

#### 5) Mangrove Crab (Scylla serrata)

Legal harvestable size must be at least six inches (15.3 cm) across the width of the carapace measured across the dorsal side of both ends. Females with eggs are not to be taken.

#### 6) Lobster (Panulirus penicillatus; P. versicolor; P. femoristriga)

Legal harvestable size must be at least three inches in carapace length, which roughly corresponds to one pound. Females with eggs are not to be taken.

#### 7) Catching, selling or possessing marine life caught by means of explosives, poisons, chemicals

or other substances which kill marine life is prohibited.

8) Procuring fish or other marine life from midnight Saturday to midnight Sunday is prohibited.

9) Underwater Cultural Resources

All man-made objects located on the bottom the State's territorial sea are part of the underwater cultural resources of the State and are protected by law from unauthorized collecting.

10) Underwater Natural Resources

All living coral in the state's territorial sea are part of the underwater natural resources of the state and are protected by law from unauthorized removal, harvesting or damage.

\* Regulations for coconut crab, mangrove crab, lobster, underwater cultural resources and underwater natural resources are still pending approval by the Attorney General's Office.

**C) Division of Marine Resources - Recommended Regulations**

---

Marine Turtles: Expand the marine turtle regulations to restrict harvest for subsistence/cultural use by Kosraeans citizens only.

SCUBA Diving Companies: The taking of coral, marine life and historical artifacts are prohibited by SCUBA diving companies. Some reef or pelagic fish may be harvested if the Division of Marine Resources gives consent. SCUBA diving companies should also keep a log recording the number of divers, origin (country) of divers and the average number of dives per diver, so that DMR can keep track of the impact of diving on Kosrae's coral reefs.

Wreck Diving: Subject to Division of History and Culture regulations prohibiting the removal or alteration of historic shipwrecks and their associated articles. (F.S.M. Historic Preservation Act).

Export of Marine Resources: Limit commercial export of reef fish and mangrove crab by local residents. Visitors are not allowed to export or take reef fish and shellfish off-island.

Large Scale fishing Operations (tuna cannery): Mandatory that foreign fishing vessels report fish type and number caught in Kosrae's waters as well as obtain a permit from DRC. Regulations should be drafted to reserve a subsistence fishing zone at least 6 miles around the entire island. This exclusive fishing area would be reserved for local Kosraeans only. Foreign fishermen would have to obtain a permit from DMR.

Establish marine conservation areas: The first site established should be between Utwe-Walung. Another future area is the Yela/Okat mangrove areas. The existing Trochus sanctuary, located between Yela and Okat could also be easily transformed into a marine preserve -- a no fishing/harvesting area that could be used to enhance fisheries near this area.

Continually monitor reef fishery resources: Develop a mechanism where fisheries can be regulated if populations are statistically shown to decline. Such regulations can include: gillnet mesh size, area or seasonal closures, minimum length and maximum number of fish.



Ban or Limit Jet Ski Use: Jet skies are incompatible with traditional fisheries and nature-based tourism activities in marine areas. If jet skies are allowed, they should be limited to a specific area.

#### **D) Division of Forestry - Recommended Regulations**

---

- 1) Incorporate the commercial wood cutting permit into the KIRMP program. The review process will allow forestry personnel to place conditions on the permit before it is issued (i.e. restrictions on size or type of tree or location of harvest). It was also suggested by forestry staff that commercial cutters be required to take a course from A&F in sustainable forestry techniques when they renew their cutters license.
- 2) Establish suitable mangrove cutting areas for each of the municipalities. This will allow the harvest to be more easily managed.
- 3) Allow only selective cutting based on the following recommendations:
  - Household Use - 2 inches and greater diameter\*
  - Commercial Firewood - 8 inch diameter\*, (encourages use of the entire tree)
  - \* measured 4 feet from the ground, or in the case of Rhizophora (Sakasric) just above the upper most prop roots.
- 4) Require commercial woodcutters in the mangrove areas to replant all areas using seedlings of the same species from other uncut mangroves areas.
- 5) Establish a 100 meter no-cut buffer zone along government-owned streams, mangrove channels and shorelines throughout the island.
- 6) Prohibit clearing of mangroves between road and shore where mangrove strip is less than 250 meters. Thinning and extraction of mangroves should be allowed only at distances 50 m from road (East-West Center recommendation).
- 7) Establish regulations for use of upper slope areas for agro-forestry practices (erosion controls, pig containment near rivers).
- 8) Study and monitor the use of commercial fertilizers pesticides and herbicides for agro-forestry operations. Encourage use of organic mulch in place of expensive and often damaging chemicals.
- 9) Protect all cloud or dwarf forest sites on high mountains, and key watershed areas crucial to municipal water supplies.
- 10) Establish Okat, Yela and Utwe-Walung Mangrove forest conservation areas according to the East-West Center recommendations.

**E) Construction and Engineering - Recommended Regulations**

---

- 1) Develop regulations for the removal, use and disposal of sand/fill materials and dredged materials.
- 2) Recommended set back limit: zone where activities and development are regulated or restricted
  - a) 50 horizontal feet inland from mean high tide line

**F) Division of Tourism - Recommended Regulations**

---

- 1) Require disclosure of financing, marketing plans, and planned use of local material and employees for new large-scale operations.
- 2) Preserve Nature-Based Tourism Attraction Sites (Ringer 1992)

- a. **Bird Watching**  
Wyia Cave, Tafunsak

- b. **SCUBA DIVING**  
Lelu harbor wrecks  
LENORA wreck, Utwa  
Malem reef  
Walung reef

Recommendations:

- No anchoring -- only "drift" dives or use of permanent mooring buoys.
- No removal of marine life or historical artifacts from wrecks in Lelu and Utwa Harbors
- All dives must be accompanied by someone from the Marine Resource Division or an approved local guide.

- c. **HIKING**  
Mt. Finkol trail, Utwa  
Menka Ruins trail, Utwa  
Toror trail, Malem  
Omah Mountain trail, Malem  
Mt. Mutante trail, Tafunsak  
Coast trail, Lelu causeway - Sandy Beach Hotel

Recommendations:

- Buffer zones of 50 meters in width on both sides of the trail from any commercial development
- No blocking of access to trails.

- d. **WATERFALLS**

Olum Cascade waterfall, Malem  
Yekula waterfall, Tafunsak  
Sipyen waterfall, Utwa  
Saolong waterfall, Utwa

Recommendations:

-Buffer zones of 50 meters in width above waterfalls  
-No diversion of water except for small-scale agricultural use (all pipes should be buried so as not to distract from natural attraction)

**e. Historic Sites**

Lelu Historic Museum  
Leluh ruins  
Loal ruins, Okat and Walung  
Japanese WW II tanks, Sansrik  
Japanese WW II bunkers and radio station, Malem

Recommendations:

-Buffer zones of 50 meters in width from any historic site.  
-No residential or agricultural development or use in the Leluh ruins (limited commercial development permitted if considered to be compatible with tourism needs by TAC and DRC)  
-Move Japanese tanks away from water to slow deterioration and increase visibility for tourists.

**f. Canoe or Boat Rides**

Inya Mutunnenea mangrove channel, Lelu area  
Inya Walunga mangrove channel, Utwa - Walung  
Walung - Okat mangrove channel  
Lelu Harbor  
Okat Harbor  
Utwā Harbor

Recommendations:

-Buffer zones of 50 meters in width along both sides of mangrove channels, shores and coastal waters.

**g. Historic Districts**

Lukunlulem, Walung  
Nefalil, Utwa

Recommendations:

-Buffer zones of 50 meters in width along both sides of the circumferential road and between any development (small-scale agriculture permitted if deemed compatible by TAC and DRC)

**h. Marine Coastal Conservation Districts**

## Utwā - Walung

### Recommendations:

- Expand Trochus Sanctuary to include Lulu Nefalil and Lelu Utwa; mangrove channels at Okat and Yela; coral reefs between Foko Saoksa and Mosron Utwa; tidal pools on Walung, Yela and Okat reefs; and tidal reef and flats between Molsron Yela and Molsron Mwot -- no development or logging permitted in sanctuary
- Buffer zones of 100 meters in width above mean high tide level along coastal waters.

### i. **Mangrove Forest Preserves**

Okat (Molsron Okat)

Yela Mangrove and Swamp Forest

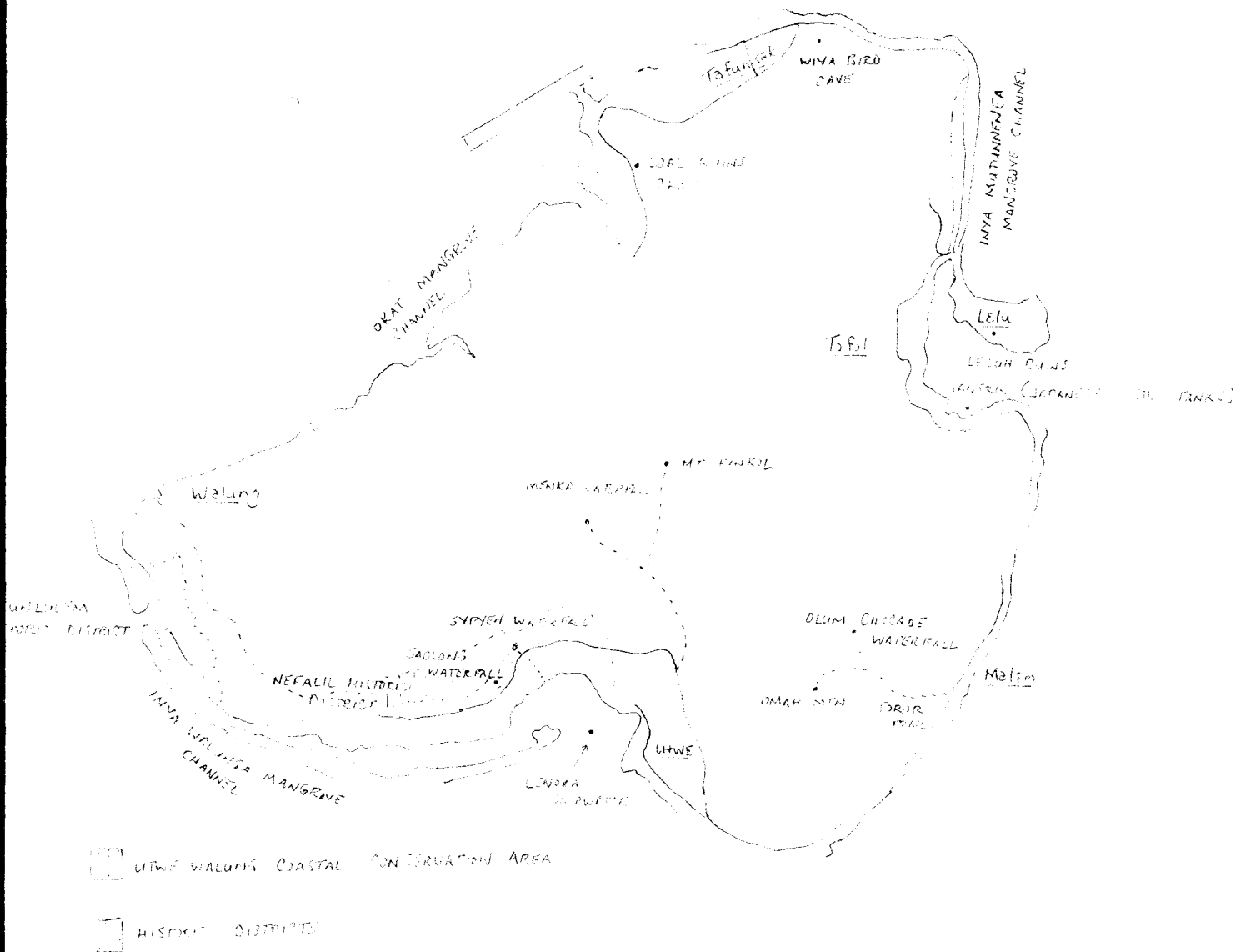
Utwā - Walung Mangrove Forest (Inya Walunga; and Infals Isra, Falwe and Lukunlulem)

### Recommendations:

- Buffer zones of 100 meters in width along both sides of rivers, channels, and streams, and along coastal waterways
- No clear-cutting of mangrove trees
- Scrap lumber to be left to promote forest regeneration and to provide wildlife habitat

**NOTE:** Within each buffer zone, the continuation of traditional or established uses and activities will be permitted except for those specifically identified above, or those which are damaging to the environment, incompatible with objectives of the KIRMP, or restricted by regulations.

# NATURE-BASED TOURISM ATTRACTION SITES for Kosrae Island Resource Management Program



## G) Recommendations for KIRMP Public Education Program

### Things to consider when designing a public education program

#### 1) What is the message you are trying to convey?

- Keep it Simple! -- simple messages are remembered longer and more accurately than long messages.
- catchy slogans, logos or jingles attached to messages helps the targeted audience establish an immediate association to a particular program.

#### 2) Who is the target audience?

- specific age group or sex
- special interest group (club, organization, etc.)
- municipality or entire state
- ALWAYS design the message to fit the intended audience

#### 3) What media resources do you have to work with?

- tailor your education campaign to be compatible with existing media resources and the audience you want to target

#### Broad-reaching

television  
radio  
video

#### Targeted

newsletter  
pamphlet/brochure  
posters  
school curriculum  
church announcement  
municipal meeting

#### Specific

public meeting  
public hearing  
workshop  
conference  
slide show  
movie

#### 4) What are the budget and time constraints of personnel designing the program?

- paid spots on television and radio can be expensive, however, most T.V. and radio stations allow some public service announcements to air free of charge.
- keep in mind that printing costs (paper and photos/slides) can add up very quickly, especially for multi-colored ink productions.
- use experienced and qualified people when appropriate, they can be a valuable and relatively inexpensive resource.

#### 5) Encourage public participation

- poster/photo contest
- encourage school children to participate and get involved
- provide incentive for others to get involved (recognition, prizes, rewards, etc....)

### KIRMP Public Education

KIRMP was designed to provide a way in which development projects are adequately reviewed so that a balance between the needs of economic development and those of environmental quality and respect for traditional ways can be achieved.

Since KIRMP was designed to be an integrated resource management program, any education program should reflect a comprehensive approach, stressing the direct relationship between land-use practices and environmental quality. The public education program for KIRMP must begin with the Program's purpose and objectives, and clearly explain what will be required for the everyday citizen.

The next phase of public education should strive to achieve greater environmental awareness, incorporating sustainable development concepts with a greater respect for Kosrae's natural resources. This next phase should focus on the inter-related aspects of all natural and human systems (ecosystems), especially for island-type communities possessing limited resources. The curriculum should also include ways in which humans can impact and disturb the natural balances that took thousands of years to attain.

#### Phase 1: KIRMP Recognition

- Kosraean radio announcements - Likiak Wesley
- Written Materials
  - KIRMP Guide (English and Kosraean), Kit Dahl
  - KIRMP brochure (English and Kosraean), Brady Phillips
  - KIRMP information poster, KIRMP Program Office
- Kosrae Government newsletter, Pubic Affairs
- Public Meetings for review of regulations and program's intent (Tafunsak, Walung, Lelu, Malem & Utwe)

#### Phase 2: Public Environmental Awareness

This section should be coordinated with the KIRMP Program Office, Dept. of Conservation of Development (Marine Resources and Agric. & Forestry), Dept. of Education, and the new Discover Kosrae program (see Madison Nena). A good way to start such a program would be to set-up an environmental/cultural education taskforce or committee. This group could decide the best ways to educate the public, set future agendas and implementation schedules. Some topics that need to be addressed include:

- Island Conservation
  - limited capacity of islands
  - ecosystems
  - link humans into natural system
  - new marine and mangrove conservation/park areas
  - nature-based tourism -- how it can work in Kosrae (Discover Kosrae)
- Land Use Practices
  - sustainable development
  - good and bad land-use practices
  - stewardship principles -- taking care of the land/water
  - pollution/garbage/sewage prevention program
- Kosrae's Resources
  - coral reef ecology/fisheries
  - mangroves -- why they are important
  - upland forests/agro-forestry

- historical resources (ruins, shipwrecks, war relics)
- cultural resources -(canoe building, handicrafts, food, dances, singing, religion)



# Kosrae Island Resource Management Program (KIRMP)

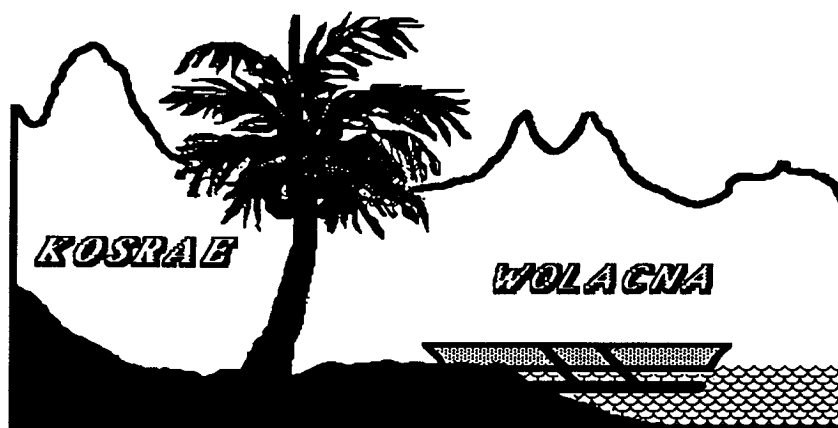
Kosrae is on the verge of rapid change. Unchecked development threatens to rapidly erode Kosrae's natural resources and the traditional lifestyle they support. Kosrae State Law 5-56 formally established the Kosrae Island Resource Management Program (KIRMP), reflecting both a concern and commitment to manage Kosrae's fragile and limited resources for present and future generations. The KIRMP development review process was designed to encourage sustainable economic and social development, while at the same time minimize harmful impacts to Kosrae's unique environmental and cultural resources. The program does not intend to prevent individual landowners from making use of their land, only to prevent harmful

vation.

2. **Development Planning and Coordination** - KIRMP will improve coordination among government agencies in their efforts to plan economic development and manage natural resources.

3. **Integrated Renewable Resource Management** - KIRMP will assist existing government agencies in managing resource use so that future uses are sustained. This will include assisting the agencies to protect important habits and species for the future.

4. **Reduce Impacts from Natural Hazards** - KIRMP will help government agencies plan development so that damage from natural hazards, such as shoreline erosion and



impacts from jeopardizing Kosrae's future.

Kosrae is unique in that it remains the only State within the Federated States of Micronesia with such a comprehensive and far-reaching program. But the ultimate success of KIRMP is linked to the people of Kosrae. While the State Government is responsible for managing the island for the benefit of present and future generations, all citizens must share this responsibility. An understanding of the goals and purpose of the program, combined with public input, will ensure the success of a program that best reflects the needs and concerns of the people of Kosrae.

## Program Goals

The following five program goals describe the overall purpose and scope of KIRMP. These goals address the resource management problems that Kosrae faces now, and will continue to face in the future.

1. **Project Review** - KIRMP will improve Kosrae's ability to develop the island by minimizing future damage to the island's biological, cultural and physical resources. The Program will also help to ensure that the development projects reflect a balanced approach to resource use for economic development, subsistence, recreation and conser-

coastal flooding is minimized. The Program will also assist in efforts to educate the public about natural hazards and how to protect life and property against them.

5. **Improve Public Education and Input** - KIRMP will assist in the coordination of public environmental education efforts carried out by the State agencies. It will educate the public on Program goals and procedure, as well as develop ways to involve the public in achieving Program goals and objectives.

## KIRMP Structure

Three new administrative bodies were created under KIRMP. Together they will work to achieve the goals of better inter-agency coordination and effective development review and planning.

### Technical Advisory Committee (TAC)

The TAC is a ten-member committee that serves two main functions: (1) provides multi-disciplinary technical guidance in the review of development proposals, and (2) improves coordination among government agencies. TAC has members representing the following Kosrae State Agencies:

- Bureau of Planning and Statistics
- Construction and Engineering
- Department of Public Works
- Division of History and Culture
- Division of Agriculture and Forestry
- Division of Marine Resources
- Division of Tourism
- Division of Land Management
- Division of Environmental Health
- State Utilities Authority

### Development Review Commission (DRC)

The DRC is a five-member commission appointed by the Governor and confirmed by the State Legislature. It has assumed the responsibilities of the former Environmental Protection Board (EPB), which was eliminated under KIRMP, as well as some new responsibilities.

One of DRC's main functions is to evaluate project proposals based on recommendations from the TAC and the general public. After evaluating all technical and public input, they will formally approve or disapprove the proposal. If the application is approved, DRC will issue a permit for the project to proceed. In some cases, they may condition a permit to require changes in the siting, design standards or construction methods for a project in order to minimize damage to the environment. Project proponents may appeal a DRC decision to deny a permit.

### Program Office and Staff

A two-person office was established to provide support for the TAC and DRC. The two positions are a Program Director, who also serves as executive director to the DRC, and a Program Advisor, who has training in coastal resource management principles and environmental impact assessment.

A major purpose of the Program Office is to help streamline project approval for potential developers. The Program Office will serve as a point of contact and source of information for permit applicants. Based on criteria established in regulations, the Office staff will inform an applicant whether a project needs a permit and if it will require an EIS. The Program Office will keep project proponents updated on the status of their application and ensure it is reviewed by the TAC and DRC.

The Program Office will also monitor projects that have been approved to make sure that all requirements and conditions established by the permit are being followed. The Office will assist the State Agencies and Attorney General's Office in enforcing KIRMP regulations.

### Role of the Public in KIRMP

The public plays an important role in KIRMP. Public recognition and understanding of KIRMP is crucial to its success. The best way for the public to get involved is to attend the Development Review Commission meetings — all are open to the public. This provides an opportunity for citizens to voice their concerns over a proposed project or

regulation. The DRC will also hold public meetings for large or controversial projects. The purpose of the meetings is to inform the public of a project and solicit their concerns. The public may also review and comment on EIS documents and official records of DRC actions.

### Do You Need a Development Review Permit?

If you are unsure whether or not you need a Development Review Permit stop by the Program Office, located in the Pacific Awane Building, and discuss the project with the program staff. Applications should be picked up and returned there as well. In general, project proponents will be required to fill out an Development Review Permit application if the project meets any of the following criteria:

- |     |  |
|-----|--|
| (a) | involve any earthmoving activities;  |
| (b) | located below the mean high water mark (includes mangroves);                                 |
| (c) | costs over \$5,000;  |
| (d) | incompatible with surrounding land uses;   |
| (e) | disposal or removal of over 10 cubic yards of dredged materials;                             |
| (f) | use, handling or disposal of toxic chemicals, pesticides, petroleum, oil & lubrication, etc. |

All projects meeting the above criteria are required to have a permit before construction begins except:

- (1) When land is tilled or plowed for small-scale agricultural purposes;
- (2) A one or two family dwelling is built within a 10,000 square foot area, and is not part of a subdivision;
- (3) Activities associated with the normal maintenance, operation and improvement of an existing household.

### Application Review Process

Once your application is filled out and submitted to the Program Office, it will be forwarded to the TAC for technical review. The TAC will compile its recommendations and submit them to the DRC, where they will make the final approval decision and attach conditions if needed. The Program Office will issue the Development Review Permit only after other necessary permits, such as toilet facilities, have been received.

If the Program Office or TAC finds that the information provided in the application is insufficient to adequately assess project impacts, they may request that an Environmental Impact Statement (EIS) be completed according to specific requirements.



*Questions regarding the application or KIRMP should be directed to Kosaki William, DRC Commissioner or the KIRMP Program Office.*

**Summary of DRC Regulations and Guidelines**

**Development Review Permit Regulations and  
Former Environmental Protection Board Regulations**

**DEVELOPMENT REVIEW REGULATIONS**  
**"KIRMP Regulations for Development Projects"**  
**(Kosrae State Code, Title 7, Chapter 4)**

1. THIS REGULATION WAS PUT INTO EFFECT TO:

- (A) Balance economic and social development with those of environmental quality and respect for traditional ways.
- (B) Critically review development projects for their environmental and cultural impacts prior to taking or funding any action that will significantly affect the quality of the human environment.
- (C) Minimize pollution and destruction of Kosrae's natural resources.
- (D) Encourage projects that are economically, environmentally and culturally sustainable in the long-term.
- (E) Improve planning and coordination among the government and private sectors.

2. "Development Projects" CAN BE MANY THINGS:

- (A) Clearing land
- (B) Moving dirt, rock, sand and coral
- (C) Dredging
- (D) Quarrying
- (E) Excavation
- (F) Road construction
- (G) Large-scale land development
- (H) Landscaping
- (I) Embankments
- (J) Dock construction
- (K) Putting in telephone/utility poles
- (L) Laying pipes
- (M) Construction of a building or a structure (including a house, business or tourism facility)
- (N) Large scale recreational complex (golf course, resort hotel, condominium, etc.)

3. THESE REGULATIONS AFFECT:

- (A) Anyone who wants to do a project that will disturb the land, ocean, reefs, lagoons, river, lake, mangrove swamp, cultural resources or historical resources.

4. RESPONSIBILITIES OF DRC ARE:

- (A) Beginning a Project -- Before a Development Review Permit can be issued, the DRC must see a plan that shows:
  - (1) Existing environmental setting
  - (2) How the project will change the area (the impacts)

- (2) How damage to the area will be kept to a minimum (Erosion and Sedimentation Control Plan)

Parts 3 and 7 of the Regulations explain what is required by the project proponent for the permit application and Erosion and Sedimentation Control Plan.

- (B) The Control Plan -- All project proponents who will engage in earthmoving projects will be required to submit an Erosion and Sedimentation Control Plan, as specified in Part 7 of the Regulations, that details how damage will be kept at a minimum. The control plan and Development Review Permit must be kept at the project site at all times.
- (C) Applicability -- These Regulations apply to all new and ongoing projects.
- (D) Permits -- Project proponents must fill out a Development Review Permit application for any project that meets the following criteria:

- (1) Involve any earthmoving activities;
- (2) Located below the mean high water mark (including mangroves);
- (3) Project costs over \$5,000;
- (4) Incompatible with surrounding land uses;
- (5) Disposal or removal of dredged material, including all sandmining operations; and
- (6) Use, handling or disposal of toxic or hazardous chemicals, pesticides, petroleum, oil and lubrication.

The following activities are exempt from the Development Review Permit requirement:

- (1) When land is tilled or plowed for small-scale agricultural purposes;
- (2) For a one-or-two family dwelling that is built within a 10,000 square foot area, and is not part of a subdivision, provided the landowner contacts the Program Office and informs them of the source and type of building materials and location; and
- (3) Activities associated with the normal maintenance, operation and improvement of an existing household.

Although no permit is needed, the persons doing these projects must still follow the Regulations and use proper controls to keep the damage to the area to a minimum.

- (E) Environmental Impact Statement -- The Program Office, TAC or DRC will use the following criteria to determine if a comprehensive Environmental Impact Statement will be required of the project proponent:

- (1) The project is likely to effect and impact:
  - (a) marine resources
  - (b) mangrove resources
  - (c) social/cultural/historical resources
  - (d) human health and welfare
  - (e) area of particular concern

- (2) The project will likely fail to comply with the FSM's minimum environmental quality standards for water and air quality, waste management and noise control.
  - (3) The project is likely to disturb more than 10,000 square feet of land surface.
  - (4) The project is likely to require more than 5,000 cubic yards of fill.
  - (5) The project is likely to be controversial and invoke public opposition.
  - (6) Projects that require a Foreign Investment Permit.
- (F) Buildings -- Before a public or private building can be built, a DRC Toilet Facilities/Sewage Facilities permit must be obtained. The application form is the same one used for the Development Review Permit.
  - (G) Historical Preservation -- The Kosrae Historical Preservation Office should be contacted before any Development Project begins. This clearance may be given by the Kosrae History and Culture representative in the Technical Advisory Committee (TAC).
  - (H) Project Completion -- When the project is completed, the area must be protected from further damage, by stabilizing the area. Part 7 of the Regulations explains the steps to be taken when protecting an area after the construction is completed.
  - (I) Land Matters -- Decisions about who owns land are not matters for the DRC to settle. The Division of Land Management or the Land Commission should be contacted to resolve these issues.

6. RESPONSIBILITIES OF THE DRC UNDER THIS REGULATION ARE TO:

- (A) Review, comment and issue Development Review Permit applications and Toilet Facilities/Sewage Disposal permits.
- (B) Making sure the project proponent has obtained other needed permits before issuing the Development Review Permit.
- (C) Review and comment on Environmental Impact Statements when required.
- (D) Assist with public informational meetings on proposed development activities.
- (E) Checking that the project is following the conditions specified in the permit and the Erosion and Sedimentation Control plan. The KIRMP Program Office may be delegated to assume these responsibilities.
- (F) Enforcing violations of the Regulations and KIRMP.
- (G) Inspecting the site after the project is finished to see that proper methods were used to stabilize the area from further damage.

**EARTHMOVING REGULATIONS**  
**"Concerning the Control of Earthmoving and Sedimentation"**  
**(F.S.M. Code, Title 41, Chapter 6, Subchapter III)**

1. THIS REGULATION WAS PUT INTO EFFECT TO:

- (A) Safeguard food resources and fishing grounds;
- (B) Protect land and property, coral reefs, and natural resources; and
- (C) Keep the islands of the Federated States of Micronesia beautiful and enjoyable.

2. "Earthmoving" CAN BE MANY THINGS:

- (1) Clearing land
- (2) Moving dirt, rock, and coral
- (3) Dredging
- (4) Quarrying
- (5) Dock building
- (6) large-scale land development
- (7) Landscaping
- (8) Building a house
- (9) Embankments
- (10) Laying pipes
- (11) Putting in telephone poles
- (12) Excavations
- (13) Building Roads
- (14) Building shore protection structures (riprap)

3. THESE REGULATIONS AFFECT:

- (A) Anyone who wants to do a project that will disturb the land, ocean, a coral reef, lagoon, river, lake or mangrove swamp.

4. THEIR RESPONSIBILITIES ARE:

- (A) Beginning a Project -- Before an earthmoving permit can be issued, the DRC must see a plan that shows:

- (1) How the project will change the area (the "Impact")
- (2) How damage to the area will be kept to a minimum (the control plan)

Parts 4 and 5 of the Earthmoving Regulations explains what the DRC requires before it reviews these plans.

- (B) The Control Plan -- It is important that the person who wants to do the earthmoving project uses a control plan to reduce damages to the area. The control plan and earthmoving permit must be kept at the construction site.
- (C) Applicability -- The Regulations apply to all new and ongoing projects

- (D) Permits -- Anyone who wants to do an earthmoving project must apply for a permit from the DRC before starting the project. Part 7 of the Earthmoving Regulations covers what is needed to apply for a permit. All kinds of projects must have permits, except:
- (1) When land is tilled or plowed for agriculture purposes;
  - (2) A one- or two- family dwelling is built within a 10,000 square foot area, and is not part of a subdivision; and
  - (3) Activities associated with the normal maintenance, operation and improvement of existing households.

Although no permit is needed, the people doing these projects must still follow the Regulations and use proper controls to keep the damage to the area at a minimum.

- (E) Buildings -- Before a public or private building can be built, a DRC Toilet Facilities/Sewage Disposal permit must be applied for.
- (F) Historical Preservation -- The Kosrae Historical Preservation Office should be contacted about doing any earthmoving project, in case it will disturb an area of historical importance.
- (G) Project Completion -- When the project is finished, the area must be protected from further damage, by stabilizing the area. Part 6 of the Regulations explains the duties of protecting the area after the project is finished.
- (H) Land Matters -- Decisions about who owns the land are not matters for the DRC to decide. Contact the Land Management or Land Commission Office for property disputes.



**DRINKING WATER REGULATION**  
**"Public Water Supply Systems Regulations"**  
**(FSM Code, Title 41, Chap. 6, Subchapter II )**

1. THIS REGULATION WAS PUT INTO EFFECT TO:

- (A) Protect public health;
- (B) Make sure there is safe water for drinking and other use;
- (C) Keep drinking water from becoming polluted; and
- (D) Prevent the spread of disease.

2. A "Public Water Supply System" IS ANY WATER SYSTEM THAT:

- (A) Supplies water to the public through pipes, valves, and/or faucets for human use; and,
- (B) Has at least 15 outlets, or regularly supplies water to 25 people per day, at least 60 days out of the year.

3. THESE REGULATIONS AFFECT:

- (A) Anyone who wants to build a water system for public use; and
- (B) Suppliers of public water.

4. THESE ARE THEIR RESPONSIBILITIES:

- (A) Construction -- Before construction can begin on a public water system, the DRC must approve the plans. Part 4 of the Regulations gives information about the steps necessary for approval.
- (B) Emergency Repairs and Changes -- During emergencies that require changes or repairs to the water system that might make the water unsafe, the water supplier should contact the DRC for permission to continue supplying water.
- (C) Monitoring -- The water supplier must routinely check the water for:
  - (a) coliform bacteria;
  - (b) turbidity;
  - (c) organic and inorganic chemicals; and
  - (d) radionucleotides.

Part 5 of the Regulation gives information about how often the samples should be taken, and the safe amounts of the above allowed in the water.

- (D) Water Quality -- Water suppliers are responsible for providing water quality that is better than, or equals the standards set in the Regulations.
- (E) Violations -- Anytime the water supplier finds the water to be in violation of the Regulations, such as being above the limits set for coliform, turbidity, etc., the water may be unsafe. The water supplier must contact the DRC and notify the public. Part 5.93 of the Regulations explains the procedures.
- (F) Record Keeping -- Records of coliform tests must be kept for 5 years by the supplier, and chemical tests must be kept for 19 years. Part 5.94 of the Regulations explains

maintaining records.

- (G) Variances and Exemptions -- There are certain cases when the water cannot be treated by the water supplier to meet the standards set in the Regulations. Variances and exemptions which would allow a treatment method that is not usually approved can be applied for through the DRC. Parts 6 and explain the process of applying for variances and exemptions.
- (H) Supply of Drinking Water During Emergencies -- There are three types of emergencies that could affect a water supply:
  - (a) When harmful substances are found in the water that would be a hazard to people's health;
  - (b) When major disasters, like typhoons and earthquakes, badly damage the water supply system; or
  - (c) When the public water system must be turned off for water rationing, possibly contaminating the water supply.

Part 8 of the Regulations describes what is necessary for supply of water to the public during emergencies like these.

5. **THESE ARE THE RESPONSIBILITIES OF THE CHIEF DISTRICT SANITARIAN UNDER THIS REGULATION:**

- (A) Reviewing and commenting on plans for water supply systems.
- (B) Giving advice to those who want to build private water supply systems.
- (C) Regularly testing public water supplies to make sure they are safe.
- (D) Making sure suppliers keep their records of sampling.
- (E) Checking for ways the water supplies could become contaminated.
- (F) Assisting with supplying safe drinking water during major emergencies.
- (G) Bringing violations to the attention of the DRC.

**WATER QUALITY REGULATION**  
**"Marine and Fresh Water Quality Standard Regulations"**  
**(F.S.M. Code, Title 41, Chapter 6, Subchapter VII)**

1. THESE REGULATIONS WERE DRAFTED TO:

- (A) Protect public health and safety;
- (B) Maintain areas for recreation and public use;
- (C) Keep clean waters free of pollution; and
- (D) Prevent waters that are already used from becoming more polluted.

2. FRESH AND COASTAL WATERS COVERED BY THIS REGULATION ARE:

- (A) Near-shore waters -- All waters that are inside the reef, or if there is no reef, all waters up to 1,000 feet off-shore.
- (B) Off-shore waters -- All coastal waters beyond the "near-shore" waters.
- (C) All other brackish, fresh, and salt waters that are affected by the ebb and flood of the tide.
- (D) Fresh water rivers and lakes.

3. THIS REGULATION AFFECTS:

- (A) Anyone who wants to start a project that will put new or increase pollution into the water.
- (B) Anyone who uses waters to discharge pollutants into.

4. POLLUTANTS THAT ARE COVERED IN THIS REGULATION ARE:

- (a) dredging material
- (b) municipal waste
- (c) incinerator residue
- (d) sewage and sludge
- (e) garbage
- (f) munitions
- (g) chemical wastes
- (h) biological wastes
- (i) radioactive materials
- (j) heat
- (k) wrecked or discharged equipment
- (l) agricultural waste
- (m) industrial waste

5. THEIR RESPONSIBILITIES ARE:

- (A) Classification -- Coastal and fresh waters have been classified by their present and future uses in each of the FSM States. Some waters have more restrictions placed on them to keep their natural state. Other waters have less-strict standards so that they can be uses

for harbors and for treated sewage disposal. Part 5 lists the ways waters are classified and how they are to be protected.

- (B) Water Quality Standards -- All waters must be kept free of pollution in amounts that would harm aquatic life, or keep waters from being used for recreation, and other purposes. All pollution going into waters must be treated before being disposed in the water.
- (C) Mixing Zones -- The DRC will allow certain spaces of water for the mixing of pollution with the rest of the water. For example, a space would be allowed from the end of an outfall pipeline where treated sewage comes out, for the discharge to mix with the surrounding water. The mixing zone permit is applied for at the same time as the NPDES permit for discharging into waters.
- (D) Approval -- Before anyone begins a project that will put new or increased pollution into any waters, approval must be given by the DRC. Part 7 of the Regulations gives information about applying for permission to discharge pollution into waters.

6. THE RESPONSIBILITIES OF THE CHIEF DISTRICT SANITARIAN UNDER THIS REGULATION ARE TO:

- (A) Know how waters are classified in the FSM and Kosrae.
- (B) Watch for any polluting activities or sources of untreated pollution that would affect the quality of the water.
- (C) Bring water pollution problems to the attention of the DRC.
- (D) Monitor water classification areas.
- (E) Notify the Coast Guard for oil spills (Plan included in the Appendix) in water, and take immediate action.

**TOILET REGULATIONS**  
**"Toilet facilities and Sewage Disposal Regulations"**  
**(F.S.M. Code, Title 41, Chapter 6, Subchapter V)**

1. THESE REGULATIONS WERE PUT INTO AFFECT TO:
  - (A) Protect public health and safety;
  - (B) Protect drinking water from pollution;
  - (C) Prevent nuisance problems such as flies and odors;
  - (D) Minimize environmental pollution; and
  - (E) Insure that toilets are built and maintained for public and private use.
2. THESE REGULATIONS AFFECT:
  - (A) Anyone who wants to build a house, building, or toilet facility; and
  - (B) Anyone who has a toilet facility.
3. THEIR RESPONSIBILITIES ARE:
  - (A) Permits -- Anyone who wants to build a house, public or private building, or a toilet facility must apply for a DRC Toilet Facilities/Sewage Disposal permit, through the DRC's Development Review Permit, before construction can begin.
  - (B) Responsibility -- The owner of the property that has a toilet facility is responsible for keeping it in good repair and working order.
  - (C) Sewer Connections -- All toilets must be hooked up to a public sewer system, if there is one available.
  - (D) Time Allowance -- Toilets that are now hooked up to cesspools, septic tanks, or seepage pits are allowed until 1982 to be hooked up to an available sewer system. If it is found that these toilet facilities are causing pollution or creating a public health hazard, then they must make immediate improvements.
  - (E) Pit Benjos -- In cases where there is no piped water for toilets, or no sewer systems, septic tanks, or cesspools available, pit benjos may be used. The pit benjos must not contaminate water supplies or cause pollution.
  - (F) Construction of Toilet Facilities -- Part 5 of the Regulations gives information about the requirements for constructing toilet facilities.
4. THE RESPONSIBILITIES OF THE CHIEF DISTRICT SANITARIAN UNDER THIS REGULATION ARE TO:
  - (A) Notify the DRC when pollution threatens public health, and take immediate action to stop it.
  - (B) Make sure septic tanks, cesspools, seepage pits and benjos are not polluting water supplies.
  - (C) Inspect cesspools, septic tanks, seepage pits and benjos before they are covered over.
  - (D) Make suggestions about proper building construction, and nuisance-free toilet facilities.
  - (E) Assist the DRC and in reviewing and commenting on Toilet Facility/Sewage Disposal permit applications.

- (F) Inspect sites before construction for acceptable soil conditions and toilet facility locations.
- (G) Check construction sites to see that permit conditions are being carried out.
- (H) Assist Farmers Home Loan in publicizing Sanitary Core Facilities.

**SOLID WASTE REGULATION**  
**"Solid Waste Regulation"**  
**(F.S.M. Code, Title 41, Chapter 6, Subchapter VI)**

1. THIS REGULATION WAS PUT INTO EFFECT TO:
  - (A) Protect public health and safety;
  - (B) Prevent air, land and water from being polluted
  - (C) Prevent the spread of disease; and
  - (D) Reduce nuisances such as rats, flies and odors.
2. THERE ARE MANY TYPES OF SOLID WASTE:
  - (A) Commercial and Institutional Solid Waste -- From stores, offices warehouses, schools, etc.
  - (B) Food Waste -- Commonly called garbage, the organic leftovers from food handling and storage.
  - (C) Junk -- Old or scrap metals, rags, rubber, cars, etc.
  - (D) Residual Solid Waste -- From households.
  - (E) Hazardous Waste -- Wastes that could endanger human health or other living organisms.
3. SOME EXAMPLES OF HAZARDOUS WASTE WOULD BE:
  - (A) Agricultural -- Unused pesticides and pesticide containers.
  - (B) Hospital -- Unused or expired medicines and pathological or material.
  - (C) Industrial -- Processing residues, waste lubrication oil, and petroleum products leftovers.
  - (D) Water and Sewage Treatment -- Chlorine containers and sludge.
  - (E) Power Plants -- Waste lubrication oil and PCB (Fluid from transformers and capacitors).
4. THESE REGULATIONS AFFECT:
  - (A) Anyone who owns or operates a solid waste disposal facility (Sanitary landfill, open dump, incinerators, etc.)
  - (B) Anyone who must dispose of solid waste; and
  - (C) Anyone who collects solid waste.
5. THEIR RESPONSIBILITIES ARE:
  - (A) Permits -- Owners of landfills, reclamation facilities, and solid waste disposal systems must apply for permits from the DRC. Section 6 of the Regulations gives information about applying for a permit and what is needed.
  - (B) Approval -- The following do not need permits, but must have written approval from the DRC:
    - (1) A single family that wants to dispose of their solid waste on their property because they are too far away from a collection system.
    - (2) A farm that disposes its solid waste on the property for its own use.

- (3) A landfill site that is only use by the owner, and only for rock, soil, concrete, and other non-rotting material.

These private disposal sites must be maintained so that flies, rats and odors will not become a problem, and be kept safe and from being a public hazard. Information is given in Part 7(f) of the Regulation about private disposal facilities.

- (C) Solid Waste Facilities Standards -- All Solid Waste Disposal Facilities must be planned, designed, and constructed according to the standards set in Part 7 of the Regulations.
- (D) Hazardous Waste -- Anyone who wants to dispose of hazardous waste must notify the DRC for special approval. Part 8 of the Regulations gives requirements for the disposal of hazardous wastes.
- (E) Responsibilities -- Part 9 lists the responsibilities of taking care of solid wastes. It is the responsibility of the property, business, or industry owner to make sure that the solid waste is:
  - (1) Properly stored;
  - (2) Removed to an approved site; and
  - (3) Not becoming a public nuisance.
- (F) Public Gatherings -- A person who sponsors a pubic gathering is responsible for the storage and removal of solid waste (fairs, athletic events, etc.).
- (G) Dead Animals -- Animal carcasses must be disposed of according to the Regulations, by the property owner or land occupant on whose land the dead animal is found.
- (H) Trash Cans -- Trash cans for public use must be kept clean by the person who provides them.
- (I) Variances -- If the disposal facility cannot comply with the Regulations, a variance can be applied for on a permit. Part 11 gives information about the process of applying for variances.
- (J) Violations -- In order to enforce the Regulations, anyone who violates them may be guilty of a misdemeanor and can be prosecuted.

6. THE RESPONSIBILITIES OF THE CHIEF DISTRICT SANITARIAN ARE TO:

- (A) Make sure all solid waste disposal facilities have permits and that they are posted at the sites.
- (B) Review and comment on proposed solid waste disposal sites and make recommendations to the DRC.
- (C) Assist the DRC in reviewing and commenting on solid waste disposal permit applications.
- (D) Assist with pubic hearings on proposed solid waste disposal sites.
- (E) Assist with developing disposal methods for hazardous waste.
- (F) Watch for troubled areas in the community where litter and trash collect.
- (G) Enforce local litter laws.
- (H) Keep people, who are not authorized, from picking through dumps, which may be adverse to their health, and for smooth operation around the site.
- (I) Inspect solid waste disposal sites to check operations.
- (J) Bring problems and violations to the attention of the DRC.



**PESTICIDE REGULATION**  
**"F.S.M. Pesticide Regulations"**  
**(F.S.M. Code, Title 41, Chapter 6, Subchapter IV)**

1. THIS REGULATION WAS PUT INTO EFFECT TO:

- (A) Protect people, including applicators, from the hazards of pesticide misuse;
- (B) Safeguard foods from being contaminated by the improper use of pesticides;
- (C) Prevent environmental disasters, such as fish kills, caused by the improper disposal of pesticides in water;
- (D) Keep F.S.M. EPB non-registered pesticides from entering the F.S.M which may not have been tested for their hazard to humans or the environment;
- (E) Keep track of the movement and use of the more dangerous pesticides; and
- (F) Prevent accidental poisonings by requiring users of dangerous pesticides to comply with certain standards.

2. EXAMPLES OF F.S.M. EPB "restricted use" PESTICIDES THAT ARE USED IN THE F.S.M. ARE:

- (A) Methyl Bromide -- A house and seed fumigant;
- (B) Paraquat -- A weed killer; and
- (C) Chlordane -- Used for termite control.

3. THIS REGULATIONS AFFECTS:

- (A) Those who want to use "EPB "Restricted Use" pesticides;
- (B) Sellers and distributors of EPB "Restricted Use" pesticides; and
- (C) Importers of all pesticides.

4. THEIR RESPONSIBILITIES ARE:

- (A) Use of EPB Restricted Use Pesticides -- An EPB "Restricted Use" pesticide can only be used by an operator certified through the DRC. A certified operator may supervise someone else who wants to use an F.S.M EPB "Restricted Use" pesticide.
- (B) Ordering an EPB Restricted Use Pesticide -- Only a certified applicator or licensed dealer may purchase or import an EPB "Restricted Use" pesticide.
- (C) Pesticides Coming into the F.S.M. -- All pesticides coming into the Federated States of Micronesia must have an EPB registration number on them. Part 7 of the Regulations explains what is necessary for a pesticide to be able to enter the F.S.M..
- (D) General Use Pesticides -- Other pesticides, call "General Use" pesticides which are not on the "Restricted" list, may be used by anyone. They are still responsible for using care and following directions for proper use and disposal.
- (E) Sellers and Distributors of EPB Restricted Use Pesticides -- A person who sells or distributes an EPB "Restricted Use" pesticide in the F.S.M. must keep a record of the following information:
  - (1) How much was shipped;

- (2) The type of pesticide;
- (3) The EPA/EPB registration number;
- (4) The type of containers used;
- (5) The date of sale;
- (6) Whom the pesticide was sold to;
- (7) Where the pesticide was shipped from;

(F) Users of EPB "Restricted Use" Pesticides -- Anyone who uses an EPB "Restricted Use" pesticide must keep a record of the following information:

- (1) The date of use;
- (2) The amount used;
- (3) Where it was used;
- (4) What it was used for; and
- (5) How the containers were disposed of.

5. THE RESPONSIBILITIES OF THE CHIEF DISTRICT SANITARIAN UNDER THIS REGULATION ARE TO:

- (A) Look into environmental events that might be caused by pesticide misuse, such as fish kills or human illness;
- (B) Bring any areas of concern about pesticides to the attention of the DRC for action;
- (C) Assist with the certification of applicators; and
- (D) Assist the "District Pesticides Specialist" who will be enforcing these regulations.

## **VI**

### **Appendix**

- A. KIRMP Law (K.S.L. 5-56)
- B. Regulations for Development Projects
- C. Environmental Impact Assessment Checklist
- D. Development Review Permit Application
- E. Development Review Permit
- F. Toilet Facilities/Sewage System Permit
- G. References Used for KIRMP Regulations and Guidelines

## **Appendix A**

**KIRMP Law (K.S.L. 5-56)**

**Kosrae Island Resource Management Program (KIRMP)**  
**Kosrae State Law 5-56**

**FIFTH KOSRAE STATE LEGISLATURE**  
**SECOND REGULAR SESSION, 1991**

**A Bill For An Act**

To amend Title 7, Chapter 4 of the Kosrae State Code to establish a Development Review Commission to replace the Environmental Protection Board; to provide that the Commission shall prepare a land use plan and permitting process for the State of Kosrae; to make certain conforming amendments to Sections 7.102, 7.111 and Title 11, Chapter 13 of the Kosrae State Code; and for other purposes.

**Section 1. Purpose.**

It is the purpose of this legislation to create a Development Review Commission that will be responsible for overseeing the wise use and protection of Kosrae's resources, balancing the needs of economic and social development with those of environmental quality and respect for our traditional ways.

**Section 2. Amendment.** Title 7, Chapter 4 of the Kosrae State Code is amended to read as follows:

**Chapter 4. The Development Review Commission**

**Section 7.401. The Development Review Commission**

(1) The Development Review Commission consists of five members who serve terms of four years. Two of the members initially serve terms of two years and three of the members initially serve terms of four years. Thereafter, all members serve terms of four years.

(2) Members of the Commission receive compensation of \$25.00 per day while engaged in the performance of the duties of the Commission. Members are entitled to receive reasonable travel costs and per diem at standard Kosrae State Government rates when engaged in the performance of the duties of the Commission.

(3) The commission meets when a proposal is submitted for its review or as often as is otherwise necessary to carry out its business under this Chapter. A meeting is held as determined by the Commission, or the call of the Chairman or the written request of any two members. All meetings are open to the public, and reasonable advance public notice of the time and place of a meeting is posted in public places and is announced on the radio throughout the State.

(4) The Commission provides for the keeping of records of its actions. These records are open to the public for inspection.

**Section 7.402. Powers and Duties.** The Commission has the power and duty to:

(1) Protect the environment, human health, welfare and safety, to abate, control and prevent pollution or contamination of air, land and water in accordance with this chapter and Commission regulations by balancing the needs of economic and social development with those of environmental quality and adopting regulations and pursuing policies which, to the maximum extent possible, ensure that economic and social development is environmentally sustainable;

(2) adopt and enforce regulations to effect the purposes of this chapter;

(3) adopt and provide for the continuing administration of a development permit system, including the requirement of development proposals, for the construction, expansion or alteration of a development, including alteration of land or marine space, that may significantly affect, directly or indirectly, natural or historic resources, significantly alter the landscape or be incompatible with surrounding land or water uses;

(4) adopt and enforce primary and secondary drinking water regulations, including the establishment of an underground injection control program;

(5) adopt and provide for the continuing administration of a program for the abatement or prevention of the contamination of drinking water systems;

(6) establish standards for classifying air, land and water in accordance with present and future uses;

(7) adopt and implement plans for the certification of applicators of pesticides, for the issuance of experimental use permits for pesticides and a plan to meet special local needs;

(8) establish and provide for the continuing administration of a permit system for the discharge of a pollutant in the air, land or water;

(9) collect information and establish record keeping, monitoring and reporting requirements necessary and appropriate to carry out the purposes of this chapter;

(10) enter public or private property to inspect or take samples in performance of its duties;

(11) issue a cease and desist order to a person found to be in violation of law or regulation pertaining to the environment;

(12) order a polluting party to abate the causing of, and to remove, polluting matter;

(13) devise land use plans and, no later than two years after the effective date of this Chapter, propose legislation to the Legislature and the Governor for the regulation of the use of land; and

(14) act as an agent of the Environmental Protection Board of the Federated States of Micronesia pursuant to written agreement approved by the Governor.

Cross-reference: Generally for offense see Section 13.530.

Section 7.403. Technical Advisory Committee. In performance its powers and duties, the Development Review Commission shall be advised by a Technical Advisory Committee consisting of one representative each from the Bureau of Planning and Statistics, the Division of Agriculture and Forestry, the Division of History and Culture, the Division of Land Management, the Division of Marine Resources, the Division of Tourism, the Division of Environmental Health and Sanitation, the Division of Construction and Engineering, the Department of Public Works and the State Utilities Authority, all appointed by the Governor to serve at his pleasure.

The Technical Advisory Committee endeavors to coordinate the regulatory powers of its member bureaus and divisions with the powers of the Development Review Commission, including the establishment of compatible permit requirements and a coordinated system for the review and permitting of activities which may adversely affect the environment or human health, welfare or safety.

Section 7.404. Commission Staff. The Commission selects a full-time program director who administers the functions of the Commission and has such duties and responsibilities as may be delegated to him by the Commission. The program director may be assisted in his duties by supporting staff as the Commission deems necessary.

Section 7.405. Environmental Impact Studies. The Commission requires that:

(1) All persons include in their development proposals an environmental impact assessment study in accordance with regulations established by the Commission.

(2) All persons submit an environmental impact statement to the Commission according the Commission specifications, prior to taking any action significantly affecting the quality of the human environment.

Section 3 and 4. Amendments. Section 7.102 and Section 7.111 of the Kosrae State Code is amended to replace Environmental Protection Board with Development Review Commission.

Section 5. Amendment. Title 11, Chapter 13 is amended to read as follows:

"Chapter 13. Protection of Environment"

Section 11.1301. Right of Entry. To enforce this chapter, the Development Review Commission may at a reasonable time enter an establishment or public or private property for the purpose of obtaining information, making an inspection, obtaining samples, inspecting or copying a record required to be maintained by this chapter or regulation, or conducting a survey or investigation to enforce this chapter.

Section 11.1302. Enforcement.

(1) A person who violates this chapter is subject to enforcement action by the Commission which may include issuance of a cease and desist order, imposition of a civil penalty up to ten thousand dollars for each day of violation, or commencement of a civil action to enjoin the

violation.

(2) If the Commission finds that an unlawful discharge of waste is taking place or that the waste collection treatment or disposal facilities of a discharger is approaching capacity, the Commission requires the discharger to submit for approval of the Commission, with such modifications as it may deem reasonably necessary, a detailed time schedule of specific actions the discharger will take to correct or prevent a violation of requirements.

(3) When the Commission finds that an unlawful development activity or discharge of waste is taking place or may take place, the Commission issues an order to cease and desist and directs that those persons not complying with the requirements or discharge prohibitions (a) comply forthwith, (b) in accordance with a time schedule set by the Commission, or (c) in the event of a threatened violation, take appropriate remedial or preventative action. In the event of an existing or threatened violation of waste discharge requirements in the operation of a community system, cease and desist orders may restrict or prohibit the volume, type, or concentration of waste that might be added to such system by dischargers who did not discharge into the system prior to the issuance of the cease and desist order.

(4) The Commission holds a public hearing to determine the authenticity of the facts upon which it issued a cease and desist order affording adequate notice and opportunity to appear and be heard to an interested person.

(5) A cease and desist order of the Commission becomes effective upon issuance, and final upon the Commission's issuance of findings after a public hearing. The Commission serves a copy by registered mail upon a person charged with the violation and upon an affected person appearing at the hearing and requesting a copy.

(6) A person who engages in a development activity or discharges a pollutant into the water, air, or on the land in violation of this Chapter or a regulation or other order issued by the Commission, or who intentionally or negligently causes or permits such a violation, upon order of the Commission, corrects the violation or abates its effect.

Section 11.303. Court Proceeding. Upon failure of a person to comply with a commission order, following Commission request, the Attorney General petitions the Court for the issuance of an injunction, mandamus or other appropriate remedy requiring the person to comply with the order.

Section 6. Effective Date. After becoming law this act shall take effect upon appointment of at least three members of the Development Review Commission.

Passed by the Fifth Kosrae Legislature on the 5th day of March, 1992.



## **Appendix B**

### **Regulations For Development Projects**

DEVELOPMENT REVIEW COMMISSION  
KOSRAE STATE  
FEDERATED STATES OF MICRONESIA

PUBLIC NOTICE RELATING TO KOSRAE ISLAND RESOURCE  
MANAGEMENT PROGRAM REGULATIONS FOR  
DEVELOPMENT PROJECTS

The Commissioner of the Development Review Commission is proposing the attached regulations pursuant to the authority vested in him by Title 7, Chapter 4, Section 7.402 of the Kosrae State Code.

The regulations are proposed to implement the Kosrae Island Resource Management Program by establishing standard procedures for the formal review of development projects and preparation of environmental assessments prior to actual implementation of projects that may significantly affect the quality of the human environment.

This is a notice of announcement to the general public for a period of thirty (30) days to solicit comments. Any interested persons may present his or her views or concerns on these regulations in writing to:

Kosaky A. William  
c/o Office of Budget & Planning  
Tofol, Kosrae State  
Eastern Caroline Island 96944

Written Comments must be received before \_\_\_\_\_ p.m. on  
\_\_\_\_\_, 1992.

---

**Kosrae Island Resource Management Program  
Regulations for Development Projects**

*DRAFT - For Review Only - DRAFT*

---

**Part I. General Provisions**

**1.1 Authority.** These regulations are promulgated and issued by the Development Review Commission pursuant to Kosrae State Code Title 7, Chapter 4, Section 7.402. These regulations have the force and effect of law.

**1.2 Purpose.** The purpose of these regulations is to implement Section 7.402 of the Kosrae Island Resource Management Program by establishing standard procedures for the formal review of development projects and the preparation of an Environmental Assessment prior to taking or funding any major action that may significantly affect the quality of the human environment. The Environmental Impact Assessment process is intended to help the general public and government officials make decisions with the understanding of the environmental consequences of their decisions, and take actions consistent with the goal of protecting, restoring, and enhancing the environment.

In addition, these regulations are designed to:

(a) Integrate the EIA process into early planning of projects to insure timely consideration of environmental factors and to avoid delays; and

(b) Identify at an early stage the significant environmental issues requiring further study and de-emphasize insignificant issues, thereby defining the scope of the EIA.

**1.3 Applicability.** These regulations shall apply to all development activities, as defined herein, as follows:

(a) Ongoing development activities/operations of a continuous nature such as dredging, quarrying, etc., shall be in compliance with these regulations within three months from the effective date of these regulations.

(b) Development activities/operations in progress on the effective date of these regulations shall comply immediately to the extent possible, and fully within three months of the effective date of these regulations.

(c) All new projects and new operations that begin on or after the effective date of these regulations shall comply fully with these regulations.

**1.4 Definitions.** As used herein, unless the context otherwise requires, the term:

(a) "Accelerated erosion" means the removal of the surface of the land through the combined action of human activities and natural processes, at a rate greater than that which would result through the action of natural processes alone.

(b) "Accelerated sedimentation" means the sedimentation resulting from the combined action

of human activities and natural processes resulting from storms, heavy rains, and high winds at a rate greater than that which would result through the action of natural processes alone.

(c) "Acceptable level" means that:

(1) All significant environmental effects that can feasibly be avoided have been eliminated or substantially lessened; and,

(2) The DRC, TAC and Program Office have found that any remaining, unavoidable significant impacts are acceptable considering the balance of the benefits of a proposed project against its unavoidable environmental risks.

(d) "Area of particular concern" means an area identified by the land use plan as being of important to the health of the environment or the traditional lifestyle of Kosraeans. Until the land use plan is officially adopted "areas of particular concern" will include mangroves, coral reefs, harbors, shorelines and all historical sites.

(e) "Conveyance channel" means a channel other than an interceptor channel used for the conveyance of water through a project area.

(f) "Cumulative impact" means the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

(g) "Department" means the Federated States of Micronesia Department of Human Resources.

(h) "Development project/activity" means the construction, alteration, movement, fill, removal, disposal or any other modification to the land or coastal areas. Land development can include, but is not limited to the, installation, placing, planting, or building of surface structures, land reclamation, navigation channels, harbors, utility lines, piers, shopping centers, clearing land, causeways, golf courses, apartment complexes, hotels, schools, roads, parking areas, or any other similar activity.

(i) "Development Review Commission or "DRC" means the 5-member group appointed by the Governor that is responsible for overseeing the wise use and protection of Kosrae's resources, balancing the needs of economic and social development with those of environmental quality and respect for traditional ways.

(j) "Diversion terrace" means a channel or dike constructed upslope of a project for the purpose of diverting storm water away from the unprotected slope.

(k) "Earthmoving" means any construction or other activity which disturbs or alters the surface of the land, a coral reef or bottom of a lagoon, including, but not limited to excavations, dredging, embankments, land reclamation in a lagoon, land development, subdivision development, mineral extraction, ocean disposal, and the moving, depositing or storing of soil, rock, coral or earth.

(l) "Effects" means:

(1) Direct effects, which are caused by the actions and occur at the same time and place;

(2) Indirect effects, which are caused by the actions or the action's direct effect but may be manifested at a later time or be further removed in distance, but are still reasonably foreseeable.

Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects and impacts as used in these regulations have the same meaning. Effects may be ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.

(m) "Environmental Assessment" or "EA" means the completion of a Development Review Permit Application and subsequent critical review by the Program Office staff and TAC and DRC members to determine if a more comprehensive EIS should be conducted.

(n) "Environmental Impact Assessment" or "EIA" means the process by which all environmental, social, cultural and economic impacts of a project, including alternatives, are identified and analyzed before the decision to approve the project is made. The EIA is used to predict the likely economic, social, cultural and ecological consequences of a proposed activity; i.e. the effect on the environment. The EIA is intended to help planning to prevent or reduce adverse impacts to acceptable levels before investment is committed.

(o) "Environmental Impact Statement" or "EIS" means a comprehensive and detailed document that describes a proposed development project, the types of impacts likely to be caused by the proposed project, consequences of those impacts and ways to modify the project or otherwise to lessen the impacts. The requirements of an EIS are listed under Part VI of these regulations. This document is similar to documents required under 25 F.S.M.C. 702, Environmental Impact Assessment Statement (EIA Statement), and as those of the U.S. National Environmental Policy Act (P.L. 91-190, as amended).

(p) "Erosion" means the natural process by which the surface of the land is worn away by the action of water, wind or chemical action.

(q) "Excavation" means, but is not limited to, a cavity formed by quarrying, dredging, uncovering, displacing, or relocating soil, coral or rock.

(r) "Fill" means a deposit of soil, rock, coral or other material placed by humans.

(s) "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological features.

(t) "Human environment" means the natural and physical environment and the relationship of people with that environment.

(u) "Interceptor channel" means a channel or dike constructed across a slope for the purpose of intercepting storm water, reducing the speed of water flow, or diverting it to outlets where it can be disposed.

(v) "Impacts" see definition of "Effects".

(w) "Initial assessment" means a concise, preliminary assessment of the environmental impacts of a project.

(x) "Mitigation" means the reduction of adverse effects of a proposed project by considering in sequential order:

(1) Avoiding the impact altogether by not taking a certain action or parts of an action (i.e. building in another location or not at all);

(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation (i.e. scaling down a project size or impact);

(3) Rectifying the impact by repairing, rehabilitating or restoring the affected environment (i.e. return impacted area to original state or close to it);

(4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action by monitoring and taking corrective measures. (i.e. repair siltation screens and continually implement ways to reduce impacts); and if none of the others are possible

(5) Compensating for the impact by replacing or providing substitute resources or environments (i.e. repair lost functions and values of impacted areas).

(y) "Person" means the Federated States of Micronesia, a State, municipality, political subdivision, a public or private institution, corporation, partnership, joint venture, association, firm or company organized or existing under the laws of the Federated States of Micronesia or any State or country, or a lessee or other occupant of property, or individual, acting singly or as a group.

(z) "Pollutant" means one or more substances or forms of energy which, when present in the air, land or water, are or may be harmful or injurious to human health, welfare, or safety, to animal or plant life, or to property, or which unreasonably interfere with the enjoyment by the people of life or property.

(aa) "Practicable" means available or capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

(bb) "Program Office" means the KIRMP Program Director and other staff that is delegated by the DRC to assist them in their duties.

(cc) "Project proponent" means the FSM National Government or its agencies, the Kosrae State Government or its agencies, or the recipient of funding from either the Federal or State Government or its agencies, or any private citizen that proposes to undertake any major action

significantly affecting the quality of the human environment.

(dd) "Scope" means the range of actions, alternatives, and impacts to be considered in an environmental impact assessment. Scoping is a process whereby the range of impacts and alternatives to be considered in the EIS are defined.

(ee) "Secretary" means the Secretary of the Federated States of Micronesia Department of Human Resources.

(ff) "Sediment" means soils or other surface materials transported by water as the result of land erosion or earthmoving activity.

(gg) "Sedimentation" means the process by which sediment is deposited on the bottom of a body of water, including, but not limited to, rivers, streams, ponds, lakes, the bottom of lagoons or the tops of reefs.

(hh) "Sedimentation retention boom" means a watertight membrane suspended from floats and weighted at the bottom in water bodies arranged in a manner that will confine sediments to a local area.

(ii) "Significant impact" means considering the harmful results of an action on the human and natural environment. An impact will be considered significant if an action may affect:

- (1) The number of people affected;
- (2) The duration of an affect (short and long-term);
- (3) The proportion of a natural resource that is damaged or consumed;
- (4) The location of a project in a sensitive area (historic site, coastal area, marine conservation area);
- (5) The relationship to other components of the project or other projects in the region; and
- (6) The intensity of severity of an impact (irreversible and cumulative)

(jj) "Stabilization" means the proper placing, grading, and/or covering of soil, rock or earth, including the use of vegetation, to ensure its resistance to erosion, sliding, or other movement.

(kk) "Subdivision" means the division or redivision of a lot, tract, or parcel of land by any means into two or more lots, lot lines for the purpose, whether immediate or in the future, of leasing, transfer of ownership, building, or lot development.

(ll) "Technical Advisory Committee" or "TAC" means the ten-member committee consisting of representatives from the Bureau of Planning and Statistics, Division of Agriculture and Forestry, Division of History and Culture, Division of Land Management, Division of Marine Resources, Division of Tourism, Division of Environmental Health and Sanitation, Division of Construction and Engineering, Department of Public Works and the State Utility Authority.

## Part II. Initial Environmental Assessment.

### 2.1 Purposes.

- (a) Identify Environmental Impacts;
- (b) Enable the project proponent to modify a project, mitigating potentially significant impacts before an EIS is conducted;
- (c) Facilitate environmental assessment early in the design of a project;
- (d) Eliminate unnecessary Environmental Impact Statements.

The initial environmental impact assessment shall be conducted early enough to insure that the decision making process reflects environmental values, and that alternatives will not be foreclosed prior to completion of the EIA process.

### 2.2 Content. An initial assessment shall contain in brief form:

- (a) A description of the project including the location of the project;
- (b) An identification of the environmental setting;
- (c) A discussion of ways to mitigate the significant impacts identified, if any;
- (d) An examination of whether the project is compatible with zoning requirements or plans, if any;
- (e) The name of the person or persons who prepared or participated in the initial assessment.

2.3 Determination. The Development Review Application shall be submitted to the KIRMP Program Office who will, in consultation with the TAC, follow the criteria listed in section 5.1 to decide if a comprehensive EIS should be conducted by the project proponent.

## Part III. Development Review Permit Process.

### (A) Permits Required.

3.1 Development Review Permit. A Development Review Permit shall be required for single projects satisfying any of the following criteria:

- a) involve any earthmoving activities;
- b) located below the mean high water mark (includes mangroves);
- c) costs over \$5,000;
- d) incompatible with surrounding land uses;
- e) disposal or removal of dredged materials, including all sandmining operations;
- f) use, handling or disposal of toxic or hazardous chemicals, pesticides, petroleum, oil and lubrication.

Smaller projects not meeting these criteria may still be required have a Development Review Permit if it is part of a larger development project (i.e. cumulative small projects).

### 3.2 Exemptions. A Development Review Permit shall not be required:

- (a) When land is tilled or plowed for small-scale agricultural purposes;



(b) For a one-or-two family dwelling is built within a 10,000 square foot area, and is not part of a subdivision, provided the landowner contacts the Program Office or DRC and informs them of the source and type of building materials and location;

(c) Activities associated with the normal maintenance, operation and improvement of existing households.

**3.3 Content of Development Review Permit Application.** Application shall be made by the source owner, operator, or other responsible person on forms furnished by the Development Review Commission and shall include the following:

(1) The name of the person, agency or group filling out the application.

(2) The name of the person who owns the parcel of land to be developed and proof of ownership. If the project proponent is not the same person intending to develop the land, the consent of the owner must be given in writing.

(3) Estimated project start and completion dates.

(4) Location of the proposed project on a map, including municipality, area of municipality (inkul), and tract number.

(5) An accurate, scaled site plan showing all existing and proposed natural and human-made features in relation to the project.

(6) A description of the proposed project including its purpose and intended use, any construction and earthmoving activities and other alterations to the land and water landscapes.

(7) A description of the public utilities needed for the construction and operation of the project, including any needed toilet facilities and sewage disposal systems.

(8) Detailed plans for improvements or construction including siting, dimensions, building materials and any other use made of the project area.

(9) Plans for any proposed earthmoving activities below the mean high water mark showing elevation, slope, drainage, material to be used, compaction and other related information.

(10) If the project involves any earthmoving activities, the project proponent must also submit an erosion and sedimentation control plan according to specifications in Section 7.2 of these regulations.

(11) All applicants must acknowledge and agree that the actual development activities will be in accordance with the plans and specifications submitted and approved by the DRC. Furthermore, the applicant must agree to comply with all applicable federal, state and municipal laws and regulations.

**(B) Initial Assessment**

**3.4 Initial project consultation.** The project proponent consults with the Program Office about the project. The Program Office will determine if a Development Review Permit, and other permits are needed. Foreign investors must secure a Foreign Investment Permit from the Foreign Investment Board before applying for a Development Review Permit.

**3.5 Completed Application.** The project proponent submits a completed application to the Program Office. The Program Office will have 7 days to review the application and determine if an EIS needs to be completed by the project proponent, based on the criteria listed in Section 5.1 of these Regulations. The Program Office will provide the project proponent with EIS content

requirements that must be followed when completing an EIS.

The Program Office will forward the Development Review Permit, and EIS if determined necessary, to the Technical Advisory Committee.

(C) Technical Review.

3.6 Application & EIS Review. The Technical Advisory Committee critically reviews all proposed projects for their potential impacts and EIS requirement. TAC acts as a technical advisor to the DRC and can recommend that conditions be placed on the permit and other alternatives to minimize and mitigate the project's negative impacts. Upon receipt of the permit from the Program Office, the TAC will have 8 days to review the application and offer recommendations. If an EIS is required, the TAC will have a maximum of 30 days to review and comment on the Draft EIS, and 15 days for the final EIS.

3.7 Summarize Recommendations. The Chairman of the TAC will compile the recommendations and forward them to the Development Review Commission for review. Review of a completed Development Review Permit application by both TAC and DRC will satisfy the Environmental Impact Assessment requirement.

(D) Decision by DRC

3.8 Public Information Meeting/Hearing. The DRC reviews the application and determines if a public information meeting or hearing is needed. DRC will ensure that all affected persons will have the opportunity to provide input, written or oral, for the project.

3.9 DRC Decision. DRC makes a preliminary decision on approving the Development Review Application, taking into consideration TAC recommendations, and results from public meetings if determined necessary. The DRC can condition a permit to require changes in the siting, design standards or construction methods to minimize harmful environmental impacts. DRC will also critically review all required Environmental Impact Statements. The DRC's final decisions and conditions will be formally explained in writing for the Public Record. If no EIS is involved, the DRC must make its decision to approve a permit within a maximum of 14 days upon receiving it from the TAC. If an EIS is required, the DRC will have a maximum of 30 days to review the Draft EIS, and another 15 days to review the Final EIS and make a decision on whether to approve or disapprove the permit.

3.10 Permit Status. DRC will either approve or disapprove the permit according to the following:

(1) Project Approved Without Conditions - the initial Environmental Assessment identified no significant environmental impacts so the project can proceed as specified in the Development Review Permit Application.

(2) Project Approved With Conditions - the initial Environmental Assessment or EIS has identified significant impacts that must be substantially lessened or minimized to an acceptable level before the project can proceed. The DRC will impose conditions specific to each project, that may include changes in the siting, design standards and construction methods. The project proponent

must follow these conditions or be in violation of these Regulations.

(3) Project Disapproved - After identifying the significant impacts through the Environmental Assessment process or an EIS, the DRC may decide to deny a permit if the significant impacts cannot be substantially lessened or minimize to an acceptable level. This decision reflects a belief that the project, if implemented, will significantly degrade Kosrae's environmental quality or the Kosraean traditional lifestyle.

The DRC will return the application, with their decision, to the Program Office, who then notifies the project proponent.

3.11 Appeal Process. The project proponent can appeal the DRC's decision to disapprove a permit by stating in writing, within 90 days, the reasons for the appeal. The DRC will review the project in light of these concerns and make a final decision within 30 days. If an appeal is not approved by DRC, the project proponent may appeal to the Kosrae State Court within six months.

(E) Project Implementation and Monitoring.

3.12 Permit Issued. The Program Office will formally issue a permit to the project proponent, based on DRC's decision, only after other necessary permits have been obtained. The Program Office will inform the project proponent of regulations that must be followed throughout the construction and operation of the project. The project proponent must display the permit in a visible location throughout the length of the permit.

3.13 Project Monitoring. The Program Office will be responsible for periodically overseeing and monitoring project sites to (1) ensure that all permit conditions are met and (2) submit a monthly operational report to the DRC and TAC Chairman that includes, but not limited to, project site inspections and non-compliance with permit conditions.

Part IV. EIS PROCESS

4.1 EIS Timing. The project proponent shall commence preparation of an EIS statement as close as possible to the time the DRC is developing or is presented with a proposal so that the preparation can be completed in time for the final assessment statement to be included in any recommendation or report on the proposal. The statement shall be prepared early enough so that it can serve practically as an important contribution to the decision making process and will not be used to rationalize or justify decisions already made.

4.2 Components of the EIS process. The Environmental Impact Statement process is made up of three sequential elements: Identification, Prediction, and Evaluation.

(a) Identification.

This involves the initial work of characterizing the proposed project and its alternatives, characterizing the existing environment, and developing a reasonable scope for the study.

(b) Prediction.

During this phase, the potential impacts selected for study are analyzed and quantified for each of the alternatives.

(c) Evaluation.

This is the culmination of the EIS based on the previous steps, in which the predicted impacts are summed and compared for the alternatives considered.

4.3 Project Screening. It is the intent of these regulations to require an exhaustive environmental impact statement of all major projects. The degree of EIS detail for a project depends upon the significance of its potential environmental impacts. An initial environmental assessment (EA) shall be conducted for projects that do not appear to have significant environmental effects. If it becomes apparent that a project may cause significant environmental impacts, wither as a result of findings in the Environmental Assessment or otherwise, a comprehensive Environmental Impact Assessment must be conducted and an EIS prepared in accordance with the procedures described in parts 5 and 6.

Part V Comprehensive Environmental Impact Statement.

5.1 Decision to Conduct EIS. If the Program Office finds after an initial assessment that a project may have a significant impact on the environment, the project proponent shall conduct an initial Environmental Impact Assessment, and prepare an EIS. An EIS shall be prepared whenever it can be determined that the project may have a significant impact on the environment, or when there is serious public controversy concerning potential environmental impacts of a project.

The preparation of an EIS will be required if one or more of the following criteria are applicable to a project proposal:

- 1) The project is likely to cause a significant environmental impact on:
  - Marine and coastal resources
  - Mangrove resources
  - Social/cultural/historical resources
  - Plants and animals (especially endangered species)
  - Human health and welfare
  - Areas of particular concern
- 2) The project will likely fail to comply with the FSM's minimum environmental quality standards for water and air quality, waste management and noise control.
- 3) The project is likely to disturb more than 10,000 square feet of land surface.
- 4) The project is likely to require more than 5,000 cubic yards of fill.
- 5) The project is likely to be incompatible with surrounding land uses.
- 6) The project is likely to be controversial and invoke public opposition.

- 7) The project will involve a foreign investment permit.

**5.2 EIS Procedures and Public Involvement.** When the project proponent determines that an EIS will be required for a project, it shall follow the procedures contained in this section.

(a) Upon determining that an EIS will be required for a project, the Program Office shall send a notice that an EIS is being prepared to all public agencies responsible for resources affected by the project, and/or having jurisdiction by law with respect to the project, or to any person or organization that may be concerned with the impacts or the project. This notice shall request comments on the proposed scope for the EIS.

(b) The scope of the EIS will be developed by the Program Office, in consultation with TAC and DRC members, and the general public, based upon the information gathered in the comments from the initial Environmental Assessment (permit application review) and professional judgement.

(c) The project proponent shall prepare a Draft EIS. The contents of the EIS are specified in part 6 of these regulations.

(d) After completing the Draft EIS, copies shall be provided to the DRC Commissioner, TAC Chairman, public agencies having jurisdiction by law with respect to the project, Kosrae Public Library, persons having special interest or expertise with respect to any environmental impact involved and any others notified pursuant to sub-part 5.2(a).

(e) The TAC shall evaluate the Draft EIS considering format, content, and objectivity. The Program Office shall forward these comments to the project proponent.

(f) The project proponent shall provide at least a 30 day period for public agencies and the general public to review and comment on a Draft EIS. The project proponent shall grant a reasonable extension of the comment period if the request is justified and received before the close of the comment period.

(g) A public information meeting on the draft EIS shall be held if the project proponent or DRC determines it would facilitate public involvement or it is anticipated that there will be substantial controversy. Adequate notice shall be given of all public meetings in a timely manner.

(h) The Project Office shall compile comments received from persons who reviewed the draft EIS or attended a public information meeting, and forward them to the project proponent for response. All comments received shall be published as an appendix to the final EIS.

(i) The project proponent shall prepare a final EIS, the content of which are specified in Part 6 of these regulations.

(j) The Project Office shall certify that the final EIS has been completed in compliance with these regulations, and shall provide the final EIS to public agencies from whom funding, authorizations, or other approvals are being sought.

(k) The DRC, TAC and general public will have 15 days to review the Final EIS. The DRC will also make its decision on whether or not to approve the project. The project proponent shall grant a reasonable extension of the comment period if the request is justified and received before the close of this final comment period.

5.3 Project Approval. When an EIS has been prepared for a project, agencies having authority for its funding or approval shall not approve the project as proposed if the agency or agencies finds any practicable alternative or practicable mitigation measures, within its powers or the powers of the project proponent, that would substantially lessen any significant impact the project would have on the environment to an acceptable level.

Where the decision of the DRC allows the occurrence of significant impacts which are identified in the final EIS but are not mitigated to a level of insignificance, the DRC must state in writing the reasons to support its action based on the final EIS statement and/or other information in the Public Record. The statement of these reasons must be included in the record of the project approval. Final project approval shall not occur until approval of the EIS by the DRC.

#### Part VI Contents of Environmental Impact Statements.

Environmental Impact Statements shall contain the information outlined in this part. The recommended format for the EIS is as follows:

6.1 Title, Abstract, Executive Summary. Each statement shall contain a brief summary of the proposed action and its consequences in language sufficiently simple that the issues can be understood by the average person. The summary shall stress the major conclusions, areas of controversy, the issues to be resolved, the choice among alternatives, and how to mitigate the unavoidable significant impacts.

6.2 Description of the Purpose, Scope and Need for Project. This section shall include:

(a) a statement of the goals and objectives sought by the proposed project, including why the project is needed and the expected direct and indirect benefits to society;

(b) a description of the precise location and boundaries of the proposed project and associated facilities shown on a detailed, preferably topographic, map;

(c) a description of the technology to be used, inputs of capital, labor and natural resources, and duration of the construction period and operating life;

(d) a description of the specific requirements of the proposed action for the consumption of power and water, the disposal of sewage and other waste material, roads, and other local infrastructure needed.

The description of the project should not supply extensive detail beyond that needed for evaluation and review of the environmental impacts, but shall include all portions and phases of the project, including, but not limited to planning, acquisition, development and operation.

6.3 Description of the Environmental Setting. This section shall include:

(a) a description of the environment, both natural and human, in the vicinity of the project, as it exists before the commencement of the project, from both a local and regional perspective. Special emphasis shall be placed on environmental resources to the region, including historical sites, endangered species and socio-cultural resources;

(b) Specific reference to related projects in the region, both public and private, both existent and planned, shall also be included for purposes of examining the possible cumulative impacts of such projects;

(c) a discussion of any inconsistencies between the proposed project and applicable land-use regulations and policies.

6.4 Environmental Impacts of the Proposed Project, Including Alternatives. The EIS shall present the environmental impacts of the proposed project and alternatives in comparative form, thereby defining the issues and providing a clear basis for choice among options by the reviewers. The section shall include:

(a) Rigorously explore and objectively evaluate all reasonable alternatives that might reduce environmental degradation or use natural resources more efficiently, including the alternative of no action;

(b) Describe each alternative in sufficient detail so that the reviewers can evaluate their comparative merits;

(c) Identify the project proponent's preferred alternative or alternatives;

(d) Identify any significant environmental impacts, either direct or indirect, that cannot be avoided, including;

- (1) predictions of changes in natural resources, ecological systems, environmental quality and physical processes attributed to the project if implemented;
- (2) socio-economic changes resulting from impacts on natural resources and the environment;
- (3) socio-cultural impacts; and,
- (4) cumulative effects

(e) Include appropriate mitigation measures, as defined in Sec. 7.3, to minimize the significant environmental impacts while considering the cost effectiveness of each mitigation measure.

(f) Describe the relationship between the short-term use of the environment and the sustainability and enhancement of long-term productivity; and

(g) Identify any irreversible or irretrievable commitments of resources from the proposed project.

6.5 Organizations and Persons Consulted. The EIS shall contain a list of names of the

persons who organized and prepared the report, their qualifications, and a listing of organizations and persons who were consulted.

**6.6 Standards of Adequacy of the EIS.** The EIS shall be prepared with a degree of analysis sufficient to enable the project proponent to make a decision which takes account of environmental consequences. An evaluation of the environmental effects of a proposed project and its alternatives need not be exhaustive, but its sufficiency is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIS inadequate; the key element is full disclosure of all available information.

The DRC shall determine whether the EIS is sufficient to support a decision to approve release of funds or authorization of the proposed project. In the event that the statement is not sufficient or is not objective in its analysis, the DRC shall notify the project proponent within 15 days after the projects proponent files the Final EIS. The notification shall set forth the specific nature of the deficiencies.

## **Part VII Erosion and Sedimentation Control.**

**7.1 General Requirement.** All earthmoving activities within Kosrae State shall be conducted in accordance with these regulations and in such a way as to prevent accelerated erosion and accelerated sedimentation. To accomplish this, all persons engaging in earthmoving activities shall design, implement, and maintain erosion and sedimentation control measures which effectively prevent accelerated erosion and accelerated sedimentation. The erosion and sedimentation control measures must be set forth in a plan, must be available at all times at the site of the project, and must be filed with the DRC.

### **7.2 Erosion and Sedimentation Control Plan.**

(a) The erosion and sedimentation control plan should be prepared by a person knowledgeable in erosion and sedimentation control methods and techniques.

(b) The erosion and sedimentation control plan should be prepared to prevent accelerated of erosion and acceleration of sedimentation and shall consider all factors which contribute to erosion and sedimentation, including, but not limited to, the following:

- (1) The topographic and/or hydrographic features of the project area.
- (2) The types, depth, slope, and area of the soils,, coral, and/or reef.
- (3) The original state of the area as to plant and animal life.
- (4) Whether any coral reef which may be affected by the earthmoving is alive or dead.
- (5) The proposed alteration to the area.
- (6) The amount of runoff from the project site based on the project's land area.
- (7) The staging of earthmoving activities.
- (8) Temporary control measures and facilities for use during earthmoving activities.
- (9) Permanent control measures and facilities for long-term protection.
- (10) A maintenance program for the control facilities including disposal of materials removed from the control facilities or project area.

(c) If the project involves an earthmoving activity in a lagoon, reef, or any body of water,



the plan should show existing marine life populations as well as minimum and maximum turbidities.

**7.3 Erosion and Sedimentation Control Measures and Facilities.** (a) General Requirements.

The erosion and sedimentation control facilities set forth below shall be incorporated into all earthmoving activities unless the designer of the erosion and sedimentation control plan shows that alteration of these measures and/or facilities, or inclusion of other measures and/or facilities, will prevent accelerated erosion and accelerated sedimentation.

(b) Control Measures.

(1) Limiting Exposed Area. All earthmoving activities shall be planned in such a manner as to minimize the area of disturbed land, mangrove, reef, or lagoon.

(2) Containment of Underwater Sedimentation. All sedimentation resulting from underwater earthmoving activities shall be contained, confined, and restricted by the best available means in such a manner that turbidities will be kept to a minimum.

(3) Velocity Control. All permanent facilities for the conveyance of water around, through, or from the project site shall be designed to reduce the velocity of flow in the facilities to a speed that will not cause significant erosion.

(4) Stabilization. Within a section or area of the project, all slopes, channels, ditches, or any disturbed area shall be stabilized as soon as possible after the final grade or final earthmoving has been completed.

(5) Interim Stabilization. Where it is not possible to permanently stabilize a disturbed area immediately after the final earthmoving has been completed or where the activity stops for more than fourteen days, interim stabilization measures shall be promptly implemented.

(6) Containment of Fills and Reclaimed Land Within Bodies of Water or Tidal Zones. Before filling or development activities occur within a body of water or tidal zone, adequate seawalls and/or breakwater facilities shall be constructed to safely contain the fill without failure and to prevent accelerated sedimentation.

(7) Collection of Runoff. All runoff from a project area shall be collected and diverted to facilities for removal of sediment.

(8) Solids Separation. Runoff from a project area shall not be discharged into the waters of Kosrae State without effective means to prevent sedimentation.

(c) Control Facilities.

(1) Sedimentation Retention Booms. These facilities must be used to restrict accelerated sedimentation around earthmoving or related activities on reefs or in lagoons in all cases, except when a finding has been made after actual demonstration that no facilities are needed to prevent accelerated sedimentation. Approval of use of alternate facilities or a finding that no facilities are necessary shall be made in writing by the DRC.

(2) Diversion Terraces.

(i) Diversion terraces shall be constructed upslope of a project area to convey runoff around the project area. They shall have sufficient capacity to convey such runoff without overflowing.

(ii) Diversion terraces shall be grasses or lined with erosion resistant materials to prevent accelerated erosion within the channel.

(iii). Outlet structures shall be designed to reduce the discharge velocity to that

which will not cause accelerated erosion, and shall be stabilized before use.

(3) Seawalls and Breakwater Facilities. Seawalls and/or breakwaters to contain fill or reclaimed land shall be sufficiently watertight to prevent accelerated sedimentation, well constructed on a solid foundation, and to a level at least two feet above the highest tide or flood level of historical knowledge. These facilities should be planned, designed, and constructed under the direction of a person trained and experienced in building seawalls and breakwater facilities.

(4) Interceptor Facilities.

(i) Interceptor channels may be used within a project area to reduce the speed of flow of surface runoff and thus prevent accelerated erosion.

(ii) Water collected by interceptor channels shall be conveyed to sedimentation basins or to vegetated areas, but not directly to streams or other bodies of water.

(iii) Outlets to vegetated areas shall be designed to reduce the discharge velocity to that which will not cause accelerated erosion.

(5) Channels of Conveyance. All channels of conveyance shall be designed and/or grassed or lined with erosion resistant materials so as to reduced the speed of flow of surface runoff so as not to cause accelerated erosion.

(6) Solids Separation Facilities.

(i) A basin for settling solids out of water shall be structurally sound and have sufficient capacity to hold the water that drains into the basin until the solids have settled out.

(ii) The basin shall be cleaned when the settling of solids has reduced the capacity of the basin by 25%.

(iii) Outlet structures shall be designed to allow only adequately settled water to be discharged, and at a rate that will not cause accelerated erosion.

(7) Hydraulic Dredged Fills. The discharge from pumps or hydraulic dredges used to construct fills shall be sufficiently treated and retained with dikes, levees, seawalls, or other structures for a sufficient period of time so that accelerated sedimentation will not take place in the waters which receive the effluent. Transmission pipelines transporting fill material will be maintained in a watertight condition at all times of excavation and fill operation.

(8) Barges, Scows, or Vessels for Hauling Dredged Material. Such vessels operating in waters of Kosrae State will be sufficiently tight and secure so that accelerated sedimentation will not occur by reason of leaking or premature dumping due to faulty mechanisms.

7.4 Restoration.

(a) Stabilization. Upon completion of the project, all areas which were disturbed by the project shall be stabilized so that accelerated erosion and/or accelerated sedimentation will be prevented.

(b) Interim Control Measures. Any erosion and sedimentation control facility required or necessary to protect areas from erosion during the stabilization period shall be maintained until stabilization is completed.

(c) Final Measures. Upon completion of stabilization, all unnecessary or unusable control facilities shall be removed, the areas shall be graded, and the soils shall be stabilized.

Part VIII Right of Entry. (pursuant to K.S.C. Section 11.1301)

Whenever it is necessary for the purposes of these regulations, the DRC, or any member, agent, or employee of the Commission when duly authorized by the DRC or by court order, may, at reasonable times, enter any establishment or upon public or private property.

Part IX Enforcement. (pursuant to K.S.C. Section 11.1302)

9.1 Violations Subject to Enforcement. Any person who violates any provision of these regulations shall be subject to enforcement action by the DRC. Such enforcement action may include, but is not limited to, issuance of an order to cease and desist from such violation, imposition of a civil penalty of not more than \$10,000 for each day of such violation, or commencement of civil action to enjoin such violation and for possible civil damages.

9.2 Civil Action. The DRC may commence a civil action in the Trial division of the Federated States of Micronesia Supreme Court, or Kosrae State Court, requesting any of the following remedies:

- (a) The issuance of an injunction against the offending party;
- (b) An action seeking civil penalties of not more than \$10,000 for each day of the violation;
- (c) An action seeking civil damages of which such damages shall be in addition to any civil penalties assessed under sub-section (b).

9.3 Penalties or Damage. Any civil penalties or damages assessed under sub-section 9.2 shall be paid to the Treasury of Kosrae State for credit to the General Fund of Kosrae State.

9.4 Issuance of Cease and Desist Order.

(1) When the DRC determines that a violation of these regulations is taking place or threatening to take place within its jurisdiction, the DRC shall issue an order to cease and desist and direct those persons not complying with these regulations do one of the following:

- (a) Cease operations and comply forthwith;
- (b) Comply in accordance with a time schedule set by the DRC; or
- (c) In the event of a threatened violation, take appropriate remedial or preventive action.

(2) Cease and desist orders of the DRC shall become effective upon issuance, and final as to the DRC upon issuing findings after a hearing. Copies shall be served upon the person being charged with the violation of the requirements by either personally delivering a copy to the person or his agent or by service of registered mail.

(3) A hearing to determine the authenticity of the facts upon which the cease and desist order was issued shall be conducted by the DRC, adequate notice of which and opportunity to appear and

be heard shall be afforded to all interested parties.

**Part X. Severability.**

If any provision of these regulations or the application of any provision in these regulations to any person or circumstance is held invalid, the application of such provision to other persons or circumstances and the remainder of these regulations shall not be affected thereby.

## **Appendix C**

### **Environmental Impact Assessment Checklist**

## Environmental Impact Assessment Checklist

Project Name and Identification No. \_\_\_\_\_

Environmental Impacts	YES	MAYBE	NO
<u>Earth.</u> Will the proposed project result in:			
a. Destruction, covering or modification of any unique geologic or physical features?	_____	_____	_____
b. Creation of steep slopes or other unstable earth conditions?	_____	_____	_____
c. Any potential for increased wind or water erosion or soils, either on or off the site?	_____	_____	_____
d. Changes in the channel of a stream, or the bed of the ocean or lagoon?	_____	_____	_____
e. Exposure of people or property to geological hazards such as landslides, ground failure or similar hazards?	_____	_____	_____
<u>Air.</u> Will the proposed project result in:			
a. Substantial air emissions or deterioration of existing air quality?	_____	_____	_____
b. Creation of objectionable odors?	_____	_____	_____
<u>Water.</u> Will the proposed project result in:			
a. Changes in currents, or the course or direction of water movements in either the marine or fresh waters?	_____	_____	_____
b. Changes in absorption rates, drainage patterns, or the amount of surface runoff?	_____	_____	_____
c. Alterations to the course or flow of flood waters?	_____	_____	_____
d. Discharge into surface waters or any alteration of surface water quality, including, but not limited to temperature, dissolved oxygen, bacteria or turbidity?	_____	_____	_____
e. Contamination of ground waters or wells, either from salt water intrusion or surface activities?	_____	_____	_____
f. Change in the quantity of ground waters, either through direct additions or withdrawal, or through interception of an aquifer by cuts	_____	_____	_____

## Environmental Impact Assessment Checklist

Project Name and Identification No. \_\_\_\_\_

Environmental Impacts	YES	MAYBE	NO
or excavations?			
g. Substantial reduction in the amount or quality of water otherwise available for public water supplies?	_____	_____	_____
h. Exposure of people or property to water related hazards such as flooding or tidal waves?	_____	_____	_____
<u>Plant Life.</u> Will the proposed project result in:			
a. Destruction of any upland or mangrove forest communities?	_____	_____	_____
b. Destruction of other important plant communities, such as sea grasses or plants having potential commercial or medicinal value?	_____	_____	_____
c. Reduction of the numbers of any unique, rare or endangered plant species?	_____	_____	_____
d. Introduction of a new species of plants into an area or result in a barrier to the normal replenishment of existing species?	_____	_____	_____
e. Reduction in acreage of any agriculture crop?	_____	_____	_____
<u>Animal Life.</u> Will the proposed project result in:			
a. Destruction of any coral reef areas?	_____	_____	_____
b. Reduction of the numbers of any unique, rare or endangered animal species?	_____	_____	_____
c. Introduction of new animal species into an area, or result in a barrier to the migration or movement of animals?	_____	_____	_____
d. Substantial deterioration of fish or wildlife habitat?	_____	_____	_____
<u>Natural Resource.</u> Will the proposed project result in:			
a. A noticeable increase in the rate of use of any natural resource?	_____	_____	_____
b. Substantial depletion of any non-renewable natural resources?	_____	_____	_____

## Environmental Impact Assessment Checklist

Project Name and Identification No. \_\_\_\_\_

Environmental Impacts	YES	MAYBE	NO
-----------------------	-----	-------	----

Noise. Will the proposed project result in:

a. Increase in existing noise levels or exposure of people to severe noise levels?

\_\_\_\_\_

Land Use. Will the proposed project result in:

a. Substantial alteration of the present or planned land use of an area?

\_\_\_\_\_

Risk of Upset. Will the proposed project result in:

a. A risk of an explosion or the release of hazardous substances, including, but not limited to oil, pesticides, chemicals or radiation, in the event of an accident or perturbed conditions?

\_\_\_\_\_

b. Possible interference with an emergency response plan?

\_\_\_\_\_

Population. Will the proposed project result in:

a. relocation or altered, distribution, density, or growth rate of the human population of the area?

\_\_\_\_\_

Housing. Will the proposed project result in:

a. Changes in existing housing or create a demand for additional housing?

\_\_\_\_\_

Transportation. Will the proposed project result in:

a. Generation of substantial additional vehicular movement?

\_\_\_\_\_

b. Substantial impact on roads and existing transportation system?

\_\_\_\_\_

c. Alteration to present patterns of movement of people and/or goods?

\_\_\_\_\_

Public Services. Will the proposed project effect or result in the need for new or altered services in the following areas:



## Environmental Impact Assessment Checklist

Project Name and Identification No. \_\_\_\_\_

Environmental Impacts	YES	MAYBE	NO
a. Police or fire protection?	_____	_____	_____
b. Schools?	_____	_____	_____
c. Parks or other recreational facilities?	_____	_____	_____
d. Hospital?	_____	_____	_____
e. Other government services?	_____	_____	_____

Utilities. Will the proposed project result in the need for new systems, or substantial changes in the following:

a. Power?	_____	_____	_____
b. Communications?	_____	_____	_____
c. Water?	_____	_____	_____
d. Sewage Disposal?	_____	_____	_____
e. Solid Waste Disposal?	_____	_____	_____

Human Health. Will the proposed project result in:

a. Creation of any health hazard or potential health hazards?	_____	_____	_____
b. Improvement in human health?	_____	_____	_____

Aesthetics. Will the proposed project result in:

a. Obstruction of any scenic vista?	_____	_____	_____
-------------------------------------	-------	-------	-------

Recreation. Will the proposed project result in:

a. Changes in the quality or amount of existing recreational opportunities, including those recommended sites for nature-based tourism?	_____	_____	_____
---	-------	-------	-------

## Environmental Impact Assessment Checklist

Project Name and Identification No. \_\_\_\_\_

Environmental Impacts	YES	MAYBE	NO
-----------------------	-----	-------	----

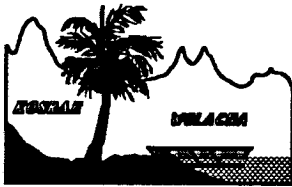
Cultural Resources. Will the proposed project result in:

- |  |       |       |       |
|--|-------|-------|-------|
| a. Alteration or destruction of archaeological sites?                              | _____ | _____ | _____ |
| b. Adverse physical or aesthetic effects to a historic resource?                   | _____ | _____ | _____ |
| c. Potential to cause a physical change which would affect unique cultural values? | _____ | _____ | _____ |
| d. Restriction of existing religious or sacred uses within the affected area?      | _____ | _____ | _____ |

Others. (Please specify)

## **Appendix D**

### **Development Review Permit Application**



**Kosrae Island Resource Management Program  
Application For  
Development Review Permit**



*Pursuant to K.S.L. 5-56, the Development Review Commission (DRC) was given the responsibility for overseeing the wise use and protection of Kosrae's resources, balancing the needs of economic and social development with those of environmental quality and respect for traditional ways. In pursuit of these responsibilities, DRC has established this permit process to evaluate potential impacts of development projects. The intent is not to preclude development, but to minimize harmful impacts and ensure that the natural resources can sustain Kosrae's traditional lifestyle indefinitely.*

**\*\*\*\*For KIRMP Use Only\*\*\*\***

**Application Number:** \_\_\_\_\_

**Permit Number:** \_\_\_\_\_

**Date Application Received:** \_\_\_\_\_

**Permit Status:**  
(circle and initial one)

**Approved**

**Approved with  
conditions**

**Declined**

☐ **EIS Required**

☐ **EIS Not Required**

**Who must apply for a KIRMP permit?**

All persons and government entities that plan to undertake a development project must complete this application and submit it to the KIRMP Program Office. Examples of development projects subject to KIRMP permit requirements include:

- The construction, expansion or alteration of an existing or new structure;
- alteration (fill, excavation, dredge or quarrying) of land or marine space, including mangroves, that may significantly affect, directly or indirectly, Kosrae's natural or historic resources;
- and projects that may be incompatible with surrounding land or water uses.

**Please fill out questions 1 - 10 as completely as possible to avoid delays in processing your application. Sign the application and return completed application to the KIRMP Program Office in the Pacific Awane Building.**

**1) Name, address, title and telephone number of person or agency applying for KIRMP permit, and those persons assisting the applicant in permit and project coordination.**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ **π** \_\_\_\_\_ **π** \_\_\_\_\_

**2) Location of proposed activity**

Municipality: \_\_\_\_\_

Area of municipality (Inkul): \_\_\_\_\_

Parcel or tract number: \_\_\_\_\_

**3) Name of Project:** \_\_\_\_\_

**4) Estimated Cost: \$** \_\_\_\_\_

**5) Estimated Start Date:** \_\_\_\_\_

**Estimated Completion Date:** \_\_\_\_\_

6) Does the applicant have a clear right to ownership or use of land where the proposed project will take place under existing F.S.M. and Kosrae State laws?

YES

NO

(circle one)

Provide a copy of the Certificate of Title, or other proof of ownership, for the property named on the previous page. If the property is owned by another person, list the owner's name, address (municipality) and attach a Land Use Right certification.

7) The proposed activity will be: (✓ check all that apply)

- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> On land      | <input type="checkbox"/> In fresh water swamps (wetlands) |
| <input type="checkbox"/> In water     | <input type="checkbox"/> Others (specify) _____           |
| <input type="checkbox"/> In mangroves |   |

8) The proposed activity will involve: (✓ check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> fill                      | <input type="checkbox"/> water/sewer hookup           |
| <input type="checkbox"/> dredge                    | <input type="checkbox"/> forest clearing              |
| <input type="checkbox"/> disposal                  | <input type="checkbox"/> alteration of shoreline      |
| <input type="checkbox"/> earthmoving               | <input type="checkbox"/> discharge of pollutants      |
| <input type="checkbox"/> quarrying                 | <input type="checkbox"/> altering/blocking streamflow |
| <input type="checkbox"/> construction of structure | <input type="checkbox"/> others (specify) _____       |

9) Attach a separate sheet of paper and describe the proposed activity, its purpose and intended use. Include a description of the structure(s) to be constructed and materials that will be used, and all toilet facilities and sewage disposal systems that will be required. In addition, describe all earthmoving activities and landscape modifications that will be necessary, including but not limited to fill, excavation, disposal, forest clearing and alteration of existing use of the land or marine space.

If the proposed project involves any earthmoving activities, include a plan describing specific measures you will take to prevent, minimize and control erosion and sedimentation in the project area (ask Program Office for guidelines).

10) Attach an accurate site plan (sketch) of the proposed development project. The plan should include scaled dimensions and clearly identify the location of the project in relation to nearby natural and human-made features such as rivers, streams, mangroves, coral reefs, forests, homes, businesses, roadways, water and sewage facilities and utilities. The plans should also show such development features as dredge areas, quarry sites, disposal sites, fill sites and structures.

If the proposed project involves fill below the high water mark, including mangroves, the site plan should show elevation, slope, drainage, type and source of fill material, compaction and other related information.

11) I certify that I am familiar with the information contained in the application, and that to the best of my knowledge and belief, such information is true, complete and accurate. I also give permission to the Development Review Commission to obtain any other information and make inspections as necessary to review the scope, and environmental and social impacts of the proposed project.

\_\_\_\_\_  
Applicant Signature

Date: \_\_\_\_\_

\_\_\_\_\_  
Agent/Assistant Signature

Date: \_\_\_\_\_

\_\_\_\_\_  
DRC Chairman Signature

Date: \_\_\_\_\_

## **Appendix E**

### **Development Review Permit**



Kosrae State, Federated States of Micronesia  
Development Review Commission

Development Review Permit

\_\_\_\_\_  
Permit Number

\_\_\_\_\_  
*Name of Applicant* of \_\_\_\_\_ *Municipality* is hereby granted

permission to \_\_\_\_\_ at \_\_\_\_\_  
*Description of Activity* *Location*

subject to the requirements of the Federated States of Micronesia Code, Kosrae State Code, regulations of the Development Review Commission and special requirements under this permit, as listed on the attached letter (if any).

This permit may be revoked at any time by a duly authorized representative of the Commission, for non-compliance with the Federated States of Micronesia Code and Kosrae State Code and regulations of the Development Review Commission, K.S.C. Title 7, Chapter 4.

\_\_\_\_\_  
Date of Issue

\_\_\_\_\_  
Chairman, Development Review Commission  
or His/Her Authorized Representative

*THIS PERMIT SHALL BE POSTED FOR PUBLIC DISPLAY*  
*PERMIT VALID FOR ONE YEAR FROM DATE OF ISSUE*

## **Appendix F**

### **Toilet Facilities/Sewage System Permit**





Kosrae State, Federated States of Micronesia  
Development Review Commission

Building Construction Permit  
Concerning Toilet Facilities and Sewer Systems

\_\_\_\_\_  
Permit Number

\_\_\_\_\_  
*Name of Applicant* of \_\_\_\_\_ *Municipality* is hereby granted

permission to construct \_\_\_\_\_ and \_\_\_\_\_  
*Type of Building* *Type of Toilet Facilities and Sewer System*

at \_\_\_\_\_ subject to the requirements of the Federated States of Micronesia Code,  
*Municipality, Inkul, Tract No.*

Kosrae State Code, and regulations of the Development Review Commission. This permit may be revoked at any time by a duly authorized representative of the Commission, for non-compliance with the Federated States of Micronesia Code, Kosrae State Code and regulations of the Development Review Commission, K.S.C. Title 7, Chapter 4.

\_\_\_\_\_  
Date of Issue

\_\_\_\_\_  
Chairman, Development Review Commission  
or His/Her Authorized Representative

*THIS PERMIT SHALL BE POSTED FOR PUBLIC DISPLAY*  
*PERMIT VALID FOR ONE YEAR FROM DATE OF ISSUE*

## **Appendix G**

### **References Used for KIRMP Regulations and Guidelines**

## References Used for KIRMP Guidelines and Regulations

- Auyong, J., S. Cripe, K. DesRochers, J. Dixon, M. Ham and P. Lal. No Date. Kosrae Island Resource Management Plan (Vol. II). University of Hawaii, Sea Grant Extension Service, Honolulu. 240 pp.
- Birkeland, C., N. Devoe, L. Hamilton, J. Maragos, M. Molina, P. Valentine and M. Wilson. 1992. Kosrae Island integrated coastal resources assessment for biodiversity/cultural conservation and nature-based tourism. Eds. A.M. Wilson and L.S. Hamilton. Kosrae State Government, Federated States of Micronesia and East-West Center, Environmental Policy Institute, Honolulu, HI. 121 pp.
- Carpenter, R.A. and J.E. Maragos. 1989. How to assess environmental impacts on tropical islands and coastal areas: South Pacific Regional Environment Programme (SPREP) training manual. Environment and Policy Institute, East-West Center, Honolulu, HI. 345 pp.
- Dahl, K., A.M. Wilson-Molina. 1991. Kosrae island resources management program guide. Kosrae State Coastal Resource Management Committee. Tofol, Kosrae. 12 pp.
- F.S.M.C. 1982. Code of the Federated States of Micronesia, Volume I. Book Publishing Company, Seattle, WA. 563 pp.
- F.S.M.C. 1982. Code of the Federated States of Micronesia, Volume II. Book Publishing Company, Seattle, WA. 598 pp. (1161 total)
- Federated States of Micronesia. 1989. Kosrae State 1986 Census Report. Division of Statistics, Office of Planning and Statistics, Kolonia, Pohnpei.
- Federated States of Micronesia. 1989. Environmental Impact Assessment Regulations. F.S.M., Secretary of Human Resources, Palikir, Pohnpei. 17 pp.
- Federated States of Micronesia. 1992. A national environmental management strategy for the Federated States of Micronesia. FSM Presidential Taskforce on Environmental Management and Sustainable Development. Palikir, Pohnpei. 47 pp.
- Kosrae State. 1991. Kosrae State statistical bulletin, Volume V, No. 1. Bureau of Planning and Statistics, Tofol, Kosrae. 86 pp.
- K.S.C. 1985. The Kosrae State Code of Laws. Kosrae Attorney General's Office, Tofol, Kosrae. 178 pp.
- McCarthy, K. 1978. Guidelines (Digest) to T.T. EPB Regulations for the district environmental health staff. A report prepared for the Environmental Protection Board, Trust Territory of the Pacific Islands. University of Hawaii, Honolulu.

- Miller, J.N., P.J. Rappa, J. Maragos and A.A. Pangelinan. 1992. Mitigative measures in environmental impact assessment, a workshop held in Kosrae August 25 - 27, 1992. The Environmental Center, University of Hawaii, Honolulu.
- Ringer, G. 1992. Nature-based tourism attraction sites for Kosrae Island Resource Management Program. Kosrae State Division of Tourism, Tofol. 3 pp.
- University of Hawaii - Pacific Island Network. No Date. Recommendations for a Kosrae Island Resource Management Program - Preliminary Report. University of Hawaii Sea Grant Extension Service, Honolulu, HI. 55 pp.
- U.S. Army Corps of Engineers. 1989. Kosrae coastal resources inventory. U.S. Army Corps of Engineers, Environmental Resources Section, Honolulu. 187 pp.