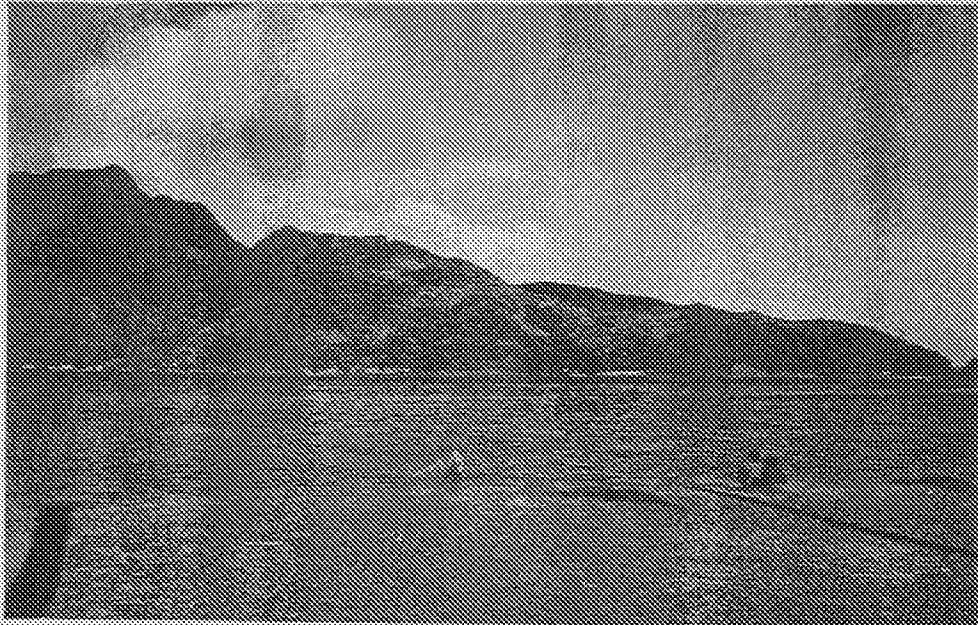




University
of Hawai'i
at Manoa

**AMERICAN SAMOA COASTAL MANAGEMENT PROGRAM:
A CASE STUDY ON
ALTERNATIVE MANAGEMENT STRATEGIES**

**Department of Urban and Regional Planning
Spring 1996 Practicum**



Net-fishing at Pago Pago Harbor

June 1996

**Prepared for the
American Samoa Coastal Management Program
August 1996 Conference
"Pacific Basin Coastal Zone Management:
Sharing Opportunities and Responsibilities for Coastal Zone
Management"**

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**American Samoa Coastal Management Program:
A Case Study on Alternative Management Strategies
Plan 751: Planning Practicum**

**Department of Urban and Regional Planning
University of Hawai'i at Manoa
Honolulu, Hawai'i
Spring 1996**

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DISCLAIMER

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GLOSSARY

ACE:	Army Corp of Engineers	DOI:	Department of Interior
AGO:	Attorney General's Office	DPO:	Development Planning Office
ASCMA:	American Samoa Coastal Management Act	DPR:	Department of Parks and Recreations
ASCMP:	American Samoa Coastal Management Program	DPS:	Department of Public Safety
ASCC:	American Samoa Community College	DPW:	Department of Public Works
ASDRO:	American Samoa Disaster Relief Organization	DURP:	Department of Urban and Regional Planning (UH)
ASEPA:	American Samoa Environmental Protection Agency	FBNMS:	Fagatele Bay National Marine Sanctuary
ASG:	American Samoa Government	FEMA:	Federal Emergency Management Act
ASPA:	American Samoa Power Authority	GIS:	Geographic Information System
BHP:	Broken Hill Properties	LC:	Land Commission
BMPs:	Best Management Practices	LG:	Land Grant
CBWMP:	Community Based Wetlands Management Project	LUP:	Land Use Permit
CHAMP:	Coastal Hazard Assessment and Mitigation Project	LUPA:	Land Use Permit Application
CRD:	Curriculum Review Division	MAD:	Marine Debris Project
CRO:	Compliance Review Office	NOAA:	National Oceanic and Atmospheric Administration
CZARA:	Coastal Zone Act Reauthorization Amendments	NPSP:	Nonpoint Source Pollution
CZM:	Coastal Zone Management	NRCS:	National Resource Conservation Services
CZMA:	Coastal Zone Management Act	NSF:	National Science Foundation
CWA:	Clean Water Act	OCRM:	Office of Coastal Resource Management
DCI:	Division of Curriculum and Instructions (DOE)	OCZM:	Office of Coastal Zone Management
DMWR:	Department of Marine and Water Resources	OSA:	Office of Samoan Affairs
DOA:	Department of Agriculture	PEACESAT:	Peace Sattelite
DOE:	Department of Education	PBDC:	Pacific Basin Development Council
DOH:	Department of Health	PPSEAWA:	Pan Pacific South East Asian Women's Organization
		PNRS:	Project Notification Review System
		PSM:	Projects of Special Merits

Section 306/306A: Management, Program, and Development
Grants/Administration, Implementation
Grants

Section 309 Competitive grants for new coastal
zone enhancement grant programs

Section 308 Competitive grants for coastal energy
impact programs

Section 6217 Competitive grants for nonpoint source
pollution control

SMA: Special Management Areas

SWM: Solid Waste Management

UH: University of Hawaii

USEPA: United States Environmental Protection
Agency

VCO: Village Conservation Officers

LIST OF TERMS
Samoan Dictionary by G.B. Milner

1. *'aiga:* elementary or extended family.
2. *'aumaga:* young (or untitled) men.
3. *'ava:* shrub; kava, a beverage made with the dried and pulverized root of that shrub mixed with water.
4. *fa'alupega:* ceremonial style and address of a person or social group traditionally associated with a certain area.
5. *Fa'a-Samoa:* custom; way of life.
6. *fono:* council; congress.
7. *matai:* titled head of a Samoan extended family; a high-ranking titleholder.
8. *pala:* swamp.
9. *pulenu'u:* official representing central government in a village; mayor.



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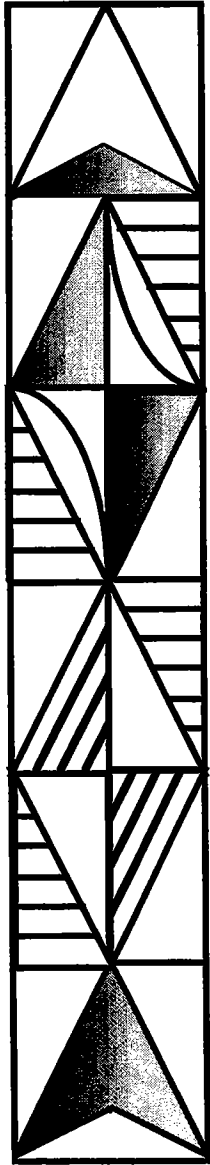
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1. EXECUTIVE SUMMARY



1. EXECUTIVE SUMMARY

American Samoa's coastal environment is at a turning point. At a time when the environment is coming under increasing pressure from development, the agencies and programs charged with conserving coastal resources are facing a severe fiscal crisis. The American Samoa Coastal Management Program ASCMP, administered by the Economic and Development and Planning Office (EDPO), is one of the key programs involved in conserving coastal resources in the Territory. The program currently receives 100% of its budget from the federal government. For fiscal year (FY) 1997 there will be an approximate 35% cut--a reduction of \$314,000 from the previous year--resulting in a budget of \$595,000. Further reductions in subsequent years are likely to occur. This comes at a time when American Samoa faces a rapidly growing population and expanding economic base that has placed much strain on its traditional way of life and its coastal resources. As most of the population resides near the shoreline due to the topography of the islands (i.e., steep slopes, minimal plains), land use controls and environmental issues have become very important from a regulatory standpoint.

The purpose of this practicum report is to assist the EDPO/ASCMP to analyze its present policies, and to present recommendations on program improvements to ensure that it continues to perform its mission to "provide effective resource management by protecting, maintaining, restoring, and enhancing the resources of the coastal zone" in spite of forthcoming budget cuts. The report was also prepared to be presented at the August 1996 conference "Pacific Basin Coastal Zone Management: Sharing Opportunities and Responsibilities for Coastal Zone Management," held in Pago Pago, American Samoa. The report is divided into five sections: Section 1: Executive Summary; Section 2: Introduction; Section 3: Methodology, which describes methods of data collection and analysis used in the practicum; Section 4: American Samoa Trends and Profile--a description of the EDPO/ASCMP and information on American Samoa's current situation; Section 5: Findings of the Workshop--a presentation of the workshop results; Section 6: Recommendations--a presentation of coastal management alternatives.

Since its establishment in 1980, EDPO/ASCMP has developed innovative regulatory and community based approaches in achieving its mission to protect the coastal zone. The following are seventeen issues, or areas of concern which the EDPO/ASCMP focuses upon to protect the coastal resources of American Samoa: wetland management; mitigation of coastal hazards; mitigation of nonpoint source pollution; marine debris management; coral reef management; shoreline development management; sustainable fisheries; development of recreational areas and shoreline access; conservation biodiversity; growth management of the Tafuna-Leone plain; special management areas (Pago Pago Harbor, Nu'uuli Pala and Leone Pala); major facilities siting; water quality; marine resources; unique areas (coral reefs, mangrove swamps, watersheds and critical habitat areas); archaeological sites; and air quality.

To address these issues, the EDPO/ASCMP developed five programs. They are the: Project Notification Review System (PNRS) to address land management; Nonpoint Source Pollution Program (NPSP); Marine Debris Project (MAD); Community Based Wetlands Management Project (CBWMP); and Coastal Hazard Assessment and Mitigation Project (CHAMP).

To gather information on the EDPO/ASCMP and its programs, a workshop was conducted in Pago Pago, American Samoa on March 27 and 28, 1996. The workshop was designed to receive input on possible future strategies for the EDPO/ASCMP from a wide range of people involved in coastal zone issues in American Samoa. Participants included representatives from government agencies, the private sector, non-government organizations, the clergy and community groups.

The evaluation of the EDPO/ASCMP revolved around the five specific programs mentioned above, and a sixth section was added on education and awareness, an overlapping theme throughout the programs. The results of this workshop, as well as a review of various journals, were then synthesized into the following recommendations, categorized into five sections: Administration and Budget Management; Land Use Management; Education and Public Awareness; Village Participation; and Additional Recommendations for EDPO/ASCMP Program Areas. These recommendations are summarized below:

Administration and Budget Management

These recommendations were not based upon a direct audit of the EDPO/ASCMP, but rather on research and data from the workshop in Pago Pago. Generally, our recommendations follow two themes: cooperation among various governmental agencies and non-governmental organizations and alternative funding strategies and improved fiscal management.

Greater coordination and cooperation among government agencies and non-government organizations can result in more effective program implementation and reduced cost to EDPO/ASCMP. For example, using the environment as a unifying theme, measures can be taken to seek balance and consistency among the operating rules of various agencies involved in environmental protection (Recommendation 4). Consistent policies and programs can lead to a greater cooperation and support between these agencies and other organizations in the sharing and pooling of resources, such as funding and manpower (Recommendations 1, 6, 7, 9, and 10).

Seeking alternative sources of funding and improved fiscal management can help to ease the budget crunch. Current operations should be streamlined and funds tracked to avoid duplication among related governmental agencies (Recommendations 2 and 3). In addition, a greater effort can be made to tap alternative sources of revenue. Possible sources include areas outside the traditional venue of coastal zone management, such as federal and non-profit grants, and the implementation user fees and property taxes (Recommendations 5 and 8).

Land Use Management

Due to the limited amount of developable land in American Samoa and the fact that all of the Territory is in the coastal zone, land management measures must be continued and expanded. Recommendations for land use management are based on a number of themes identified during the workshop, including: the need to increase legitimacy of the PNRS among the people of American Samoa; the need to enhance village participation in land use planning; the need to enhance and expand monitoring and enforcement of the PNRS.

Legitimization of the PNRS is a key measure needed to overcome many villagers perception of the system as a threat to traditional village based land use management. In order to continue to successfully implement this innovative permitting process, the PNRS must improve its image.

This may be done by increasing the visibility and accessibility of the PNRS through increased outreach (Recommendations 4 and 5), or by increasing village involvement in the PNRS process (Recommendation 1). In addition, increased cooperation between various actors in land use management will enhance the public image of the PNRS (Recommendation 2).

Increased village participation can increase the effectiveness of land use planning efforts while decreasing the cost of land use regulation and monitoring and enforcement to the PNRS in the long run. Villages can participate more actively in the PNRS (Recommendation 1), and can also be encouraged to engage in village based land use planning (Recommendations 6, 7, and 8). Village based land use planning is likely to result in plans that are more in line with Fa'a Samoa.

Enhancement and expansion of monitoring and enforcement is needed to ensure compliance with PNRS regulations. Such measures might include instituting legal procedures and civil actions for penalizing non-compliance with the PNRS (Recommendation 9). Other measures to increase compliance might include providing brochures on how to comply with the PNRS and continuing to conduct pre-planning meetings with developers (Recommendations 5 and 10). Increased cooperation with other government agencies involved in land use management may allow the PNRS to link compliance with land use permits with the issuance of other licenses, permits, or extension of infrastructure or services (Recommendation 3).

Education and Public Awareness

Recommendations on Education and Public Awareness focus on several themes, including: the need to focus educational activities; greater coordination and centralization of educational and awareness activities; greater participation in the planning and implementation of educational and awareness activities, especially at the village level; and the possibility of seeking alternative sources of funding for educational and awareness activities.

Identifying target audiences, focusing the message, and using appropriate media in educational and awareness activities are seen as key to continuing to improve the effectiveness of educational and awareness activities (Recommendation 1). There is a need to identify groups which should be focused upon, and identify the media which will be most effective in reaching them (Recommendations 4, 5, 6, 9, 12, and 17). Specific groups that should be targeted for education include employees of governmental agencies, who constitute a third of the labor force (Recommendation 6), and school children, who can be reached through improved implementation of environmental awareness in the Territories school curriculum (Recommendations 4 and 5). The media can also play an important role in disseminating the EDPO/ASCMP's message (Recommendation 3). It is also important that criteria be developed to measure the effectiveness of educational and awareness efforts (Recommendation 2).

Greater coordination and centralization of educational and awareness activities is a key means to increase the effectiveness of educational and awareness activities while conserving scarce financial resources. In the past, there has been substantial duplication of activities and lack of coordination among the various agencies and programs conducting environmental education. Le Tausagi can play an important role in coordinating activities and the sharing of resources among

agencies (Recommendation 8). Within EDPO/ASCMP, it is suggested that all education be centralized under the Education and Awareness Project (Recommendation 16). In addition, it is recommended that an Educational Resource Center be established to provide a source of technical assistance for villages in village based planning (Recommendation 7).

Increased participation in the planning and implementation of educational and awareness activities will make educational activities more culturally appropriate while reducing the cost to EDPO/ASCMP in the long run. Specifically, EDPO/ASCMP should aim to broaden participation in planning for Coastweeks (Recommendations 10 and 11). Another way to reduce the cost of educational activities to EDPO/ASCMP is to *seek alternative sources of funding*. There are a number of grants available from both governmental and non-governmental organizations for environmental education (Recommendation 14). The private sector can also be called upon to fund certain activities (Recommendation 13).

Village Participation

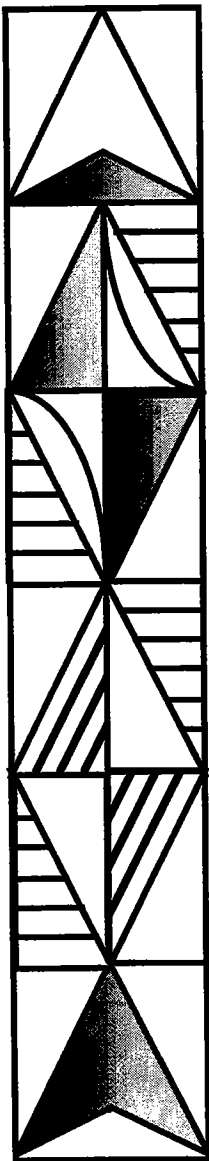
During the workshop, it was expressed that public perception of the EDPO/ASCMP was at times negative. This was due to villagers feeling that their rights and authority to manage their resources were being diminished by the programs of the EDPO/ASCMP. Village participation, however, is considered crucial as the participatory approach taken for the CHAMP, CBWMP, and MAD programs were identified as strengths in resource management.

Themes to further village participation are threefold. The first is to improve communication between the EDPO/ASCMP and villages to establish a cooperative relationship. For example, interviews and surveys on coastal issues can be conducted to initiate dialogue and ease the negative concerns of the EDPO/ASCMP (Recommendation 1). The second theme is to evaluate villages which are actively participating in resource management programs. Successful management cases could, therefore, be identified and promoted to other villages (Recommendation 2). Additionally, the EDPO/ASCMP should provide planning and management assistance to enhance the resource management capacity of villages (Recommendations 3 and 4). The third theme is networking. As more villages become involved in village based planning, networking should be encouraged through the sharing of resource management information--a newsletter is one means to achieve this (Recommendation 5).

Additional Recommendations for ASCMP Program Areas

Additional recommendations for the EDPO/ASCMP program areas include the following:

- Plan for the transfer of nonpoint source pollution control responsibilities to ASEPA.
- Institute recycling program if funds can be obtained.
- Extend enforcement of marine debris regulations to the police and Coast Guard in public and freehold areas.
- Encourage population to take responsibility for their land.
- Increase the number of garbage receptacles.
- Conduct participatory data collection at the village level on debris generation.



2. INTRODUCTION

A sese uta ia tonu tai.

(If inland errs let the coast be right.)

(Try to keep the balance of nature.)



2. INTRODUCTION

2.1. Problem Statement

American Samoa is currently at a crossroads. A rapidly growing population and an expanding economic base has placed a strain on not only its traditional communal and subsistence society, but also on its coastal resources. As the amount of developable land is limited to areas near the coastline, it is in these areas that the majority of American Samoa's people live and work. Due to this development pressure, resultant problems include wetlands loss, water pollution, over-fishing, and reef destruction.

The question, then, is how to satisfy the development needs of the people (housing, infrastructure, agriculture, etc.) and still protect and preserve the natural resources while attempting to balance tradition or *Fa'a Samoa* and a Western regulatory system of management. To address this concern, the American Samoa Coastal Management Program ASCMP was implemented in 1980 through the Federal Coastal Zone Management Act (CZMA), a voluntary, federally funded program to promote the protection and management of coastal resources of individual states, territories, and commonwealths.

With the Economic Development and Planning Office (EDPO) as the lead agency, the ASCMP developed the following mechanisms and/or strategies to deal with specific issues:

- a) Project Notification and Review System: an interagency land-use permit review system;
- b) Coastal Hazard Assessment and Mitigation Project (CHAMP): to reduce the effects of coastal hazards;
- c) Marine Debris Project (MAD): to reduce the amount of marine debris (solid waste pollution);
- d) Community Based Wetlands Management Program (CBWMP): to protect and preserve wetlands;
- e) Village Nonpoint Source Pollution Control Demonstration Projects: to reduce the amount of pollutants entering coastal and other waters; and the
- f) Education/Awareness Program: to increase public awareness of coastal issues.

Federal funding for the EDPO/ASCMP, however, is expected to be drastically reduced, thereby threatening the scope of its services. To ensure that these services continue, decisions must be made about the future management of the various programs and services which are currently under the EDPO/ASCMP.

If all programs are to stay within the responsibility of the EDPO/ASCMP, it is more than likely that the services provided will be reduced. If, however, programs are co-managed or managed by cooperating agencies, organizations, and/or clubs, or delegated to the village level, most or all of the programs can continue and possibly expand.

2.2. American Samoa Coastal Management Program Budget

As the EDPO/ASCMP is essentially a 100% federally funded program, any type of budget cut can seriously effect both the services provided and the island environment. Already, funding for the fiscal year (FY) 1997 is expected to be cut by \$314,800. This would leave a budget of \$595,000, compared to the FY 1996 level of \$909,800 - an approximate 35% cut. Further reductions in subsequent years are likely to occur.

Specific programs within the EDPO/ASCMP that will be immediately affected include: the Community Based Wetlands Management Program, Wetlands Restoration, and Village Nonpoint Source Pollution Control Demonstration Projects. The deletion of these programs could result in a drastic loss of wetlands. Tutuila is already facing an average decrease of 4.57 acres per year, and an increase in water pollution. As wetlands provide for storage areas that are tapped for potable water and also as natural barriers for nonpoint source pollution, consequences for the people of American Samoa will be severe.

2.3. Project Objectives

The objectives of this project are as follows:

- a) To conduct a graduate planning practicum class in Spring 1996 by the Department of Urban and Regional Planning at the University of Hawai'i at Manoa which would entail student team work and a relation with a real client in order to learn planning practice.
- b) To assist the EDPO/ASCMP in developing planning options for coastal zone management under fiscal constraints and reduced federal assistance.
- c) To develop a report to be presented at the upcoming conference "Pacific Basin Coastal Zone Management: Sharing Opportunities and Responsibilities for Coastal Zone Management," to be held in Pago Pago, American Samoa in August 1996.

2.4. Project Phases

The project was divided into three phases:

- a) **Data collection:** background information regarding American Samoa was reviewed, including data on culture and traditions, and socio-economic profiles and trends;
- b) **Workshop:** with the EDPO/ASCMP, a workshop was developed and conducted in American Samoa in March 1996 as a tool for data collection, but also for

information exchange among various governmental agencies, community organizations, and village leaders on coastal issues; and

- c) Report writing: after the completion of the workshop, the information gathered was analyzed to develop the recommendations contained in this report.

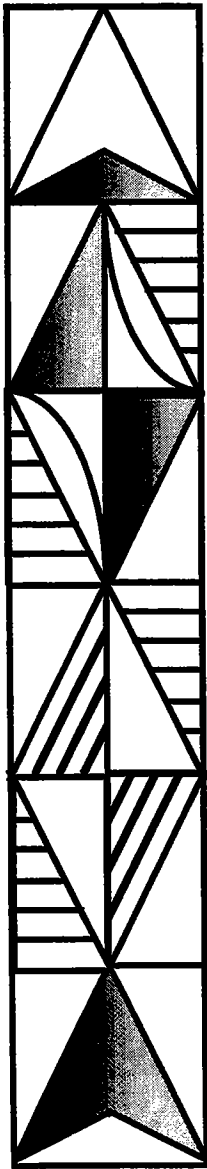
This process is explained further in the next section, Section 3: Methodology. The following sections include: Section 4: State of American Samoa - a description of the EDPO/ASCMP and information on American Samoa's profile and trends; Section 5: Findings of the Workshop - a presentation of the workshop results; Section 6: Recommendations - a presentation of coastal management alternatives.



Picture 2.1 Pago Pago Harbor

Picture 2.2 Pago Pago Harbor; View of Aua





3. METHODOLOGY

*E mana'o i le i'a a e manumanu
i le upega.*

(Let not your anxiety to catch the fish ruin the net.)

(Proceed with caution.)



3. METHODOLOGY

Coastal zone management in American Samoa is facing a serious challenge to cope with a financial crisis while maintaining the current level of service of its programs. This report suggests ways that EDPO/ASCMP can continue its program activities without federal financial support. The team that developed this report employed several planning methods. This section of the report described those methods in each phase of the project.

The practicum team explored several methods to develop appropriate recommendations for EDPO/ASCMP including scenario building. During the first phase, research on coastal zone management and culture of American Samoa was conducted in Hawai'i, using secondary resources collected at the University of Hawaii and sent by EDPO/ASCMP. In the second phase, a two day workshop planned by the practicum team in Hawai'i was conducted in Pago Pago, American Samoa in March of 1996. After the workshop, the team compiled all data collected throughout the project, and developed recommendations.

3.1. Phase I: Data Collection for the CZM Program Profiles and Trends

There were two primary objectives during the first phase: 1) to develop the American Samoa coastal zone program profiles and trends of coastal zone issues, and 2) to familiarize the team with the culture and traditions of American Samoa.

1) To develop the American Samoa coastal zone program profiles and trends of coastal zone issues.

The team began to explore the best possible ways to proceed in data gathering. Data was collected from several resource centers such as Hamilton library at the University of Hawai'i, and more detailed materials were sent by EDPO/ASCMP. This task allowed us to understand the current EDPO/ASCMP programs, the possible strengths and challenges of these programs, and coastal zone issues that people in American Samoa are facing or will be facing.

2) To familiarize the team with the culture and traditions of American Samoa.

The project team was introduced to the traditional culture of American Samoa through a *literature review*, *guest lectures*, and *video viewing*. American Samoan's maintain traditional culture and life style in their daily lives. The land tenure system in American Samoa in particular is still based on traditional land ownership. Without understanding the culture, it would be difficult to understand issues of coastal resources. The relationship between the village level and the territorial government, for example, seems to be experiencing tension due to differences in their ideology and perception as western style regulatory systems of the territorial government with traditional village based resource management systems. The American Samoa Government must therefore seek a balance between these two systems which involves villages in the planning

process. Under the situation of the budget cut especially, cooperation with villages or co-management of the coastal zone with villages will be significant.

3.2. Phase II: Conduct a Workshop on the CZM Program in American Samoa

The workshop was seen as a key data collection activity, as it allowed the team to obtain direct input from those who have been involved in the program in American Samoa. It was scheduled as a two-day participatory session with staff members of EDPO/ASCMP as well as representatives of other concerned agencies and segments of the community with coastal resource management concerns.

After exploring the culture and CZM system of American Samoa, the practicum team began to develop details of the workshop activities. Visioning and scenario building were selected as main methods for exploring alternative strategies to cope with the severe budget cuts.

The workshop consisted of four main participatory activities: 1) Profiles and Trends; 2) Visioning Future Strategies; 3) Identifying Actors; and 4) Scenario Building. The data collected during the last three activities formed the basis for the creation of recommendations.

PEACESAT Meeting

The PEACESAT network, headquartered at University of Hawai'i¹ allowed us to have direct communication with EDPO/ASCMP. The meetings were scheduled twice prior to the workshop, and they increased mutual understanding of the process and contents of the workshop.

Designing of the Workshop

The practicum team chose the Oregon Model for community visioning as a reference for planning the workshop (see Table 3.1). This model was developed as a participatory method which would allow a community to vision its future, and develop an action plan for achieving that vision. Modifying the Oregon Model, the team created four steps of activities which would lead participants to create alternative plans for ASCZM. For designing the visioning process and scenario building, the practicum team *reviewed several articles* and *consulted with some experts* such as Dr. Jim Dator, professor of the Department of Political Science of University of Hawai'i, and Dr. Kem Lowry, professor of the Department of Urban and Regional Planning of University of Hawai'i. The schedule, the purpose, mission, goals, and objectives of the workshop are included in Appendix A.

¹ The PeaceSat is the Pan-Pacific Education and Communication Experiments by Satellite Program. It is administered by the Social Science Research Institute. PEACESAT is an official program of the National Telecommunication and Information Administration of the United States Department of Commerce.

In designing activities, the following points were emphasized: the flow between steps; and appropriate wording to avoid confusion among participants and organizers. Objectives were also carefully developed in order to achieve desired results.

Table 3.1. Oregon Model

	<i>Driving question</i>	<i>Planning activities</i>	<i>Products</i>
One: Profiling the community	Where are we now?	Research and data collection, compilation and analysis. If a values statement is developed, additional activities such as a community survey, meetings etc. may be required.	Community profile, values statement
Two: Analyzing the trends	Where are we going?	Determination of current and projected trends, assessment of their future impact. Creation of probable scenario.	Trend statement, probable scenario
Three: Creating the vision	Where do we want to be?	Creation of a preferred scenario and final vision.	Preferred scenario, vision statement
Four: Developing an action plan	How do we get there?	Identification of goals, strategies, actions, implementations agendas and priorities.	Action plan

Source: Oregon Visions Project, 1993

Step 1. Profiles and Trends

In the step, practicum team members reviewed trends in population growth, economic growth, and other factors that have an impact on coastal resources. It also outlined the current EDPO/ASCMP activities and the issues which they address. The step was designed to enhance workshop participants understanding of future threats to the coastal environment, so they would be able to stress the ability of EDPO/ASCMP activities to cope with these threats. The practicum team presented a profile of EDPO/ASCMP, and issues that are currently addressed by EDPO/ASCMP. Data for this section were all collected from the literature sent from EDPO/ASCMP, complemented by data from research in Hawai'i, and maps on the coastal zone from the Atlas of American Samoa.

Step 2. Visioning Future Strategies

The purpose of this step was to obtain participants input on the following question: What are the possible strategies and tasks to improve the EDPO/ASCMP and to conserve coastal zone resources? The workshop participants visioned the coastal zone management system in the future after reviewing the current strategies and tasks undertaken by EDPO/ASCMP. A ***Strengths, Weaknesses, Opportunities, and Threats (SWOT) exercise*** was chosen for evaluation of the current programs.

Workshop participants were divided into six groups, and provided with an outline of one of the current program elements and stresses impacting the coastal zone. Please refer to the Table 3.2

for the SWOT matrix. Each group started out by brainstorming the strengths and weaknesses of the program components. This dialogue led them to come up with opportunities to increase the effectiveness and address the challenges of the programs. Then, the workshop participants created possible new tasks to achieve the suggested strategies. The first two columns were filled in by the project team prior to the workshop. The last four columns were filled in by the participants during the workshop.

Table 3.2. SWOT exercise

**COMMUNITY BASED WETLANDS
MANAGEMENT PROJECT**

Current Program Tasks	Stresses On The Environment
<ul style="list-style-type: none"> • Protection of wetlands through regulations • Wetlands restoration • Techniques for protection and restoration 	<ul style="list-style-type: none"> • Filling of wetlands for housing development • Conversion for plantation and agricultural use • Livestock raising • Waste dumping • Exploitation of mangroves for firewood • Upstream pollution

Strengths Of Current Program	Challenges Of Current Program	Opportunities For Future Strategies	Future Tasks
<p>EXAMPLE</p> <ul style="list-style-type: none"> • Community involvement reduces cost of monitoring and enforcement 	<p>EXAMPLE</p> <ul style="list-style-type: none"> • Information on wetlands management has not reached some remote villages 	<p>EXAMPLE</p> <ul style="list-style-type: none"> • Increase outreach to village leaders in remote villages 	<p>EXAMPLE</p> <ul style="list-style-type: none"> • Create outreach program for remote areas

Step 3: Identifying Actors

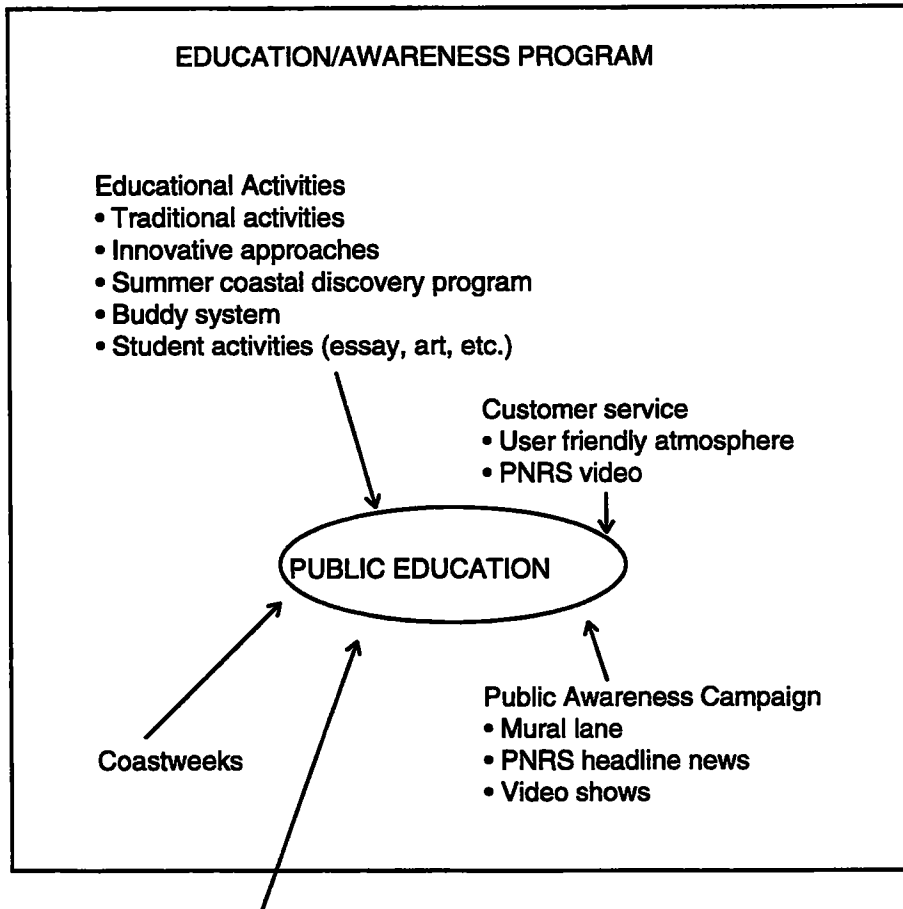
This exercise was designed to provide workshop participants with opportunities to review the current actors and identify possible new actors who might be able to implement coastal resource conservation activities. The workshop participants stayed in the same groups from the previous activity, and identified actors for each assigned program. The participants were provided with a diagram of current actors and tasks (see the Table 3.3). First, they reviewed the current situation,

and then, brainstormed and added new actors outside of the box. This generated a list of potential new actors who might be able to play a role in managing the coastal zone.

Step 4: Scenario Building

The workshop participants visioned the EDPO/ASCMP’s strategies for the future to cope with the future budget cuts in step 2 and 3 activities. The next question is “how do we get there?” Through the scenario exercise, the participants were expected to allocate the responsibilities of tasks among all possible actors. The participants were broken into three groups. Group 1 worked on the scenario that the budget for Nonpoint Source Pollution Program (NPSP) and Community-Based Wetland Management Program (CBWMP) were cut. Group 2 worked on the scenario that the budget for Marine Debris Project (MAD) and Coastal Hazard Assessment and Mitigation Project (CHAMP) were cut in addition to the group 1 scenario. Group 3 worked on the scenario that all enhancement programs as well as parts of PNRS and education were cut. Based on these scenarios, participants were asked to reallocate responsibilities of each task to new actors. A matrix was used (see the Table 3.4) for this exercise.

Table 3.3. Example of Diagram



EDPO/ASCMP: Educational Activities for specific EDPO/ASCMP projects

Table 3.4. Matrix for Step 4 Exercise

tasks	all actors	EDPO,	ASEPA,	NGO,	Church,		
education							
monitoring and enforcement							
administration							

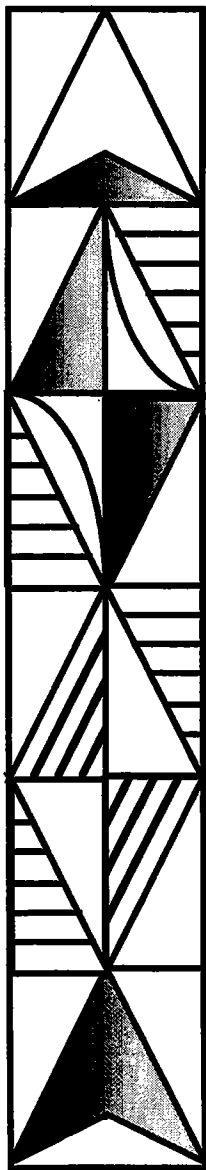
Site Visiting

Besides the workshop, the practicum members *interviewed* the PNRS staff members. *Site visits* allowed practicum team to develop a better visual understanding of the current situation of the coastal zone in American Samoa.

3.3. Phase III: Development of a CZM Case Study Scenario for American Samoa

Recommendations for the EDPO/ASCMP were mainly based on the findings from the workshop. In addition, coastal zone management journals were reviewed to strengthen the recommendations. Other case studies provided us with new insights into the experience of agencies which have experienced severely reduced budget and provided ideas for co-management.

The draft report was reviewed by the staff of EDPO/ASCMP and Dr. Mike Hamnett, and their input was incorporated in the final report.



4. AMERICAN SAMOA TRENDS and PROFILE

Seu le manu a e taga'i i le galu.

(Scoop the bird but be wary of the wave.)



4. AMERICAN SAMOA TRENDS AND PROFILE

American Samoa's rapidly growing population and expanding economic base have placed a tremendous strain not only on its traditional communal and subsistence society, but also on its coastal assets. To preserve these unique coastal resources, the American Samoa Coastal Management Program (ASCMP) was created in 1980 to promote the management and protection of these important areas. However, the reduction in federal funding has threatened to limit the scope of EDPO/ASCMP activities. Already, federal funding for fiscal year 1996-7 is expected to reduce EDPO/ASCMP's budget by a third from the previous year's level. Moreover, further reductions in federal funding are probable in subsequent years.

Considering the growth pressure facing American Samoa today as well as the importance of federal funding to the operation and management of EDPO/ASCMP, the various programs that protect and manage its coastal resources are at risk.

The goal of this section is to provide a profile of the EDPO/ASCMP as well as trends of human activities which impact coastal zone resources in American Samoa. This section also presents the current budget situation in Washington facing all coastal management programs. Lastly, this section outlines the stresses on the environment caused by the dynamics of the aforementioned factors.

4.1. TRENDS IN AMERICAN SAMOA

Population Growth. American Samoa's population is rapidly growing. With a growth rate of 3.86% per annum, it has one of the highest growth rates in the world. As shown in Figure 4.1, it is surpassed in the Pacific Island Region by only three other countries, namely the Federated States of Micronesia at 4%, Wallis and Futuna at 4%, and the Northern Mariana Islands at 4.2% (Economic Development and Planning Office, 1994). As of July 1994, American Samoa's population was 54,760. This is projected to increase to 97,738 by the year 2020 (Economic Development and Planning Office, 1994) as illustrated by Figure 4.2.

This rapid population growth is particularly critical in terms of coastal zone management considering the limited amount of developable land in American Samoa, most of which is located along fragile coastlines. American Samoa is approximately 197 square kilometers. Of that total, about two thirds is steeply sloped and not suitable for human habitation or agriculture. Tutuila, the largest island, represents 70% of the land area and contains approximately 90% of American Samoa's population. Most of the territory's population growth is expected to occur in the Western District (Economic Development and Planning Office, 1994) as illustrated in Figure 4.3.

In 1990, the territory's population density was recorded at 234 residents per square kilometer (the population density has been rising steadily since the 1930s as illustrated in Figure 4.4). However, this figure is based on the territory's total land area. Considering the availability of usable land, the actual population density is much higher than mentioned above. In 1990, Tutuila's average population density on developable lands (lands with less than 30% slope) was nearly 1,093 persons per square kilometer (Economic Development and Planning Office, 1994).

Figure 4.1. Growth Rate of U.S. Island Territories in the Pacific Region

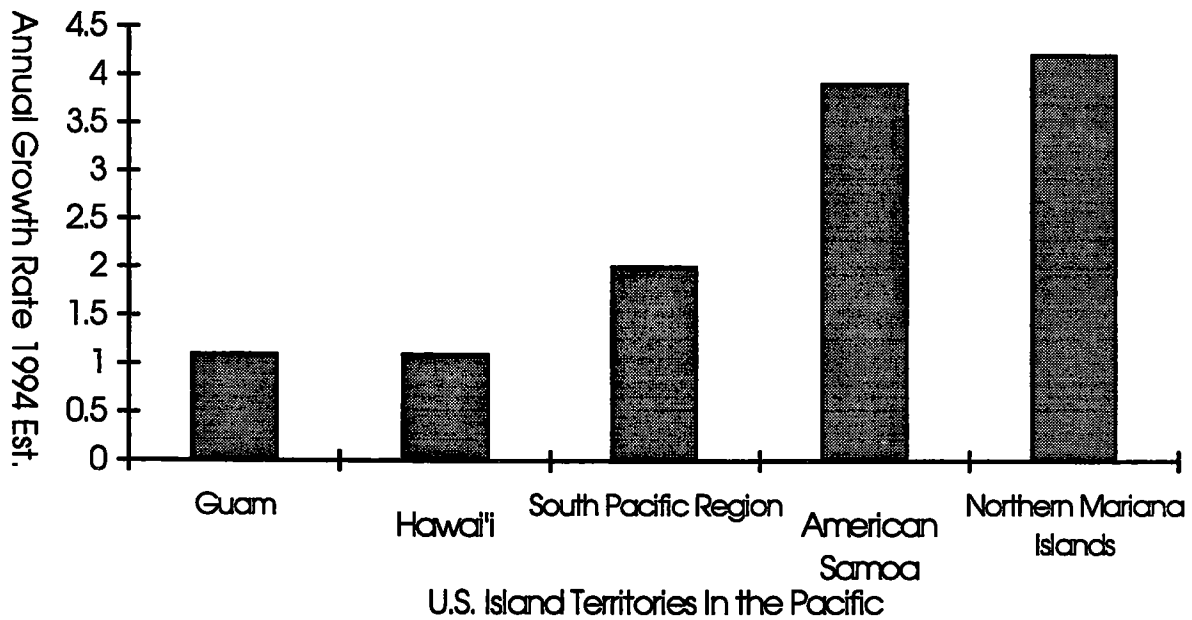


Figure 4.2. Population of American Samoa

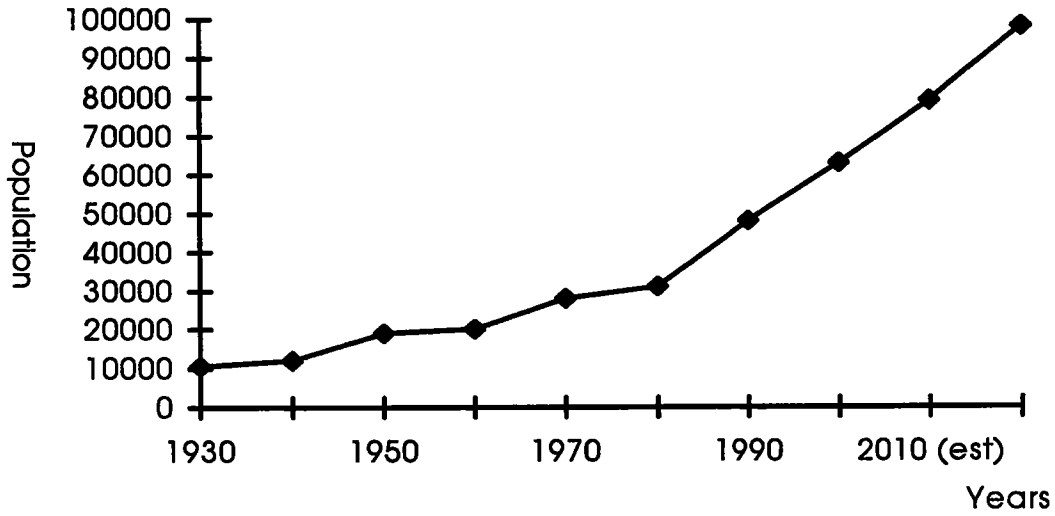


Figure 4.3. Population of Selected Districts in American Samoa

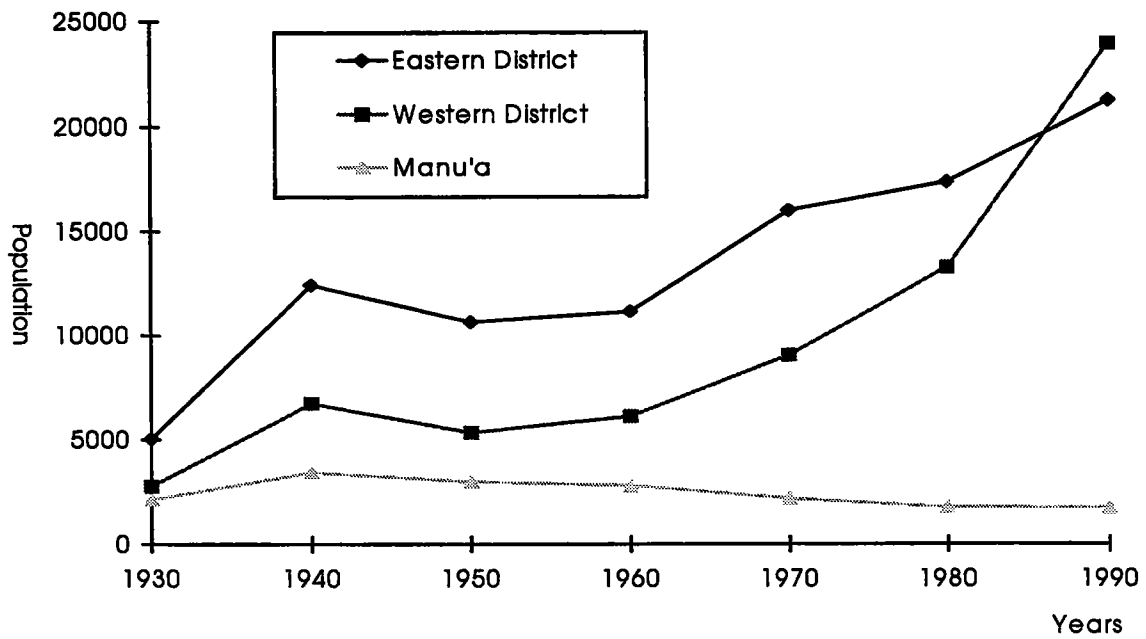
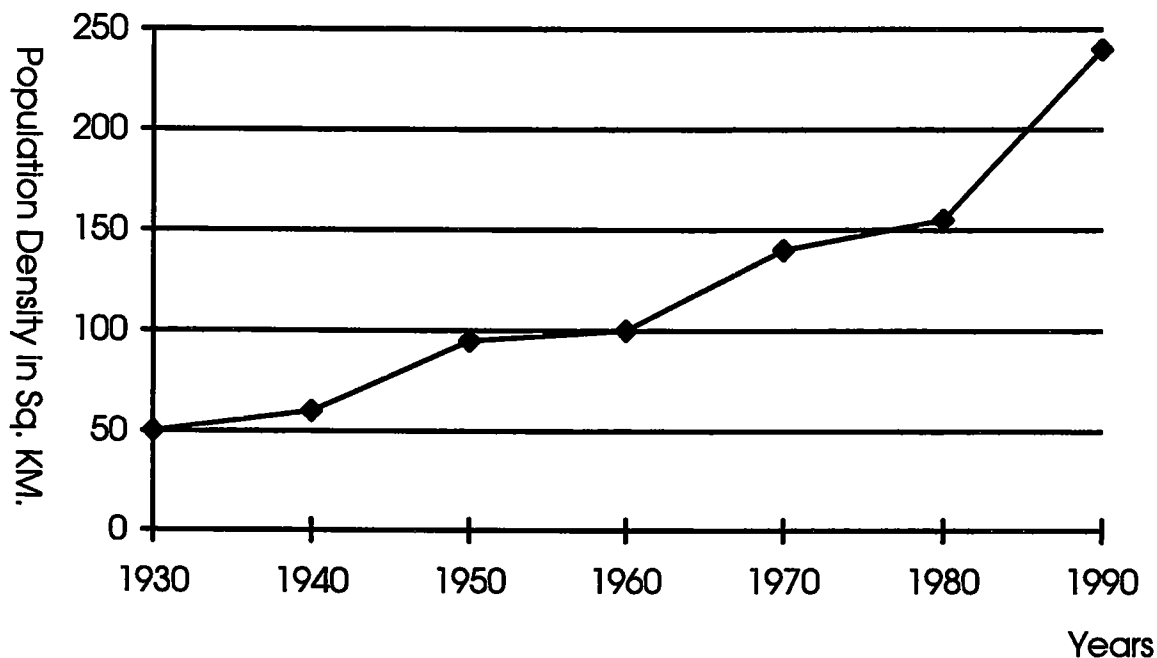
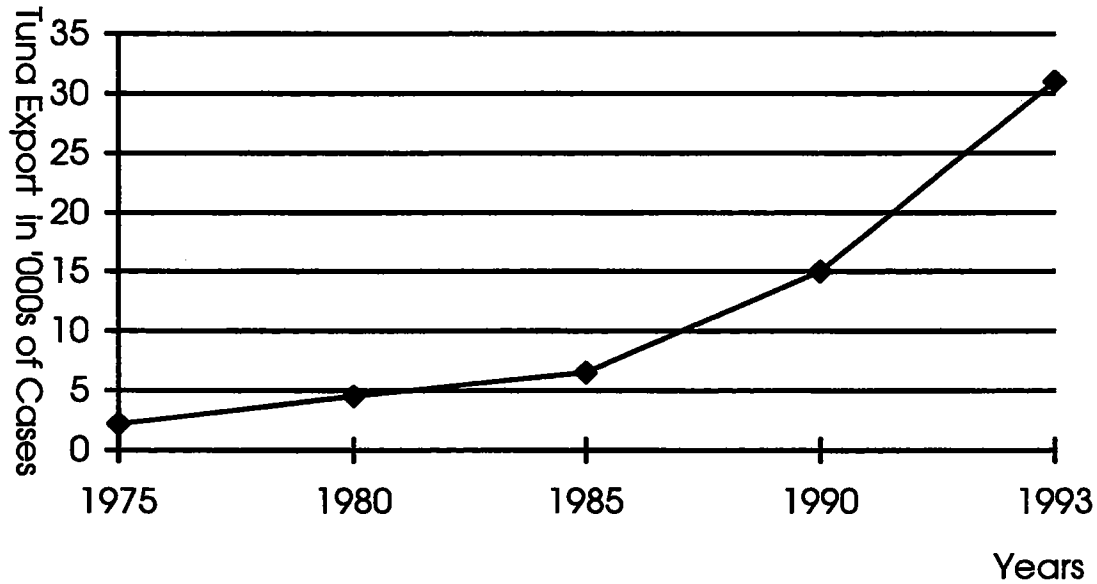


Figure 4.4. Population Density of American Samoa

Economic Activity. Compared with many other island countries or territories in the Pacific Island Region, American Samoa's economy is decidedly cash oriented. The territory has shifted slowly from a traditional subsistence level economy to a Western-style market economy. Subsistence agriculture which is important to the economic well-being of many island nations appears to be declining in American Samoa.

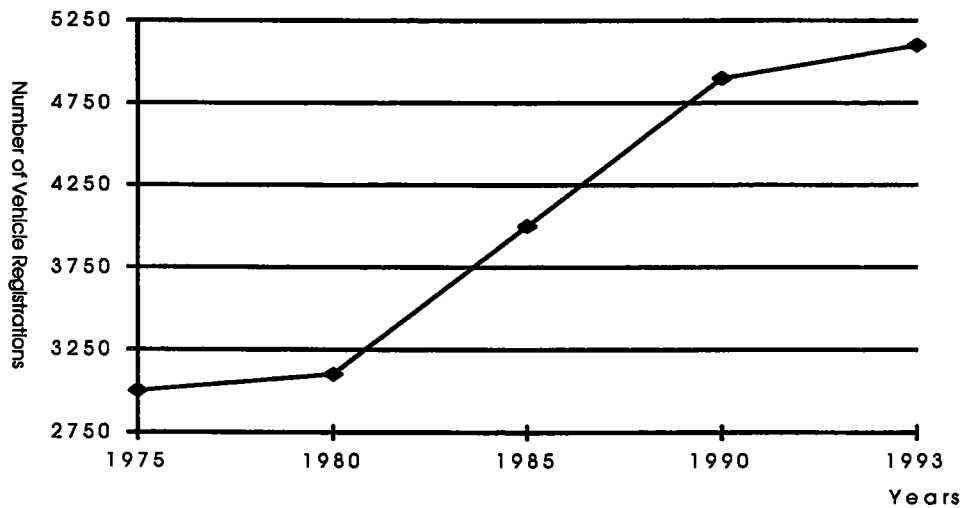
Today, most of the territory's employment is generated by the American Samoa Government which employs 38% of the workforce (Economic Development and Planning Office, 1994). Two large tuna canneries which have been in operation for nearly half a century employ another 37%. Figure 4.5 shows the increase of American Samoa's tuna export since 1975. Tourism, which is being promoted by the government, is still relatively small-scale. Indicative of the shift toward a market-oriented economy, only one tenth of one percent of the workers are in the subsistence category (Pacific Island Yearbook, 1994).

Figure 4.5. American Samoa's Tuna Export (in cases)



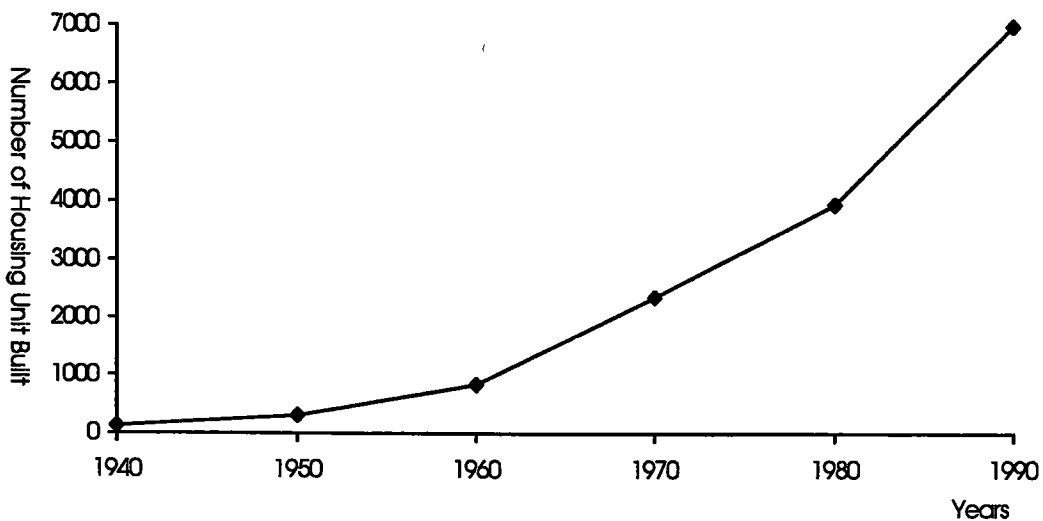
The shift from a traditional economy to a western-style economy has increased demand for imported goods and a western standard of living (National Oceanic and Atmospheric Administration, 1994). The following figure (Figure 4.6) illustrates the increase of total vehicles registered since 1975.

Figure 4.6. Total Vehicles Registered in American Samoa



Similarly, the increase in population together with the increase in market-oriented employment opportunities has resulted in increased demand for housing units. Figure 4.7 shows the rise of the number of housing units being built during the past fifty years. This, once again, illustrates the critical need for finding ways to balance the protection of the territory's coastal resources with the increasing demands for buildable lands.

Figure 4.7. Total Housing Units Built in American Samoa



Implications of the Above Trends. American Samoa's movement toward market-oriented economy plus the rapidly increasing population growth are leading to the degradation of many coastal resources particularly in the Pago Pago area. For instance, decline of coral reef due to urban discharges, tuna cannery waste, and chronic oil spills has been documented in Pago Pago Harbor (Maragos, 1994). Similarly, beaches are eroding due to loss of beach sand, near-shore protection structures and from sand collection for construction and household use (Maragos, 1994). Recent studies have also indicated that the few remaining wetlands are dwindling rapidly. Figure 4.8 illustrates the ratio between wetlands lost during the period of 1961 to 1991 and existing wetlands. Biosystem Analysis Inc. (1992) reports that the average annual loss of wetlands in Tutuila is 4.5 acres.

Solid waste generation is also expected to increase over time with the increase in economic activity. Figure 4.9 illustrates the projected increase in solid waste generation for the next four years (based on figures from Cal Recovery study, 1996).

Figure 4.8. Wetland Losses in American Samoa between 1961 and 1991

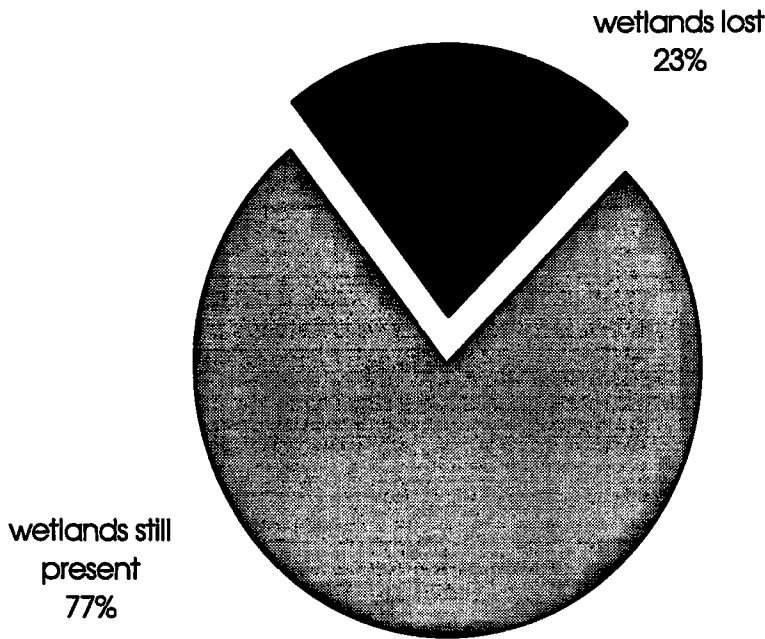
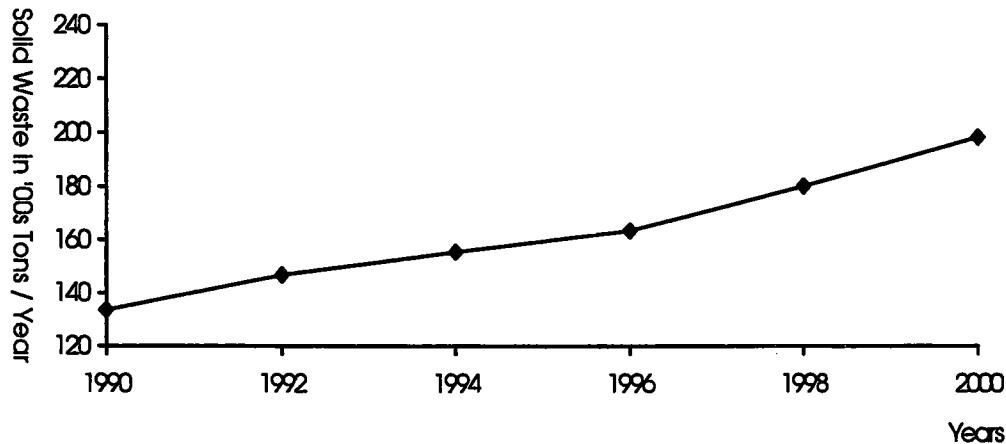


Figure 4.9. Solid Waste Generation in Tons in American Samoa

1. Population figures are based on American Samoa Statistical Digest, 1994
2. Estimate of Annual Solid Waste is based on Cal Recovery Report ,1996 and has an increment of 1% per year.

EDPO/ASCMP was created to help deal with pressures described above. The next section presents a detailed profile on the current program in place that directly addresses the aforementioned growth pressures.

4.2. PROFILE OF EDPO/ASCMP

4.2.1. Introduction

Protection and management of coastal resources in American Samoa is extremely important. First, most of American Samoa's population resides very close to the shoreline because of the steepness of the islands' mountain slopes and the lack of coastal plains. Second, similar to other Polynesian cultures, the American Samoa's way of life is heavily oriented toward the ocean. Schools, for instance, tend to be located along the coast as part of the Samoan tradition. As noted in the previous section, however, American Samoa's rapid population growth and the ensuing demand for increased economic development are leading to the degradation of many

coastal resources. Because of the small size and the topography of the territory, its fragile coastlines are under extreme pressure.² A coastal management program is therefore necessary to balance land use demands and marine resource use with the maintenance and protection of fragile coastal resources.

In 1972 Congress passed the Coastal Zone Management Act to assist states and US territories in developing institutions, plans, and procedures to manage land use in coastal areas. With the support from this act, the American Samoa government established a coastal zone management program in 1980. Since then, the American Samoa Coastal Management Program (ASCMP) has become a key planning and regulatory agency of the territorial government.

The following discussion provides an overview of the current program and an outline of its history.

4.2.2. Description Of The Current Program

Program Mission

The mission of EDPO/ASCMP as expressed in the Coastal Management Act of 1990 is "to provide effective resource management by protecting, maintaining, restoring, and enhancing the resources of the coastal zone."

In order to achieve this, the act mandates EDPO/ASCMP to:

- protect unique areas and resources, including wetlands, mangrove swamps, aquifer recharge areas, critical habitat areas, streams, coral reefs, watersheds, nearshore waters, and designated or potential historic, cultural or archeological sites from destruction or inappropriate development;
- develop strategies for coping with sea level rise, other coastal hazards, and cumulative impacts;
- promote the public health, safety and economic welfare in the conservation of wildlife, marine, and other resources;
- coordinate planning, monitoring, and enforcement activities for all ASG agencies whose activities affect the coastal zone; and
- improve and expand recreational activities.

2. The total land area in the territory is only 197 sq. km. with the largest island, Tutuila (135 sq. km.), accounting for most of the area.

Program Funding

As the ASCMP was established through the Federal Coastal Zone Management Act (FCZMA), funds to implement the above mentioned activities are received in its entirety from the Federal Government. Under the FCZMA, funding sources are basically through the four sections described in Table 4.1 below:

Table 4.1. Federal Funding Sources

Section	Description
306	Once approved, a state, territory, or commonwealth can receive annual grants on a "cost-sharing basis" to operate a coastal management program.
308	Makes available grants and loans to plan for, and respond to, onshore impacts of coastal energy activities.
309	Makes available grants to develop programs which address the following issues: <ul style="list-style-type: none"> a) the protection or creation of wetlands; b) the mitigation of natural hazards; c) increasing public access; d) reducing marine debris; e) addressing cumulative and secondary impacts of coastal growth; f) preparing and implementing Special Management Area (SMA) plans; g) planing for ocean resources; and h) procedures and policies for siting energy facilities.
6217	Makes available grants for the protection against nonpoint source pollution (matching funds for a nonpoint source pollution program are also available through Sections 306 and 309)

Table 4.2. below describes how the four federal sections fund the following specific components of ASCMP:

Table 4.2. EDPO/ASCMP's Program Specific Federal Funding

Section	Component
306	General administrative costs for the operation of ASCMP Project Notification and Review System Education and Awareness Programs
308	Wetlands Restoration Projects
309	Community Based Wetland Management Marine Debris Coastal Hazard Assessment and Mitigation Project
6217	Nonpoint Source Pollution Program

These components of the EDPO/ASCMP are described in further detail below.

Program Boundary

Because of American Samoa's small size, the American Samoa Executive Order 3-80 established the boundary of the coastal zone to include all of the territory's land and waters including submerged lands extending seaward three miles with the exception of excluded federal lands. Excluded federal lands include Rose Atoll, which is a National Wildlife Refuge, the American Samoa National Park lands of Tutuila, Ofu, and Ta'u, and Pago Pago International Airport.

Administrative Structure

In order to give an overview of EDPO/ASCMP's structure, it is useful to discuss the program using the following four components, namely: the Project Notification Review System; EDPO/ASCMP's enhancement programs; other EDPO/ASCMP's activities; and the overall program administration.

Figure 4.10 illustrates how these components fit in the overall structure. This coastal management program accomplishes most of its objectives through regulation of American Samoa's land uses through its land use regulation program called the Project Notification Review System or PNRS (component A in Figure 4.10). In addition to PNRS, EDPO/ASCMP also has enhancement programs for three specific coastal issues (component B in Figure 4.10), namely wetland management, coastal hazard management and marine debris management. The program's leading agency also conducts other initiatives for coastal resource protection (component C in Figure 4.10). Finally, the fourth component (component D) is the program administration which ties all the other three components together. The following discusses these four components.

AMERICAN SAMOA COASTAL MANAGEMENT PROGRAM ADMINISTRATIVE STRUCTURE

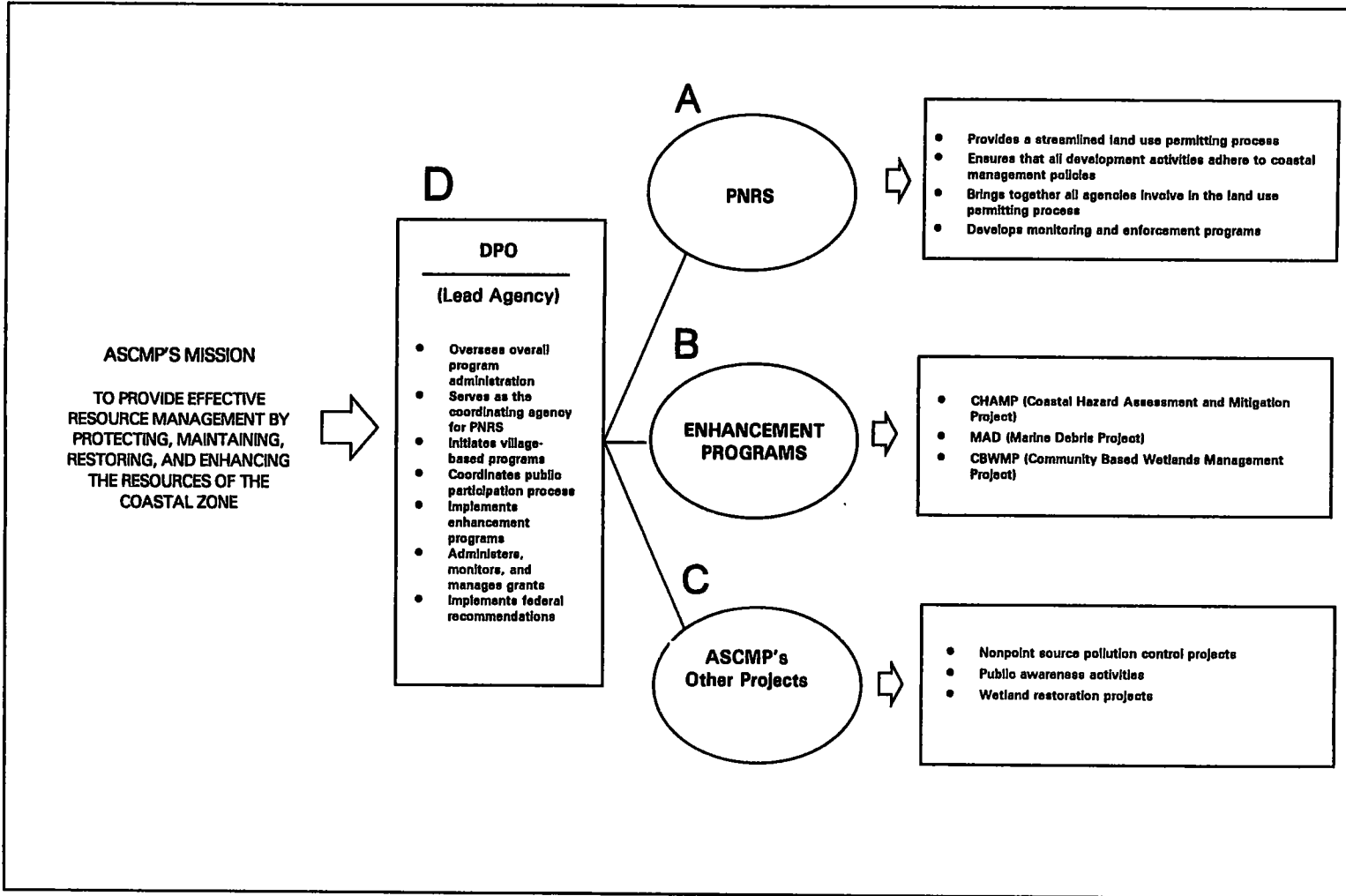


Figure 4.10

Figure 4.10. American Samoa Coastal Management Program Administrative Structure

Project Notification Review System (PNRS)

Perhaps the most significant element in a coastal zone management program is the regulation of land use. In the case of American Samoa, the coastal zone management program is directly involved in making permit decisions through the PNRS.³ Created in 1988, PNRS is EDPO/ASCMP's key planning tool in implementing its mission. This component of EDPO/ASCMP brings together all the agencies involved in the land use permitting process which include the following:

Economic Development and Planning Office/American Samoa Coastal Management Program
Department of Health
Department of Marine and Wildlife Resources
American Samoa Power Authority
Department of Parks and Recreation
American Samoa Environmental Protection Agency
Department of Public Works.

The aim of this project is to streamline the permitting system; and with EDPO/ASCMP acting as a coordinator, it ensures that any development in the territory adheres to the coastal zone management program objectives. Since its inception, PNRS has been an important and beneficial component of EDPO/ASCMP. By providing coordination on all aspects of regulatory requirements of the various resource management agencies, it has been able to provide timely review of land use permit applications. In addition, by bringing together the collective experience of some seven or eight professionals (rather than a single person as was previously the case), it has been able to provide more meaningful environmental review of development proposals. Finally, by streamlining the permitting system and by requiring early review of a project proposal at the conceptual site planning stage, PNRS has reduced public expense.

EDPO/ASCMP's Coastal Enhancement Programs

In order to focus its efforts and to better fulfill its statutory mandate to protect unique areas and resources, and to develop strategies for coping with coastal hazards, EDPO/ASCMP, through its Section 309 activities, designated three priority areas which began in 1992. These are coastal hazards management, marine debris management, and wetlands protection. During the Section

³ In addition to directly regulating land uses, the Coastal Zone Act suggested two other alternatives of land use management for coastal zone management programs. The first one requires the state/territory coastal zone management programs to establish criteria or standards for local implementation of the state/territory plan, then the local governments would adopt their own coastal zoning ordinances and regulations. They would receive and decide on land use permit applications and also enforce the regulations. The state/territory coastal management program would not intervene in individual permit decisions. The second alternative involves state/territory coastal management agency review of all development regulations and project proposals by other state/territory agencies to see that they are consistent with the state/territory coastal management programs. This option leaves the local unit of government free to adopt land use regulations without state/territory criteria other than the program itself. However, this subjects certain actions by local government to automatic review of the coastal zone program.

309 enhancement process, EDPO/ASCMP conducted a series of public meetings in both Tutuila and the Manua islands to solicit people's input in prioritizing areas on which the EDPO/ASCMP should focus more attention. As a result, in 1992, coastal hazards management, marine debris management, and wetland protection were chosen by the local population as the main priority areas. EDPO/ASCMP submitted a grant proposal to the Office of Ocean and Coastal Resource Management and was rewarded additional financial assistance.

Coastal Hazards Management

EDPO/ASCMP developed the Coastal Hazard Assessment and Mitigation Project (CHAMP). CHAMP is an on-going effort by EDPO/ASCMP to reduce the effects of coastal hazards in American Samoa. Since American Samoa has one of the highest population growths in the world, avoiding hazardous lands is an increasingly important issue. This program has two major objectives: to direct existing and future public and private development and redevelopment away from hazardous areas prone to landslide and flooding hazards; and to preserve and restore the protective functions of natural shoreline features such as beaches, dunes, and wetlands. Through this program, EDPO/ASCMP has been developing new territorial regulations and procedures for hazard mitigation to be implemented through the PNRS and at the village level.

Marine Debris Management

EDPO/ASCMP established the Marine Debris (MAD) project. Largely due to the inadequate municipal solid waste management system, marine debris has been a pressing problem in American Samoa for many years. Through MAD, EDPO/ASCMP hopes to reduce this problem. In cooperation with other territorial agencies, EDPO/ASCMP is developing new legislation to establish advance disposal fees for selected imports, an increase in fines for illegal dumping, and an enterprise fund to support municipal solid waste management. In cooperation with the American Samoa Environmental Protection Agency (ASEPA), EDPO/ASCMP is working with villages to develop village-based solid waste management, regulation, and enforcement. This participatory planning effort builds upon planning procedures developed as part of the Coastal Hazard Assessment and Mitigation Project. EDPO/ASCMP is also using Section 306A funds to construct solid waste collection facilities in designated Special Management Areas where resources are at risk from illegal dumping. These facilities will provide an alternative to illegal dumping for villages in mountainous areas with narrow roads that are not accessible to collection vehicles.

Wetland Protection

Finally, for the protection of America Samoa's remaining wetlands, EDPO/ASCMP initiated a number of projects through its Community Based Wetlands Management Projects. The most innovative of these efforts involves working with village councils to enlist their support in enforcement of wetland regulations. The EDPO/ASCMP is working with village leaders to develop local wetland ordinances for wetland protection.

Other EDPO/ASCMP Projects

In addition to the different programs described above, this coastal management program is also involved in other efforts. Together with the ASEPA, EDPO/ASCMP is currently developing a nonpoint source pollution program. In addition, it is carrying out several wetland restoration projects. Finally, since its inception, it has been conducting public education efforts. EDPO/ASCMP sponsors a number of educational activities for teachers and students. It also hired a public education coordinator who has been conducting a number of innovative public awareness activities including the annual Coastweeks festival.

Program Administration

The EDPO/ASCMP Act mandates the Economic Development and Planning Office (EDPO) as the lead agency for ASCMP. EDPO brings together the three components mentioned above: it implements the enhancement programs and ASCMP's other activities and it serves as the coordinating agency for PNRS. In addition, EDPO also conducts the following activities:

- Establishes and provides educational awareness campaigns;
- Initiates village based programs;
- Organizes and coordinates the public participation process;
- Coordinates environmental issues within the region;
- Promotes and enhances ASCMP organizational activities;
- Administers, monitors, and manages grants, and
- Implements the Section 312 recommendations.

4.2.3. The Continuing Evolution of EDPO/ASCMP

Management of coastal resources prior to the establishment of EDPO/ASCMP was under a number of executive agencies, boards, and commissions, each of which has its own special and limited responsibilities. This fragmentation of responsibilities posed complex problems. First, the division of responsibility discouraged comprehensive permit or project reviews. Second, because each agency has very special review criteria, it was difficult to assess the overall impacts of projects. Consequently, important management questions were often not raised, and there was no opportunity for balancing divergent interests. Under the old system, for instance, a road building project would have to go through the Department of Public Works which would determine if the project was technologically feasible or not. Then the Zoning Board would determine whether it met zoning requirements. This would be followed by the Capital Improvement Committee to determine if money was available. Then the Office of Manpower Resources would look to determine if necessary workers had to be recruited. No agency was responsible to undertake a comprehensive balanced review of the proposal and ask pertinent questions such as: What are the cumulative impacts of the project to American Samoa's natural resources? Whom will the project serve? And should the project be built? To do a comprehensive review at that time meant extended decision making delays. Furthermore, due to

lack of a single agency responsible for the overall management of coastal resources, there was a general lack of data on these resources.

The establishment of EDPO/ASCMP in 1980 was an effort of the American Samoa government to address the above shortcomings. In its original form, the program's policies were very comprehensive. It had 16 enforceable policies covering the following areas: administration, village development, shoreline development, coastal hazards, fisheries development, slope erosion, major facility siting, agricultural development, reef protection, recreation and shoreline access, water quality, marine resources, drinking water quality, unique areas, archeological and cultural resources, and air quality. The implementation of all these policies were designated to various American Samoa government agencies with EDPO acting as the clearinghouse for territorial permits and overall coordinator of activities.

Taken together, the 16 policies attempted to provide a comprehensive and specific management of American Samoa's coastal resources and to strike a balance between economic development and resource conservation. These policies also attempted to increase sensitivity to *Fa'a Samoa* in the exercise of government administration. The EDPO, with the coordination of the Office of Samoan Affairs, was designated to assist villages to create their own development plans that would implement EDPO/ASCMP policies.

The original program established a framework for comprehensive coastal resources management. It described a well-designed coastal management program. It had its shortcomings, however. The *Final Evaluation Finding for The American Samoa Coastal Management Program: May 1991 Through March 1994* observed the following: "the [original] program document provides a model that while sound, is not fully functional."

The actual administration of the program has since evolved, however. The following outlines some of the adjustments that have been made since the program's inception in 1980.

- In 1988, the American Samoa Government issued an executive order which expanded EDPO's implementation authorities. This act replaced EDPO's permit coordination procedure with a formal interagency review process which has evolved into the Project Notification and Review System. More importantly, it required any land use development or other activity that affected the coastal zone to obtain a land use permit from EDPO.
- In December 1990, the *Fono* passed a territorial Coastal Management Act. This act codified EDPO's land use program and enforcement mechanisms. It also prohibited any kind of fill without appropriate permits.
- Through its Section 309 activities, EDPO has focused its efforts on enhancement and protection of coastal resources. In 1992, it designated coastal hazards, marine debris and wetlands as the focus of its enhancement program strategy.
- Finally, EDPO/ASCMP is now using the above Section 309 projects to increase village involvement in implementing and developing EDPO/ASCMP programs.

4.2.4. Program Challenges

One of the greatest challenges that American Samoa faces in terms of coastal zone management is the need for its coastal management program to be able to operate within two types of governance: the Western-style regulatory system of the territorial government and the traditional governance at the village level. The success of EDPO/ASCMP depends largely on the acceptance of its policies and programs by the villages. Ninety-two percent of lands in American Samoa are still held communally by *aiga* or extended families which make up the villages. Land ownership under this land tenure system extends not only to lands occupied or cultivated but to the top of the mountain and to the edge of the reef. Due to the nature of land ownership, village level governance revolves around *aiga*. Each *aiga* has a selected chief (*matai*) who manages the communal economy, protects and distributes the lands and represents the family in the village council. Consequently, any land use management efforts that EDPO/ASCMP undertakes need the support of these *matai*.

Furthermore, EDPO/ASCMP needs to ensure that its coastal management policies are implemented in a manner that does not undermine the traditional Samoan way of life or *Fa'a Samoa* which gives more importance on the group welfare and achievements than to individuals. Unlike the Western-style regulatory system which is based on the concepts of private property, due process and government protection, decision making under the described land tenure system emphasizes consensus building and cooperation.

At the same time, however, EDPO/ASCMP needs to have the technical, regulatory and legal framework that works within the Western-style system in order for it to be able to deal with developments resulting from the emerging cash economy.

Another critical issue in the management of coastal resources in American Samoa today is the territory's rapid population growth as discussed in Section 4.1. EDPO/ASCMP plays a critical role: it must find ways to meet increasing demands for buildable lands and, at the same time, ensure the long term integrity of American Samoa's coastal resources.

Finally, there is the question of where to obtain financial resources for continued enhancement and protection of American Samoa's coastal zone. Federal funding cutbacks for the fiscal year 1997 are expected to reduce EDPO/ASCMP's budget by about a third from the previous year's level; and further reduction is anticipated in subsequent years.

4.3. Federal Budget Constraints

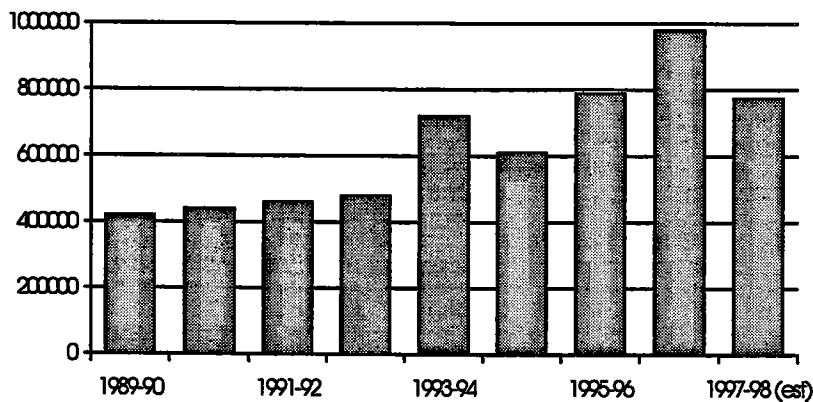
For fiscal year 1995-6, EDPO/ASCMP received over \$1 million of federal funding for programs that promoted the protection and management of coastal resources (American Samoa's Coastal Management Program, 1996). EDPO/ASCMP depends on this source of funding almost exclusively to maintain its daily operations. However, as indicated previously, recent federal budget constraints have threatened to limit the scope of EDPO/ASCMP. Availability of federal

money for coastal management programs has varied according to who is in charge of the federal administration.

For instance, during the 1980s, the executive branch of the federal government zeroed-out management budgets for state, territorial, and commonwealth governments. However, Congress, with support from coastal states as well as other public interest groups, had the appropriations restored. During the 1990s, coastal programs fared much better. In fact, for the first time in a decade, there was an administrative budget for coastal zone management programs. However, in 1995, Washington once again changed its focus. The new Congress, with an interest in balancing the budget in seven years, has proposed reductions in federal funding for coastal management programs. The executive branch, while still committed to improving environmental and resource management, is being drawn into a commitment to balance the federal budget. The implications of these changes are becoming all too obvious.

As indicated previously, federal funding for the fiscal year 1996-7 is expected to reduce EDPO/ASCMP's budget by about a third from the previous year's level. Section 6217 which currently funds the Nonpoint Source Pollution Program and section 308 which currently funds wetland restoration projects are being cut. Section 309 which currently supports enhancement programs is also subject to a reduction of funds. Moreover, further reduction in federal funding is possible in subsequent years. Figure 4.11 below will help to illustrate this point.

Figure 4.11.
Budget
Appropriation
for
EDPO/ASCMP



Now, with a better understanding of the growth pressures facing American Samoa and the budget constraints EDPO/ASCMP will be dealing with, we move on to the next section that deals with the impacts on the coastal environment.

4.4. Stresses On The Environment

Given the nature of American Samoa's rapidly growing population and expanding economy, combined with the declining levels of federal funding, the ecosystem is in a precarious situation. Because of the reduced ability of EDPO/ASCMP to maintain its current level of coastal resource management, the environment is placed at risk.

The following is a list of issues or areas of concern (with a brief description for each) which the practicum team identified in consultation with EDPO/ASCMP staff:

- (1) **Wetland management.** Wetlands are areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Because of the growing population and its need for suitable lands in American Samoa, approximately a quarter of wetlands have already been lost to development.
- (2) **Mitigation of coastal hazards.** Coastal hazards are a risk to life and property due to natural events such as flooding, tsunamis, landslides, and shoreline erosion. Because of the limited availability of suitable land for residential and commercial uses, pressure for developments to be sited where they may be unsuitable have increased.
- (3) **Mitigation of nonpoint source pollution.** Nonpoint source pollution is becoming a threat to coastal waters everywhere. Nonpoint source pollution refers to pollutants that enter a body of water as a result of water flowing over the surface of the land (e.g., rainfall, irrigation, etc.). Common nonpoint source pollutants include soil, fertilizers, animal waste, oil, litter, lawn clippings, etc. Polluted runoff originating from human activities increasingly threatens coastal water quality and other valuable coastal ecosystem.
- (4) **Marine debris management.** Marine debris is pollution caused by human activities and has been a persistent problem in American Samoa for a number of years. Marine debris can wreak havoc on the shoreline ecosystem due to its degenerative nature on the environment.
- (5) **Coral reef management.** Coral reefs are unique marine resources that are sensitive to human activities. They provide shelter to many forms of marine life and should be preserved as much as possible.
- (6) **Shoreline development management.** Developments adjacent to the shoreline can adversely impact the coastal ecosystem in a number of ways. They may result in the degradation of coastal resources due to their proximity as well as diminish visual or physical access to the shoreline area.
- (7) **Sustainable fishery and agriculture management.** Both the fishery and agriculture industry can place a tremendous strain on coastal resources if these assets are utilized beyond their ability to regenerate. The goal should be to promote

such industries in a manner consistent with sound conservation practices that would be sustainable to the ecosystem.

- (8) **Development of recreational areas and shoreline access/protection of cultural and historic resources.** The development of recreational areas and the improvement of shoreline access for residents and visitors alike are important public goods that must be preserved. Along with this, cultural and historical resources are valuable resources that provide an identity to the area. In both cases, these assets should be maintained and preserved for the people of American Samoa.
- (9) **Conservation of biodiversity.** Every location is unique in that it contains a special array of living matter. This biodiversity should be preserved and protected since it would be impossible to replace it once it is lost.
- (10) **Growth management of Tafuna Plain.** Because the Tafuna Plain is among the most desired region for development due to its ideal slope conditions, wasteful use of the lands should be discouraged. American Samoa's growing population has created a strong demand for developable land in this area. Sound planning is necessary for sustainable development.
- (11) **Special Management Areas: Pago Pago Harbor, Nu'uuli Pala and the Leone Pala.** Along with the Tafuna Plain, Special Management Areas (SMA) such as those listed above are located on or are in close proximity to sensitive ecosystems. It is important for sound and sustainable planning to occur in order to preserve these areas.
- (12) **Major facilities siting.** Major facilities require siting that account for the sensitivity of the surrounding environment since they are physically imposing as well as important to the community they service. If sited in a hazardous area, these facilities may become incapacitated in the event of a natural disaster.
- (13) **Water quality.** Water quality, especially clean drinking water, is an important element for the sustenance of life. This applies for humans as well as other life forms within the ecosystem. Consequently, it is important that clean water is available for all life forms.
- (14) **Marine resources.** Living marine resources are vital components to the life cycle of the ecosystem. These important assets must be protected and preserved. The ultimate goal would be the protection from over harvesting or the unnecessary degradation to their habitats.
- (15) **Unique areas.** Unique areas, such as wetlands, coral reefs, mangrove swamps, mudflats, aquifer recharge areas, critical habitat areas, floodplains, streams, watersheds, and near shore waters are important elements to the ecosystem since they are particular to a location. They cannot be easily duplicated and should be preserved.
- (16) **Archeological sites.** Archeological sites are also unique areas and must be protected as they are important historical records of the past. Once destroyed, archeological sites can never be duplicated.
- (17) **Air quality.** Air quality, like water quality, is an important element to a healthy life. Clean air should be protected as a right for residents as well as visitors of American Samoa.

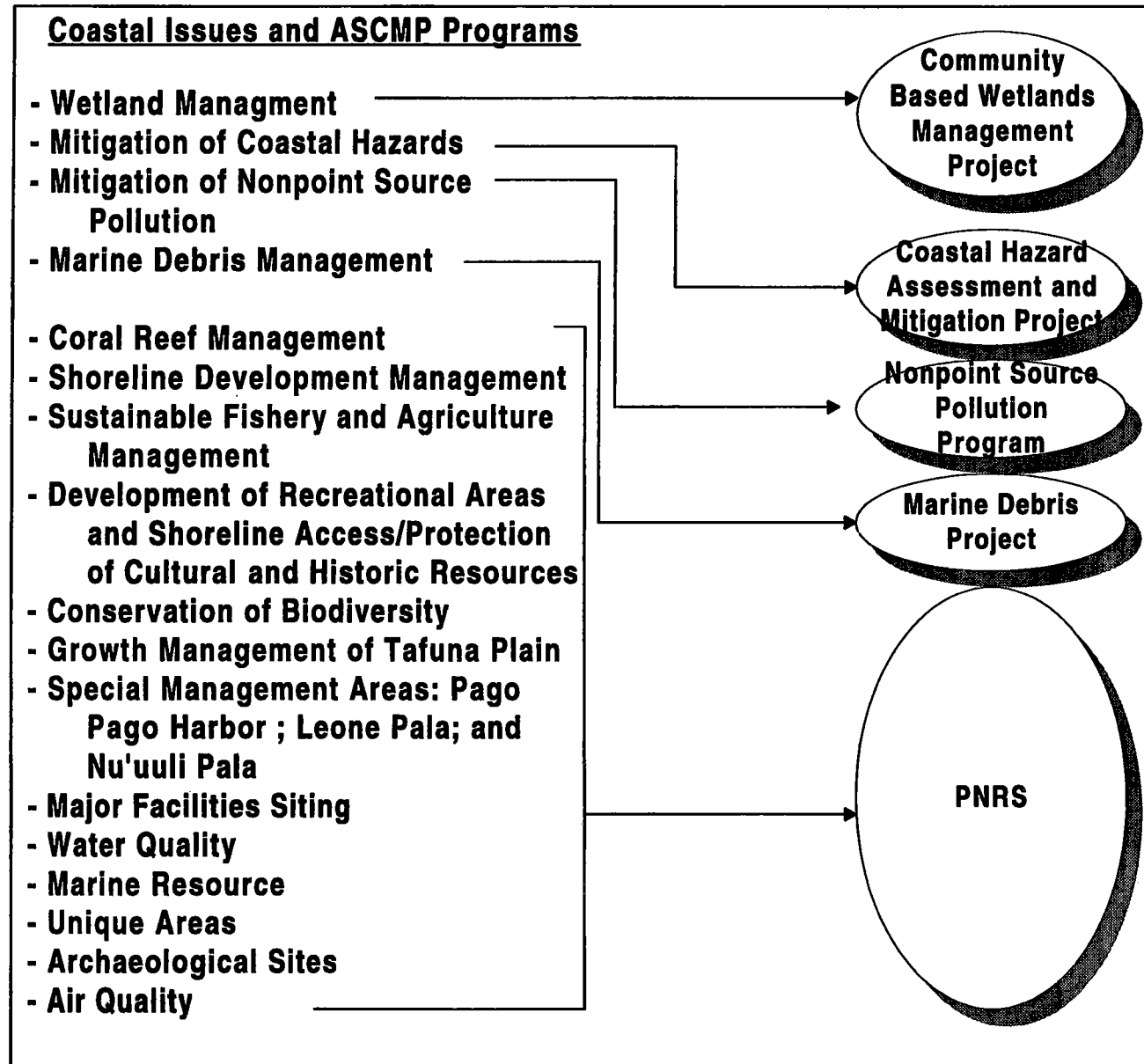
4.5. EDPO/ASCMP Areas of Intervention

In order to address the seventeen areas of concern to the EDPO/ASCMP in preserving the coastal zone, the EDPO/ASCMP has developed five primary areas of intervention. The establishment of these five areas of intervention was based on an assessment of the priority issues in preserving the coastal zone, as well as how best to use EDPO/ASCMP resources. These areas of intervention and programs addressing them are listed below.

Areas of Intervention	Programs
1. Land use management	PNRS
2. Wetlands preservation	CBWMP
3. Coastal hazards assessment and mitigation	CHAMP
4. Nonpoint source pollution	NPSP
5. Marine debris mitigation	MAD

Figure 4.12 describes how these five areas of intervention address the seventeen issues of concern to the EDPO/ASCMP listed above. As can be seen from the chart, land use management through the PNRS is a key strategy to address a number of issues in coastal zone management. The decision to develop specific programs to address wetlands preservation, coastal hazards, and marine debris was made through a participatory process in which people in American Samoa were involved in deciding what issues were a priority for intervention. Finally, the nonpoint source pollution component of EDPO/ASCMP was developed following federal legislation stating that states and territories of the United States were required to develop nonpoint source pollution plans.

Figure 4.12. Diagram of Coastal Issues and EDPO/ASCMP Areas of Intervention



The sections below describe in some detail the specific nature of the areas of intervention of EDPO/ASCMP, the current situation with regard to these issues in American Samoa, and an overview of the current interventions taking place in these areas.

4.5.1. Land Use Management

Introduction

As the population of American Samoa grows and the economy expands, the territory is experiencing pressure due to the expanding demand for land. There are only 10,560 acres of developable land in the entire Territory. According to the Energy Resources International Inc., the ratio of persons per acre has increased from .1 persons per acre in 1900 to .5 persons per acre in 1970. In 1990, the ratio further increased to an estimated 1.43 persons per acre. This ratio will continue to increase as the population grows. In a densely populated area such as Tualauta County, the ratio is approximately 10-14 persons per acre. The case study in Tualauta County presumes that the general land use of the county continues to follow the existing and new infrastructure corridors which means in-filling is increasing. It is therefore projected that more than 80% of the County's potentially developable land will be used by the year 2012 to support a population 300% higher than that of 1990 (Energy Resources International Inc., 1993). The limited amount of developable land in American Samoa will, therefore, be exploited with increasing intensity in the years to come. There is a need for effective mechanisms to manage land in order to prevent rapid land development from resulting in extensive damage to the coastal environment.

Land Tenure

Under the traditional Samoan land tenure system, each village communally owns the surrounding land and fishing areas. Communal land use decisions are made by the *matai* for the benefits of the *aiga*. More important decisions, which affect a large area of land, are made by the village council of *matai*.

The situation of land management is changing, however, and in some areas land is no longer communal. Much of the Tafuna Plain, for example, is freehold land. Many residents are not tied to each other by traditional *aiga* relationship, and village boundaries are unclear. Currently, 92 percent of American Samoa's land is still owned communally with the remaining 8 percent divided among private, government, and church interests (ASG 1981, also see Biosystems 1992).

The present land tenure system in American Samoa requires a unique management approach because the system itself consists of a combination of communal land ownership and fee simple land ownership. Carefully designed management tools are therefore needed since management tools that increase regulations on one type of land ownership can shift the development pressures on to the other type and vice versa.

Land Use Practices

Land tenure, life philosophy, and topography are the three factors that influence land use practices in American Samoa.

The steep topography of the Territory strongly influences the existing land use patterns. Most of the land on the Tutuila Island remains undeveloped as less than 30 percent of land area on the island is located on a slope of 30 degree or less. Human settlements, therefore, are concentrated along the coast and stream valleys (Biosystems Inc., 1992). As a result, the Tafuna Plain, as the most flat area, has been heavily populated (Amerson et al. 1982).

Subsistence agriculture has traditionally been an important part of *Fa'a Samoa*. As in most tropical areas, swidden agriculture is a most common land use practice with mixed plantations of trees and agricultural crops. Common crops in Tutuila are taro, bananas, breadfruit, coconuts, papaya, cassava, citrus, and vegetables. On Aunu'u Island, the main crop is taro.

Under the influence of the market economy and modernization, land use patterns in American Samoa are changing. As the territory has moved towards a modern cash economy, Samoans have been increasingly employed in jobs in government, and in canneries and other light industries, and have abandoned traditional subsistence farming. Total agricultural land decreased by 15.6 percent during the 1970-1977 period (ASG 1981, also see Biosystems Inc., 1992). The change in wetland use is very obvious as well. Wetlands on Tutuila and Aunu'u islands are increasingly being converted to residential use due to the development which has occurred as the population has increased. Many wetlands have become trash, waste dumping areas, and grazing land.

Problems in Land Use Management

Changes in the land tenure system and land use practice brought on by development activities and population growth have posed many problems in land use management in American Samoa. The problems of land scarcity, land degradation, and unclear boundaries and titles are most serious, leading to landslides, loss of biodiversity and wildlife habitats, and conflicts among neighboring uses.

The increasing pressure on land resources also poses serious problems to land tenure. Communal property systems are effective when land is available to all village members. However, communal land tenure systems are now under pressure due to land scarcity. Land ownership is shifting from communal ownership to fee simple ownership or leasing arrangements. The Tafuna Plain is a particularly good example of this phenomenon.

The shift in land tenure and a less traditional system has lead to unclear boundaries and titles in land use. The baseline study of Tualauta County, reported that there is confusion between communal land claims, fee simple land, and leased land. It is argued that this confusion can

discourage development in appropriate sites and encourage it in inappropriate sites, where investors are reassured by clearer titles.

Changes in land management patterns have also led to the development of serious environmental problems. In the past the traditional communal land management system was sufficient to cope with the environmental stresses of a subsistence economy. However, today's modern cash economy has led to the introduction of more environmentally damaging types of land development. American Samoa has yet to develop an adequate regulatory system to cope with these stresses. There has been an increase in landslides, land deterioration, and shrinkage causing loss of biodiversity, habitats, and archaeological and/or historic areas. Landslides often have complex causes. Findings of the study on landslide hazard mitigation conducted on Tutuila Island by the U.S. Department of Agriculture reveal that landslides on steep slopes or on the central ridgetop of Tutuila are caused by natural hazards, and landslides near the villages are directly related to man's activities. Meanwhile, filling for infrastructure construction, conversion for plantation, grazing, and dumping waste are the major threats causing the shrinkage and deterioration in wetland areas. In a comprehensive study to develop a wetland management plan for Tutuila and Aunu'u islands, it is reported that most of the freshwater wetlands in Nu'uuli have been disturbed by household trash disposal, clearing, and development (Biosystems Analysis Inc. 1992). These activities have not only polluted and reduced the area but changed the hydrology of the wetlands as well. Extension of property by placing rocks over trash in dumping areas is also reported as a threat to the land use management in wetland areas. Wetlands shrinkage leads to loss of wildlife habitats, and hence, loss of biodiversity.

Land Use Management Related Programs

Uncontrolled development is a major factor that has strongly influenced land use management. Many agencies of the American Samoa Government are involved in land use management. EDPO/ASCMP's existing programs also have land use as a fundamental component.

Agencies Involved in Land Use Management

As noted in the EDPO/ASCMP program profile, the PNRS is an integrated land use permitting system designed to improve coordination between regulatory agencies responsible for land use decisions. Participants in the system are the Economic Development and Planning Office, the Department of Health, the Department of Marine and Wildlife Resources, the American Samoa Power Authority, the Department of Parks and Recreation, the American Samoa Environmental Protection Agency, and the Department of Public Works. The PNRS is responsible for preparing technical reviews of land use permits, monitoring project proposals, conducting site visits and writing reports, and developing standards for site plans.

A number of other agencies are involved in the land management process, namely the Territorial Registrar's Office, the Land Commission, the Governor, the Office of Samoan Affairs (OSA), and the High Court. Advised by the Territorial Registrar's Office, the Land Commission is responsible for protecting communal lands and providing advice to the Governor on land-related

issues. The OSA acts as mediator on behalf of the Governor to solve land conflicts. The High Court rules in cases of conflicts and land claims.

Specific Programs

Although EDPO/ASCMP does not have specific programs on land management almost all of its existing programs (PNRS, CBWMP, CHAMP, MAD, and NPSP) have land use as a component.

The CBWMP was established to: (1) develop village ordinances for wetland management for Tutuila and Manu'a islands; (2) designate special management areas; (3) Develop Geographic Information System (GIS) to support village-based management; and (4) develop village-based management and regulatory systems for special management areas. As it is, land management is a fundamental component in CBWMP.

EDPO/ASCMP created CHAMP in order to cope with coastal hazards issues. CHAMP is responsible for making new territorial regulations and procedures relating to coastal hazard mitigation as well as integrating risk assessments into the PNRS process. The risk analysis procedure is accompanied by the development of new land use regulations and public awareness campaigns to increase awareness of coastal hazard issues.

As MAD and NPSP deal with dumped trash and pollution discharge, land management has been considered as a means to improve the effectiveness of their functions. Through land laws and regulations, filling for construction, waste dumping activities, and pollution discharge can be prevented or mitigated.

Land use management can be understood as a fundamental component of the existing programs and projects. It has become a very important factor that determines the success of American Samoa's coastal zone management.

Conclusion

As American Samoa makes the transition from a subsistence economy to a modern economy, it is becoming increasingly important to develop new methods of environmental management and regulation which are capable of addressing modern day pressures while preserving *Fa'a Samoa*. Nowhere is this more apparent than in land use management, which is such a key aspect of the village authority system and the Samoan way of life. EDPO/ASCMP has taken a lead role in ensuring that land use decisions take into account preservation of American Samoa's natural resources. Developing a culturally appropriate and effective land management system is one of the most important tasks facing the EDPO/ASCMP in its future development.

4.5.2. Wetlands Management

Introduction

American Samoa's wetlands offers a wide range of valuable functions. Their fragile ecosystems and physical features are easily affected by human activities both in the wetlands and in watershed areas. The valuable resources from wetlands and their irreplaceable functions make wetland protection and management increasingly important. In *American Samoa's Wetlands*, the Government of American Samoa stated "If future generations of American Samoa are to benefit from the richness of this natural resource, wetlands need protection and careful management from now on" (The Government of American Samoa, 1992).

Wetlands provide American Samoa's people with a living environment, and habitats for fish, shellfish, birds, animals, and plants. They are also of high recreational and educational value. Without trash and fill they make attractive recreation sites by offering beautiful scenic areas of lush and tropical vegetation, as well as fishing, boating, swimming, and hiking areas. Students often visit wetlands to learn about their island ecosystems. Freshwater wetlands collect and store fresh water in the underground. This helps to recharge groundwater sources. In some areas, they prevent the intrusion of salt water, offering more opportunities for agricultural production. Wetlands help to control floods and reduce the damage by absorbing and slowly releasing floodwaters. Coastal wetlands trap sediments that would wash onto offshore reefs, destroying them. American Samoa's wetlands are also well known for their archaeological and historical uses. They convey from generations to generations the story about how Samoans found their wetlands valuable and how they used them in the old days.

The increasing population growth has put pressure on wetlands, causing wetland loss and deterioration. Within the last 30 years, American Samoa people have lost at least a quarter of their wetlands (The Government of American Samoa, 1992). The main threats identified by the government include filling for development, pollution caused by trash dumping, piggeries run-off, and other upland development activities.

Geographical Distribution of Wetlands

American Samoa possesses various types of wetlands, including marshes, swamps (mangrove swamps, freshwater and salt-water swamps), lakes, openwater, and cultivated and ruderal (growing in disturbed areas) wetlands.

Tutuila island possesses 350.93 acres of wetlands, including most of the types listed above, except lake and open water. Aunu'u island possesses 111.93 acres with mangrove swamps, lakes, open water, streams, cultivated and ruderal areas. Table 4.3 summarizes the name and total acreage of wetlands .

Table 4.3. Name and area of wetlands on Tutuila and Aunu'u islands

Wetland site	Area (acre)
Tutuila Island	350.93
Nu'uuli	122.90
Leone	20.74
Malaelo	72.06
Aua	9.18
Masefau	43.06
Vatia	34.05
Alofau	2.03
Aoa	23.45
Alao	15.47
Tula	7.99
Aunu'u Island	111.93
Pala Lake	44.76
Taro Fields	27.30
Crater lake	36.84
School swamp	3.03

Source: Biosystems Analysis, Inc., 1992.

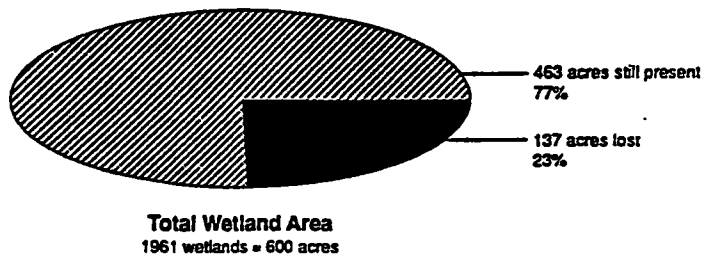
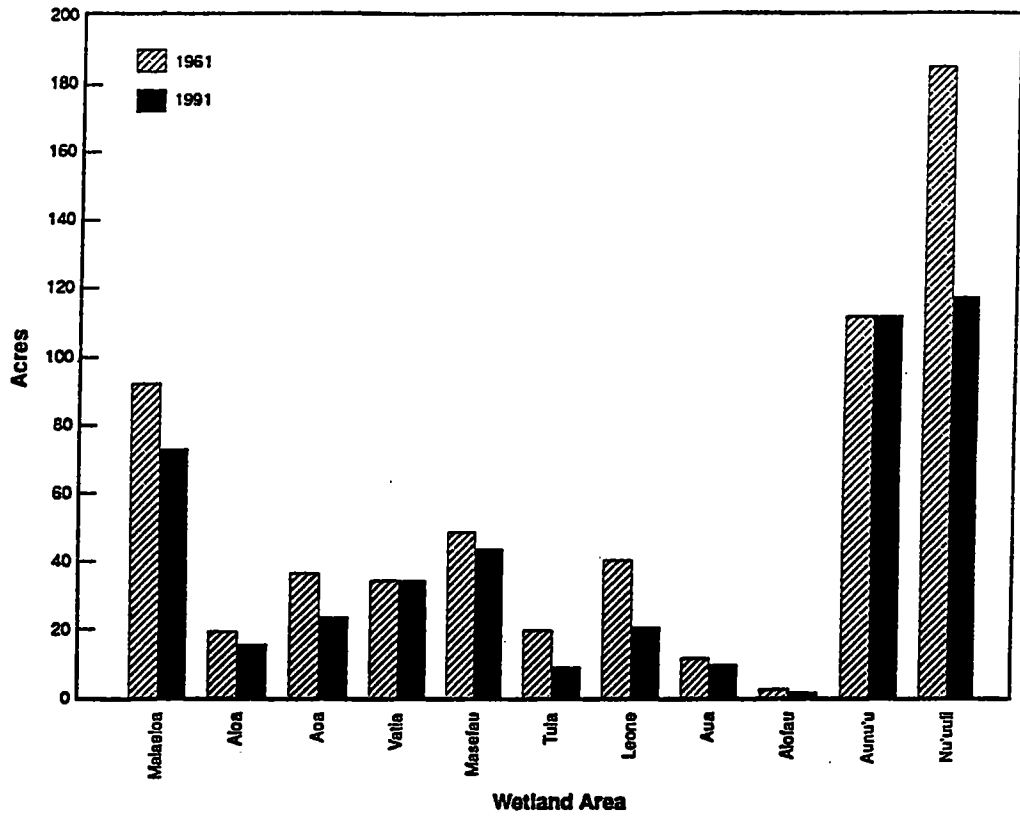
Status and Trends

According to recent statistics, most of the wetlands on Tutuila and Aunu'u islands have experienced loss. The total wetland area on Tutuila island has been reduced by 28 percent with 137 acres being lost, and 351 acres remaining. Most of the lost wetlands have been converted into dry land for construction, plantation, and other development activities. The average yearly rate of decline in Tutuila is 4.57 acres (Biosystems Analysis Inc., 1992). The loss on Aunu'u island is insignificant (Figure 4.15.).

On Tutuila island, Nu'uuli, Tula and Leone have suffered the most serious loss of wetlands. Tula has lost 8 acres, representing 58 percent of its total area. Leone has lost almost half of its wetlands - 19 acres representing 48 percent. Nu'uuli has suffered a loss of 61 acres representing 33 percent. The rate of loss in Nu'uuli is the greatest with 2.05 acres per year.

The main factors causing wetland loss are development activities including clearing and filling for village housing and commercial buildings, conversion for plantation, livestock grazing, and trash and other debris dumping. The Strategic American Samoa Coastal Management Enhancement Program (1992) also emphasized two factors that have contributed to the continued filling of wetlands: (1) shortage of land having slopes suitable for residential and commercial use in the face of population growth and economic development; and (2) inadequate municipal solid waste management.

Figure 4.13. Total Wetland Losses from 1961 to 1991 on Tutuila and Aunu'u Islands, American Samoa



Problem Facing American Samoa's Wetlands

In a document on American Samoa's wetlands, the Government of American Samoa stated that the primary cause of the loss of wetlands is development. Wetlands are cleared and filled for construction of village housing and commercial buildings, and livestock raising. Other threats include dumping trash, ash, and other debris, cutting mangroves for fire wood, dumping or discharging wastes, polluting upstream, and clearing and filling for plantation. Many activities that result in piecemeal losses of wetlands are either exempt from current regulations or occur without due process and permit review.

Wetlands in American Samoa are being lost or degraded by urban growth and development as a direct result of an increasing population. American Samoa's population has increased at an annual rate of 3.8 percent, according to the most recent census data (1980-1990). The rate at which American Samoa has lost its wetlands is proportional to the population growth rate. During the 1961-1990 period, about 4.6 percent of American Samoa's wetlands have been lost each year. Given the continuing population growth, and the rapid decrease in the amount of land suitable for development, loss is likely to continue.

Compounding the problem associated with regulations and enforcement are cultural forces and a general shift in the social attitudes of Samoans. Under the Samoan land tenure system, wetlands are perceived as village owned land. Therefore, Samoans see the use of their land as subject to decisions of their *matai* and village councils, not the federal or territorial government. This traditional system is still very influential as the EDPO/ASCMP's land use permitting process is often bypassed or compromised (US Department of Commerce, 1994). In addition, villagers do not have enough information and knowledge on the biological values of wetlands, the regulations surrounding wetland areas, and the activities that damage or might damage the fragile ecosystems. Also, enforcement is further complicated by the fact that the federal government does not have a legal venue on-island for prosecuting civil penalties under the Clean Water Act, an artifact of the initial agreement that created territory status for American Samoa (US Department of Commerce, 1994).

Wetland Management Policies

Agencies Involved in Wetlands Management

A number of federal and local agencies are involved in American Samoa's wetlands management. The local agency with the most direct responsibility for wetlands management and protection, however, is the EDPO/ASCMP, through the Coastal Management Act (CMA). The general purpose of EDPO/ASCMP is to provide effective resource management by protecting, maintaining, restoring, and enhancing the resources of the coastal zone through protecting unique areas and resources (US Department of Commerce, 1994).

EDPO/ASCMP directs the PNRS permitting actions that regulate dredging, filling, excavation, and development throughout the islands. A number of other local agencies also are involved in

the PNRS. The federal legal authorities that govern the protection, management, and enhancement of wetlands in American Samoa are the US Army Corps of Engineers (COE) and the US Environmental Protection Agency (EPA). The authority to regulate the discharge of dredged and fill material is jointly shared by the COE and the EPA. The COE is authorized to issue Department of Army permits for the discharge of dredged and fill material into wetlands under section 404 of the Clean Water Act. The EPA can veto a permit issuance under section 404 (c) of the Clean Water Act. The EPA's jurisdiction over all waters of the United States, including wetlands is the same as the COE under section 404 of the Clean Water Act. The US Fish and Wildlife Service also reviews permits for the COE on the impact of filling or dredging within wetlands. The Natural Resource Commission Service governs wetland delineation in agricultural wetlands.

Many local legal authorities govern wetlands. Among them are the EDPO/ASCMP, the Department of Parks and Recreation, the Department of Public Works, the Zoning Board, the Environmental Quality Commission, the Department of Marine and Wildlife Resources, the Department of Public Safety, the Department of Health, the Office of the Governor, and others. The main agency that governs the protection, management, and enhancement of wetlands is the EDPO/ASCMP. The AS Environmental Protection Agency and the Department of Marine and Wildlife Resources also play an active role in wetland preservation and protection.

Management activities, such as restoration, rehabilitation, special management area designation, development of village based management and regulatory systems, training in wetlands assessment, delineation of boundaries, and other tasks are accomplished by the EDPO/ASCMP Wetlands Specialist and the wetlands Village Conservation Officer.

A Wetlands Community Task Force was established to provide a review of the document "A Comprehensive Wetlands Management Plan for the Islands of Tutuila and Aunu'u, American Samoa." The Task Force reviewed specific items such as the definition of wetlands in English and Samoan, the delineation techniques, the no net loss criteria and the approach to delineate the wetlands identified in the plan. The Task Force provided recommendations for approaching villages in order to gain access to delineate wetlands. The Task Force was in effect from December 1993 to March 1994, and has not met since that time due to their previous accomplishments and recommendations which are still being conducted within other programs.

Current Programs

Nu'uuli Pala and Leone Pala on Tutuila Island of American Samoa have been designated as special management areas under the CZM Act of 1972. This means that any development that takes place in these areas must be reviewed as a major project.

The current Community-Based Wetlands Management Program (CBWMP) aims to protect and preserve the existing levels of wetlands, as measured by acreage and function, from direct, indirect and cumulative adverse impacts, by developing and improving regulatory programs. It also attempts to increase the level of wetland area and functions within degraded areas and develop and implement appropriate techniques for protection and restoration purposes.

The tasks being performed by CBWMP include: protection of wetlands through regulations and restoration, and village-based programs and public awareness projects. In order to develop village ordinances, CBWMP has developed model village ordinances and regulatory systems with the participation of village councils through the Village Liaison/Facilitator program. Also, it has established Special Management Areas designation and regulatory systems (as outlined in the EDPO/ASCMP Administrative Rules).

Major projects including large scale restoration efforts, development and adoption of appropriate legislation, development of village-based systems such as the Village Liaison/Facilitator program, PNRS project review, wetland boundary delineation, enforcement, and mitigation.

The Village Liaison/Facilitator program which includes delineation and mapping is currently being conducted in 6 villages; Leone, Nu'uuli, Malealoa, Ofu, Masefau, and Tula. Plans call for the program to be extended to Ta'u and Aunu'u this year. Restoration projects, many of which complement the Village Liaison/Facilitator program, will be conducted in Nu'uuli, Masefau, Tula, Aunu'u, and Alao.

The Wetlands Specialist and the Village Conservation Officer conduct public awareness activities, PNRS site visit reviews for proposed projects, and an enforcement program. A Geographic Information System is being tried in the village of Nu'uuli for its wetland boundary. EDPO/ASCMP does not, however, have a GIS in place.

Prospects for the Future of Wetlands Management in American Samoa

EDPO/ASCMP has to review CBWMP to find out whether the program is sufficient and whether it is worth continuing. Facing increasing population pressure and budget cut, EDPO/ASCMP also has to look for other alternatives to support wetland management activities in the territory.

4.5.3. Coastal Hazards In American Samoa

Introduction

Coastal areas in the United States are afflicted with an array of natural hazards which disrupt hundreds and thousands of lives every year. Among these hazards, beach erosion is unique in the problems it presents, while other types such as hurricanes, floods, landslides, earthquakes, tsunamis, volcanic eruption, land subsidence are severe and may appear in different combinations.

Due to its unique topography and geographical location, risks from coastal hazards are acute in American Samoa throughout the year (ASCMP/PBDC & University of Hawai'i, 1992:16). Additionally, growing development pressures in coastal areas are increasing the risk to life and property from such hazards. These events, though rare, are usually catastrophic, and necessitate continued management attention in order to reduce the loss of life and property.

Potential Coastal Hazards in American Samoa

The islands of American Samoa are of volcanic origin and exhibit the rugged topography common to Pacific volcanic islands. Typically, sheltered embayments developed small coastal plains providing one of the few sources of flat land in the territory. Total buildable land area with slopes less than thirty degrees is approximately 16 square miles or about 30 percent of the main inhabited island, Tutuila, and is found mostly in the Tafuna-Leone Plain.

As a result, the people of American Samoa have historically lived along the narrow strips of coastlines. With the rapid population growth and new urban development activities, pressure on buildable land is ever increasing. A vast majority of housing and other contemporary development has taken place in areas subject to threats from different coastal hazards. All these phenomena can be explained by the following facts: first, land not subject to hazards is extremely limited, and second, most of the land in American Samoa is communally owned (land is allocated by the village chief or *matai*). The traditional land tenure system does not permit access to land by anyone but customary title holders. In most cases, the vulnerability of these areas is not clear to the *matai* who protect and distribute these communal lands.

The Samoans face threats from hurricanes, flooding and storm surge, shoreline erosion, high surf, landslide, mudflows, tsunamis and earthquakes. Hurricanes in particular have on occasion caused extensive damage in terms of life and property in American Samoa.

Status and Trends

In recent history, between 1966 and 1991, five major hurricanes have hit American Samoa resulting in storm surge, flooding and landslide. Hurricane "Val" in 1991 damaged or destroyed over ten thousand homes, washed out roads, wiped out cash and subsistence crops, cut power lines, broke power mains, and damaged or destroyed buildings (FEMA 1992:3). In view of the economy of American Samoa, the importance of mitigation of coastal hazards was made clear by the damage cost associated with "Val" which reached as high as \$100 million.

Among other hazards, land slides are of great concern. A total of twelve land slides on Tutuila occurred in 1990, and the territory is currently facing an increased threat because of damage to vegetation and soil erosion resulting from and following hurricane "Val." Shoreline erosion is another problem in many areas of the islands. The 1980 American Samoa Shoreline Survey identified seventy-seven problem areas of which twenty-five were considered areas of "critical erosion" -- totaling 20,000 feet of shoreline. Tsunamis and earthquakes are somewhat less serious hazards because they have occurred with less frequency. However, the vulnerability of the island of Tutuila must be recognized as its spine consists of overlapping centers of early volcanic activity (Disaster Assistance Plan, 1978: A3).

Territorial management of coastal areas may be strengthened by giving explicit attention to these hazards and to the ways in which people can cope with them. In turn, the information, planning,

and management activities under the American Samoa Coastal Management Program (ASCMP) may contribute to wiser mitigation of these growing hazards.

Mitigation of Coastal Hazards in American Samoa

The threat of coastal hazards was ranked as one of the four most important coastal issues in American Samoa by EDPO/ASCMP Enhancement Grant Program Assessment (CZARA, Section 309). EDPO/ASCMP developed the Coastal Hazard Assessment and Mitigation Project (CHAMP) to address this issue.

CHAMP is an on-going effort, as already discussed in the earlier section on Program Profile of American Samoa, and its workplan is outlined in its Project of Special Merit (PSM) proposal. Through this program, EDPO/ASCMP has been developing new territorial regulations and procedures for hazard mitigation to be implemented both through the PNRS and at the village level. Disaster assistance and recovery was primarily through the *aiga* structure. Therefore, this project takes a participatory mode of approach which is both culturally and technically appropriate.

Objectives of the CHAMP

CHAMP consists of five primary objectives which are to assist the people of American Samoa to:

1. recognize potential coastal hazards;
2. avoid hazard-prone areas where possible;
3. utilize techniques to minimize hazardous effects;
4. increase ability to handle disasters with local resources; and
5. preserve *Fa'a Samoa* to the maximum extent possible.

Focusing on these objectives will allow the EDPO/ASCMP to take on a much more visible role in the land and water use decisions on-island, while at the same time placing more knowledge and ability into the hands of the people of American Samoa. Both of these are desired effects since: (1) the entire Territory is in the coastal zone; and (2) the local population has shown a willingness to deal with coastal problems as long as it can be done within the context of *Fa'a Samoa* (Grant Application under Section 309, 1995:30).

The proposed program changes to accomplish these objectives are:

1. The development of new regulations and permit processing procedures for hazard mitigation to be implemented through the Project Notification and Review System; and
2. The development of village hazard mitigation plans, village regulations, and village-based enforcement procedures.

In order to meet the five objectives mentioned above and to develop and implement the program changes, the following are the tasks required:

1. Review existing plans, policies and procedures with the Village Hazard Mitigation Task Force, FEMA, and TEMCO (Territorial Emergency Management Coordination Office).
2. Develop a territorial level regulatory program.
3. Provide for a participatory planning and management system at the village level.
4. Approve village plans, regulations, and enforcement procedures.

CHAMP is staffed by a senior participatory planning facilitator with extensive experience in working with village leaders in American Samoa, and a hazard mitigation technical specialist. . The village hazards specialist has been trained on the village hazard mitigation plans and ordinances, and is supposed to monitor developments for compliance with these plans and ordinances. The staff must work closely with not only existing EDPO/ASCMP staff but also officials from the Office of Samoan Affairs (OSA), the TEMCO, and village leaders throughout the Territory. The Village Hazard Mitigation Task Force has been established since October 1993 to guide, conduct, and provide assistance in village hazard mitigation activities within the Territory

CHAMP was originally designed as a three-year project, but due to its participatory planning approach, it has been so successful that further effort is needed for its future expansion.

Scope and Opportunities for Future Strategies

Because of the success as mentioned above, EDPO/ASCMP believes that CHAMP must continue. In essence, its present workplan consists of a continuation of the existing program with an anticipation that this will receive wide-spread public support and the program changes being proposed in this area are very likely to be adopted. Specifically, the objectives include:

1. to continue refining the village hazard mitigation ordinances and plans to ensure implementation, comprehension, and enforcement; and
2. to introduce the village hazard mitigation ordinances and plans to new areas of the Territory.

Village Mitigation Plans are development guidelines for a homeowner to follow mitigation measures which protect them against coastal hazards. These village hazard mitigation plans and management systems are based on the people's understanding of coastal hazard and the risks associated with building on steep slopes in nearshore areas, and in areas particularly subject to shoreline erosion, earthquakes, floods, and landslides. In these plans, regulations might include

village ordinances creating "buffer zones" which would prohibit building and activities on slopes identified as landslide hazard areas, or prohibit construction in shoreline areas vulnerable to storm surges.

EDPO/ASCMP believes that the people of American Samoa would definitely welcome an opportunity to actively participate in the development of village hazard mitigation plans. It is more likely because after Hurricane Val, public awareness was heightened with the widespread involvement of government agencies and individuals in relief and recovery efforts. With this perception, the authorities of CHAMP have formulated priorities which are to expand the concept to the 23 villages not included in the first round of planning (of which three are in the Manu'a Islands Group and the rest 20 villages were randomly picked) and to refine the program in the villages already included.

With the combined analysis contained in the Landslide Hazard Mitigation Study, the American Samoa Hazard Mitigation Plan, the Hurricane Hazard Mitigation Survey Team Report (1990), and reports produced by ASG and FEMA in the wake of Hurricane Val, EDPO/ASCMP has an established knowledge base upon which to develop village hazard mitigation plans. EDPO/ASCMP is also committed to working with FEMA to strengthen federal regulations and/or rules (such as withdrawal of insurance protection in high hazard areas) which could be used as leverage to gain greater village cooperation in management efforts.

4.5.4. Nonpoint Source Pollution

Introduction

Polluted runoff, or nonpoint source pollution (NPSP), refers to pollutants that enter a body of water as a result of water flowing over the surface of the land, such as rainfall and irrigation. Common runoff pollutants include soil, fertilizer, pesticides/herbicides, animal wastes, untreated sewage, oil, grease, litter, lawn clippings, and home lawn care chemicals. These and other pollutants end up in public waters all across the territory.

This is contrast to point source pollution which is water pollution that results from a discrete point such as a pipe, ditch, channel or tunnel. Examples of point source pollution in American Samoa are the cannery pipeline and Utulei Sewage treatment plant outfall that discharge into Pago Pago Harbor. NPSP is the pollution of the territorial waters caused by rainfall moving over and through the ground. As the runoff moves, it picks up and carries away natural pollutants and pollutants resulting from human activities, depositing them in lakes, rivers, wetlands, coastal waters and ground waters. In addition, hydrologic modification (channelization of streams and dams) is a form of NPS pollution that often affects the biological and physical integrity of surface waters. These type of structures change the ability of natural systems too absorb hydraulic energy and filter pollutants form surface waters.

(A.S. Coastal Nonpoint Pollution Control Program, 1995, pg. 4)

Other byproducts of urban runoff that adversely effect human health are coliform bacteria, viruses, pesticides, fertilizers and heavy metals. If these factors need to be present in moderately

large quantities, they may lead to increased disease from aquatic recreation, algae blooms, fish kills and destroyed marine habitats. Invariably, most nonpoint pollution results from human activity on the land and is thus preventable.

For American Samoa, not only are quality coastal waters important for the health of its inhabitants, they also affect potable water supplies, fisheries and irrigation supplies for farming. In addition, the local inhabitants use nearby coastal waters for swimming, boating, fishing, and skin diving.

There are six main subsections that make up the Nonpoint Source Pollution Management Program (American Samoa Coastal Nonpoint Pollution Control Program 1995) to control this pollution problem. These six categories are consistent with the Federal Mandates listed in Sec. 6217 of the Coastal Zone Management Plan, NOAA/EPA. These are: Agriculture, Forestry, Urban Areas, Marinas and Harbors, Hydromodification (the alteration of streams and rivers) and Wetland and Riparian Areas.

Of the six categories contained in the Federal requirements we will focus on five of the categories, Agriculture, Urban Areas, Marinas and Harbors and Hydromodification and Wetlands. As for forestry, according to the American Samoa NPSP report, it is not a significant presence on Tutuila or any of the surrounding islands. Therefore there is little discussion on its NPSP impacts.

Status and Trends

NPS pollution is considered dangerous and thus the federal government requires its mitigation and control. Mitigation of NPS pollution is not difficult, however it does require funds, enforcement, education and a commitment to diminish its negative effect on humans and wildlife.

The July 1995 American Samoa Coastal Nonpoint Source Pollution Control Program described how A.S. intended to meet the requirements of Section 6217 (which mandates NPSP management). The EDPO/ASCMP is cooperating with the American Samoa Environmental Protection Agency and other local agencies on the development of the program to meet the federal requirements in program implementation. Again, what makes this difficult (for all US coastal territories) is the reduction of federal dollars to aide in the implementation and maintenance of NPSP management programs.

Problem facing American Samoa:

The problems that American Samoa faces is similar to those found in Hawai'i, Guam or the Northern Marianas - a fragile tropical island ecosystem highly susceptible to the negative effects of urbanization and over population. An administrative problem which greatly effects most federal funded environmental programs is how to implement a NPSP program in an era of budget cutbacks. American Samoa is more susceptible to budget cutbacks because of its dependency on

federal funding. In addition, with the rapid urbanization of many parts of American Samoa, future urban runoff pollution will get worse. Combine this with a small island area and a limited area in which urbanization can occur then the concentration of NPSP can be great. The question affecting American Samoa is how to deal with the negative aspects of this problem (in the field of human health, damage to the ecosystem and damage to the potable water supply).

Status of Current Program

As of 1995, American Samoa's NPSP program has been in the analysis and implementation phase. NPSP has received increasing attention at the national and local levels as point sources of pollution have been controlled in the last twenty years through the Clean Water Act.

Nonpoint source pollution control did not become a priority until 1988 after enactment of Section 319 of the Clean Water Act mandating development of nonpoint source management by states and territories. The American Samoa Environmental Protection Agency (ASEPA) developed and is implementing the program for the territory of American Samoa. In 1990, the Coastal Zone Act Reauthorization Amendments (CZARA) Section 6217 required states to develop coastal nonpoint programs. The ASEPA and EDPO/ASCMP are now cooperating to develop and implement a joint nonpoint source program to meet the mandates of CZARA section 6217. (A.S. Coastal Nonpoint Pollution Control Program, 1995: 13).

The goals and objectives of American Samoa's program include:

- (1) To review the existing nonpoint source pollution controls and their adequacy.
- (2) To identify the nonpoint sources specified by Section 6217 and their applicability in American Samoa.
- (3) To provide management measures and best management practices to meet those measures for identified nonpoint sources for American Samoa.
- (4) To describe effective mechanisms and time schedules to implement management measures for the identified nonpoint sources.

For a complete list and discussion of the subcategories, sources and complete aspects of the Nonpoint Source Pollution Program, consult Appendix B.

Conclusion

The most serious targets of polluted runoff are those areas where people, marine life or wildlife rely on for food, shelter or portable water usage. Wetlands contain a variety of wildlife, fishes and rare plants. They are an important source for deep well drinking water. Pollutants not only effect plant life, marine resources (which local inhabitants depend on for food), and they seep underground and contaminate underground waters. The question is not whether NPSP mitigation programs are important for it is a federal mandate. In the era of budget cutbacks, the key issue is

how important is what other programs, funds or agencies can take over many of the functions and responsibilities that the CZM program now holds. The most obvious agency would be the American Samoa Environmental Protection Agency. It could take over much of the more crucial work, especially monitoring and enforcement duties.

4.5.5. Marine Debris

Introduction

Marine debris is a problem of international proportions and significance. This is a problem that is readily apparent by just looking at any coastal area, where litter and solid waste lay on beaches, endanger marine and wildlife and diminish an areas natural beauty. The tropical climate of many of the Pacific Island states, including American Samoa, allow for year round use and enjoyment of the coastal waters in water-related activities and sports. However, much of this human activity generates a vast amount of litter. If the amount is excessive, debris pollutes water, causes safety concerns, and harms human health. Due to the location of American Samoa, it is difficult to determine the exact origin of the debris. Not only do debris come from local residents and visitors, it can also be traced to commercial fishing vessels. Much of the debris consists of glass bottles, fishing gear, floats and nets. Fish waste can also present a problem, in addition to improperly disposed solid wastes.

The primary marine debris byproduct is plastics. However, other debris such as paper, metals, wood, cloth and rubber can also be a problem.

Status and Trends

The policy for marine debris falls under two categories: (1) localized policies; and (2) National/International policies and controls.

Under international law the Marine Pollution Act (MARPOL) prohibits all ships from disposing plastics, garbage, and other harmful substances into United States waters. The United States Coast Guard (USCG) is the lead MARPOL enforcement agency. The USCG also ensures that commercial boats have proper waste management systems on board (Commonwealth of the Northern Marina Islands Coastal Resources Management Program, 1993: 48).

Another federal law which governs and regulates marine debris is the Marine Protection, Research and Sanctuaries Act. This act regulates the dumping of material into ocean water and prohibits ocean dumping without a permit. The Rivers and Harbors Act of 1899 and the Refuse Act prohibit the discharge of refuse of any kind into navigable waters, tributaries or upon coastal or river banks. The majority of these acts or enforced by either international agencies or the US Coast Guard.

One of the drawbacks to the international control of nearshore ocean dumping is the lack of monitoring agencies and manpower. The Pacific is a vast expanse and it is difficult for the Coast

Guard and other international agencies to monitor the region. Manpower constraints can inhibit proper enforcement and safeguards of debris entering near and far shore waters.

Problems Facing American Samoa

The causes of problems facing American Samoa in the area of marine debris are very similar to that of nonpoint source pollution and wetland destruction. Rapid urbanization, population growth and limited space to accommodate the strain on resources and the environment. With an increased population comes a larger waste stream. It is possible that the proper disposal of trash may be hindered by a strain on government resources. Without proper collection and disposal of trash, and without educational policies that would enlighten the population concerning activities that are harmful to their island's environment, the marine debris problem will probably get worse. Therefore it is vital for American Samoa to enact strict policies to control marine debris. These policies include not only proper collection and disposal of waste, they also involve educational programs, and monitoring and enforcement of waste management control measures. In addition, international fishing fleets and long-voyage vessels must be monitored in order to eliminate illegal ocean dumping far out at sea.

Status of Current Program

The Marine Debris program is funded under Section 309 of the Coastal Zone Management Act, American Samoa does have a local policy in place. It is a multi-faceted program that deals with solid waste management (which include volume estimates and waste consumption), education policies to better inform the local populace, litter control programs, monitoring illegal ocean dumping, recycling programs, beach and highway clean-up, legislation initiatives (such as a "bottle-bill", or the banning of imported goods that may be harmful like plastics and disposable diapers).

Solid Waste Disposal

Solid waste disposal is an important component of marine debris control. Essentially, improper disposal of waste products eventually leads to the pollution of surface waters (Nonpoint Source Pollution) or litters beaches and nearshore coastal areas (marine debris). To better understand the concept of waste disposal you must first analyze (1) waste composition and (2) volume estimates. Aside from proper waste disposal there are waste stream reduction mechanism policies such as recycling.

Waste Composition

Approximately 16,315 tons of waste were disposed in American Samoa in 1996. This estimate is based on a generation rate of 1.65 pounds per person, per day with a 1996 census population of 54,250. Of this, paper constitutes nearly 48.5 percent of the total waste stream, by weight (Waste Characterization Study By Cal Recovery, American Samoa, March 1996: Table 4).

Bottles, aluminum cans, and plastics constitute only 13 percent of the total waste stream. However, they are among the most visible forms of marine debris in American Samoa.

Volume Estimates

Waste composition is likely to change over the planning period. However, it is difficult to forecast the types of changes that may occur. Changes in waste composition may be due to a variety of factors including the local economy, technological developments, consumer purchasing trends, local legislation and new packaging practices (Final Report Recycling and Reutilization Study for American Samoa, March 1992: pg. I-4).

According to the above mentioned report, by 2001 it is estimated that waste volume will be over 39,500 total tons per year.

Localized control of marine debris can be greatly enhanced by the proper disposal of solid and toxic wastes. There was some discussion of education of residents and tourists to enhance the proper disposal of solid wastes, as well as the establishment of a recycling policy of plastics, aluminum, glass and paper.

The most effective measure to address the problem of marine debris is education. The practicum team does not have any hard data on what percentage of marine debris is caused by residents and what percentage is caused by commercial fishing vessels, and what percent from floatable debris that has drifted from longer distances.

Educating the people, as well as ensuring proper collection of disposable items should have a clear effect on this problem. American Samoa has a number of large landfills on the island. The largest being the Futiga landfill. It is questionable to what effect a recycling program would have on marine debris, however it would reduce the amount of solid waste that was disposed of in landfill areas.

Recycling Program

The practicum team has obtained preliminary data on the amounts of recyclable goods generated by the citizens of American Samoa based on visual inspections of Futiga Landfill, solid waste generation forecasts for the years 1991-2001 and population projections. Recyclable goods include: aluminum cans, corrugated cardboard, glass, newspaper, PET (polyethylene terephthalate) plastic bottles, steel cans and white goods. The Final Report Recycling and Reutilization Study for American Samoa, March 1992, reported the following:

1) Aluminum Cans

In 1990 approximately 20,318,400 aluminum cans were imported to American Samoa by the primary soda and beer distributors. There were approximately 28 cans per pound, which translates into 362.8 tons.

2) Corrugated Cardboard

Little information was available on corrugated cardboard. It is likely that corrugated cardboard makes up a larger percentage of the wastestream than is typical in the mainland US simply because of the shipping requirements to an island nation. Star-Kist Samoa, Inc. estimated that corrugated cardboard comprised 60 percent of their wastestream. This converts to approximately 16,272 cubic yards of waste generated each year.

3) Glass

In 1990 2,688,000 glass soda and beer bottles were imported to American Samoa. According to calculations from the Glass Packaging Institute, there are approximately 4,000 glass bottles per ton, which converts to 672 tons of glass imported. Vailima Beer imports 120,000 bottles per month to American Samoa and nearly 95% are recycled and returned to the company.

4) Newspaper

The total quantity of newspaper imported by Samoa News and Samoa Journal is nearly 112.5 tons per year.

5) PET Plastic Bottles

None of the primary soda and beer distributors indicated that PET plastic is imported at this time. Some of the distributors did, however, indicate that they will be importing PET plastic in the near future. It was noted in the report that there were many PET bottles disposed in the landfill.

6) Steel Cans

Star-Kist estimated that steel cans and scrap metal comprised approximately 5% of the volume of their wastestream. Therefore of the 16,272 cubic yards generated yearly, nearly 814 cubic yards are steel cans and scrap metals.

7) White Goods

White goods include large appliances such as refrigerators, clothes washers and dryers, hot water heaters, air conditioning and stoves. The report estimated that 142 tons of white goods are generated each year.

Recycling reusable material is a fine idea if markets (i.e., manufacturers and producers of recyclable goods) can be obtained for use of these materials. Conventional wisdom states that presently there is an over supply of this material and not enough end users of such material (except possibly for aluminum cans).

In order for a recycling program to be cost effective definite users must be found before a program of this magnitude could be initiated or the efforts might be futile. Such a program, if it could provide incentives for islanders to collect and properly dispose of such goods, would ensure the diversion of this material out of the wastestream (which would alleviate pressure on the Futiga Landfill). If incentives were in place, it would also assure that much of the marine

debris that affects the coastal areas would be cleaned up and taken to recycling collection areas. Therefore, things like aluminum can or glass collection with financial rewards would reduce, to a certain degree, these materials from Samoa's beaches, streambeds and wetlands.

However, in order for financial incentives to be in place it would require that manufacturers, the private sector or government agencies be willing to pay for such material and that they could be collected in an orderly and profitable manner. This might not be possible for such things as newspaper, cardboard and white goods. Due to the federal cuts that are envisioned for American Samoa, it may be beneficial for EDPO/ASCMP to allow other government agencies to take the lead in establishing and maintaining recycling programs and waste disposal (possibly DPW).

Banning of Some Disposable Goods

During the mini-workshop there was also some discussion on banning disposable products in American Samoa such as diapers, plastics and some paper products. Although this policy would reduce the solid waste stream (decreasing the stress on landfills, incinerators or off island), it is uncertain whether this will have any definite impact on marine debris. Again the most effective program to eliminate marine debris is proper disposal of trash. Allocating numerous and accessible public trashbins throughout the islands and public awareness will probably be more cost effective and efficient. In addition banning non-recyclable products such as diapers and some plastics may cause inconvenience to residents. If such policies are going to be considered there must be some determination on how effective it will be.

Conclusion

Marine debris is an increasingly serious problem in American Samoa. The problem of marine debris is being addressed and can be shared by many agencies including public schools, churches, public and private sector involvement and environmental and anti-litter awareness campaigns. Such programs will make the public aware that people are causing the problem and they can stop it by becoming more aware of what they are or are not doing.

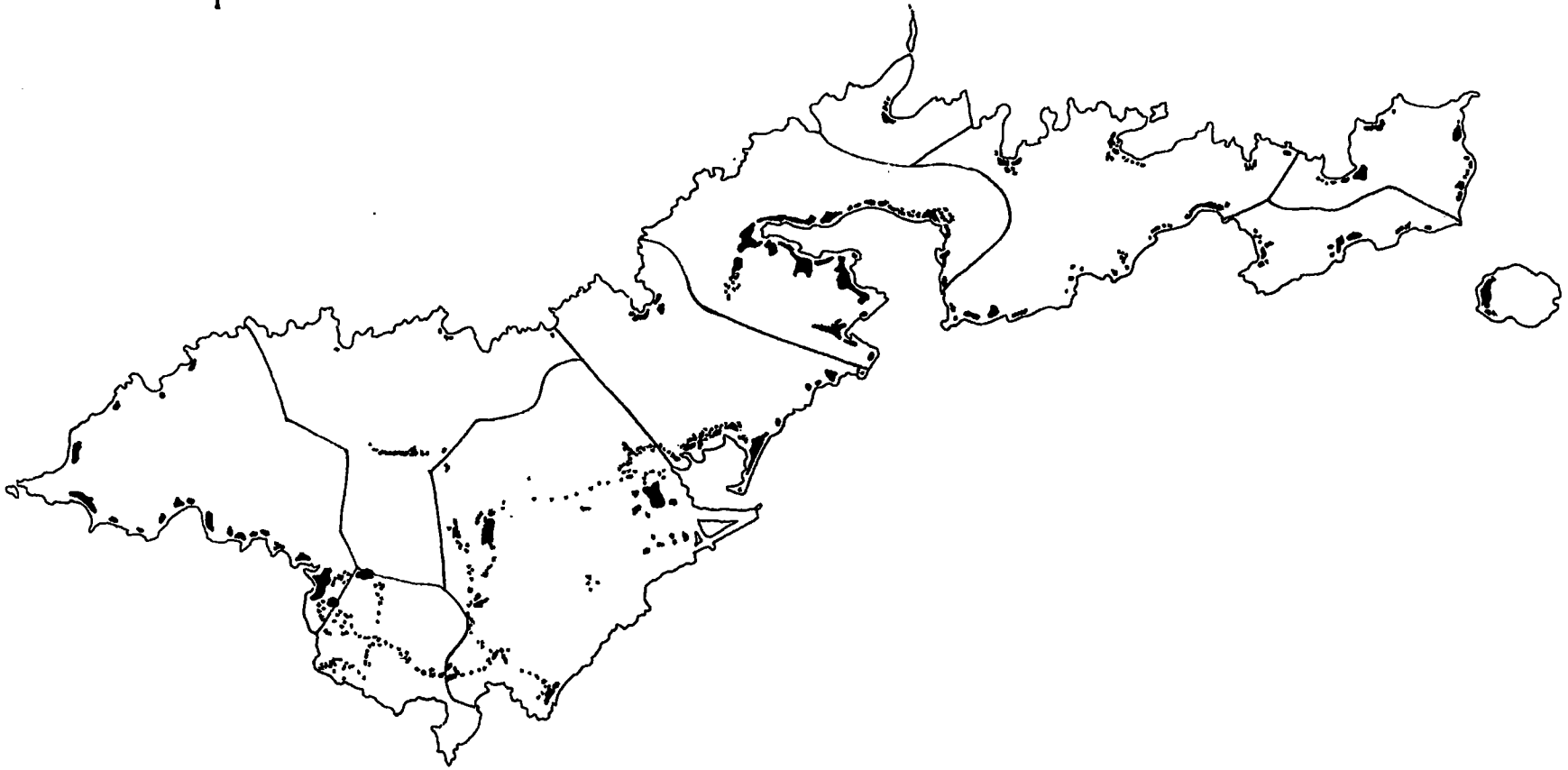
In addition to implementing the mini-workshop findings, there are other steps that American Samoa's CZM program can do to strengthen and improve marine debris controls. Following the example the Commonwealth of the Northern Marianas, policy makers may want to consider the following:

- (1) The production, distribution and dissemination of commercials, pamphlets and public service announcements that demonstrate the need for public participation in helping preserve the natural environment and coastal areas.
- (2) The institution of community and citizen monitoring and reporting of suspected illegal dumping. This policy could utilize private boat owners, dive clubs and fisherman to monitor other vessels while at sea. This approach could alleviate the lack of monitoring by officials who are encumbered by lack of manpower and funding.

(3) The institution of marine debris source study to determine and identify the origin of marine debris affecting American Samoa's coastal areas.

Comprehensive approaches to regulatory and non-regulatory methods for ensuing compliance with current laws and guidelines on protection of the coastal environment is vital to American Samoa's ecology and economy (e.g., the development of tourism). Marine debris should be a top priority for American Samoa's governmental agencies. Vigorous enforcement, public education and community involvement are important factors. In addition, EDPO/ASCMP may want to consider transferring much of the responsibility for enforcement and monitoring to the villages, other country agencies and the American Samoa EPA.

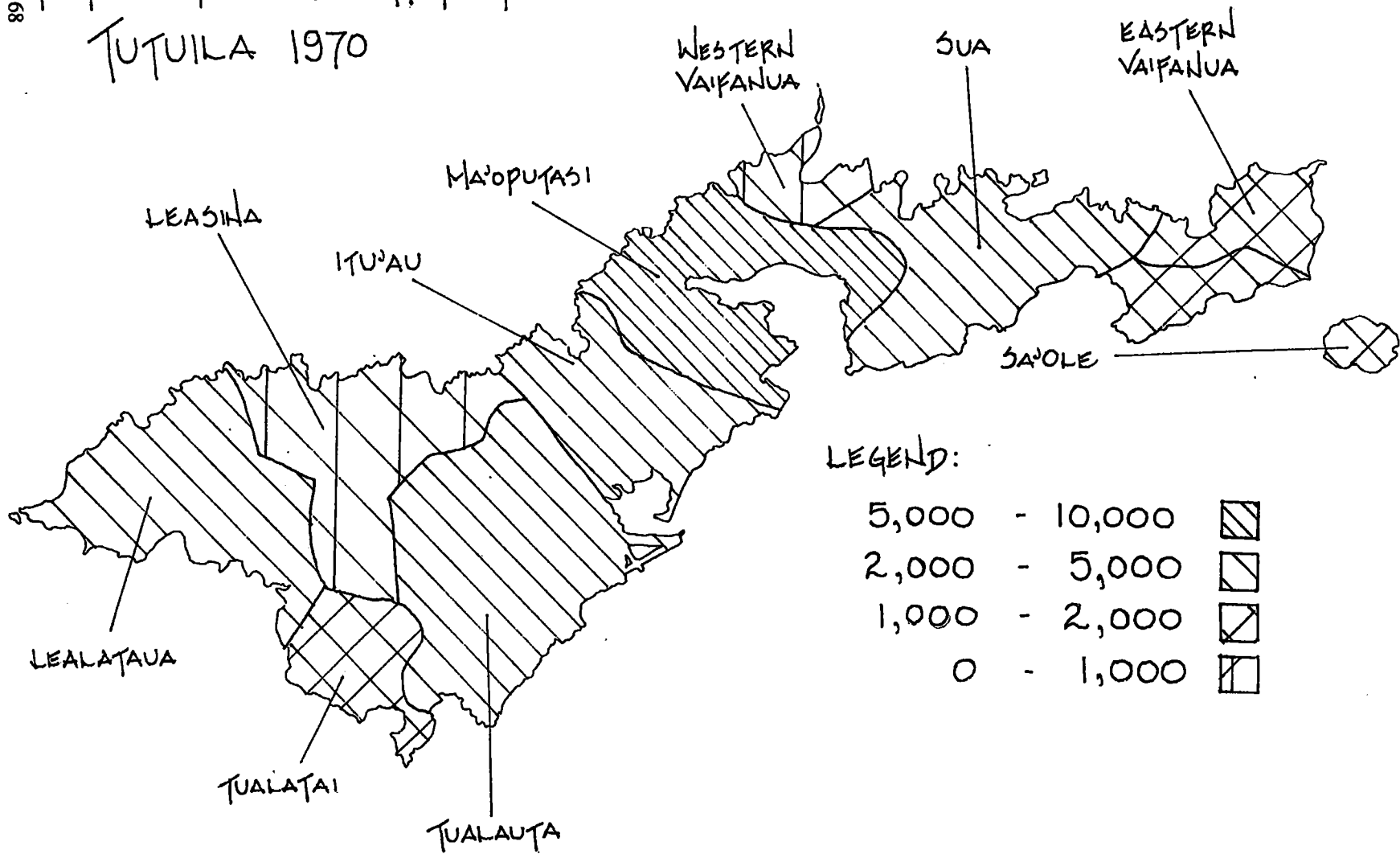
SETTLEMENT PATTERN 1981
TUTUILA



Map 4.1. Settlement Pattern: Tutuila 1981

SOURCE: ATLAS OF AMERICAN SAMOA
1981

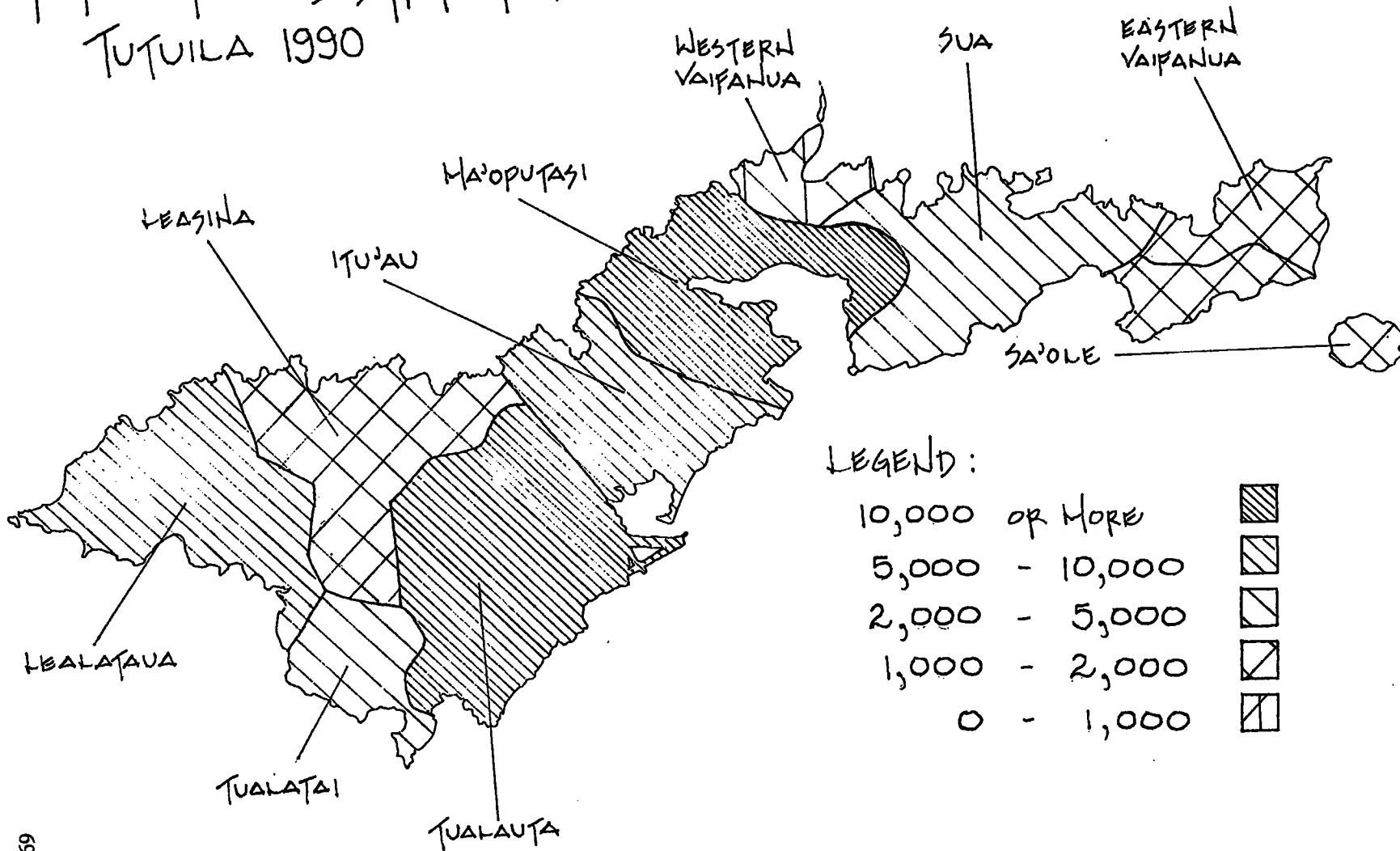
68 POPULATION DISTRIBUTION:
TUTUILA 1970



SOURCE: AMERICAN SAMOA STATISTICAL DIGEST
1994

Map 4.2. Population Distribution: Tutuila 1970

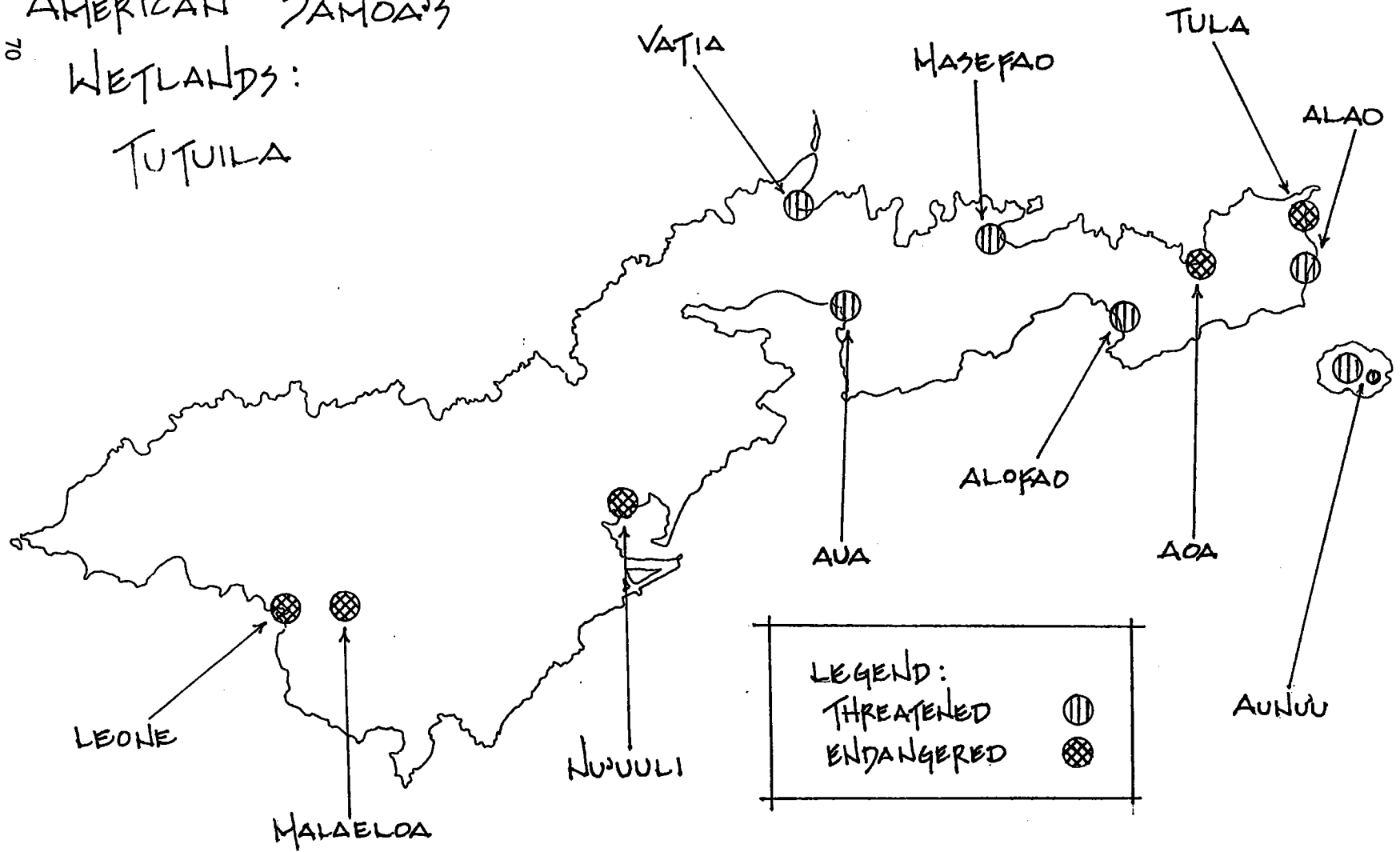
POPULATION DISTRIBUTION: TUTUILA 1990



Map 4.3. Population Distribution: Tutuila 1990

SOURCE: AMERICAN SAMOA STATISTICAL DIGEST
1994

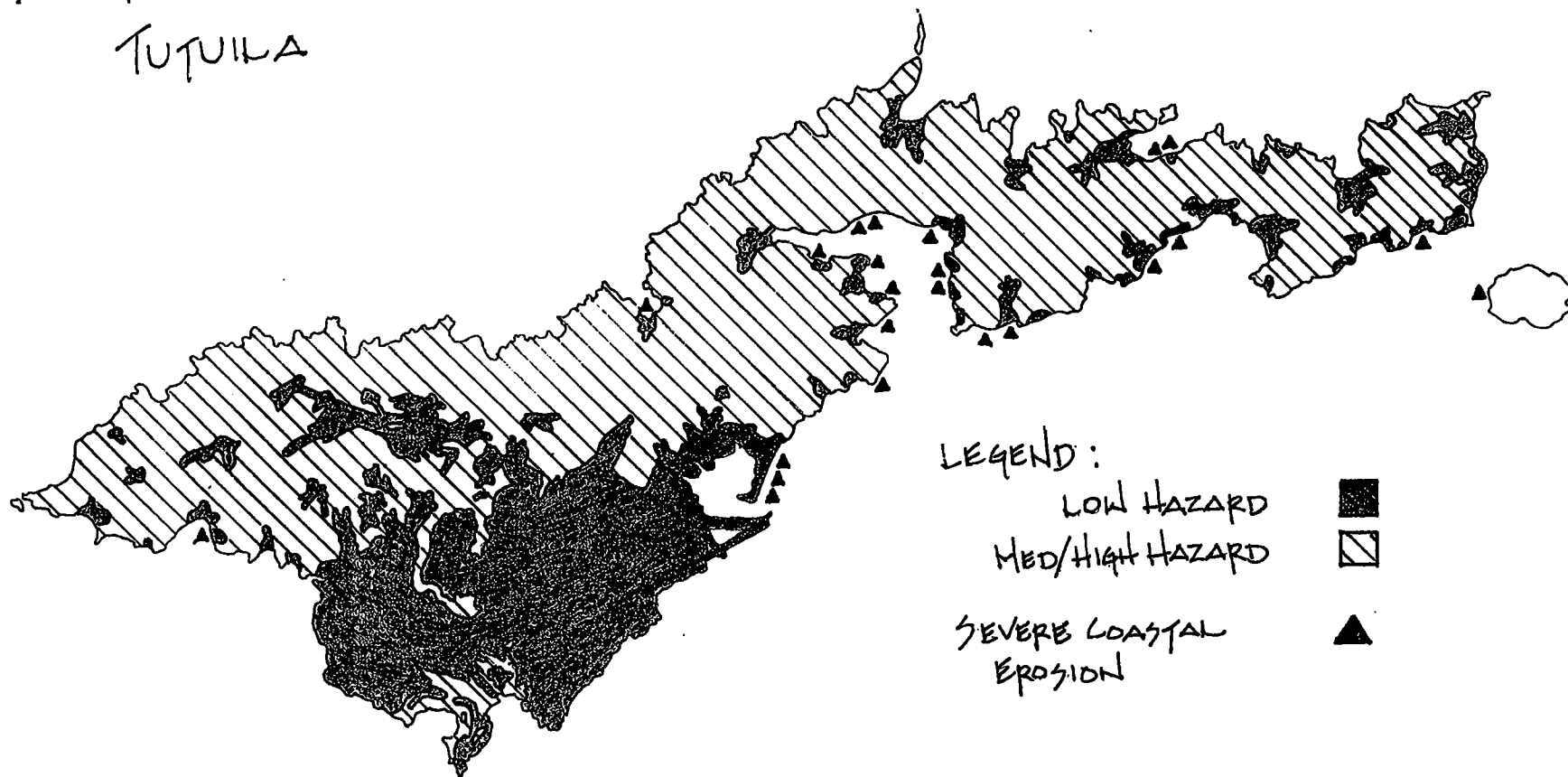
70
 AMERICAN SAMOA'S
 WETLANDS:
 TUTUILA



Map 4.4. Wetlands: Tutuila

SOURCE: AMERICAN SAMOA'S WETLANDS
 1992

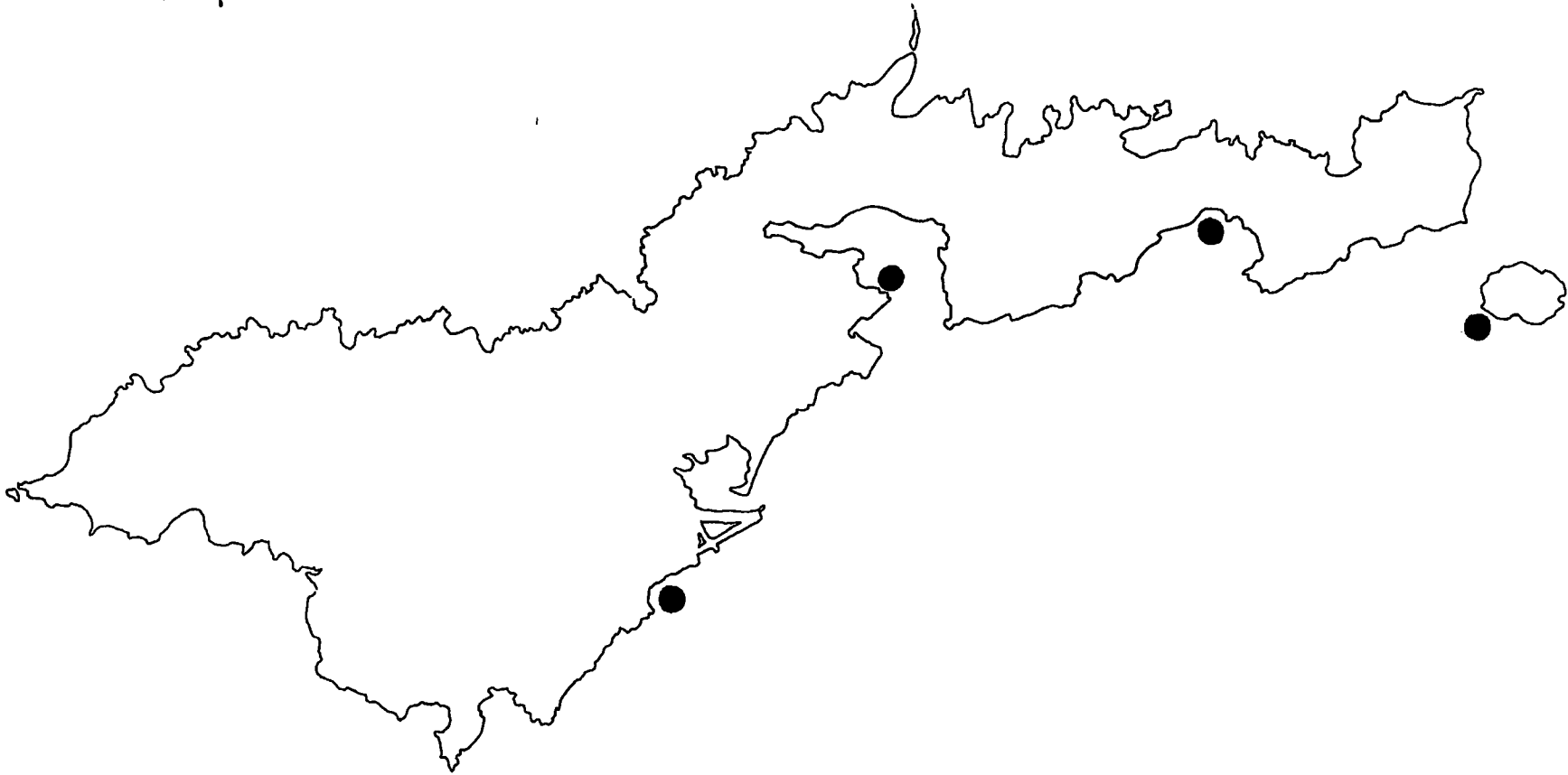
LANDSLIDE HAZARD ZONES, 1990
 SEVERE COASTAL EROSION, 1981
 TUTUILA



LEGEND:
 LOW HAZARD [solid black square]
 MED/HIGH HAZARD [diagonal lines square]
 SEVERE COASTAL EROSION [triangle]

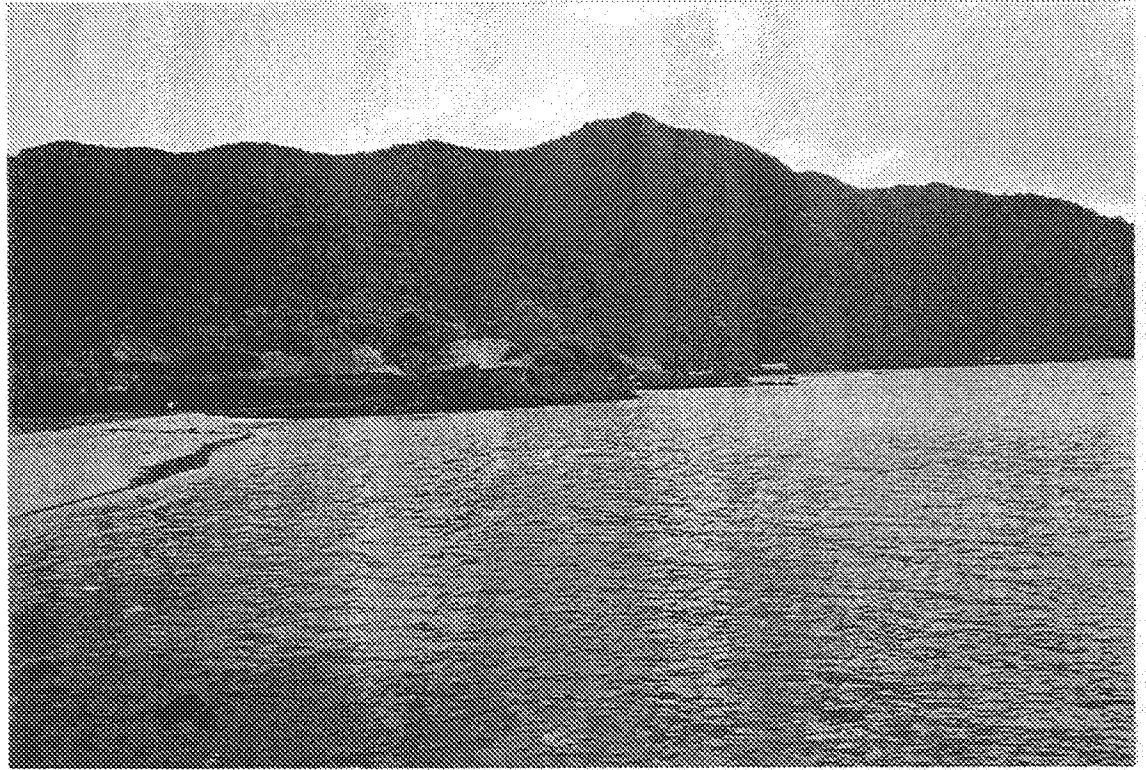
Map 4.5. Landslide hazard zones 1990; Severe coastal erosion 1981

72 SEWAGE OUTFALL AREAS 1981
TUTUILA



Map 4.6. Sewage outfall areas: Tutuila 1981

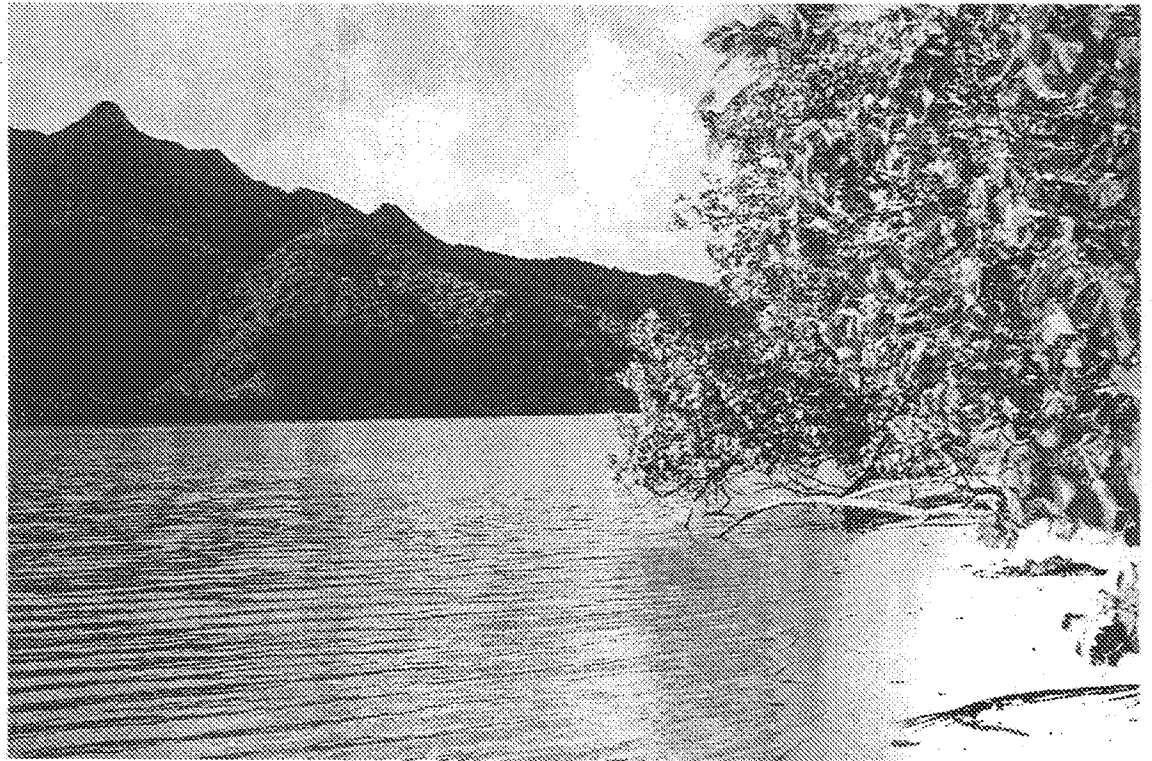
SOURCE: ATLAS OF AMERICAN SAMOA
1981



Picture 4.1 Rainmaker Hotel at Utulei

Picture 4.2 Pago Pago Harbor: Shoreline

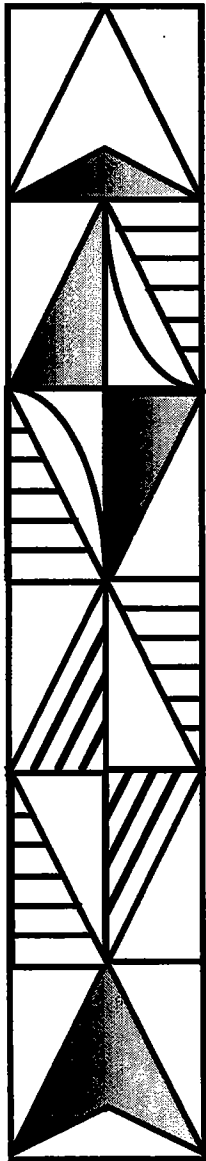




Picture 4.3 Pala Lagoon

Picture 4.4 Vaitagi Village, Tafuna Plain





5. FINDINGS

*E lele le toloa ae ma'au
i le vai.*

*(The grey duck may fly from one
direction to another but will always
return to the swamp.)*

(There's no place like home.)



5. FINDINGS

5.1. Introduction

This section will present the findings of the two day workshop which was conducted by EDPO/ASCMP and the students of the University of Hawai'i at Manoa Urban and Regional Planning Department and Dr. Mike Hamnett of PBDC on March 27 and 28, 1996. The purpose of the workshop was to get input from a wide range of people who have a stake in coastal zone issues in American Samoa with the objective of exploring ways to restructure EDPO/ASCMP in order to enable the program to continue to carry out its mandate to conserve coastal resources. Participants of the workshop included a number of actors from government agencies, non-governmental organizations, the clergy, and community groups. For a comprehensive description of the activities of this workshop, please refer to the methodology section.

The findings are divided into six sections, based on the six major programs of the EDPO/ASCMP. These are:

1. The Project Notification Review System
2. The Education/Awareness Program
3. The Community Based Wetlands Management Program
4. The Coastal Hazards Assessment and Mitigation Program
5. The Marine Debris Program
6. The Nonpoint Source Pollution Program

The information contained in the findings is based entirely on the information which was collected from participants during the workshop. It is presented both in tables and in summary form.

Below is a brief description of the steps in the workshop and the data which was collected.

STEP I. Profile and Trends

This step consisted of information on a profile of EDPO/ASCMP, current and future trends of human activities in American Samoa and their impact on the coastal zone, and the future budget scenarios of the EDPO/ASCMP. No data collection was performed during Step 1.

STEP 2. Visioning Future Strategies

The information in this section was gathered in a "Strengths, Weaknesses, Opportunities, Trends" exercise. In this exercise, participants were asked to assess the strengths and challenges of EDPO/ASCMP program areas, opportunities for the future, and possible future tasks that participants believe will improve the program. This information was recorded on large sheets of paper. The charts entitled **Data From Step II** consists of the information which participants recorded during this step at pages 79, 85, 90-91, 97, and 102.

STEP 3. Identifying Actors

Participants identified new agencies or groups which might help the EDPO/ASCMP continue to protect the coastal zone with less funding from the federal government. They were given a chart showing the current tasks of the programs. Participants then named organizations and groups which could help perform these tasks and drew lines to the tasks they can help with. These charts, and the information written down by participants, are presented in the chart entitled **Data From Step III at pages 80, 86, 92, 98, 103, and 110.**

STEP 4. Scenario Building

Participants began to assign new tasks to agencies, organizations, or groups that might be able to take some responsibility for helping to manage the coastal zone. Some ideas for this reallocation of tasks are presented in the chart entitled **Data From Step IV at pages 80, 86, 92, 98, 103, and 111.**

5.2. Findings from Workshop

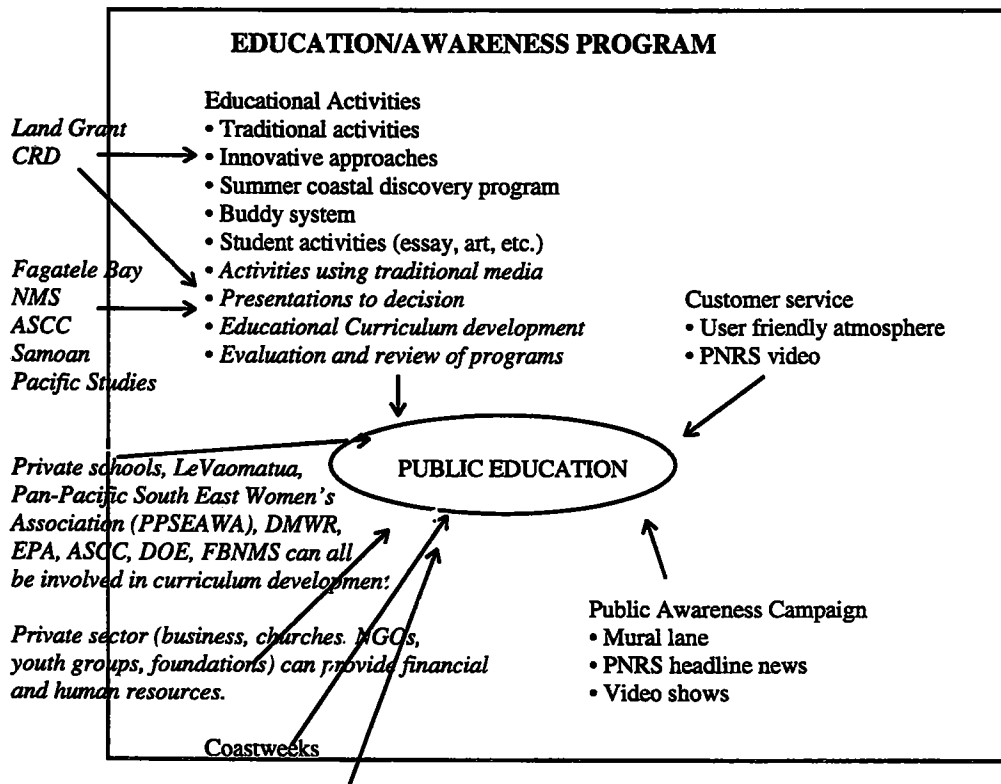
5.2.1. Education/Awareness Program (§ 306)

DATA FROM STEP II.

STRENGTHS OF CURRENT PROGRAM	CHALLENGES OF CURRENT PROGRAM*
<ul style="list-style-type: none"> • Activities of program are intersectoral-they have many different actors involved (e.g. students, community organizations, private sector). • A comprehensive, integrated approach to planning is reflected in the approach to educational activities and the follow up to the activities. • The activities target a broad audience in the community. • The program uses a culturally appropriate approach to education. 	<ul style="list-style-type: none"> • Public perception of EDPO/ASCMP roles in the community is sometimes negative. • Some are skeptical about the education/awareness program, see it as eroding <i>Fa'a Samoa</i>. • People sometimes do not want to hear the message, if it impacts them. e.g. about the need for regulation through the PNRS. • Regulations restrict use of innovative methods, such as the use of culturally appropriate approaches. • It is sometimes difficult to translate Western ethics into a culturally appropriate idiom. • Some areas of American Samoa are remote, and therefore difficult to access. • There is an increasing number of 'non-stakeholders' in the community (e.g. minorities, Western Samoans). • It is difficult to make people involved in decision making in both the public and private sector accountable for their actions. • It is sometimes difficult to obtain consistent support from the village leadership.

OPPORTUNITIES FOR FUTURE STRATEGIES	FUTURE TASKS
<ul style="list-style-type: none"> • Strive for stronger integration between EDPO/ASCMP programs and village traditional system. • Enhance <i>matai</i>, village leadership participation. • Develop traditional media materials (songs, performing arts) to educate people about the environment. • Bring those who are not a part of the traditional land use system (minority groups, non-locals) into programs by using a multi-cultural approach. • Educate decision makers as to their responsibilities to the coastal environment. • Educate all actors from all sectors in the community. 	<ul style="list-style-type: none"> • Develop materials to incorporate traditional media into education. • Develop outreach program for 'non-stakeholders' (minorities, non-locals). • Develop presentations for decision makers. • Develop educational curriculum for schools. • Develop instruments to evaluate, review, and streamline educational activities.

DATA FROM STEP III.



EDPO/ASCMP: Educational Activities for specific EDPO/ASCMP projects

Note: According to the workshop participants, organizations and groups presented in italics in this chart could help performs the tasks identified by the arrows.

DATA FROM STEP IV.

TASKS	AGENCIES
Coastweeks	Private sector, various agencies, village councils
Educational activities	DOH, ACE, NSF, DOE, ASCC, ASEPA, others
Curriculum Development	Private schools, Le Vaomatua, DMWR, EPA, PPSEAWA, ASCC, DOE, FBNMS, Land Grant, CRD
Traditional Media Activities	FBNMS, Land Grant, CRD, ASCC
Presentations to Decision Makers	FBNMS, Land Grant, CRD, ASCC
Evaluation and Review of Program	FBNMS, Land Grant, CRD, ASCC

Findings

Participants expressed the view that educational activities are among the most important endeavors undertaken by EDPO/ASCMP. Increasing awareness among the people of American Samoa is critical to the implementation of environmental policies, and also in making people aware of their individual responsibility to preserve the coastal environment. However, participants also emphasized the need for cultural sensitivity in educational activities.

While there is a need to continue the mission of the Education/Awareness Program, there are a number of opportunities to streamline the education/awareness component through increased cooperation and coordination with other public and private sector groups involved in educating the public. In addition, a number of strategies for raising additional funds to supplement federal funding were discussed.

Evaluation of Current Program

The discussion of the evaluation of the Education/Awareness Program focused on several issues which participants felt were key to the program's success:

- The approach of the educational activities, particularly the use of culturally appropriate methods.
- Coordination of educational activities with other organizations doing environmental education.
- The effectiveness of the program in reaching all members of the community.
- The effectiveness of educational activities in furthering the goals of the American Samoa Coastal Management Program, and mechanisms for measuring effectiveness.

Participants expressed the opinion that the program had done a good job of developing innovative, culturally appropriate approaches to education which attempted to reach a broad audience in the community. Furthermore, the program had succeeded in getting a broad range of actors involved in all of its activities. This is especially true of Coastweeks, which enlists the support of a number of government, community, and non-governmental organizations, student groups, and private companies. Participants felt that the educational activities demonstrated a comprehensive approach to planning which thoroughly addressed a broad range of issues.

While the participants agreed on the success of the program in the areas mentioned above, they also felt that there were a number of challenging issues facing the program. Many of these issues were related to the difficulty of introducing non-indigenous concepts of resource management in an appropriate and culturally acceptable way. One of the issues mentioned was the difficulty of bringing what is sometimes an unpopular message to villagers. Villagers have sometimes been resistant to educational programs due to skepticism about the role of EDPO/ASCMP programs, such as the PNRS because of perceived conflict with the traditional land tenure system. This has led to some difficulty in obtaining consistent cooperation from villager leaders. Another concern which was expressed was the difficulty of translating Western approaches to resource management into a cultural idiom appropriate to American Samoa.

Participants also expressed the need to educate decision makers in both the public and private sector on their responsibilities in environmental conservation. It was noted that the government and the private sector frequently engage in activities which are damaging to the coastal zone. In addition, increased awareness of the importance of EDPO/ASCMP activities among decision makers in the public and private sector might lead to needed support for the EDPO/ASCMP.

Another area of concern was the growing number of 'non-stakeholders', people who were not born and raised in American Samoa and were therefore perhaps not adequately reached by the educational activities of the program. Such groups include minorities and Western Samoans. It

was felt that these members of the community, who may not have close ties to traditional village authority systems, might not be reached by the village based approach to education currently being used.

Opportunities for the Future

Based on the evaluation of the program, participants came up with a number of possible future strategies and tasks which might strengthen the implementation of the Education/Awareness Program. The discussion focused on a number of strategies, including: strategies to increase the effectiveness of educational activities, particularly through the further development of culturally appropriate approaches; and strategies to broaden the target group of educational activities to reach groups not currently being served.

Participants felt that environmental education could be more effective if EDPO/ASCMP programs were more thoroughly integrated with the traditional village system. One possible strategy mentioned was to further bring the village leadership, and particularly the *matai*, into the planning process. While it was felt that the EDPO/ASCMP had made significant efforts in this area, participants noted that the merging of traditional village authority systems with centralized regulatory systems was an evolving process which required continual review and adjustment.

One specific suggestion on how to make educational programs more culturally appropriate was to develop educational materials which use traditional media such as songs and performing arts. Other suggestions for ways to increase the effectiveness of educational activities was to develop a curriculum for environmental education for schools.

Participants discussed strategies to develop a multi-cultural approach to education in order to reach a broader audience. One future task suggested was to develop an outreach program specifically targeting minority groups and Western Samoans. Another future task was to create an intersectoral advisory council made up of different actors from the community. Some felt, however, that the coordination of such a group might create considerable logistical problems.

While there has been an excellent level of participation in many of the Education/Awareness Programs activities, participants expressed a need to have some kind of method to evaluate whether the message of environmental campaigns was really getting through to people. Participants therefore suggested the development of instruments to evaluate, review, and streamline educational activities.

Finally, participants discussed ways to educate decision makers on their responsibilities to the environment, such as through the development of presentations for people in both the public and private sector.

Co-Management Opportunities

There are a number of possible ways that the financial burden of educational activities could be lightened through increased sharing of resources between agencies, through co-management, and by seeking alternative sources of funding.

Participants felt that educational activities could be made more effective and the cost to EDPO/ASCMP could be decreased through increased coordination and cooperation with other public and private groups involved in educational activities. In particular, there is an opportunity to share resources by using Le Tausagi as a coordinating body. This could involve expanding Le Tausagi to include representatives from other departments. Some of the educational activities of the EDPO/ASCMP could be carried out by other agencies using money obtained from various federal sources which these agencies might qualify for. This would decrease the cost for educational activities of EDPO/ASCMP. Another idea was to expand the core coordinating group to get more participation from youth groups, churches, and non-Samoan ethnic communities, OSA/*aumaga*, village groups, business and professional women, and athletic groups. There is also a need to increase coordination of data collection and analysis efforts among agencies. One idea presented was for a number of agencies to cooperate to develop a position papers on environmental issues.

Participants also discussed ideas for increasing participation of a wide range of groups in the development of education and awareness programs. One idea was to have an advisory council or task force on education composed of representatives of various interest group and communities.

A number of ideas were discussed for possible alternative sources of financial and technical support. One idea discussed was to fund education and awareness activities with fines obtained through civil action. Another idea was to seek support from celebrities as well as from industries with environmental programs or interests. Participants also noted that there are a number of possible sources of funding for educational activities, including grants from the federal government and foundations, which EDPO/ASCMP could pursue. Finally, participants felt it was important for the ASG to consider local appropriation of funds for EDPO/ASCMP activities.

Participants also felt that there was a need to increase awareness of EDPO/ASCMP programs in general in order to obtain alternative sources of funding. In particular, an awareness campaign targeting the *Fono* and the Governors office might help in acquiring funding through the ASG.

Participants discussed a number of ways the EDPO/ASCMP budget for Coastweeks could be reduced, either by sharing responsibilities for its implementation with other agencies or groups, or through finding alternative sources of funding. One participant suggested the possibility of reducing the Coastweeks program to a week. It was also felt that there are a number of untapped potential sources of funding. One possible way to seek funds for Coastweeks is to work with the *Fono* to draft legislation for acquiring funding through the ASG. Other ideas for fundraising included conducting a letter writing campaign to seek private donations, and selling advertising during Coastweeks. In addition, it was felt that the cost of activities to EDPO/ASCMP could be

reduced by having private and public sector groups sponsor Coastweeks activities. Finally, it was felt that EDPO/ASCMP could improve the effectiveness of Coastweeks activities and reduce the cost to EDPO/ASCMP by involving villages more in the planning and implementation of activities. As an incentive for the village people, EDPO/ASCMP can offer award to the villages which conducted the best activity.

Participants named a number of actors who could be called on to help implement the new activities identified in step two, including the Land Grant CRD, the Fagatele Bay National Marine Sanctuary (FBNMS), and the ASCC Samoan Pacific Studies Program.

Other suggestions to increase the overall effectiveness of the program included:

- Increase year round educational activities and efforts to educate about the long term maintenance of clean coastlines and lands. This may involve reallocation of resource from 'event' activities to activities on the long term basis.
- Increase knowledge of environmental issues by offering scholarships for the study of environmental conservation issues.
- Use the media more, for example through a weekly column in the newspaper on coastal issues.
- Invite the elderly to school to explain traditional resource management.

Conclusions

American Samoa is going through a process of transition from a subsistence based society to a modern consumptive society. People must be made aware of the impact these changes are having on the coastal environment if they are to take steps to protect the coastal zone.

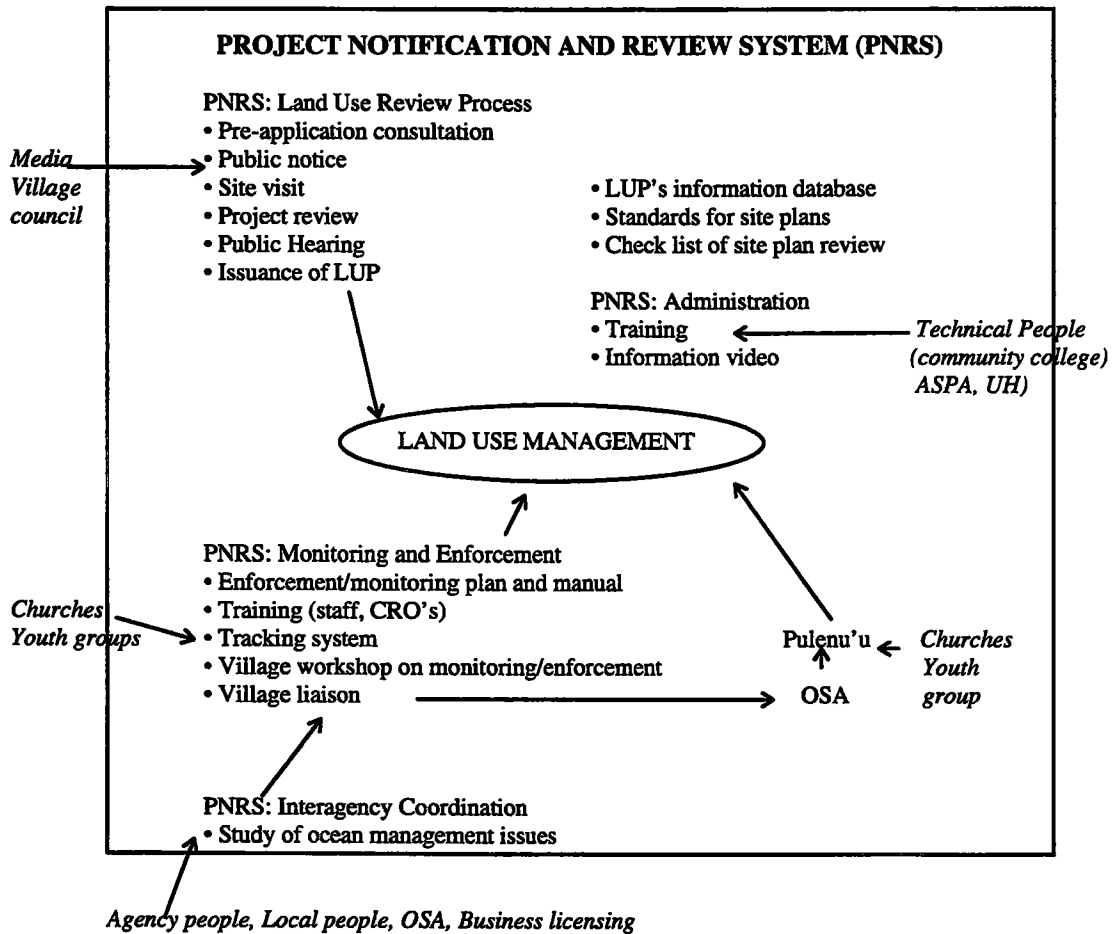
Traditional Samoan culture has successfully managed the coastal environment for thousands of years. The ongoing mission of the Education/Awareness Program is to raise awareness of environmental issues relating to the coastal zone in a way that is compatible with *Fa'a Samoa*.

5.2.2. Project Notification Review System (PNRS- § 306)

DATA FROM STEP II.

STRENGTHS OF CURRENT PROGRAM	CHALLENGES OF CURRENT PROGRAM
<ul style="list-style-type: none"> • One stop permitting process allows venue for comprehensive review of environmental impacts of development. • Insures that all developments comply with guidelines set by member agencies. • Allows for check and balance between environment and development. • Provides member agencies opportunity for input and involvement, provides venue for sharing of information and concerns between agencies. • Only mechanism for land use management. • Provides access to federal funds. • Better conditions among agencies. • Less cost and time to the applicant. 	<ul style="list-style-type: none"> • Weakness of monitoring and enforcement due to lack of monitoring by agencies other than EDPO, hesitancy in the Attorney General's office to take legal action, lack of reporting, and no enforcement on weekends. • Procedures with regard to land management at local level sometimes do not work. • Other government agencies sometimes feel they do not have to comply with the PNRS process, as they have their own mandate. • There is often political pressure to approve major government projects. • Penalties for non-compliance with the PNRS are often not imposed. In particular, procedures for collecting from other government agencies are not clear. • There are problems with the appeals process--there is no administrative judge, and a citizen panel which is often technically unqualified has a major say in decisions regarding appeals. • There is a need for more effective enforcement because there are ways around the system, such as through after the fact permits.
OPPORTUNITIES FOR FUTURE STRATEGIES	FUTURE TASKS
<ul style="list-style-type: none"> • Involvement of church groups in plans for this year. • Improve coordination within agencies that have permit granting authority. • More coordination with the Department of Public Safety, involvement of DPS in enforcement. • Move towards civil action, village level enforcement, with part of fines going to village. Get village councils, <i>pulenu'u</i> involved in enforcement. • Develop participatory land use planning process. • Increase education on how land use management relates to marine and terrestrial habitat among government employees. 	<ul style="list-style-type: none"> • Use designated site visit day for monitoring. • Periodic review of rules. • Create newsletter about projects, or place article in paper about projects. • Monitor on weekends. • Create citation mechanism. • Develop village land use plans? • Conduct pre-project meetings with developers. • Create PNRS logo, stationary, and uniforms. • Have all 7 agencies contribute to the PNRS budget. For example, by covering the environmental attorney's salary. • Have a PNRS office in Manu'a, either full or part time provided the number of permits calls for it.

DATA FROM STEP III.



Note: According to the workshop participants, organizations and groups presented in italics in this chart could help performs the tasks identified by the arrows.

DATA FROM STEP IV.

TASKS	AGENCIES
Monitoring and Enforcement	Village councils, village court system, OSA, NRCS, technical assistance from relevant agencies
Interagency Coordination	OSA
Village based land use plans	Village councils

Findings

The Project Notification Review System (PNRS) is the heart of the EDPO/ASCMP. It is the primary mechanism by which the EDPO/ASCMP ensures that developments meet guidelines for preservation of coastal resources, and it is the only land use permitting mechanisms in American

Samoa. Throughout the workshop, participants stressed the need to continue supporting the PNRS and seek ways to improve its implementation. Specifically, participants felt there was a need to explore ways to improve awareness of the importance of the PNRS among American Samoans. At the same time, participants felt that the EDPO/ASCMP needed to explore means to make the PNRS more culturally appropriate.

Evaluation of Current Program

The evaluation of the current program focused on the need to strengthen understanding of and compliance with the current PNRS. While participants stressed the importance of the PNRS as an effective venue to assess the possible environmental impacts of developments and as the only effective land use management mechanism in the territory, there have been problems with implementation.

One of the major challenges of the current program is the difficulties with monitoring and enforcement. Problems with lack of adequate monitoring and enforcement have been related to the lack of adequate mechanisms to monitor compliance with projects, and lack of mechanisms to take legal action against offenders through penalties. It was also noted that there were too many loopholes in the system, such as allowing after the fact permitting.

Another concern mentioned was that other government agencies often feel that they have their own mandate, and, therefore, do not have to comply with the PNRS. Unfortunately, this is even true of some agencies which are a part of the PNRS. In addition, there is often political pressure on the PNRS to approve major government projects. This is a major problem because government projects are often the developments which have the greatest impact on the environment.

Opportunities for the Future

Discussion regarding future strategies for the improvement of the PNRS focused on the following issues:

- Ways to improve monitoring and enforcement through closing loopholes in PNRS administration.
- Ways to improve monitoring and enforcement through a more participatory, village based approach to implementation.
- Ways to increase compliance through fostering awareness of the importance of the PNRS.
- Ways to improve the image of the PNRS.

One general strategy suggested for improving monitoring and enforcement was to develop a more participatory planning process. In general, it was felt that efforts at improving implementation would be more effective if village councils and *pulenu'u* were more involved in monitoring and enforcement. There was some question, however, as to what the jurisdiction of the *pulenu'u* was in such matters. Participants also felt church groups could play a more active role in land management. One possible way to increase village participation which participants

considered was to revive the idea of village based land use plans which was originally outlined in the 1980 environmental impact assessment establishing the EDPO/ASCMP.

Other ways to increase the effectiveness of monitoring and enforcement included using a designated site visit day for monitoring , and monitoring on weekends. Conducting pre-project meetings for major projects with developers was seen as an effective way to ensure that developers understand and abide by the conditions of the LUP. Finally, participants expressed the need for the creation of citation mechanisms.

With regard to increasing compliance with the PNRS among government agencies, the participants felt that there was a need for an awareness campaign regarding the need for the PNRS among government employees.

Co-Management Opportunities

The discussion on co-management opportunities resulted in a number of recommendations for how to improve the effectiveness of the PNRS process, and to improve monitoring and enforcement, and to increase awareness of and compliance with the PNRS.

Participants felt that the effectiveness of the PNRS could be improved through a number of measures to clarify land use permitting procedures and modify review guidelines. One suggestion was to revise the guidelines which are used to review projects to incorporate issues of concern to the EDPO/ASCMP: wetlands preservation; coastal hazards mitigation; nonpoint source pollution; and marine debris. It was felt that this would make the EDPO/ASCMP a more effective tool for fulfilling its mandate to address these issues, thereby taking some of the burden off the EDPO/ASCMP programs. In addition, some participants felt there was a need to set specific guidelines for certain aspects of the permitting process, such as a minimum guideline for setback from streams. Finally, it was suggested that developers be required to make a written commitment to follow the guidelines set by the EDPO/ASCMP prior to progressing with construction. It was felt that this would improve compliance with these guidelines.

Participants suggested some measures to improve monitoring and enforcement. One suggestion was to reactivate the village court system to get them involved in monitoring. In addition, participants saw a need to strengthen enforcement mechanisms, especially with regard to after the fact construction.

While the above recommendations focus on improving the PNRS system itself, participants felt that increasing awareness of the need for the PNRS is equally important if compliance is to improve. It was particularly felt that increased awareness of the importance of land management was needed to convince the *Fono* and other government entities of the need for further action. One way to increase awareness would be to issue press releases on new projects so that the public is more aware of the threats of development activities and the PNRS' role in mitigating such threats. Finally, it was suggested that the EDPO/ASCMP collect data on sources of litter and other environmental abuses and issue reports on these abuses.

Conclusions

As American Samoa's coastal zone faces increased stress in coming years, it will become increasingly important to have strong land use management mechanisms to mitigate environmental impacts from development. This will require an increased understanding among the residents of American Samoa of the need for land management. At the same time, it is necessary to maintain traditional Samoan land use practices which have proven effective for centuries and which are an important part of *Fa'a Samoa*. The EDPO/ASCMP should, therefore, pursue a strategy of increasing public awareness of the need for a land use permitting system while simultaneously developing participatory approaches which involve all sectors of society in land management.

5.2.3. Coastal Hazard Assessment And Mitigation Program (CHAMP- § 309)

DATA FROM STEP II.

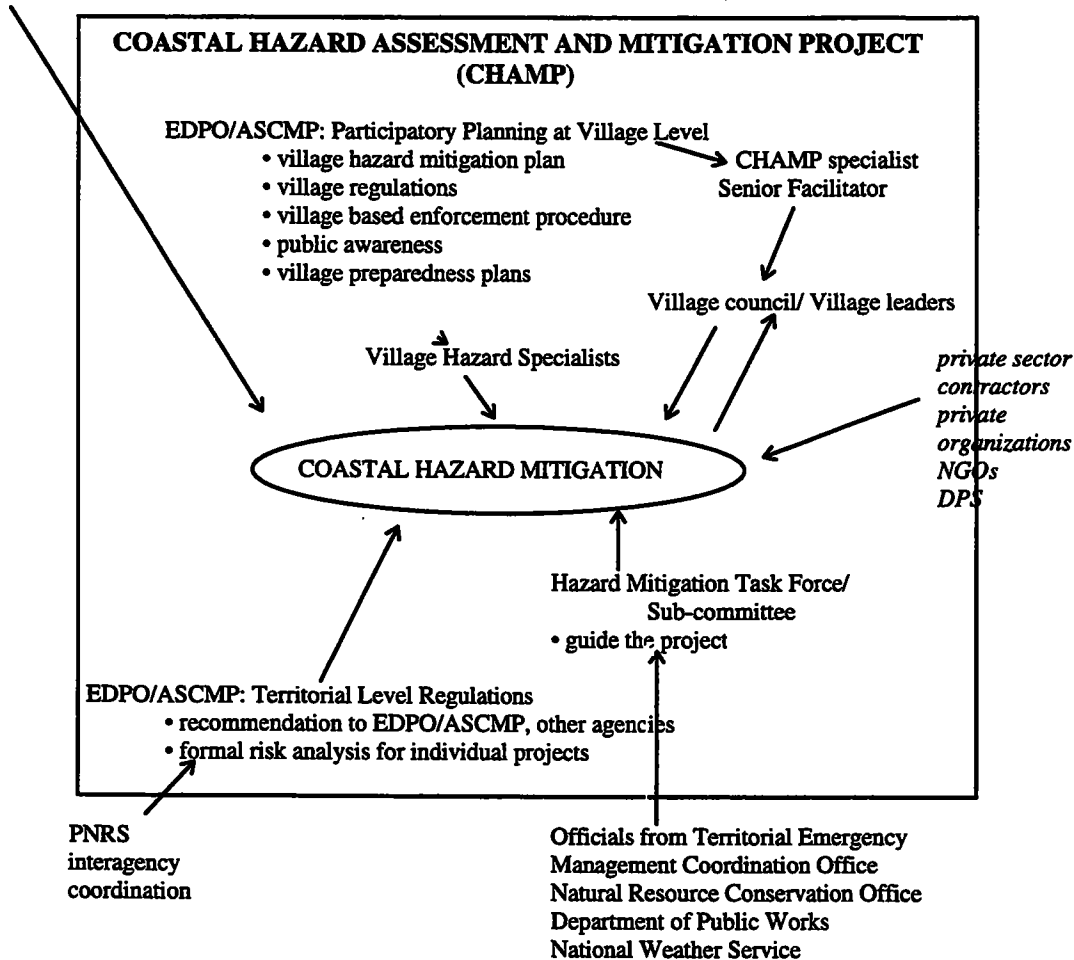
<p align="center">STRENGTHS OF CURRENT PROGRAM</p>	<p align="center">CHALLENGES OF CURRENT PROGRAM</p>
<ul style="list-style-type: none"> • Participatory nature of the program involves local businesses, schools, Office of Samoan Affairs, village council, and others. • Presentations use several media such as video and audio, training programs, social events, and celebrations. • Consistent message and activities. • Message is easy to identify and relate to. • Makes good use of the media (television, newspapers). • Village ordinances and resolution • Village preparedness and mitigation plans which guide development. • Provided training to village members on village plans. 	<ul style="list-style-type: none"> • Public presentations are often made on Sunday which results in limited participation. • Some people prefer to hear the message and directions come from village councils instead of the program staff. • Most people lack a fundamental understanding of the program. • Some villages feel that the program takes rights and resources away from the village. • Steps needed to mitigate against coastal hazards are different in communal land and freehold land. • There should be more interdepartmental communication and coordination. • Lack of continuity of follow up. • Program’s message is not immediately understandable for many people. • There is no way to measure the effectiveness of the program. • There is a lot of overlap between programs. • Lack of a good GIS hinders effectiveness. • Failure to give specific instructions (i.e. scrap metal drive created hazards because piles were to high).

DATA FROM STEP II (Cont.)

OPPORTUNITIES FOR FUTURE STRATEGIES	FUTURE TASKS
<ul style="list-style-type: none"> • Village councils need to be more informed and more involved especially in enforcement. • There needs to be more interagency coordination. • Consider combining education programs into one. • Develop a system that assesses the effectiveness of the program. • Identify areas that are most at risk. • Identify who will have and cause the most problems. • Help <i>Fa'a Samoa</i> incorporate coastal hazard mitigation into village plans and actions. • There is a need for more consistent follow up. • More awareness and education brought to the village but formal presentation should not given on Sunday. • Ask ministers to relate the proper stewardship of the land to coastal hazards. Specifically, this message could be incorporated in the church ministers sermon on Sundays. • Develop a sense of volunteerism among various community groups and organizations. • Include women's organizations among those that can help. • Encourage more educational opportunities for a broader education in natural resource management. 	<ul style="list-style-type: none"> • Develop presentations that specifically address how the village benefits by complying with and enforcing the CHAMP program. • With an increase in interested groups there is a need for more agency and group coordination. • Create a package that another group could take when they go out to visit or a group like Le Tausagi. • Need to create an assessment system that will tell the program what works and what does not, who understands and who does not. Very important when trying to create education package. • Create a coastal hazards atlas to inform people of the severity of danger that exists in their particular region. • Focus on groups that will have the most difficulty with the coastal hazards program because they may need to be focused on. • More consistent follow up is needed. May need to visit every village at least once a month. • When presenting, find a day other than Sunday, because Sunday is an official day of rest. • Inform ministers of the need to link the church and coastal hazard mitigation. Perhaps good stewardship of the land is not building in hazard areas. • Women are an under used resource in the village. Involve the women in community functions for helping with coastal hazard mitigation. • Ask the American Samoa Community College to offer more education opportunities in natural resource management.

DATA FROM STEP III.

Special interest groups & Volunteers: women's group, youth group, church leaders, schools, PTA's, ASCC, Land Grant



Note: According to the workshop participants, organizations and groups presented in italics in this chart could help performs the tasks identified by the arrows.

DATA FROM STEP IV.

Tasks	Agencies
Education	ASEPA, ASPA, DOE, DMWR, Land Grant, Le Tausagi, ASDRO
Monitoring and Enforcement Administration	PNRS, DPW, DPS, NRCS, Village Councils
Technical Assistance	DOH, ASDRO
Village Level Monitoring and Enforcement	DPW, ASPA, NRCS, ASDRO
Village Level Administration	Village Council, OSA
	Village Council, OSA

Findings

The CHAMP group operated very well in understanding the scenario of zero based funding for the program. They generated alternatives in a timely fashion and found that ASDRO and the Village Councils can take more responsibilities. Unfortunately, because of the limited time to work the group could only allocate the current tasks and none of the new tasks generated in Step II. However, this does not mean that the group did not think that the new tasks were not important. There was just the constraint of time.

There were several themes that came out of the discussion. One of the themes that came out of the discussion was the need to get the Village Councils and the OSA to become more involved with village enforcement and administration. They did not seem to understand the purpose of the CHAMP program.

Evaluation of Current Program

One of the strengths identified is the participatory nature of the program as it involves schools, the Office of Samoan Affairs and others. By involving the other groups they build a larger constituency. We also find that in the discussion, many of these groups will be called upon to take some of the responsibilities identified in Step IV.

Second, the various presentations use a number of media including video, audio, and printed material. The materials convey a consistent message that is relatively easy to identify and relate to. The material captures the attention but what is not properly communicated is the message. The idea that there are coastal hazards is easy to understand. However, how you communicate what to do about coastal hazards is different. Apparently this is where the communication breaks down.

Third, the program makes good use of the media. They use the newspapers, radio, and television to communicate the message of coastal hazards. The materials are readily available and the message is reached in many places.

There were many challenges presented in the current program. First was the apparent lack of understanding among EDPO/ASCMP staff that they should not make public presentations on Sunday. Sunday is always a day of rest. It might be inappropriate for public presentations to be made on Sunday.

Another weakness is the fact that some people do not recognize the authority of those giving public presentations or would rather hear directions come from their village council. This is generally the case because most people lack an understanding of what the program is all about. Some villagers think that the program exists to take land authority from the village. This is untrue. The program exists to help people realize that where they build their homes makes a difference.

There is also a lack of inter-departmental communication. There is often an overlap of programs and presentations. If programs communicated and went out as groups to do public presentations then the amount of overlap would be reduced. Otherwise villagers may get confused over which program does what job.

All of this alludes to how effective the program is. Right now there is no way to determine how effective the program is. Some of the discussion centers around the fact that the people doing the presentations do not know if they are reaching the people in the villages. There may be ways they can change their presentations that will communicate the message better. Without an evaluation system; however, there is no way of knowing what is effective and what is not.

Finally, there is a definite lack of a good Geographic Information System or GIS. GIS is used to keep detailed mapping information to give a spatial dimension to planning problems. Details such as settlement patterns, topography, coastal hazard areas, special management areas, conservation zones, and other spatial data can be more effectively shared with a modern GIS.

Opportunities for the Future

Several strategies were identified to address the challenges identified in the previous section. First is to develop presentations that will motivate the Village councils to get involved with the CHAMP program. More specifically, these presentations can demonstrate how the villages benefit from participating in the CHAMP program. If groups are going out to do presentations, there should be more coordination so that the village does not feel bombarded with information. If another group is going to a village then an educational packet or brochure could be created for general dissemination.

Second, an evaluation mechanism must be created. This mechanism or evaluation must be able to tell the presenters what is working, what is not, and whether the villagers are learning. This could be very important when creating an educational packet or when developing presentations.

Additionally, the program must identify areas at risk for various coastal hazards. One idea is the creation of a coastal hazard atlas. It could be used to inform people of various areas the severity of danger that exists in that particular region.

The CHAMP program needs to determine which villages are resisting the CHAMP program and why. These villages or councils may require more attention if they are to see the benefits of enforcing the CHAMP program. This relates to the idea of using *Fa'a Samoa* to incorporate coastal hazard mitigation in village planning. If the *Matai*, village council, and OSA see the value of the CHAMP program then the program can work through more accepted channels.

The CHAMP program can reach the ministers of the village, who can use a Sunday to speak about the proper stewardship of the land and how a part of proper stewardship is coastal hazard mitigation. It could be construed that the minister is thinking about the best interest of his parishioners when speaking about coastal hazards.

The role of women's groups was also discussed. The women's groups are currently underutilized. They can help in areas such as dissemination of information or coordination of presentations. In any case, the women can find a more active role.

Co-management Opportunities

The group basically concentrated on the six existing tasks because of the limited time on the last day of the workshop. However, they did identify many groups that could be included in the current tasks.

Education found itself with seven programs that could help in the Co-management of this task. These include ASEPA, ASPA, DOE, DMWR, ASDRO, Land Grant, and Le Tausagi, an educational group. Each of these entities were identified as being the logical resource that would be looked to for assistance in co-managing the CHAMP program. They all have a stake in seeing that the CHAMP educational component continues.

Second was the monitoring and enforcement of the CHAMP program. These include the PNRs, DPW, DPS, NRCS, and Village Councils. The PNRs already implements the land use permit and the DPW implements the building permits. Thus, they would most likely to see the CHAMP program continue being enforced. However, the village councils were identified as needing a more prominent role in enforcement.

Third is the administration of the CHAMP program. There were two programs identified in the administration of the CHAMP program. They were the DOH and ASDRO. These were identified as the two programs that could best share in the responsibility of implementing the CHAMP program. Apparently the participants in this group thought that DOH and ASDRO needed to take a more active role in the activities of the CHAMP program.

Fourth is the technical assistance for those implementing the program. The DPW, NRCS, and ASDRO can provide training and expertise that may be necessary to the development of a better program or to get the villages more involved.

The fifth and sixth tasks both have the village council and OSA as resource departments. These tasks are the village level monitoring and enforcement and administration. The Village Council and the OSA are very important to the success of the program. The group discussed the greater involvement of these two groups because of their influence in the village. These are also the decision making bodies that are the official link between the village and the program. If these two programs will participate it is generally believed that the implementation of the CHAMP program will be a lot easier.

Conclusion

Although the CHAMP program is generally thought of as successful, there are still areas that need work. In spite of the impending budget cuts the CHAMP program appears to have secure

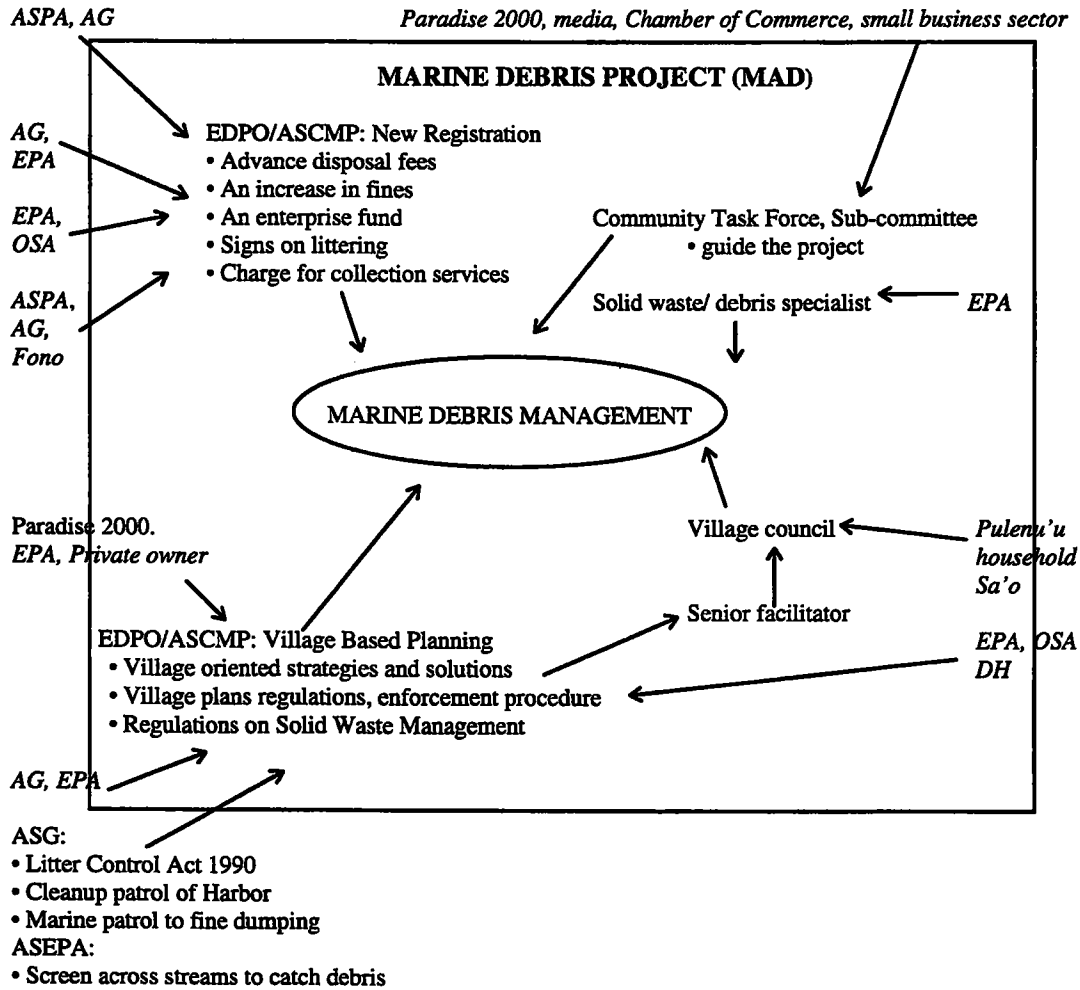
help from many different departments. If all of these departments and programs participate, the work can be more widely distributed. There needs to be a large amount of coordination.

5.2.4. Marine Debris Program (MAD - § 309)

DATA FORM STEP II.

STRENGTHS OF CURRENT PROGRAM	CHALLENGES OF CURRENT PROGRAM
<ul style="list-style-type: none"> • There is community based enforcement and regulation. • The current program has addressed solid waste disposal. • Protects marine life and fisheries. • Coordinates with public health agencies. • Protect coral reef. 	<ul style="list-style-type: none"> • Decreased effectiveness of agency and program due to various legislation. • There is a lack of authority and man power for enforcement. • There is a lack of statistics on the household level of awareness of marine debris. • Lack of public trash bins (i.e., bus stops and public parks).
OPPORTUNITIES FOR FUTURE STRATEGIES	FUTURE TASKS
<ul style="list-style-type: none"> • Paradise 2000 to be continued by EDPO/ASCMP and Solid Waste Committee. • Legislation that places responsibility on various agencies (i.e., officially grant ASPA the ability to charge a solid waste service charge). • Provide incentive programs for villages. • Fines that are assessed in a village should return to the village. This requires enabling legislation. • Provide public waste receptacles. • Create legislation that reduces waste from plastics and other non biodegradable items from entering American Samoa. • More village accountability and CZM coordination. 	<ul style="list-style-type: none"> • Determine if Paradise 2000 can be developed as a model for continuous use to mitigate marine debris. • Conduct an assessment of whether other agencies can benefit from implementing a service charge to help in the cost of running the program. • Create programs like an Adopt a Highway or Village Cleanliness Competition that stress the need to eliminate potential debris. • Set up an account that stipulates that the fines that are returned to the village be used to further marine debris clean up. • Place public waste receptacles at bus stops and public parks, and chain the receptacles to a pole • Draft and introduce legislation to the <i>Fono</i> that would prevent the introduction of plastics or other non-biodegradable products from entering the American Samoan market. • Create a marine debris committee in each village that sees to the clean up of areas before refuse becomes marine debris.

DATA FROM STEP III.



Note: According to the workshop participants, organizations and groups presented in italics in this chart could help performs the tasks identified by the arrows.

DATA FROM STEP IV.

Tasks	Agencies
Education	DOE, DMWR, ATTORNEY GENERAL'S OFFICE (AG's OFFICE)
Monitoring and Enforcement	EDPO, ASEPA, ASPA, DOH, DMWR, DPS, DPR, AG's OFFICE, <i>Pulenu'u</i>
Administration	ASEPA, ASPA, DMWR
Monitoring and Enforcement on the Village Level	DOH, <i>Pulenu'u</i>
Administration at the Village Level	ASEPA, ASPA, OSA, AG's OFFICE

Findings

The group operated from an assumption that of zero based funding. Thus the question was if MAD had all of its funding eliminated which programs could take over the tasks that were served by MAD. The group felt that ASEPA, ASPA, DMWR, and the Attorney General's office could take a more active role in MAD. Although there were new tasks that were discussed, there wasn't enough time to do all of them. Thus the group chose to reallocate the current tasks first and then add the new tasks if time allowed.

Evaluation of Current Program

One of the strengths of the program is that it already tries to reach out to the public. They have some degree of village level enforcement and regulation. In some senses the village already accepts responsibility for the trash and debris that they generate. To this end, the current program has addressed solid waste disposal in draft form. In addition to its efforts to protect marine life and fisheries it also coordinates with other public health agencies like the DOH.

The first weakness is due to actions by the *Fono*. The agency and program has had its effectiveness decreased because of some of the legislation by the *Fono*. On top of this, there is a lack of human resources and authority for enforcement. Because there are not enough human resources, groups like Le Tausagi take on more responsibility. Coordination would appear to be the most prudent course. In this way everyone's message gets out and more people are spreading the message.

The next weakness is a problem of effectiveness. Basically, the MAD program does not know how effective they are. They do not know if everyone understands the message that they are trying to convey. Although the programs feels that they are making a difference, there is not a lot of data to support this notion.

Lastly there is a lack of public trash bins. Simple things like trash cans chained or anchored in one location like at public bus stops or parks could help to decrease litter.

Opportunities for the Future

Several strategies were constructed based on the findings of the previous section. First of all the group felt that Paradise 2000 should take on MAD with ASEPA, DOH, DMWR, etc. They felt that a program like Paradise 2000 was important in controlling Marine Debris. Perhaps Paradise 2000 could be developed into a continuously implemented model for marine debris mitigation. Paradise 2000 could sponsor public clean up campaigns or continue other activities on an annual basis.

The next strategy was to allow departments like the ASPA to charge a solid waste service charge. This could go toward other areas of the ASPA like incentive programs to keep the village clean. However an assessment of whether or not the ASPA can charge a fee is needed.

Incentive programs can be created where the public participates in an activity and also learns about their environment and marine debris. These activities could include things like an adopt a highway or village cleanliness competition on a bimonthly cleanup basis of the village or sources of marine debris.

Fines that are assessed to a village should return to a village. This would help by making the village responsible. I would seem that the village fined the person and that the fining agency only does an assessment. This money could go to other village clean up campaigns.

One measure that everyone identified with was the lack of waste receptacles at bus stops and open areas. These are important because if there is no place to put trash, and it will end up on the ground. However, it would be important for the trash receptacles to be firmly anchored or grounded to their location. It would not be a good idea if the trash can became a source of marine debris.

Finally there was discussion of eliminating potential marine debris from entering American Samoa all together. The group felt that there could be some legislation that reduces the amount of non biodegradable items entering American Samoa. The rationale being that if such materials never enter American Samoa than it cannot become a source of marine debris. This would require legislative action so it would fall on the *Fono* to determine if this is possible.

Co-Management Opportunities

Once again the primary focus of the group was the re-allocation of the tasks that already exist in the program. The new tasks are important but the group did not have time to address all of the new tasks. The educational component was the first to be addressed.

The group found that the DOE, DMWR, and Attorney General's Office were the primary offices that should provide assistance in the education campaign. In particular, the Attorney Generals office needs to lend some assistance in determining what the legal ramifications are if the debris is not cleaned. The DOE and DMWR can assist each other in developing a curriculum or package that can be used to educate students and the general public.

The monitoring and enforcement component of MAD can tap the capacities of the EDPO, ASEPA, ASPA, DOH, DMWR, DPS, DPR, AG's office, and the *Pulenu'u*. Each of these have a vested interest in either the monitoring or enforcement of the MAD program. The *Pulenu'u* have a larger role because they are also involved in the village level enforcement. The coordination of all of these programs is important because there is a definite potential for overlap. One of the dangers is that none of these programs will talk with each other. So that no one knows what steps the other is taking. The result be a fragmented and disjointed operation and the American Samoa Government may seem like it has more than one message. If the programs can work together, the government will appear to be unified in its position against marine debris.

The administration of the program fell to the ASEPA, ASPA, and DMWR. Because the group was operating from an assumption of zero funding, the administration would be shared among all of the departments.

The village level monitoring and enforcement went to the DOH and *Pulenu'u*. The DOH can provide the technical expertise and the *Pulenu'u* would look after the enforcement of the program.

The village level administration of the program went to the ASEPA, ASPA, OSA, and AG's office. The OSA has a key role in the administration of the MAD program. If the OSA feels that marine debris is a hazard to people and the environment then the program can go to the village with the OSA support on the matter. It is important that OSA be educated on the necessity of the MAD program and why it is important for them to support it.

Conclusion

The MAD program helps keep the waters of American Samoa clean and garbage free. It is important that this program be distributed among other agencies. Currently, a person may freely go into the water with the expectation of not encountering garbage like plastic bags or any other foreign matter. This may change unless the people understand why the waters are clean. In the face of a growing population and limited land, the ocean will face greater pressure to absorb the debris of the population. Thus, the villages and government must do their part in limiting the amount of debris entering the ecosystem. If the problem is not addressed one day you will go to the beach and find that all the garbage people threw away yesterday is in the water today.

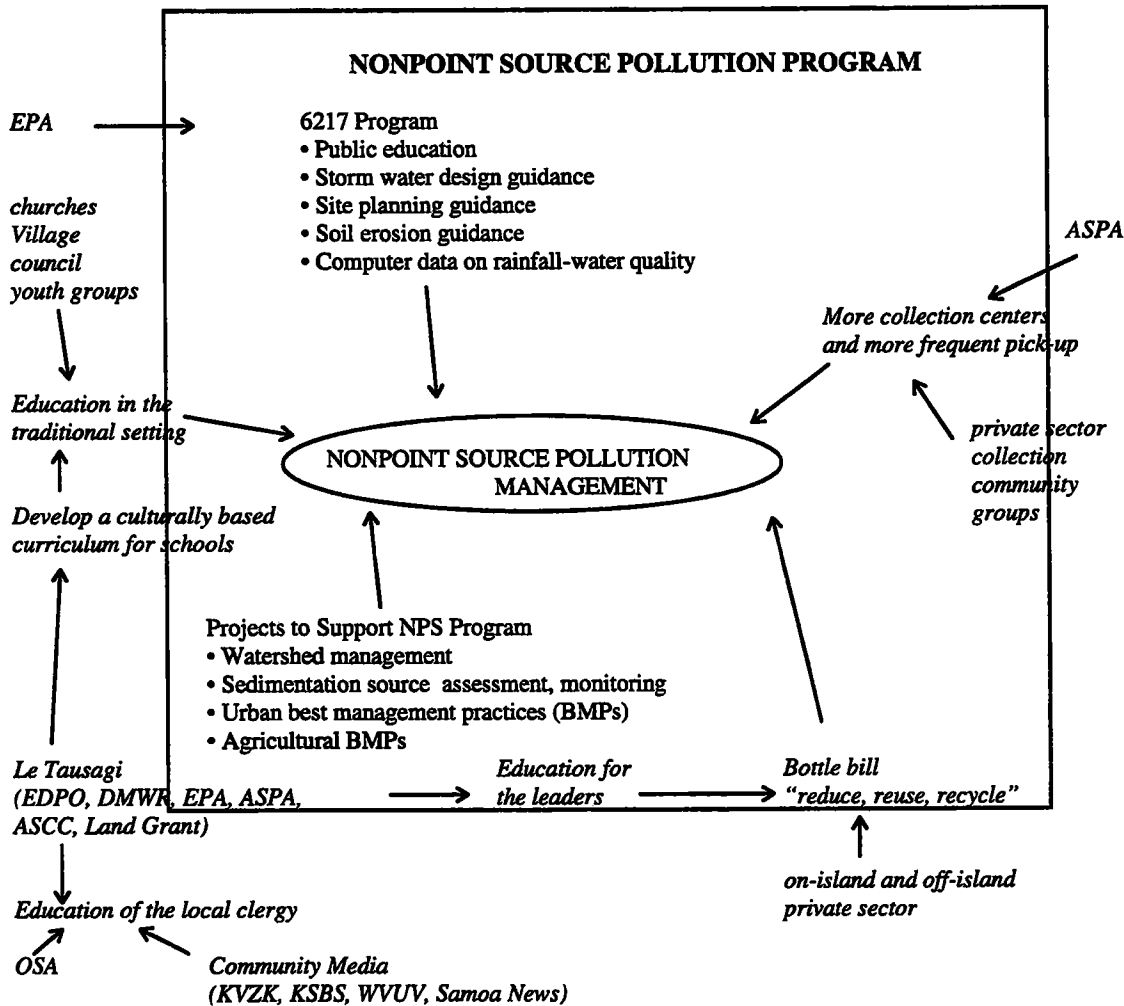
5.2 5. Nonpoint Source Pollution Control (NPSP- § 6217)

DATA FROM STEP II.

STRENGTHS OF CURRENT PROGRAM	CHALLENGES OF CURRENT PROGRAM
<ul style="list-style-type: none"> • Good coordination between the various governmental agencies involved with NPSP program (e.g., EDPO/ASCMP, ASEPA, NRCS, ASCC, LG, etc.). • The NPSP program contains a broad public awareness component (e.g., radio information and workshops with the village leaders, education booklets, government agencies, churches, and schools). • The NPSP program has conducted a number of successful projects (e.g., storm water management, septic tanks, and erosion control, and others). • The NPSP program has a site planning component involving the PNRS. • The NPSP program has clearly defined standards (e.g., stream setbacks). • The NPSP program has administrative rules through the PNRS and they are able to enforce these rules using disincentives such as fines. 	<ul style="list-style-type: none"> • The NPSP program does not consider the cultural barrier problem in its educational program (i.e., program does not take into account that traditional Samoan cultural values differ from western cultural values). • The program does not clearly define NPSP to the general public. Consequently, the connection between cause and effect is not clear to their target audience. • The NPSP program is not reaching out to all groups of people (e.g., the youth, those outside the school program, etc.). • Low acceptability of NPSP program by the ASG and the public. For instance, sometimes ASG are the worst violators. Because of this, ASG is viewed as a hypocrite by the community. • The program is difficult to enforce since NPSP is not easily traceable to a single source.

OPPORTUNITIES FOR FUTURE STRATEGIES	FUTURE TASKS
<ul style="list-style-type: none"> • There should be a more effective public awareness component in the NPSP program (e.g., bi-lingual educational material in English and Samoan and should be community based). • There should be greater emphasis of NPSP in schools so that the youth understand the benefits of the program. • There should be a program to increase the enforcement authority for agencies involved with NPSP control. • There should be a program implemented to gain ASG acceptance and compliance. • There should be a program to improve solid waste management in American Samoa. This will result in a overall reduction in NPSP in the long run. 	<ul style="list-style-type: none"> • Develop an education curriculum that will teach the citizens of American Samoa in the traditional setting (e.g., using churches, village councils, youth groups, etc.). • Develop an education program targeting the clergy so they can spread the message to the villagers. • Develop an education program targeting the ASG leaders to educate them and gain their support. • Develop an education program with clearly defined roles that can be enforced through fines. • Develop more collection centers and offer incentives to recycle such as a bottle bill. • Develop an education program using proven techniques such as "reduce, reuse, and recycle."

DATA FROM STEP III.



Note: According to the workshop participants, organizations and groups presented in italics in this chart could help performs the tasks identified by the arrows.

DATA FROM STEP IV.

TASKS	AGENCIES
Agricultural Best Management Practices	LG, NRCS, DOA, NPS
Urban Best Management Practices	PNRS
Technical Assistance	ASEPA, ASPA, NRCS
Education in the Traditional Setting	OSA, Village Councils, Clergy
Education for the Clergy	EDPO, ASEPA, DMWR, LG, NRCS
Education for ASG Leaders	EDPO, ASEPA, DMWR, LG, NRCS
More Collection Centers & More Frequent Pick-up	ASEPA, ASPA, Private Collection Service

Findings

The workshop group agreed that ASEPA could take over most of the functions of the NPSP program if funding from §6217's was eliminated entirely. However, considering that ASEPA is currently staffed by only one full time employee, it is questionable whether the same level of services can be maintained. Nevertheless, a number of strategies were discussed at the Workshop in which new agencies could take on some of the existing tasks or new tasks that were created in order to increase the effectiveness of the program.

During the workshop, one of the major themes stressed as an impediment to the effectiveness of the NPSP program was the cultural barrier that existed between the traditional Samoan value system and western culture. Simply stated, the *Fa'a Samoa* values on the environment are contrary to the western system. Because of this, the public education component was emphasized in order to gain the public's acceptance of the benefits of NPSP controls. Still, this would not be an easy task to accomplish. Such re-education of the Samoan people will take time. This will be presented in greater detail in the evaluation section below.

In line with the educational theme stressed by this group was the fact that the public was not aware of the definition of NPSP. While there were a number of public education programs, they seem to be ineffective in gaining the public's attention. Again, providing effective educational programs is the key.

Evaluation of Current Program

Strengths of the current program. There were a number of strong points discussed at the workshop regarding the current program. First, there is good coordination between the various governmental agencies. Other agencies involved beside EDPO/ASCMP include: (1) ASEPA, (2) NRCS, (3) ASCC, (4) LG, etc. Some may take on a greater role than others, such as ASEPA. But all are involved in the various components.

Second, the NPSP program contains a broad public awareness and education component. In other words, several venues are currently being used to educate the public on the benefits of NPSP control. For instance, they have done a number of radio information programs that included public participation. The residents of the community can "call in" if they have specific questions regarding NPSP during these information programs. In addition to the radio show, they have conducted a number of workshops with the village leaders, government agencies, church groups, and schools. However, the question of effectiveness of the current program was brought up and will be discussed in detail in the challenges section below.

Third, the program has conducted a number of successful projects. For example: (1) storm water management projects; (2) implemented septic tank requirements; and (3) erosion control projects. All of the aforementioned projects have led to improved management of NPSP in American Samoa. In particular, storm water management projects and erosion controls project have reduced the sedimentation problems associated with NPSP. In addition to the projects mentioned above, a number of point source pollution projects were conducted. The group felt that by

managing point source pollution, NPSP would be reduced over the long term since it would promote more environmental awareness among the residents of the village community. An example of such a project is the scrap metal collection project. This project challenged the various villages to see who could produce the most scrap metal.

Fourth, the current program has a good site planning component. Currently, PNRS is involved in site planning. The lead agency for site visits within the PNRS is EDPO. ASPA offer free site planning if the applicant applies for a residential LUP through the PNRS.

Fifth, the program has clearly defined standards such as stream setbacks. The benefit of having standards is that there is no ambiguity or interpretation. And with clearly defined standards, enforcement of the rules becomes a question of the degree of enforcement rather than what to enforce.

Challenges of the current program. However, there were a number of weak points discussed at the Workshop regarding the current program. First, one major weakness of the NPSP program was the cultural barrier present in American Samoa. Because of this, a lack of understanding exists among its residents regarding the benefits of NPSP. For instance, in the traditional *Fa'a Samoa* culture, the level of cleanliness differs from the western society. There may be a stream clean up using public participation where trash is collected for disposal. However, all of the vegetation is cleared which then would have a damaging effect on the ecosystem. New values will need to be taught in order to point out the benefits of the new system.

Second, the current program does not clearly define NPSP to the general public. More specifically, the connection between cause and effect is not clear. By providing this connection, the public will be educated clearly as to the potential benefits of reducing NPSP rather than being forced to follow the regulations.

Third, the program is not reaching out to all groups of people. There are gap groups who do not receive the intended information, especially those of the younger generation and those who are outside of the school system.

Fourth, there is a lack of acceptability of the NPSP program among government and community members. Sometimes ASG are the worst offenders of the program. For example, sand mining is illegal in American Samoa. However, for the Flag Day Celebration in town, ASG sand mined so that the park could have a thin layer of sand. The intention was to offer a genuine feel to the residents and visitors, but by doing so, the group presented a bad example to the public.

Finally, enforcement is a problem because NPSP is not easily traceable to a single source. But this is a problem that is faced by many NPSP programs.

Opportunities for the Future

A number of strategies were discussed by the workshop group to improve the NPSP program based on the findings of the previous section. First, there should be a more effective public awareness component of the program. This is necessary to educate the public on the benefits of NPSP control, but it was suggested that this must be done using bi-lingual material to improve the effectiveness of the program. More specifically, it is necessary to educate the residents who are living under the traditional communal ways and do not speak English. Moreover, the material should be community based to increase effectiveness. Without this, the residents could feel like they are being told what to do by government authorities. There is presently some friction between the village people and government agencies since the two systems clash many times on cultural values. Therefore, a curriculum that would teach the citizens in the traditional setting is vital to the success of any education program. The use of traditional setting can not be over emphasized since it provides a venue in which to disseminate information effectively. Target groups may include: (1) churches; (2) village councils; (3) youth groups, etc. Since churches play such a major role in the village, perhaps using the church as a vehicle to educate the congregation on the importance of controlling NPSP could prove to be effective. Therefore, a future task might be to develop an education program targeting the clergy so that they can spread the message to villagers.

Second, there should be a greater emphasis of NPSP in schools. The school environment provides a place for tremendous opportunity in the education of young people of American Samoa. NPSP could be integrated into the environmental science curriculum, making it part of the education process. Additionally, field trips could provide students first hand experience about NPSP and the problems it poses to the environment. Therefore, a future task might be to develop an education curriculum that would teach the students of American Samoa about the benefits of controlling NPSP.

Third, there should be a program to increase the enforcement of NPSP in American Samoa. There may be in place standards or regulations that manage NPSP but unless they are enforceable, it may be difficult to have the public follow them. Part of the problem regarding NPSP is that it is difficult to trace the source. So enforcement may be inherently difficult. But greater enforcement abilities by the agencies involved is necessary for an effective program.

Fourth, there should be a program to gain ASG acceptance and practice. As cited in the previous example, other government agencies may be the worst violators. This becomes a very difficult situation where one government agency may have to sue another agency to follow the rules. To avoid this, the other offending agencies should be educated on the benefits of the regulations in place. Therefore, a future task might be to develop a education program targeting the ASG leaders to gain their support.

Finally, there should be a program to improve solid waste management. If point sources of pollution are controlled that would lead to the ultimate management of NPSP. Tasks to accomplish this could include: (1) more collection centers with frequent pick-ups, (2) introducing a bottle bill, and (3) implementing educational programs using proven techniques such as

“reduce, reuse, and recycle.” By reducing the point source, this will in the long run help to reduce NPSP. Therefore, a future task might be to develop more collection centers and offer incentives to recycle by establishing legislation such as the bottle bill. Also, develop an education program using proven techniques such as “reduce, reuse, and recycle.”

Co-management Opportunities

A number of strategies were discussed in the workshop to reconfigure the program so as to maintain the level of services currently offered. The entire program is primarily funded by EPA with a portion contributed by EDPO/ASCMP.

First, a number of agencies could be involved in agricultural best management practices. Suggestions include involving: (1) LG, (2) NRCS, (3) DOA, and (4) NPS. All of the aforementioned agencies are already involved in one way or another in agricultural best management practices. More specifically, LG could work with farmers in using best management practices in re-planting while NRCS could focus more on soil erosion and fertilization. Also, DOA could provide technical assistance and expertise since they have the agricultural specialists on staff. Finally, NPS could work with farmers who have land abutting parks. Since NPS directly deals with the parks system, they would be a natural fit.

Second, the main agency to implement a urban best management practices would be the PNRS because the PNRS is already involved in land use management. Their primary task would be to guide and monitor development that is occurring in American Samoa.

Third, under technical assistance, there are a number of agencies which have the expertise to maintain the services to cover the portion of funds contributed by EDPO/ASCMP's for the NPSP program. They include: (1) ASEPA, (2) ASPA, and (3) NRCS. EDPO/ASCMP could be called on to play an especially important role, as it already contribute a major portion of the budget for this program. All of the aforementioned agencies already have some of the facilities and could provide additional technical staff assistance.

Fourth, there are three possible players for education in the traditional setting. Recommendations include: (1) OSA, (2) the village councils, and (3) the clergy. OSA could take on the lead role and coordinate the information that is disseminated by constructing a schedule. Both the village councils and the clergy could provide village or community based education programs. The village council and the clergy are in the ideal position since they are in touch with the traditional American Samoan culture.

Fifth, there are a number of agencies that could be involved in education for the clergy. Suggestions include: (1) EDPO, (2) ASEPA, (3) DMWR, (4) LG, and (5) NRCS. All of the aforementioned agencies could provide the training necessary for the trainers who could then provide the education to the clergy. They all have some expertise in NPSP and would be ideal candidates for implementing training programs.

Sixth, the agencies that could be involved in the education for the ASG leaders programs are similar to those named in the section above. They include: (1) EDPO, (2) ASEPA, (3) DMWR, (4) LG, and (5) NRCS. All of the aforementioned agencies could provide the training necessary for the trainers who could then provide the education to the ASG leaders. They all have some expertise in NPSP and would be ideal candidates for implementing training programs.

Finally, a number of agencies are already involved or could be involved in more collection centers and more frequent pick-ups. Recommendations include involving: (1) ASEPA, (2) ASPA, and (3) the private collection services. ASEPA could construct additional collection centers and provide monitoring services. ASEPA also has a hotline number. ASPA is already a player and could have an expanded role. However, this may be difficult due to their budget constraints. Finally, a private collection service could offer collection services as required provided that funding is available. TNT was one of the possible companies that was mentioned.

Conclusion

The benefits of NPSP control are many. It is vital that the services of this program be maintained at a level that will protect the coastal resources of America Samoa. As mentioned previously, ASEPA has indicated that they could take over most of the functions of NPSP program. However, due to their staff limitations, some of the tasks under §6217 could be shared by a number of other agencies.

5.2.6. Community Based Wetlands Management Program (CBWMP-§309)

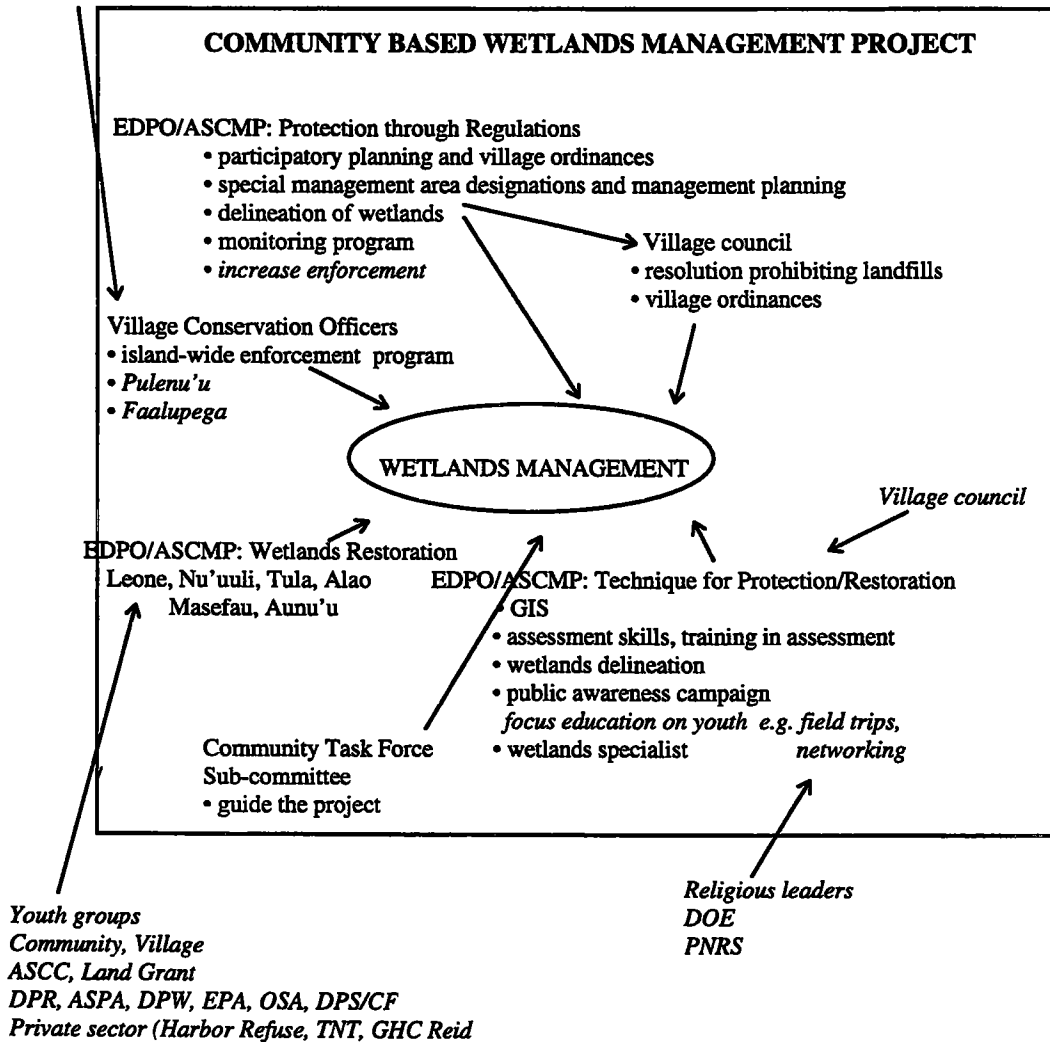
DATA FROM STEP II.

STRENGTHS OF CURRENT PROGRAM	CHALLENGES OF CURRENT PROGRAM
<ul style="list-style-type: none"> • CBWMP contains a good village education component by using visual materials for presentations (e.g., slide shows, wetlands video, etc.) • CBWMP has worked with villages in the delineation of the boundaries of the wetlands. This achieves consensus between the government and the local community. • A working relationship is established between the staff of CBWMP and the village community through island-wide enforcement program. 	<ul style="list-style-type: none"> • CBWMP has poor communication between the village council and the residents surrounding the wetlands because village council does not pass on information. • CBWMP needs a more effective public education component. • It is difficult to get village participation in the restoration of wetlands. • CBWMP is difficult to enforce. • CBWMP lacks funding for wetlands restoration. Funding has been awarded for projects in five villages, however, more funding is needed.

OPPORTUNITIES FOR FUTURE STRATEGIES	FUTURE TASKS
<ul style="list-style-type: none"> • There should be a program that provides more education through the churches. • Regulations should be made more compatible with the increased pressure for the demand of housing. • There should a program that offers incentives to motivate the residents (e.g., money or safety). • There should be a program that stresses the benefits of preserving the wetlands for the benefit of the community (e.g., increased safety from flooding, etc.). • There should be a program that establish network links with other environmental groups who share similar goals to increase efficiency. 	<ul style="list-style-type: none"> • Develop an education program targeting youth groups by first getting ideas or strategies from them and then implementing according to the input (e.g., programs could include T-shirts or field trips). • Gain additional support from the AGO, <i>Fono</i> leaders, and the Governor. • Develop networks with other community groups. • Develop a program that would have the village be more responsible for their own enforcement of the program which further builds on the village ordinances and the Leoleo program.

DATA FROM STEP III.

Village council, AG, Fono leaders, Governor, DPS, DH, PNRS



Note: According to the workshop participants, organizations and groups presented in italics in this chart could help performs the tasks identified by the arrows.

DATA FROM STEP IV.

TASKS (CBWMP-§309)	AGENCIES
Education	ASCC, DOE, ASEPA, DMWR, Churches, Village Councils, Le Vaomatua, Women's Groups
Monitor and Law Enforcement Administration	ASEPA, ASPA, DOH, DPS, Village Councils
Technical Assistance	ASEPA, DMWR
Village Level Monitor and Enforcement	ASEPA, ASPA, DMWR, LG, NRCS
Village Level Administration	Village Council, OSA
Increased Enforcement	Village Council, OSA
Focus on Youth	Attorney General Office, ASG
	ASCC, DOE, ASEPA, DMWR, Churches, Village Councils, Le Vaomatua, Women's Group

TASKS (WETLANDS RESTORATION PROJECTS- §308)	AGENCIES
Technical Assistance	ASEPA, ASPA, NRCS
Biological Habitats Monitoring and Enforcement	ASEPA, ASPA, DMWR, LG, NRCS
Performing Restoration	DPW, DPS, LG, Youth Group, Village People

Findings

Generally, the group felt that increased public awareness and participation were important components for the successful maintenance of the program. Currently, there seems to be a lack of understanding between the government and the village on the benefits of the wetlands. In addition, the village community view government as intrusive. A change in attitude is necessary if the two parties are to be effective in working together. Other themes discussed included gaining support from the government, specifically from the AGO, *Fono* leaders, and the Governor. It is necessary for the enforcement of environmental regulations. Finally, the village community should participate in the management of the wetlands since ultimately, they are the main beneficiaries in this and they have some power.

Evaluation of Current Program

Strengths of the current program. There were a number of strong points discussed at the workshop regarding the current program. Generally speaking, the current program has worked closely with the villages in a number of ways.

First, EDPO/ASCMP has worked well with villages in the delineation of the boundaries of the wetlands. EDPO/ASCMP would first draw the official wetlands line of the government based on scientific definitions. Then the village would offer their input and delineate their line. A consensus is then reached and both parties then agreed to not to allow any more developments in these areas. Through this, public participation was used and cooperation was fostered. The participants viewed this process very favorable.

Second, there were a number of educational material given to the villages on the advantages of wetlands. Village education taught the residents of the community the benefits of protecting the wetlands. This created an opportunity to establish a relationship between the two parties. However, as we will see in the next section, while a relationship has been established, the attitude of the villagers regarding the intervention of EDPO/ASCMP is not favorable. As a result, while they may be educated in the benefits, whether they take it to heart is an entirely different matter.

Finally, PNRS site visits have given EDPO/ASCMP and the village community a direct communication link. Through this link, direct contact and greater cooperation were established between the two parties. Furthermore, there was a short discussion about the problem of people by-passing the PNRS. Site visits, however, only performed as a referral to the wetlands specialists or village conservation officers so far. Once again, the communication link will help educate the villagers of the benefits of protecting the wetlands so such circumvention of the permitting process is prevented.

Challenges of the current program. There were a number of weak points discussed at the workshop regarding the current program. First, the communication links between the village council and the people has broken down. The village council is the representative of the villages, but the *Matai* often do not live there. Instead, they sometimes purchase land elsewhere and reside there. Considering that the people living around the wetlands should be involved in wetlands management, the lack of communication between the village council and the villagers is a problem. The same problem exists between the minister and the villagers. EDPO/ASCMP staff contacts the minister because the majority of the villagers attend church service. However, the minister often do not live in the village either and the same problem again exists.

Second, the program needs a more effective public education component, especially in the villages. Since most of villages are on communal land, they view the land as all theirs. It is difficult for a governmental agency to come in and dictate to them how to manage it. Rather, public education is important to teach the villagers the rationale behind wetlands management. Furthermore, there are cultural barriers that may need to be broken down. For instance, it is culturally acceptable to throw trash onto the wetlands. Once again, education is vital in teaching the community that such practices are destructive to the environment.

Third, it is difficult to get village participation in the restoration of wetlands. The same problems are present as were mentioned in the previous section. Moreover, many times there is a lack of understanding on the benefits of the wetlands for the villagers. Because the benefits (e.g., safety, preservation of fish habitats, etc.) are not obvious, it is difficult to gain village support in the restoration of wetlands.

Fourth, there is a lack of enforcement mechanisms in place to ensure that the regulations developed are carried through. Currently, EDPO/ASCMP has no support from the *Fono* regarding enforcement legislation. More specifically, an EDPO/ASCMP staff indicated at the Workshop that it is difficult to get *Fono* to internalize village enforcement unless the government and community improve their relationship. Moreover, there is a lack of communication between

the government and villages due to geographic constraints. For instance, government activities are focused around the bay area and the remote villages do not see what the government is doing. Because of this, they are able only to educate rather than to regulate.

Finally, the program lacks funding for wetlands restoration. The restoration of damaged wetlands is often a monumental task requiring massive amounts of labor and capital resources. Currently, the primary funding source is from \$309 of the CZMA. Because of budget constraints, funding of \$309 as well as other coastal management programs are in jeopardy. Without any funding, it is very difficult to mobilize any program to accomplish the task.

Opportunities for the Future

A number of strategies were discussed at the Workshop to improve the program based on the findings of the previous section. First, increase public awareness by providing more education through the churches. This can be accomplished in a number of ways. Because the youth in school are more educated and outspoken than ever before, it was suggested to focus on them. Currently, there are educational programs in schools, but they tend to stop there and are not reflected on the wetlands management in the village. Another problem raised in the Workshop was that students were not interested in wetlands management and do not attend workshops on wetlands management. Consequently, it is necessary to create strategies that will gain the attention of the youth. It was suggested that strategies should come from the youth themselves. Therefore, a future task might be to develop an education program targeting youth groups by first getting ideas or strategies from them and then implementing project according to their input.

Second, regulations should be made more compatible with the increased pressure from the demand for housing. Increased demand for housing is inevitable. With this in mind, plans should provide options since the delineation of the wetlands would mean less land in which the villagers could use for housing. In short, plans must be flexible.

Third, the program should offer more incentives to motivate the residents. Incentives include safety issues as well as monetary compensation. Currently, EDPO/ASCMP is stressing the importance of wetlands for the safety of the community as well as the ecological (i.e., fish habitats) benefits. Monetary incentives is the second option that was suggested by one of the participants. However, this should be carefully considered since it might provide the wrong type of motivation.

Fourth, this program should stress the benefits of preserving the wetlands. As mentioned in the previous section, the safety issue should be stressed. Therefore, a future task might be to develop a program that would give the village more responsibility for their own enforcement of the program based on maintaining the benefits that wetlands provide.

Finally, develop networking with environmental groups. Developing networks with different groups was suggested because those groups already have an audience. It was suggested that rather than having its own workshops, EDPO/ASCMP could go to the meetings of other community groups and have presentations. In addition, networking among the youth was also

discussed. Therefore, a future task might be to develop networks with environmental and other community groups.

Co-management Opportunities

A number of strategies were discussed in the workshop to reconfigure the program to maintain the level of services currently offered. Currently, there are two different funding sources. They are: (1) Community Based Wetlands Management Program which obtain its funding from §309 of the CZMA and (2) Wetlands Restoration Project which obtain its funding from §309 of the CZMA.

Community Based Wetlands Management Program (§309). First, regarding education programs, there are a number of agencies who could assume that role. They include: (1) ASCC; (2) DOE; (3) ASEPA; (4) DMWR; (5) churches; (6) village councils; (7) Le Vaomatua; and (8) women's group. An education curriculum could be established by both ASCC and DOE since they are already involved in the education of American Samoa's young people. DOE in particular could be an ideal actor for the education of American Samoa's youth. They could have field trips to the wetlands that would be an ideal educational experience. ASCC could obtain national grant money to establish a college research program using the wetlands as a giant lab. ASEPA could be the primary funding source as they have good financial support from the federal government. The local churches and village councils could be ideal venues for information dissemination to the general public. Since the village council is mostly made up of male members, it was suggested that the women's group could educate the female population. Finally, Le Vaomatua is an NGO which could offer some help. The government agencies listed above could produce an instructional video that would train the trainers who would then educate the residents of American Samoa.

Second, regarding monitor and law enforcement activities, a number of agencies could be involved. Suggestions include: (1) ASEPA; (2) ASPA; (3) DOH; (4) DPS; and (5) village councils. ASEPA, ASPA, DOH, and DPS all have some ability for law enforcement due to their ability to fine for violations in environmental regulations. The village councils could be an ideal candidate to offer village level enforcement. It was suggested that the village council should be the number one enforcer. It was pointed out that they have enforcement capability since it is in their code to do so. However, this may be a difficult task in light of the fact that the village may not enjoy assuming the role of the enforcement arm of the government.

Third, regarding administration services, two departments could be involved. Recommendations included: (1) ASEPA; and (2) DMWR. Both ASEPA and DMWR have administrative abilities although ASEPA has some limitations unless they are able to hire more staff.

Fourth, regarding technical assistance, a number of agencies could be involved. They could offer specialized assistance in their respective fields. Suggestions include: (1) ASEPA; (2) ASPA; (3) DMWR; (4) LG; and (5) NRCS. All of the aforementioned agencies have specialist on staff and could provide expertise.

Fifth, regarding Village Level Monitor and Enforcement, two agencies could be involved. They include: (1) the village council and (2) OSA. The village council could handle some enforcement since they are the traditional power of authority in American Samoa.

Sixth, regarding Village Level Administration, two agencies could be involved. Recommendations include: (1) the village council, (2) *Pulenu'u*, and (3) OSA. The village council could handle some administration since they are the traditional authority. Or the *Pulenu'u* could also be involved in village level administration since they are viewed as an authoritarian figure. In both cases, this assumes that they are willing to assume this role. OSA could provide information and direction for the village council.

Finally, regarding increased enforcement, two agencies could be involved. They include: (1) the AGO and (2) government leaders like the Governor and the *Fono* or legislative leaders. Support from AGO could be important for prosecution of cases. This could also indicate to the citizens that ASG is serious in protecting its coastal resources. Government leaders could provide public support and establish laws that protect wetlands.

Wetlands Restoration Projects (§309). First, regarding technical assistance, there are a number of governmental agencies which have the technical expertise (e.g., engineering, hydrology, etc.) to handle the job. Recommendations include: (1) ASEPA; (2) ASPA; (3) DMWR; (4) LG; and (5) NRCS. All of the listed agencies have specialist on staff and could provide expertise.

Second, regarding the monitoring of biological habitats, there a number of agencies that could be involved. Suggestions include: (1) ASEPA; (2) ASPA; (3) DMWR; (4) LG; and (5) NRCS. Once again, all of the listed agencies could provide technical assistance since they currently have specialist on staff.

Finally, regarding the performance of wetlands restoration, a number of groups could be involved. They include: (1) DPW, (2) DPS, (3) LG, (4) youth groups, and (5) village people. DPW has equipment that could be used for the restoration of wetlands. While DPS could provide the labor by using the correctional facility inmates. Labor in this case would be free and the inmates would be doing a community service. LG could furnish help on re-plantings and other technical assistance. Youth groups could provide some labor for the restoration projects. And finally, the village people could "adopt a wetland."

Conclusion

The benefits of wetlands management are many. It is vital that the services of this program be maintained at a level that will protect the coastal resources of America Samoa.



Picture 5.1 March CZM Workshop: Coastal Hazards Small Group Session

Picture 5.2 March CZM Workshop: Marine Debris Small Group Session





Picture 5.3 March CZM Workshop: Nonpoint Source Pollution Small Group

Picture 5.4 March CZM Workshop: Community Based Wetlands Mgmt. Small Group

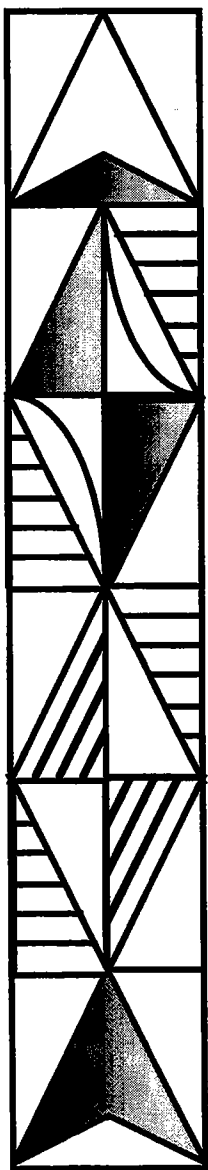




Picture 5.5 March CZM Workshop: Plenary Session

Picture 5.6 March CZM Workshop: Plenary Session





6. RECOMMENDATIONS

*E a Sipa le lamaga a e gase
ai malolo.*

(Sipa's greediness wasted a school of very young fish.)

*(Always consider the consequences before doing
anything.)*



6. RECOMMENDATIONS

6.1. Introduction

These recommendations are based on the synthesis from the findings of the EDPO/ASCMP March '96 Workshop as well as on a review of various journals. Some of these recommendations require new legislation, some can be implemented under existing administrative procedures, and some possibly through executive order. Regardless, all these recommendations do need considerable cooperation and coordination between various governmental agencies as well as the formation of new alliances with villages and NGOs.

The complexity and the overlapping issues of the coastal zone management area are many. Because of this, the practicum team decided to organize our recommendations on a crosscutting themes of issues. The practicum team has organized its recommendations into the following major areas:

1. Administration and Budget Management;
2. Land Use Management;
3. Education and Public Awareness;
4. Village Participation;
5. Additional Recommendations for EDPO/ASCMP

6.2. Recommendations

6.2.1. Administration and Budget Management

Recommendations on the administrative and the budgetary structure of EDPO/ASCMP are not based upon a direct “audit” on the operations of EDPO/ASCMP. Rather they are based on our research and data from the participatory workshop. The recommendations also attempt to address the problem of how to maintain the program with a smaller federal budget. The following are our recommendations:

Recommendation 1: Sharing Fiscal Responsibility for the Operation of the PNRS

After the March ‘96 Workshop, there was a general consensus regarding the importance of the PNRS and its role in the management of American Samoa’s Coastal Zone. While there are other possibilities for reducing the operating cost of EDPO/ASCMP, the contribution of services from the other agencies is both desirable and highly recommended. Responsibilities currently carried out by EDPO/ASCMP can be channeled to other agencies. It is recommended that the members of the PNRS consider ways that services can be cost shared. In addition, PNRS members should explore the possibility of having the various agencies contribute monitoring and enforcement in their areas of expertise, or to perform other services to assist in the operation of the PNRS. This will result in a savings to EDPO/ASCMP which could be channeled to cash strapped projects that have lost their traditional funding source (i.e. CHAMP, CBWMP, MAD, etc.).

While other methods of cost allocation should be evaluated, a redistribution of responsibilities is fair and is in everyone’s best interest as it will support the continuation of the program and minimize impact on the budgets of other departments. In other words, everyone has a vested interest in the program’s future and should be willing to share the responsibilities.

Recommendation 2: More Effective Use of Current Funds

In light of the current budget situation, all governmental agencies, including EDPO, should streamline their operations. A thorough self audit should be performed to effectively reduce duplication of effort and maximize current funding available for coastal zone management. This audit may reveal common areas of activities among different projects within EDPO/ASCMP. Cooperation in these common areas will result in more effective use of resources in the long run.

For example: The centralization of education and public awareness campaigns will unify the message of the importance of the coastal zone of American Samoa to the people. Far more significant, however, is that the process of centralizing this component would mean cost savings for EDPO/ASCMP as well as the entire ASG because agencies would be coordinating each other to avoid duplication of tasks.

Recommendation 3: Better Cost Accounting Analysis

No organization can do without an accurate accounting system. It is as much a part of an organization as its people. It is recommended that EDPO/ASCMP adopt better cost accounting procedures to improve the tracking of EDPO/ASCMP's expenditures. Although it may not be within ASCMP's jurisdiction to change accounting methods as it is housed under a larger department, EDPO, a method must be developed to provide better analysis of the actual costing of individual projects and programs. This costing should include time management of personnel as well as materials utilized by various projects. This better accounting would improve decision-making in terms of costing out procedures as well as sharing of cost between affiliated agencies if necessary. Furthermore, accuracy of information is crucial in the decision making process for the future when funding is tight.

Recommendation 4: Environment as the Unifying Theme for the American Samoa Government

Explore the idea of using the environment as a coordinating force that unifies many of ASG's policies and programs so as to achieve a 'sustainable development' approach to island planning. Measures should be taken to seek balance and consistency among the operating rules of various governmental agencies involved in environmental protection. If incompatible rules and policies are found then amendments will be sought.

Perhaps, this endeavor will result in the identification a coordinating entity for the various governmental agencies that have a role in conserving and preserving the environment for American Samoa's future. The future of American Samoa depends on living within the means of island coastal resources. The ASG should not risk long-term environmental damage for the sake of short-term economic gains. This concept of caring for the environment must be the unifying principle for all future policies and approaches to economic growth in American Samoa. Growth unchecked by both the public and the private sector will lead to the 'tragedy of the commons.'

Recommendation 5: Diversify Funding Sources

Be innovative in diversifying sources of funding to include those sources outside the traditional area of coastal zone management. Look into other areas that fund projects related to botany, indigenous society, sustainable development, etc.

For example, the Smithsonian Institution is active in research in tropical biology through its National Museum of Natural History, Smithsonian Tropical Research Institute, and National Zoological Park. Training and environmental education also are carried out under Smithsonian auspices.

EDPO/ASCMP should look into the possibility of writing grants to several other federal agencies with projects or programs related to biological resource conservation in tropical developing countries. Possibilities include the National Science Foundation, the US Army Corps of Engineers, and National Academy of Sciences/National Research Council. In addition, there

are several quasi-governmental federal funding sources and NGOs that receive substantial federal funding for conservation-related activities: the Pacific Tropical Botanical Garden, the New York Botanical Garden, and the Missouri Botanical Garden are some examples.

In the event that EDPO/ASCMP does not qualify directly for these grants, EDPO/ASCMP should encourage local film makers, villages or environmental NGOs to apply for grants such as the Pacific Islanders in Communications Grants. Pacific Islanders in Communications (PIC) is a national nonprofit media organization established primarily for the purpose of increasing national public broadcasting television programming by and about indigenous Pacific Islanders. PIC promotes programming which foster a deeper understanding of the values inherent in Pacific Island cultures and which enhances public recognition of and appreciation for Pacific Islanders.

Also, investigate various 4 year colleges in Hawai'i and the Mainland as well as other Pacific Basin countries on research grants available. This may promote training and foster more exchange between American Samoa and interested parties. Akin to the funding from the Sea Grant Office that made this Practicum possible, other funding sources may act as a catalyst for future American Samoa coastal zone management activities.

Finally, it is important that the ASG explore local resource generation as a means to continue funding the EDPO/ASCMP and other agencies facing federal budget cuts. As such measures may require new legislation, it is necessary for the *Fono* members to understand the importance of the continuation of EDPO/ASCMP activities. Please refer to Recommendation 10 in this section for suggestions for increasing *Fono* understanding of and involvement in coastal resource conservation issues.

Recommendation 6: Collaboration with Other Governmental Agencies and Non Governmental Agencies

Seek greater integration of a wider range of governmental and non-governmental assets, i.e., programs, resources, people and funding. This idea can be expanded throughout the countries of the South Pacific. Most of these countries are relatively small, in both geographic and economic terms. The natural socio-economic characteristics of these countries also severely limits their capacity to sustain the environment, especially the coastal zones. These small domestic markets can be aggregated through sharing and pooling of resources. The heritage linkage and close proximity of American Samoa to Western Samoa is a prime example. More cooperation should be encouraged especially in the area of sustainable development. The recycling market may be too small for American Samoa but when combined with Western Samoa, it might be feasible. This joint economic efforts may result in a better economy of scale. Because American Samoa is a territory of the United States of America, there may be a need to seek approval from the State Department to establish a relationship with Western Samoa, a foreign country.

EDPO/ASCMP can also begin to look to regional organizations for assistance in continuing to carry out its mandate. Specifically, EDPO/ASCMP should explore the possibility of increasing SPREP involvement in providing technical assistance and resources to the EDPO/ASCMP.

Recommendation 7: Need for Consensus and Political Commitment

Due to the predicament of EDPO/ASCMP's budget situation and the federal political atmosphere, there is increased emphasis on being more efficient and self-reliant. The ASG, especially EDPO/ASCMP, must explore a process of striving for more independence from current sources of revenue. Since the livability of AS is very dependent upon her geographic sensitivity as a coastal zone, ASG must consider making the environment a priority and an integral part of all policy making. Commitment made today may avoid a long run environmental disaster.

There is a need to settle political differences. Pertinent governmental agencies should be included in the land use management process; hence, whatever political differences exist should be brought up and resolved. For example, DPW is a member of the PNRS but apparently rarely participates in this review process. If differences cannot be settled among agency directors, the governor himself has to step in to facilitate a middle ground so that the people and the environment of American Samoa would not be short changed.

Recommendation 8: User Fee and Property Tax as a Source of Revenue Generation

As American Samoa moves from a subsistence economy towards a cash based society, the generation of governmental services will have to grow. This level of services cannot be maintained if ASG does not start generating revenue from some of the services provided. One logical area for revenue generation would be through the implementation of a user fee. In this way, revenues are only collected from the users.

For example, a user fee was suggested at the March '96 Workshop for the collection of solid waste. ASG should authorize ASPA to start charging a fee for solid waste collection. This will offset some of the cost of garbage collection. In order to encourage the concept of reduce, reuse and recycle, the fee structure could be implemented in progressive form--the more you throw away the more you pay. This "garbage by the pounds" concept is currently being tested in some parts of the US mainland but its effectiveness is yet to be determined. A shortfall of this suggestion, however, is that people may circumvent the system by just dumping their garbage into the environment that ASG is trying to protect. In addition, a property tax on land owners could be considered in order to offset the costs of administration, installation of infrastructure and utilities, or improvements. This will, however, require additional legislation by the *Fono*.

Recommendation 9: Seek More Volunteers to Staff EDPO/ASCMP

There was general consensus at the March '96 Workshop that EDPO/ASCMP, as well as many other governmental agencies, are under utilizing some "free" human resources, namely women's organization and the youth groups. These organizations could be better mobilized and effectively help out in tasks ranging from answering telephones to researching and requesting alternative grants. EDPO/ASCMP would have some financial savings with these volunteers in place. Another resource area that EDPO/ASCMP could tap into is the students of ASCC. EDPO/ASCMP could set up an internship program that would draw potential students who are

interested in the environment. This not only provides valuable hands on practical skills for these students but also increases their marketability if they apply for further schooling outside American Samoa. For example, in Hawai'i some schools are being utilized for monitoring water quality from streams. This results in scientific data collection projects with equipment and expertise often provided by line agencies. These project can lead to additional research grants.

Recommendation 10: Build Support in the Fono

The March workshop served to show how much support was needed in order to provide the same level of coastal zone management in spite of the budget shortfalls. This support needs to come from many places. One of the most important will be the *Fono*. The *Fono* leaders need to feel that EDPO/ASCMP is important to the sustainability of the American Samoa coastal zone. It is important, therefore, to increase awareness among *Fono* members of the consequences of lack of management for the coastal zone. This can be achieved by a series of workshops and site visits. These site visits can increase understanding among *Fono* members of threats to the coastal zone, and may therefore increase their support for EDPO/ASCMP's efforts. An example of a site visit may even include a visit to other Pacific Island states which have experienced damage to the coastal zone as a result of economic development and lack of adequate management measures. Funding for workshops and exposure trips could be sought from various organizations which provide funding for issues related to environmental protection.

6.2.2. Land Use Management

Based on the findings of the Workshop, the practicum team has identified a cross-cutting theme among various coastal zone issues in the area of land use management. Due to the combination of rapid population growth and the mountainous landscape of American Samoa, effective land use management has become a crucial factor for coastal zone management.

Under the land use management components, the practicum team has identified four main areas which we recommend that EDPO/ASCMP address. First of all, the Project Notification Review System (PNRS) needs to be accepted and legitimized by people in American Samoa. The PNRS has been the core component of EDPO/ASCMP for issuance of land use permits. Regardless of its innovative land use permit system, it seems that its legitimacy is not totally recognized by people concerned with land use management. The territorial government's decisions on land use are often perceived to be governmental intervention or a means to exploit villagers' lands, since over 90 percent of the territorial land is owned by villages. The PNRS needs to raise understanding of its functions among people in American Samoa.

Secondly, village participation is recommended to be enhanced. Under severe budget cuts, it will be difficult to expand the functions of the PNRS without the cooperation of other agencies and villages. One of the ways to minimize cost and to increase compliance with land use standards set by the PNRS is to encourage villages to participate in land use planning. Through sharing the tasks of planning with villages, the PNRS will be able to reduce the cost of land planning. This process of participation will eventually increase the participants' understanding of the importance and need of land use planning. This method also allows people in American Samoa to practice land management that is more in line with their traditions and culture.

Thirdly, enhancement and expansion of monitoring and enforcement of the PNRS is recommended. It is difficult for EDPO/ASCMP to monitor and to enforce the PNRS for the entire territory. Infraction of land use or projects which do not comply have been observed due to village's different way to manage their lands. There is, however, no systematic way to control and penalize all cases.

Lastly, continuation of land use management has also been identified as a key theme for increasing the effectiveness of its functions of preserving wetlands, mitigating coastal hazards, and reducing marine debris and nonpoint source pollution. Strong land use management will therefore reduce the burden on EDPO/ASCMP's enhancement programs and NPSP program. Through regulating land use construction on hazardous areas and water pollution can be prevented, and wetlands can be protected. Under the situation of a severe budget cut in particular, it seems to be indispensable to consider improvement of land use management.

Recommendation 1: Involve Representatives of Affected Villages in American Samoa Directly in the PNRS Process

In order to include villagers' voices more effectively in the PNRS decision making process, it is recommended that the PNRS board be required to invite representatives of the affected villages to review meetings for all major projects. These village representatives could sit in as observers. However, village representatives could also potentially be granted voting power. Participation in the decision making process will increase the villagers' understanding of the PNRS as well as their commitment to the decisions. In addition, the integration of villager's concerns will assist in making the PNRS process culturally appropriate. One concern for this recommendation is that representatives from remote areas might request transportation fees and a per diem to travel to Tutuila for PNRS reviews. In order to increase the participation of villagers, this issue has to be further addressed.

Recommendation 2: Settle Political Differences Among Government Agencies

The workshop participants noted that the PNRS lacks cooperation with the Department of Public Works (DPW), although DPW is one of the key agencies of the PNRS. The role of DPW is crucial in the area of land use management, as they issue building permits. One of the major goals of the PNRS is to establish a one-step land use permitting system, but the efficiency and effectiveness of this system has been negatively affected by political tension. In order to make CZM more effective, this tension should be eased. Thus, it is recommended to settle political difference among some governmental agencies whose interests conflict with each other through *mediation* by a third party, possibly the governor (please refer to recommendation, consensus and political commitment under 6.2.1.).

Recommendation 3: Increase Support from other Government Agencies and the Private Sector to Cope with Infractions of Land Use Management

It is recommended that EDPO/ASCMP consider measures to strengthen the PNRS by linking compliance with permits with the issuance of other licenses, permits, extension of infrastructure, or services. For example, those who do not comply with the PNRS could be denied the business license issues by the Business Licensing Authority of EDPO, or could be prohibited from participating in the National Flood Insurance Program through local banks. This will require cooperation from related agencies. In order to put this recommendation into practice, EDPO/ASCMP needs to allocate staff time to review administrative rules of relevant agencies and coordinate with those agencies to draft changes in their administrative rules to allow for a linkage with the PNRS.

Recommendation 4: Increase Visibility of the PNRS

EDPO/ASCMP should continue efforts to increase visibility of the PNRS in order to raise its familiarity to people in American Samoa. The following ideas are recommended:

- Reviving of the newsletter, *O Lau Samoa*

A newsletter specifically to *Matai* and governmental officials will help disseminate information on newly issued projects and future development. There used to be a similar newsletter called *O Lau Samoa*, but it is not longer published. By revising *O Lau Samoa*, the PNRS will have a means to familiarize people who have a stake in land use management with the land use permitting system. This will increase awareness of and compliance with the PNRS.

- Creation of uniforms for PNRS staff members

EDPO/ASCMP has already created logos and stationary, but different creative ideas such as uniforms for PNRS staff members could possibly contribute to presenting a more positive image of the PNRS.

- Use the Educational Resource Center to Increase Understanding of the PNRS

In order to disseminate news regarding land use management, to conduct seminars on land use permits, and for other purposes, an Educational Resource Center can be used by EDPO/ASCMP (refer to recommendation for education/public awareness). This place also can serve as an information booth where questions on land use management will be asked.

Recommendation 5: Increase Accessibility of the PNRS

- Consider establishing a PNRS branch office in Manu'a

In order to increase public accessibility to the PNRS in Manu'a, a mobile satellite office can be set up. A lack of accessibility to the PNRS will be a disincentive for villagers in remote areas to obtain a land use permit. Given the future budget cut, it might be more feasible to open the facility periodically with staff visiting from the main office instead of setting regular daily office hours.

- Continue pre-planning meeting with developers

It is strongly recommended to continue this process. This will ensure that developers understand the conditions of the PNRS decisions. This process also enhances the implementation and enforcement of land use management as better understanding of the conditions of permits is developed between the PNRS and developers.

Recommendation 6: Enhance Village Participatory Project of Land Use Planning

During the workshop, it was strongly recommended that land use planning move toward an integration of village-based and territorial level approaches. The concept behind this recommendation was to share the responsibility and cost of land use planning with the village level, and to empower villages to manage their own land in a traditional way while complying with PNRS regulations. Recommendations 6 through 8 will suggest possible ways to enhance

village participation. The practicum team recommends to have villages involved in all stages of the land use planning process, from needs assessment to monitoring and enforcement. EDPO/ASCMP can play an advisory function in assisting villages in the land use planning process. This effort can build on EDPO/ASCMP's experience with village based land use management gained in its wetlands management and hazard and marine debris mitigation planning efforts. Please refer to the *Recommendations for Village Participation* for the details of village participation.

Here are the possible steps developed by the practicum team to conduct village-based land use planning:

- **Land Use Management Workshop with *matai***

EDPO/ASCMP should coordinate a land use management workshop with *matai* to raise their awareness of the need for land use planning and to encourage them to initiate village-based planning in their home villages. The workshop would also set up exercises on how to establish land use planning and express concerns of EDPO/ASCMP without forcing requirements upon the villages. In other words, a workshop can be the place where EDPO/ASCMP and villages will exchange their concerns (more mutual understanding) and EDPO/ASCMP can answer the questions of villages (technical assistance). Through the workshop, *matai* can be updated with land management issues of American Samoa as well.

- **Village-base Land Use Planning**

Matai are expected to conduct land use planning in their home village. The role of EDPO/ASCMP is to provide assistance to villages which are undertaking or going to undertake land use planning. Post-workshop follow-up by EDPO/ASCMP is crucial. Otherwise village's motivation can fade out as time goes by.

- **Incrementally Integrate Village Level Plans into Territorial Level Plans**

Although the village decisions will be implemented by villagers, villages are also required to inform the territorial government of their decisions and process of planning. The territorial government or EDPO/ASCMP needs to take decisions made by villages into consideration when making regulations on territorial land use management.

Recommendation 7: Develop a Pilot Project of Village-Based Land Planning

Successful stories always have power to convince people. Through feedback conducted in the workshop, there seem to be some villages which are willing to undertake village-based land use planning. These are often villages in which EDPO/ASCMP has had success in its participatory planning process in other programs and projects. In cooperation with these villages which show their interest in village land use planning, The practicum team recommends conducting pilot projects. These pilot projects could later be expanded throughout the territory. It may be possible for EDPO/ASCMP to seek grants from agencies or organizations which favor agency/community partnerships to conduct such pilot projects.

Recommendation 8: Continue Involving Villages in Monitoring and Enforcement

- Involve villages in monitoring and enforcement.

During the workshop, it was felt, in general, that efforts at improving implementation would be more effective if village councils and *pulenu'u* were more involved in monitoring and enforcement. Along with the recommendations proposed above, village participation can play a substantial role in enhancing monitoring and enforcement of land use. Village's decisions on land use will possibly strengthen their commitment to implementation and monitoring of land use planning.

- Continue involving village court system in monitoring and enforcement.

Villages also maintain their own traditional court system. These village court systems can be called on to penalize non-compliance with their planning. This process can also involve village councils and *pulenu'u*. In this case, fines collected based on the court system can go to villages as funds for their planning.

Recommendation 9: Institute Legal Procedures and Civil Actions for Penalizing Non-Compliance with the PNRS

In general, legal procedures or civil action for setting penalties and the appeal process in American Samoa are not quite established. In addition to enforcement at the village level, regulations on penalties for projects which do not comply with the PNRS and appeal procedures are necessary. The Attorney General's office can possibly play a role in establishing and taking legal actions. One concern for this recommendation is how to make legal procedures and civil actions comply with the village level court system. It is necessary to make these procedures culturally compatible.

Recommendation 10: Provide Informational Brochures on Compliance With the PNRS and Hazard Safe Construction

As a suggestion to enable developers to comply with the PNRS and to mitigate against coastal hazards, the development of construction guidelines which differ based on the types of building is recommended. Informational brochures can be produced which provide developers with guidelines for complying with the PNRS, and how different types of buildings can be strengthened to mitigate damage from coastal hazards.

Recommendation 11: Identify Geographical Priority Areas for Land Use Regulation

In order to issue land use permits properly, geographical priority areas need to be identified. Areas such as hazard prone zones and endangered wetlands should be assessed and plotted on maps. The coastal hazard atlas is one of the recommended ideas. In the state of Hawai'i, the telephone directories lists tsunami evacuation maps as civil defense guidance. In addition, buildings in zones which are prone to hazards could be required to meet strict safety standards. As stated in Recommendation 10, land use permits would not be issued unless the proposed projects met the criteria of the priority areas.

Recommendation 12: Revise the Review Guidelines for the PNRS

At the workshop, it was suggested that the PNRS revise its guidelines to incorporate issues of concern to them: wetlands preservation; coastal hazards mitigation; nonpoint source pollution; and marine debris. This process is necessary to reduce overlap among all EDPO/ASCMP programs, and thereby reduce overall cost to EDPO/ASCMP. In other words, some components of each enhancement program can be covered through enhanced guidelines for issuing land use permits. For example, not giving permit for the use of the up-stream lands for agriculture can protect against soil run off.

6.2.3. Education and Public Awareness

Based on data collected during the EDPO/ASCMP March '96 Workshop, and other documents the practicum team has received, the team has identified a number of overriding themes that should be addressed in the area of public awareness/education.

- It is useful to differentiate between formal and informal education/awareness activities. Formal activities include any education conducted in a structured setting (i.e. in a classroom or workshop) that is interactive. These activities target a very specific audience, and require the development of a set curriculum, and teacher training. Informal activities include awareness campaigns which seek to address a broad audience.
- It is necessary to *focus educational activities* by targeting a specific audience.
- There is a need for *greater coordination of educational activities* among different agencies conducting educational and awareness programs related to environmental issues.
- There is a need to *increase village participation* in the planning and implementation of education/awareness projects. The emphasis should be on a transition from a system in which the Education and Awareness Program initiates, develops, and funds projects, to one in which the Program acts as a coordinator and technical assistant in the development of village based projects. This will *make educational activities more culturally appropriate* while also *reducing the cost to EDPO/ASCMP* in the long term.
- There is a need to more actively *seek outside sources of funding* for EDPO/ASCMP activities.

Based on these themes, the practicum team recommends that the following actions be taken:

Recommendation 1: Target Audiences, Focus Message, and Use Appropriate Media

Workshop participants noted on a number of occasions that, while education and awareness activities of the EDPO/ASCMP were quite visible, in many cases the message of the activities was not fully understood by the general population. EDPO/ASCMP should further efforts to prioritize messages which it wishes to convey, identify the audience for these messages, and develop the appropriate medium to convey this message. What do we want American Samoan youth to be aware of? What message should we send to the elderly? How can we best convey these messages? Recent studies have shown, for example, that American Samoan youth prefer television to other forms of media, so a campaign to increase awareness among youth might focus on the strategic use of television commercials and environmental programming. The elderly, on the other hand, are more likely to be influenced by newspapers, so awareness efforts aimed at the elderly might use this medium. Coastweeks addresses a broader segment of the population, but there is nonetheless a need to clarify the environmental message of Coastweeks activities. Examples of specific changes which might be made are listed below:

- Coastweeks should have targeted themes for each year, such as the importance of wetlands, or the threat of marine debris.

- Coastweeks activities could include traditional song and chant contests which would emphasize the importance of the natural environment in Samoan culture.
- Commercials and educational programming should be used strategically to reach certain age groups and to deliver certain messages. For example, youth can be targeted with television commercials that use simple, powerful images to instill in them the need to preserve environmental resources.
- Messages which link the preservation of the coastal zone with the preservation of *Fa'a Samoa* may prove particularly effective.

Recommendation 2: Develop Criteria to Measure the Effectiveness of Activities and Evaluation Mechanisms to Determine Their Success

It is important that there be some way of determining whether the education and awareness activities are actually resulting in increased awareness and, more importantly, changes in environmentally damaging behavior. Projects should therefore have specific and measurable objectives (e.g. fifty percent of school children will be able to name three important functions of wetlands) and should be followed up with an evaluation. For 'formal' educational activities conducted in a classroom or workshop setting, this would entail developing evaluation forms to be filled out by participants. It is also important to evaluate the effectiveness of 'informal' activities. For example, before and after surveys for Coastweeks could be used to determine whether awareness of targeted issues has increased among the general population, and to find out which activities or events left the most positive impression on people.

Recommendation 3: Make More Frequent and Effective Use of the Print Media as a Tool to Disseminate Information on Coastal Zone Issues

Workshop participants noted that the EDPO/ASCMP should make full use of the media to spread its message. In the future, the EDPO/ASCMP should take steps to disseminate timely information on events and campaigns. One staff member should be given responsibility for communicating with the press. Another possible activity is to publish a weekly column about American Samoa's environment. Other ideas include using the news bulletin of the Office of Public Information to post notices of news and events, and reviving the monthly newsletter of the EDPO/ASCMP, O Lau Samoa.

Recommendation 4: Develop a Poster Series on Environmental Issues

For example, a series of food chain posters could be effective in conveying the direct impact of pollution on human beings. These posters could demonstrate how, for example, pollution may end up in the fish we eat. Similar posters could be developed for coastal hazards, marine debris, nonpoint source pollution, and wetlands. This activity could be incorporated into the school curriculum, and schools could have contests in which students develop posters. Efforts can be made to encourage the private sector to sponsor the costs of materials and the printing of the poster series. Another alternative is to seek grants available for activities which involve environmental education.

Recommendation 5: Develop Teacher and Administrator Training Project and Educational Materials for American Samoa's Schools

While environmental issues are already integrated to a certain extent in the school curriculum, it is necessary to ensure that this curriculum is implemented effectively. The EDPO/ASCMP and other agencies with environmental education components can play an effective role in enhancing this curriculum and improving its implementation by providing technical assistance and training for teachers and administrators involved in implementing the environmental curriculum, and by providing educational resources. The DOE, the ASCC, and non-governmental organizations could be important partners in this initiative.

Recommendation 6: Develop and Conduct Educational Workshops for All Government Agencies and for All Level of Employees

The American Samoa Government must lead by example. If government officials themselves are uninformed about environmental issues, and if the government engages in activities which damage the environment, it will increase the difficulty of bringing the environmental message to the general population. In addition, government employees constitute one third of the labor force, and if they can be targeted for an intensive education and awareness campaign, they can then pass the environmental message on to the village level. Increased awareness will also make government employees more sensitive to environmental issues in the workplace. Workshops on environmental issues conducted in cooperation with other agencies with environmental education components are one means to develop awareness among this group. Members of the *Fono* should also be targeted for education, as their support will become increasingly important to the continuation of environmental programs.

Recommendation 7: Develop an Educational Resource Center (ERC)

An Educational Resource Center could play an important role in education and awareness as a place to which communities can turn to receive information and help on environmental issues. This recommendation complements the recommendations to give more power to villages--if villages are to have more responsibility, they must have technical resources and information available. The ERC can assist villages in preparing plans, and in seeking alternative sources of funding by acting as a clearinghouse for grants for village based projects. ERC staff could be composed of both full time employees and volunteers who could be recruited as student interns, or from representatives of women's groups. Alternative funding sources can be sought to cover the cost of personnel and facilities for the ERC (refer to the recommendation to Diversify Funding Sources in section 6.2.1). The EDPO/ASCMP or Le Tausagi could play a leading role in the establishment of the ERC.

One possibility would be to develop the ERC as a quasi-governmental agency with nonprofit status. This would allow for more involvement of non-governmental organizations in implementing projects, and would make the ERC eligible for grants available to non-profit organizations. Specifically, Le Vaomatua seems an ideal candidate to play a key role in the ERC.

Recommendation 8: Formalize And Strengthen The Role Of Le Tausagi As An Education And Awareness Coordinating Group

The need for increased coordination was stressed repeatedly in discussions on the Education/Awareness Program. Significant steps have been made in this area through Le Tausagi, a coordinating group for a number of agencies and organizations concerned with environmental education. Nevertheless, more can be done to share resources and ideas in delivering a unified and coherent message on environmental issues. Specifically, Le Tausagi can play a more formal role in coordinating educational activities, similar to the role the PNRS plays in land management. One agency, possibly EDPO/ASCMP or the DOE, can play a lead role in Le Tausagi. Le Tausagi could have one or more full time staff who are paid equally by all member agencies, or through alternative funding sources available to programs and projects in environmental education. In either case, this expanded role for Le Tausagi is likely to lead to substantial savings for EDPO/ASCMP and other agencies involved in environmental education as it will result in increased coordination and pooling of resources. This organization could be made responsible for such activities as Coastweeks, teacher training activities and technical assistance on curriculum development, and NPSP poster campaigns. Another possibility is for Le Tausagi to play a lead role in establishing the Educational Resource Center mentioned in the previous recommendation.

Recommendation 9: Involve Members Of The Clergy In Issues Related To The Coastal Environment

An initial step towards achieving this objective is to have the Governor's Office invite the members of the American Samoa Council of Christian Churches to meeting to discuss the role churches can play in conservation of the environment.

Recommendation 10: Broaden Participation in Planning for Coastweeks

The planning committee for Coastweeks should include not only representatives from cooperating government agencies, but also the private sector, villages, and non-American Samoan communities. The increased involvement of all sectors in planning Coastweeks will be important in efforts to reach a wider audience while reducing the cost to EDPO/ASCMP.

Recommendation 11: Have Villages Sponsor Coastweeks Activities

The Education/Awareness Program can reduce the cost of Coastweeks activities to EDPO/ASCMP and increase the effectiveness of these activities by soliciting more village participation the planning and implementation of Coastweeks. This would entail involving village councils more in the process of planning these activities. For example, villages could present proposals for activities, develop, and implement these activities, while the EDPO/ASCMP plays a role as a coordinator and technical assistant. In order to provide villages with an incentive to participate in Coastweeks, EDPO/ASCMP could provide awards for the

villages with the best activities. In addition to activities currently undertaken, villages could also be encouraged to develop more traditional activities.

Recommendation 12: Incorporate an 'Environmental Pledge' in the Process of Issuing Licenses and Permits

A Samoan saying states that 'stones rot, but words last forever'. This emphasis on the spoken word in *Fa'a Samoa* can be used to encourage people to make a commitment to protect the environment. For example, people could be required to make a 'pledge' to refrain from activities which damage the coastal zone as a necessary step in the issuance or renewal of drivers licenses, boaters permits, or other documents. Boaters and drivers, for example, could pledge to properly dispose of their trash, and could be given complimentary trash bags. Such a program has been successfully implemented in the Gulf of Mexico. An example of such a pledge is given below. This pledge can be written in both English and Samoan.

Box 5.1. Boater's Pledge to Protect the Coastal Environment

I Pledge

To transport to shore, for proper disposal, all trash generated aboard my boat, especially plastic, glass and metal;

To make every effort to prevent accidental loss of food and drink containers, fishing gear, and other debris from my boat;

To retrieve for proper disposal onshore, plastic refuse, cans and other man-made debris I find floating in navigable waters; and

To encourage fellow boaters and fishermen to Take Pride in the Waters of American Samoa.

(Adapted from Villere Reggio, Coastal Zone 93 Vol 2, p. 1981-1989)

Recommendation 13: Have Private Sector Sponsor Calendars, T-Shirts and Activities

EDPO/ASCMP should aggressively seek private sector sources of funding where it can significantly reduce costs for EDPO/ASCMP. Such private sector involvement can provide good public relations for local companies, while also making them feel a stake in the coastal environment. Sponsorship is especially appropriate for Coastweeks activities. The Art & Tide Calendar, T-shirt, and other novelty products, for example, can be sponsored by private companies. In addition, the private sector can be encouraged to help fund sporting and other activities. The Education/Awareness Coordinator can be made responsible for letter writing campaigns soliciting contributions.

Recommendation 14: Seek Grants for Students from American Samoa to Get Advanced Degrees in Environmental Management

There are a number of possible sources of grants which could be used to fund the cost to send American Samoan students to seek a degree in environmental management. For example, Rotary International has grants for travel and accommodations for students. The ERC, acting as a clearing house for grants, could assist students in seeking such grants.

Recommendation 15: Conduct Seminars and Workshops on Hazard-Safe Construction and Compliance with the PNRS for Developers

Providing periodic seminars on construction standards and hazard-safe construction for developers in American Samoa can help to improve compliance with the PNRS. Such seminars could be made mandatory for developers who fail to comply with standards, and could be open to all others who are interested.

Recommendation 16: Centralize Issue Specific Educational Components Under the Education/Awareness Program

Presently each of the issue specific program areas of the EDPO/ASCMP (CHAMP, CBWMP, MAD, and NPSP) have their own education component. In order to reduce duplication of effort and develop a coordinated educational effort, it is necessary to centralize all education and awareness activities under the Education/Awareness Program. This should result in savings to the EDPO/ASCMP, as noted in Recommendation 2 of the Administration and Budget Management section.

Recommendation 17: Make Educational and Awareness Activities More Culturally Sensitive

There are a number of general ways in which educational activities can be made more culturally sensitive. Two specific suggestions are listed below:

- Print all educational and awareness materials in both Samoan and English.
- Consult with villagers before planning any activities. In the past, lack of consultation has caused problems, such as the planning of presentations on Sunday, which is a rest day in many villages (please refer to the section on Village Participation for more specific recommendations for village based planning).

6.2.4. Village Participation

Since its establishment, EDPO/ASCMP has wisely taken a bottom-up approach in coastal zone management. Especially for the three enhancement programs, CHAMP, CBWMP, and MAD, the participatory approach is one of the strengths in managing resources at the village level. Yet, the workshop participants indicated challenges of EDPO/ASCMP programs in terms of village participation. During the discussion of education and public awareness, the opinion was expressed that public perception of EDPO/ASCMP roles in communities was sometimes negative. This concern was raised in almost all of the discussions during the workshop. The negative public perception is partially due to miscommunication between EDPO/ASCMP and villages. Although EDPO/ASCMP intends to make villages better equipped to manage their land, some villages feel that the EDPO/ASCMP programs take away their rights and authority to manage resources.

For future success in resource management, more village participation is considered to be crucial. The workshop participants proposed that the village councils play a larger role in monitoring, enforcement, and administration of EDPO/ASCMP programs at the village level. In order for villages to be willing and able to participate further, EDPO/ASCMP will need to make villages motivated and equipped to manage their resources. Readopting village land use plans with an emphasis on village "ownership" over resources can be a central component of village participation. In the past this has not been practiced due to land tenure in American Samoa which does not allow for communal land development and cultivation to be discussed in a village council setting for fear of encroachment or illegal claim by people who are not family members. Any attempts to foster a participatory land use planning process in American Samoa will have to take these cultural factors into account, and the suitability of such an approach must be determined on a village by village basis. For example, participatory land use planning may be more appropriate on freehold land than in some villages with communal land tenure. This section suggests strategies which aim to assist villages in developing village land use plans and other related resource management practices.

Recommendation 1: Improve Communication between EDPO/ASCMP and Villages

The negative perception of EDPO/ASCMP by some villagers is a serious constraint for enhancing village participation. Some participants at the workshop noted some problems of EDPO/ASCMP's workshops in villages which might partially form the negative public perception of EDPO/ASCMP. For example, one problem from the villagers viewpoint was that village presentations on coastal hazards by EDPO/ASCMP are sometimes conducted on Sunday, the rest day. Another problem for CHAMP was that the program message was not immediately understandable for many people. These weak points might prevent villagers from participating and make them feel threatened by outsiders. Due to miscommunication between EDPO/ASCMP and villages, EDPO/ASCMP's intention to be a facilitator and technical assistant for villages may not be understood by some villages.

In order to improve public perception of EDPO/ASCMP and to have EDPO/ASCMP accepted as a facilitator and provider of technical assistance, it is recommended to focus on improving two way communication between EDPO/ASCMP and villages. Interviews and surveys on issues around problems such as coastal hazards, wetlands management, and marine debris, can be used as tools to initiate the dialogue between EDPO/ASCMP and villagers. Interviews and surveys can target specific groups such as *matai*, women's groups, and youth organizations, which can play important roles in resource management at the village level. The problems regarding coastal zone management identified by EDPO/ASCMP might be different from concerns of target groups about their resources. Therefore, interviews and surveys can adopt open-ended questions and a discussion format, so that target groups are encouraged to share their concerns and opinions. This type of interaction will help EDPO/ASCMP present itself as a facilitator and provider of technical assistance.

Recommendation 2: Evaluate Successful Cases and Categorize Villages

The findings of the March 96 workshop show that some villages have been actively participating in CHAMP and CBWMP resulting in the successful management of the resources in question, while other villages have been reluctant to do so or have rejected the projects. Although each village is said to be politically organized in its own way and requires a particular approach of communication, there may be common factors among successful cases that have made the EDPO/ASCMP programs better accepted. Therefore, it is recommended to evaluate the successful cases of CHAMP, CBWMP, and MAD and search for possible key factors that encouraged village participation. These findings can then be used to develop strategies to promote village participation in the less successful cases and in new cases.

While evaluating successful cases, all the villages could be categorized based on degrees of participation and suitable approaches could be developed for each of the categories. For example, in CBWMP, some villages have already adopted ordinances to prohibit further land fill in wetland areas, whereas other villages rejected the delineation of wetlands in their village. Efforts to enhance village participation may be more effective if different strategies are developed for villages in different categories.

Recommendation 3: Enhance Management Capacity of Villages

Findings of the March '96 workshop show that participants thought that the village councils could be more responsible for implementing the EDPO/ASCMP projects particularly in monitoring, enforcement, and administration at the village level. On the other hand, there was an opinion raised during the workshop that the village councils are not prepared to take these responsibilities. EDPO/ASCMP should continue to encourage village participation in planning, implementation, and evaluation of coastal zone management. Through involvement in various activities for coastal zone management, environmental awareness of participants will increase, and they will become motivated to take initiatives in managing their own resources. Active participation by villages, therefore, will contribute to sustainability of the EDPO/ASCMP projects.

Villages lack the necessary skills. Therefore, it is recommended that EDPO/ASCMP provides assistance to the village councils in gaining planning and management skills. Participatory Rural Appraisal (PRA) is a method which aims to enhance the capacity of villages to develop their own problem solutions and development options. PRA is used for planning, implementation, and evaluation of community based resource management. A typical PRA has eight steps:

1. Site selection and clearance from local administrative officials;
2. Preliminary site visit;
3. Data collection: (a) Spatial; (b) Time-Related; (c) Social; and (d) Technological;
4. Data synthesis and analysis;
5. Problem identification and setting of opportunities to resolve them;
6. The ranking of opportunities and the preparation of a Village Resource Management Plan;
7. Adoption and implementation of the Plan;
8. Follow up, evaluation, and dissemination of findings.

These steps use several planning tools which enable villages to have control over research, planning, implementation, and evaluation. One possible example of data collection for the EDPO/ASCMP projects might be spatial mapping of wetlands areas by villagers living around wetlands. They could draw a map of their village wetland areas with the location of their residences. Then, they could describe conditions of wetlands around their residences, perceived assets and problems and other information which would be added on the map. This map could be a good information base for further planning for wetlands management in villages.

Charts and matrices are often used to identify problems and solutions and rank them. Charts are able to describe logical relations of the problems, while matrices present collected information in an organized structure. As an example, problem identification conducted by researchers and villagers together in the case of the coastal resource planning of Palawan Island, the Philippines is presented in Box 2.

Recommendation 4: Encourage Use of Existing Resources by Villages

As villages enhance their management capacity, it is recommended to look for available resources to help them implement the project. These resources can be technical, human, or monetary. While EDPO/ASCMP will be the primary source of assistance for villages, encouraging villages to search for other sources of assistance may reduce the cost to EDPO/ASCMP. For example, the Education Resource Center, which is recommended in the section of Education and Public Awareness, could provide information on environmental management. At the Center, information on grants for resource management would be also available, and villages could possibly apply for grants to start resource management projects initiated by villages themselves.

Box 5.2. Case Study**Coastal Resource Planning in Malampaya Sound, Philippines**

A participatory research project was conducted for the coastal resource planning of Malampaya Sound in Palawan Island, western Philippines. The objective was to describe the problems and opportunities in the area through the active participation of the local communities. The research was jointly conducted by six researchers and representative household members from seven villages.

In each of the seven villages, researchers interviewed a village headman and some other people to obtain specific biological, social and economic data. A brainstorm session was also held among researchers and village representatives. A report was prepared with the outcomes of the interviews and the brainstorm session.

Based on the report and other findings, problems were identified, and perceived solutions and proposed projects were developed, in this case by professionals not by villagers. The problems, solutions, and projects were arranged in a matrix. A part of the fishery section is listed as an example:

<u>Problems</u>	<u>Perceived solutions</u>	<u>Proposed projects</u>
Declining fishery production	Conservation of resource base	Resource inventory of fish and marine habitats Application of new fishing technologies
Illegal fishing	Review and enforcement of existing fishery laws	Patrol boats acquisition Environmental education Communal fishing ground management

Recommendation 5: Develop Networks among Villages

During the discussion of CBWMP at the EDPO/ASCMP March '96 Workshop, a suggestion was made to issue a wetlands management newsletter and distribute it to villages with wetlands management projects. This newsletter could also be used by CHAMP and MAD. By having a newsletter, villages can share information about successful management practices, or what has worked and how in some villages. This sharing of information can facilitate villages to learn from each other's experiences. In the case of American Samoa, village pride to compete with other villages might motivate villages to better manage resources when they learn experiences of other villages.

Not only could the villages share experiences through the newsletter, they also could visit other villages where resources are successfully managed. For example, in agricultural projects, there is a method called farmer-to-farmer training which uses farmers who have acquired certain agricultural skills to teach other farmers. This method is often more effective than outsiders teaching new skills to farmers. It could be adopted for CHAMP, CBWMP, and MAD. After a village has completed all the steps of a project successfully, this case could be treated as a pilot project. This village could either invite other villages to show its management methods, or visit other villages to give assistance at their sites.

6.3.5. Additional Recommendations for EDPO/ASCMP Programs

Recommendation 1: Plan for Transfer of Nonpoint Source Pollution Control Responsibilities to ASEPA

The findings of the workshop indicate that primary responsibility for the development of a nonpoint source pollution control program should be given to ASEPA, which has both the funding and technical capacity to carry it out. The EDPO/ASCMP should begin working with the ASEPA to develop a contingency plan for this transition. This transfer may involve the reallocation of personnel from EDPO/ASCMP to ASEPA in order to maintain continuity of management of the issue. EDPO/ASCMP should continue to coordinate with ASEPA to ensure that the program continues to address issues directly related to coastal zone issues.

Recommendation 2: Institute Recycling Program if Funds Can Be Obtained

An analysis by the Pacific Basin Development Council and Ross & Associates concluded that recycling is feasible in American Samoa (Pacific Basin Development Council et al 1992). This report, produced in 1992, studied the feasibility of recycling municipal solid waste in the American Flag Pacific Islands. Goods deemed feasible for recycling included some white goods and automobiles. In addition, the report indicates that markets exist for many materials. In deciding the appropriate role for recycling, American Samoa will need to keep three considerations in mind. First, different program objectives will likely lead to choosing different recycling systems. Second, the economics of any recycling system can be substantially altered through the decision of which materials will be collected and the level of effort devoted to enhancing program participation. Third, the political feasibility of recycling can vary depending on which system is chosen.

Based on the PBDC and Ross & Associates report, systems that attempts to balance program objectives are the most feasible. These systems would include deposits and household collection, and deposit and drop-offs. The first system would divert more materials than the second, but the second system has lower net annual costs and is somewhat more cost-effective. The ultimate objective of such a choice would, according to the report, be to (1) maximize revenue by collecting only higher-value materials like aluminum; (2) minimize costs by not collecting low value items like mixed paper; and (3) maximize the number of participating households.

However, there is a need to further study the markets for recycled materials. The geographical location of American Samoa is likely to prove to be a disadvantage. Nonetheless, the introduction of a possible bottle bill is a movement to the right direction.

Also, the concept of reduce, reuse, recycle is a valuable one. Many materials may be reused. For example, tires can be chipped and used as underlying drainage layer of a landfill cap. Large oil drums could be cleansed and used as garbage receptacles. These are relatively simple technologies that can be adopted. In addition, compost could reduce the organic component of solid waste. Composting also saves money in the long run as villages will spend less on

fertilizers. This idea is also beneficial for the environment as it creates “soil” and lessens pollution runoff from the fertilizers. Efforts to inform villagers about this simple technique that would enrich their soil while protecting their environment should be continued.

Recommendation 3: Extend Enforcement of Marine Debris Regulations to Police and Coast Guard in Public and Freehold Areas

While village based regulation of waste management should be pursued in villages, it may be necessary to find means to increase compliance with regulations regarding waste disposal on freehold and public land. The police and coast guard already has the statutory ability to fine. However, it is possible that additional legislation would be required to extend their power to fine polluters.

Recommendation 4: Encourage Population to Take Responsibility for Their Land

This recommendation is based on the experience of projects on the mainland such as ‘Adopt a Highway’ and ‘Adopt a Stream’. By having villages become responsible for the land on which they live, it helps build village pride while also increasing awareness of the importance of maintaining a healthy environment.

Recommendation 5: Increase the Number of Garbage Receptacles

Participants of the conference noted that there is a lack of availability of trash receptacles in public places. This is a relatively simple problem to solve. Trash cans should be available in public places such as bus stops, public parks, and other heavily used locations. These receptacles should be chained to a stationary object to avoid being removed.

Recommendation 6: Conduct Participatory Data Collection at Village Level on Debris Generation

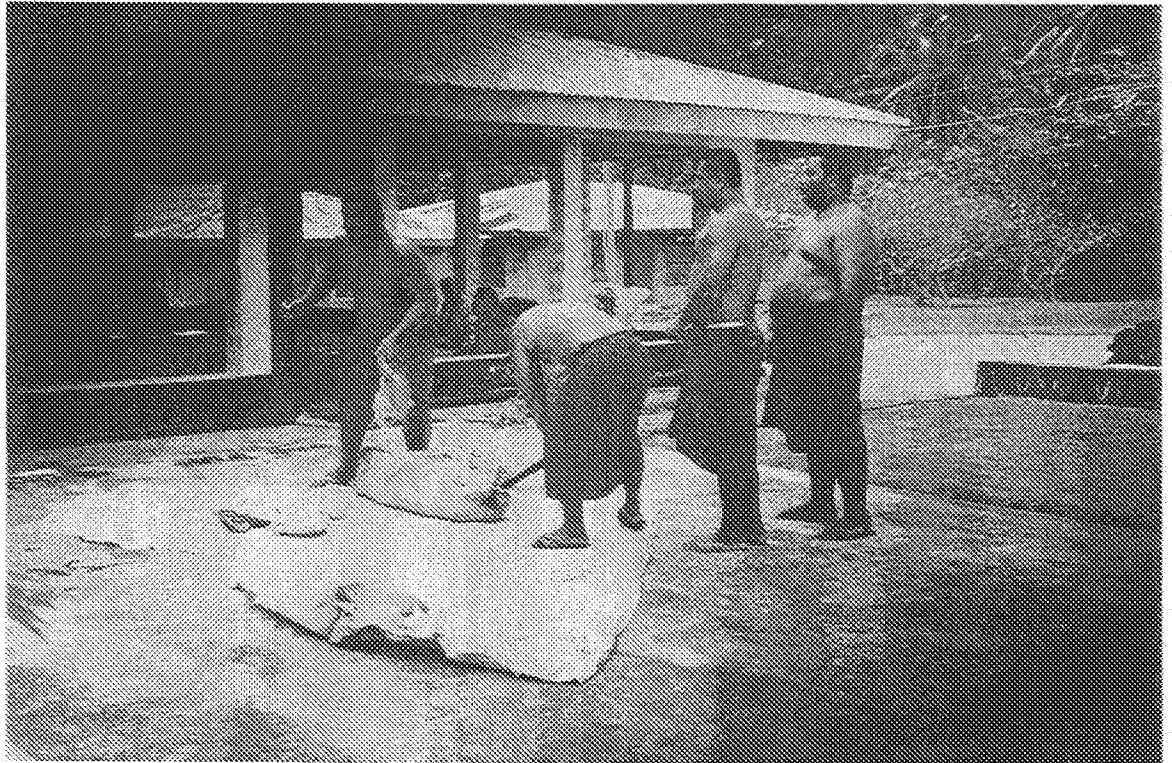
Villagers could be involved in defining goals of the research, developing research plan, and conducting research. This could be the first step in the development of village based planning ordinances. The collection of data on debris generation would also assist in the planning of waste collection services and recycling. Women’s groups could play a key role in this process. Please refer to recommendations on village participation for a more detailed description of a participatory data collection process.



Picture 6.1 Masausi Village, Tutuila

Picture 6.2 Sa'ilele Beach, Tutuila

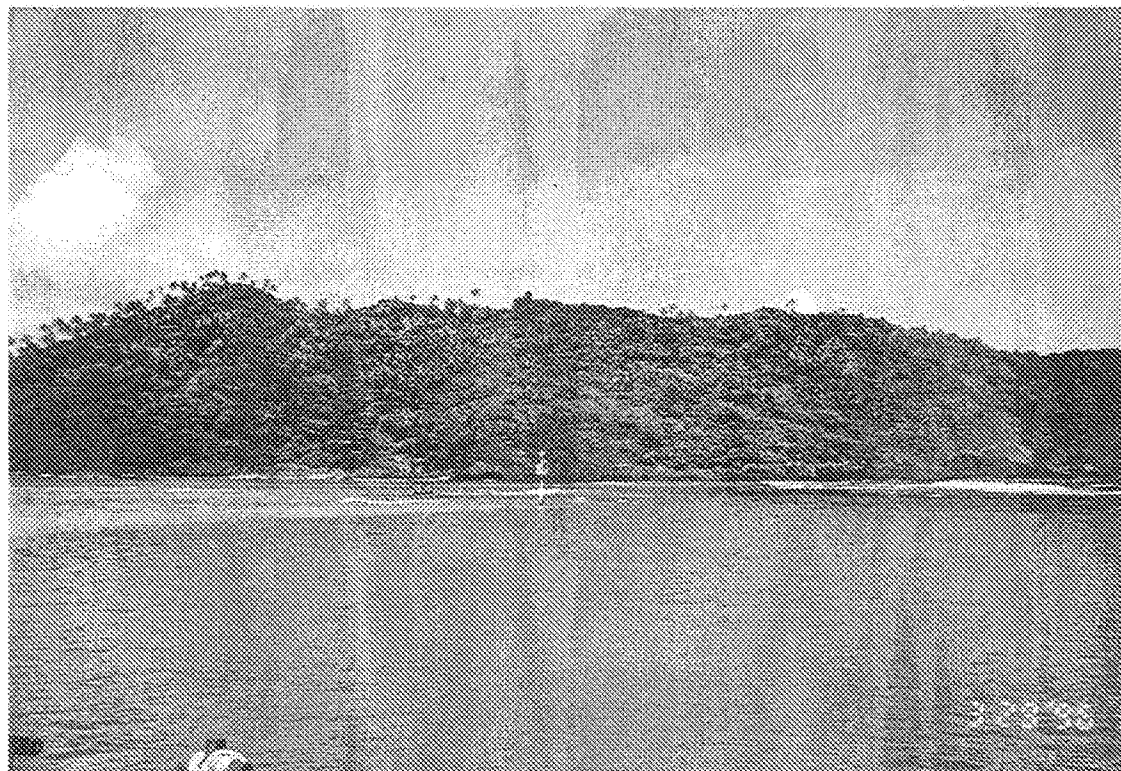




Picture 6.3 Olosega Village: 'Ava Ceremony

Picture 6.4 Olosega Village: 'Ava Ceremony

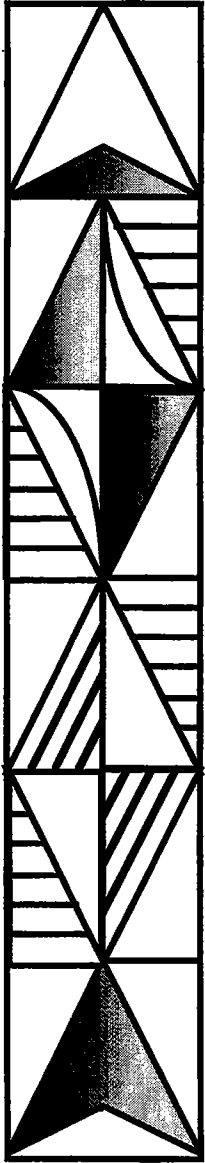




Picture 6.5 Nu'utele Island off Ofu Island

Picture 6.6 Harbor at Alaufau, Ofu Island





APPENDIX

Practicum Members

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Interests: community
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Asia

Shayne Hasegawa (Hawaii)
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econ., urban revitalization

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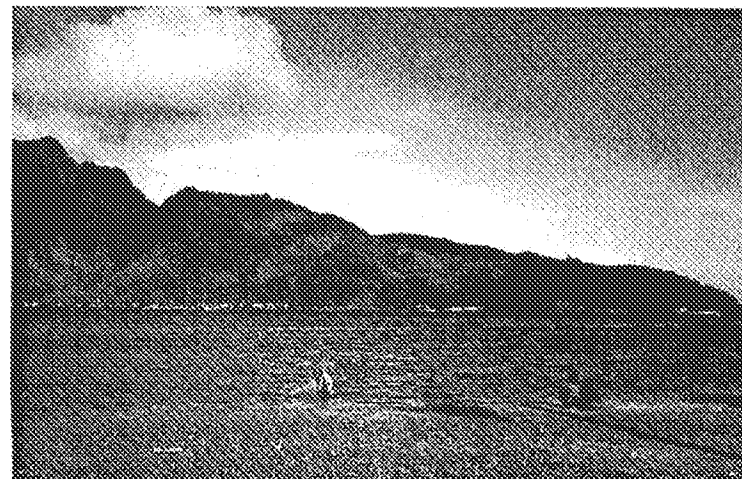
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SE Asia

AMERICAN SAMOA COASTAL MANAGEMENT
PROGRAM:
DEVELOPING MANAGEMENT ALTERNATIVES

Mini-Workshop
Pago Pago, American Samoa
March 27-28, 1996



American Samoa Coastal
Management Program
Office of Economic Development
Planning

Pago Pago, American Samoa



Department of Urban and Regional
Planning
University of Hawaii at Manoa

Honolulu, Hawaii

American Samoa's growing population and expanding economic base has placed a strain on not only its traditional communal and subsistence society, but also on its coastal resources. Problems include development encroachment, soil erosion, water pollution, over fishing, and reef destruction. As the majority of American Samoa's people live and work near the coastline, the protection and preservation of these resources are essential.

In response, the American Samoa Coastal Management Program (ASCMP) was approved in 1980 through the Federal Coastal Zone Management Act (CZMA), a voluntary, federally funded program to promote the protection and management of coastal resources of individual states, territories, and commonwealths. Governed by the American Samoa Coastal Management Act of 1990, the Development Planning Office (DPO) was designated as the lead agency in directing all of American Samoa's territorial agencies to act consistently within the policies set forth by the ASCMP.

Federal budget constraints, however, threaten the scope of the ASCMP. Already, Federal funding for the fiscal year 1997 is expected to be cut approximately 35% from the fiscal year 1996 levels. For the ASCMP to maintain its current level of services, alternative measures must be implemented.

The American Samoa Coastal Management Program, in conjunction with the University of Hawaii at Manoa Department of Urban and Regional Planning (DURP) Spring 1996 Graduate Planning Practicum, will therefore, develop management alternatives to offset the reduction in Federal funding.

Partially supported by the University of Hawaii Sea Grant Pacific Program, with funds from the Department of Interior, and with the assistance of Sharon Ziegler, Coordinator of the Pacific Island Network and Peter Rappa, Associate Environmental Agent of the Sea Grant Program, the DURP practicum, consisting of twelve graduate students under the coordination of Professor Luciano Minerbi, will work with Lelei Peau, Manager of the ASCMP, Mike Hamnett, Coordinator of the Pacific Basin Development Council (PBDC), and Professor Kem Lowry of DURP to:

- Collect data and develop draft profiles of coastal zone management programs in American Samoa, Guam, Hawaii, and the Commonwealth of the Northern Mariana Islands.
- Conduct a workshop, to be held in Pago Pago, American Samoa on March 27-28, 1996, to explore alternative coastal zone management strategies under various Federal funding reduction scenarios for American Samoa.
- Develop and package an American Samoa coastal zone management case study, using the information gathered from the workshop, to be presented at the upcoming conference "Pacific Basin Coastal Zone Management: Sharing Opportunities and Responsibilities for Coastal Zone Management," to held in Pago Pago, American Samoa on August 5 - 9, 1996.

If you have any questions regarding this project, please contact:

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APPENDIX A. WORKSHOP

AMERICAN SAMOA COASTAL MANAGEMENT PROGRAM: Developing Management Alternatives Miniworkshop

DATE: March 27 to March 28, 1996

PLACE: Rainmaker Hotel, Pago Pago in American Samoa

A.1. List of Participants

Aetonu, Justine (ASPA, Civil)	Lutu, Christine (Gov. Office)
Aimuatunai, Amanda (DPO)	Maene, Elena (Stats/DPO)
Aitaoto, Apelu (DPO)	Maileoi, Dan (NRCS)
Auelua, June (DPO)	Malala, Fred (DPH)
Aumavae, Tom (DPO)	Misa, Mike (Land Grant)
Autele, Faufano (Manua Faipule)	Ngalapadi, Puni (DPO)
Brighthouse-Failauga, Gene (DPO)	Otteson, Brita (DPO)
Daschbach, Nancy (DPO)	Peau, Lelei (DPO)
Dworksy, Mike (ASPA/Rotary Club)	Peau, Tui (Pava'ia'i Elementary School)
Esau, Talosia (Pago Elementary)	Porter, Mary (DMWR)
Failauga, Alii (ASEPA)	Ring, Mogen (Engineer)
Fanua, Joe (DPO)	Sene, Netini (DCI)
Filiga, Vai (Stats)	Seui, La'au, Jr. (DPR)
Fiti, Amy (Reserve)	Sevaetasi, Sekuini, Jr. (Faifeau)
Fiu, Daniel (DPO)	Sheck, Atinae (Rev.)
Haleck, Fiasili (House Rep.)	Sauni, Jerry (DPO)
Iuli, Trudie (ASPA)	Siatunu'u, Ben (DPO)
Jennings, Wally (ASEPA)	Solaita, Fuli (DPO)
Kabeiseman, Bill (DPO)	Sua, Tanielu (DMWR)
Kluge, Karla (DPO)	Sword, Willie (BHP)
Kolise, Teri (DPO)	Tauanu'u, Lia (DPO)
Krone, To'oa (DPO)	Tauoa, Lance (DPO)
Langford, Phil (DPO)	Tautolo, Charlie (House Rep.)
Lauti, Simona (Samoan Affairs)	Taylor, Caro (Private Consul.)
Levu, Aifo'i (DPO)	Tilei, Puna (DPW)
Levu, Estelle (DPO)	Tuiolosega, Herman (DPO)
	Weigman, Sheila (ASEPA)

A.2. Schedule of the Workshop:**Wednesday, March 27**

7:30 - 8:00		Registration	Daniel Fiu
8:00-8:15		Opening Prayer	Rev. Sekuini Sevaetasi
8:15-8:30		Opening Remarks	John Faumuina Jr.
8:30-9:00		Introduction	Lelei Peau & Dr. Minerbi
9:00-9:30	Step 1	Profiles and Trends	UH Students
9:30-9:45		Break	
9:45-10:30	Step 1(cont.)	Profiles and Trends (cont.)	UH Students
10:30-12:00	Step 2	Visioning Future Strategies	UH Students
12:00-1:00		Lunch Break	
1:00-2:00	Step 3	Identifying Actors	UH Students
2:00-2:15		Break	
2:15-3:15	Step 3(cont.)	Identifying Actors (cont.)	UH Students
3:15-3:30		Wrap Up for the Day	Lelei Peau

Thursday, March 28

7:30-8:00		Registration	Daniel Fiu
8:00-8:15		Recap from Day One	Dr. Minerbi
8:15-9:30	Step 4	Scenario Building	UH Students
9:30-9:45		Break	
9:45-12:00	Step 4 (cont.)	Scenario Building (cont.)	UH Students
12:00-1:00		Lunch Break	
1:00-2:30	Step 5	Wrap Up of Scenario Building	UH Students
2:30-2:45		Break	
2:45-3:15		Closing Remarks & Evaluation	Lelei Peau
3:15-3:30		Closing Prayer	Rev. Sekuini Sevaetasi

A. 3. Goals and Objectives of Mini-Workshop

Purpose of the Mini-Workshop:

The Mini-Workshop in American Samoa will be one of the means to explore scenarios for continuing management of the coastal zone despite the impacts of the budget cuts. The mini-workshop will get feedback from major actors involved in the coastal zone management (including staff of ASCMP, PNRS board members, and community groups) regarding alternatives for the development of ASCMP in a situation of declining federal funding.

Mission:

To restructure coastal zone management practice in American Samoa in response to reduced Federal funding in a way that will maintain its mission of preserving the coastal resources for the use of the people in American Samoa while maintaining economic development.

Goals:

1. To develop alternatives for the survival of PNRS under the cuts of 306 and the future stress on environment.
2. To develop alternatives for the survival of environmental projects of the American Samoa coastal zone management with reduced federal funding and the future stress on the environment.

Objectives

Step 1. Profiles and Trends

Objectives:

- 1-1 To outline future stress on coastal resources, including an analysis of the location and scale of major stresses on the environment, based on projections of future trends in demography, economic growth, and other human impacts on the coastal zone.
- 1-2 To describe a current situation of ASCMP including the change in federal funding for ASCMP in the past and discuss possible future trends in federal funding.
- 1-3 To provide the participants with a set of coastal zone issues, their benefits as well as threats of coastal resources, using a flow chart and matrices which show the integration of the impacts on the coastal zone and human activities based on present reality and future projections.

Step 2. Visioning Future Strategies

Objectives:

- 2-1 To evaluate the current ASCMP programs in terms of mitigation of threats presented in step 1, and to find out their potential weaknesses and strengths.
- 2-2 To develop alternative tasks to achieve new strategies for preservation for the coastal zone.

Step 3. Identifying Actors

Objective:

- 3-1 To brainstorm the possible new actors who can be called upon to help implement coastal resource conservation activities identified in step 2 in a situation of reduced federal funding of ASCMP.

Step 4. Scenario Building

Objectives:

- 4-1 To develop alternative management plans to cope with the reduced budget situation based on three budget scenarios.
- 4-2 To develop alternative funding sources for ASCMP in a situation of reduced federal funding of ASCMP.

Step 5. Wrap UP

Objectives:

- 5-1 To present and review the outcome of step 4.
- 5-2 To develop a mutual understanding from all participating parties to take future actions.

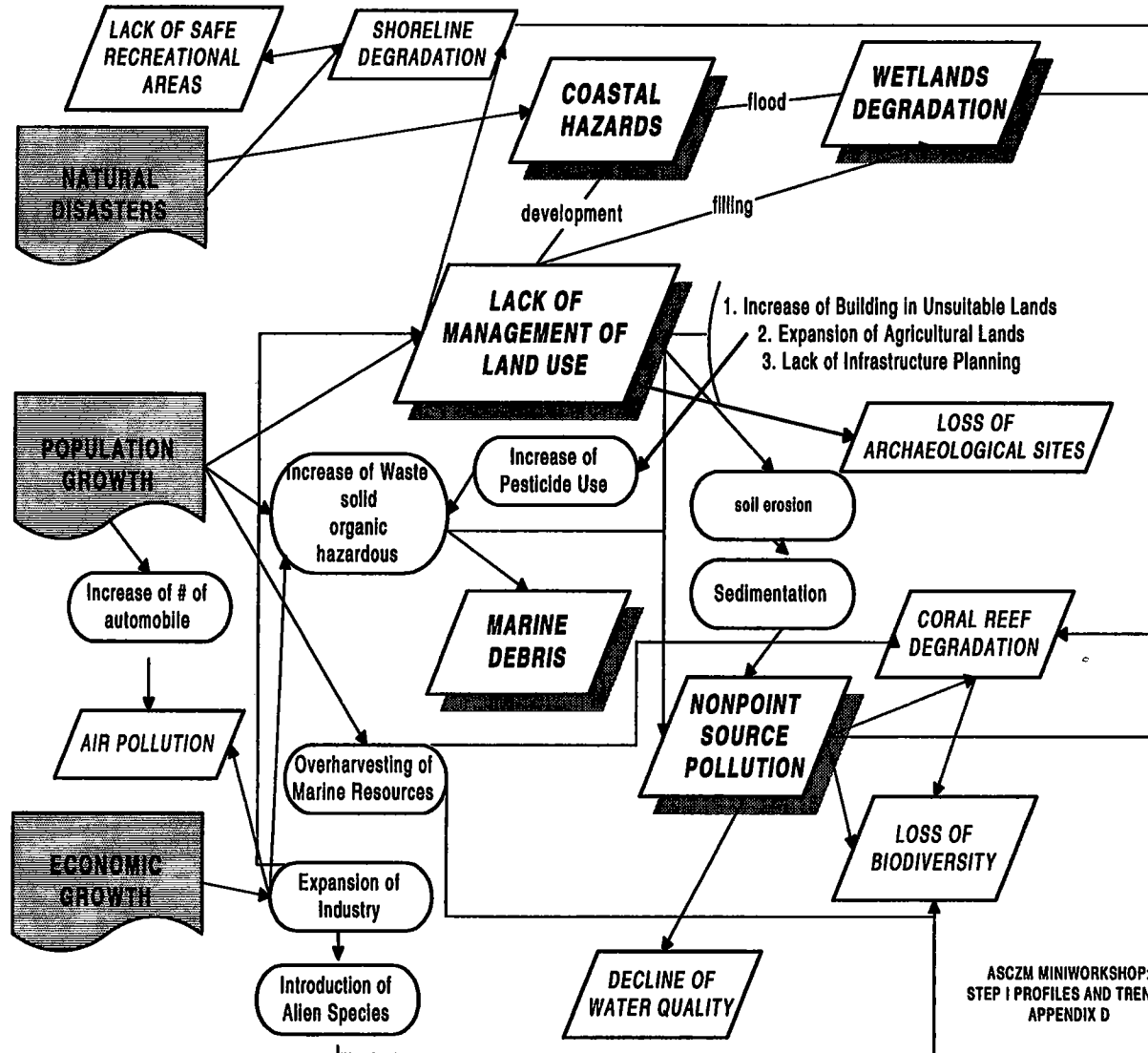
A.4. Environmental Issues in American Samoa

Issues	Benefits	Threats^[Dsc11]	Programs
Mitigation of Coastal Hazards	<ul style="list-style-type: none"> - minimize loss of life and property - ensure reasonable and safe use of resources - provision of relief and rehabilitation assistance - optimize cost of managing vulnerable coastal zones - govern construction in high hazard areas - maintain Fa'a Samoa - food security - risk analysis 	<ul style="list-style-type: none"> - building in vulnerable areas - new technologies and pattern of consumption resulting in environmental degradation - lack of comprehensive planning - sea-level rise and global warming 	CHAMP
Shoreline Development Management	<ul style="list-style-type: none"> - soil erosion protection - storm drainage protection - sand protection - coral reef protection - preservation of recreational areas - sustainable fishing 	<ul style="list-style-type: none"> - storm related wave action - unplanned access to beaches - sedimentation caused dredging and filling - nearshore fishing - beach sand mining 	PNRS CHAMP
Growth Management of Tafuna Plain	<ul style="list-style-type: none"> - sustainable development - community participation - leading to more profitable projects - efficient use of limited land resource - improved administrative management - creation of employment centers - provision of infrastructure - conservation of native vegetation and wildlife - reduction of pollution - redistribution of population - improvement of tourism - maintaining Fa'a Samoa 	<ul style="list-style-type: none"> - lack of community plan - lack of management tools on the part of the government - present approach to development being low density & land extensive - lack of employment centers - conflicting land uses resulting in pollution and lack of safety - lack of sufficient infrastructure - loss of native vegetation and wildlife - encroachment threatening pre-historical and historical resources - inconsistent compliance to building codes - threats to sources of drinking water - dependence on imported fuels due to trends toward enclosed structures 	PNRS
Wetlands Management	<ul style="list-style-type: none"> - conservation of fish, shell fish and wildlife habitat - flood control and storm damage prevention - sediment trapping and pollution abatement 	<ul style="list-style-type: none"> - filling for housing development - conversion for plantation and agricultural use - livestock raising 	CBWMP

	<ul style="list-style-type: none"> - recreation and education - groundwater recharge and discharge and water supply - cultural/historical preservation 	<ul style="list-style-type: none"> - waste dumping - overexploitation of mangrove for fire wood - upstream pollution 	
Coral Reef Management	<ul style="list-style-type: none"> - soil erosion protection - storm damage protection - food production - sand production - recreation 	<ul style="list-style-type: none"> - nearshore fishing - overharvest of coral - nonpoint source pollution - sedimentation caused by dredging and filling 	PNRS 6217
Biodiversity Conservation	<ul style="list-style-type: none"> - protection of habitats - conservation of wildlife species (fauna & flora) - cultural and historical preservation 	<ul style="list-style-type: none"> - overharvesting and habitat conversion - global warming and sea level rise - cyclone frequency 	PNRS
Archaeological Sites	<ul style="list-style-type: none"> - conservation of archeological information source - conservation of historical and cultural records and evidence - preservation of social and cultural identity 	<ul style="list-style-type: none"> - conversion of land for housing and agricultural use - environmental degradation 	PNRS
Unique Areas	<ul style="list-style-type: none"> - preservation of social and cultural identity - recreation and education benefits - conservation of tourism potential - provision of timber and fuel wood - conservation of soil quality and control of sediment runoff - flood control and regulation of groundwater - shoreline and coral reef protection - water quality protection and enhancement - conservation of wildlife and fisheries habitats - protection against wind damage and pollution abatement 	<ul style="list-style-type: none"> - overharvesting forest and marine resources - habitat conversion for housing development and agricultural use - beach sand mining and soil erosion due to overuse - introduction of alien species - agricultural chemical use - global warming and sea level rise cyclone frequency - coral bleaching 	PNRS CHAMP CBWMP 6217
Water Quality	<ul style="list-style-type: none"> - maintaining and improving water quality - better human health condition - conservation of wildlife and fisheries 	<ul style="list-style-type: none"> - point and non-point source pollution, - poor siting and installation of septic tanks - lack of sewer expansion, oil spills, and cannery outfall 	PNRS
Air Quality	<ul style="list-style-type: none"> - better health condition - odor-free environment 	<ul style="list-style-type: none"> - industrial pollution - increase of automobile use 	PNRS
Marine Debris	<ul style="list-style-type: none"> - increase of aesthetic values, reduction of noxious 	<ul style="list-style-type: none"> - flatable surface debris such as plastics, wood, vegetation 	MAD

Management	<ul style="list-style-type: none"> odors - conservation of coral reefs, fisheries and marine resources - better health condition 	<ul style="list-style-type: none"> - suspended solids, oil spills - decaying organics, glass and metals 	
Pago Pago Harbor	<ul style="list-style-type: none"> - improvement of water quality - conservation of marine life - reduction of pollution - safer environment for recreation 	<ul style="list-style-type: none"> - pollution from sewage treatment and cannery outfalls - non point pollution from urbanization and human activities - discharge of solid waste, hazardous waste and discharges of petroleum products from vessels or shoreside 	PNRS
Pala Lagoon	<ul style="list-style-type: none"> - protection of mangrove swamp - conservation of fish and shell fish 	<ul style="list-style-type: none"> - discharge of heavy metals, solid or industrial and animal waste - high coliform concentration - destruction of wetlands 	PNRS
Fagatele Bay	<ul style="list-style-type: none"> - protection of pristine, inaccessible, fragile ecosystems 	<ul style="list-style-type: none"> - human activities, e.g. modern fishing 	PNRS
Non-point Source Pollution	<ul style="list-style-type: none"> - maintaining /improving water quality - preservation of wetlands - conservation of biodiversity - better human health condition - preventing sediment from top soil 	<ul style="list-style-type: none"> - erosion and runoff - use of pesticides - discharge of solid/organic/chemical waste - clearing land and grazing - filling and cutting 	6217

CONCEPTUAL FLOW CHART



A.5. Conceptual Flow Chart

ASCZM MINIWORKSHOP:
STEP 1 PROFILES AND TRENDS
APPENDIX D

A.6. Materials for Step II Activities

STEP II: VISIONING FUTURE STRATEGIES

LIST 1: PROJECT NOTIFICATION AND REVIEW SYSTEM

The Project Notification and Review System (PNRS) is an interagency resource management system designed to provide cooperation and coordination between regulatory agencies responsible for land use decisions. It consists of representatives from the following agencies:

- Development Planning Office
- Department of Health
- Department of Marine and Wildlife Resources
- American Samoa Power Authority
- Department of Parks and Recreation
- American Samoa Environmental Protection Agency
- Department of Public Works.

THREATS

- After the fact projects which may impact coastal resources
- Need to look at cumulative impacts of a project on the environment
- Imposing fines and penalties on after the fact cases or violations

TASKS

Project Review

- Prepare **technical review** of Land Use Permit Application (LUPA)
- Coordinates the various PNRS agencies to provide **on-going review and monitoring major and minor projects proposals**
- Assist in the improvement of LUP's **information database** for better monitoring and for planning purposes
- Conduct **site visits** and prepare **written reports**
- Develop **standards for site plans** and **check list of site plan review**

A flow chart of the reviewing process of land use permit applications is attached at the end.

Monitoring and Enforcement

- **Enforcement and monitoring plan and manual:**
 - plan guides actions of the staff, outline policies, and provide a schedule of each staff member's responsibilities
 - manual provides staff with site visit format forms, follow-up procedures (checklist), when to issue a stop order and checklists on how to complete a site visit, stop order etc.

- **Training**
 - on-going training of staff (i.e. regular schedule of site visits on violations, follow-up conditions, report writing, picture taking, and checking compliance of development activities with respect to ASCMP's goals and objectives)
 - monthly training for the Compliance Review Officers (CRO) to be familiarize personnel on ASCMP policies and PNRS responsibilities
- **CRO staff assistance**
the professional staff evaluate performance of CRO's at each site visit and conduct a round up session with the CRO weekly
- **Improved Tracking System**
improved tracking mechanism for permitted activities and violations of permit conditions
- **Village workshop on monitoring and enforcement**
conducted in tandem with those scheduled for CHAMP and wetlands
- **Village liaison in monitoring and enforcement**
monitoring and enforcement of violation cases and detection of unpermitted developments in the villages. OSA is the contact agency in gathering the village pulenu'us and village councils for monthly meeting which the CRO's attend to elicit problems or issues

Land Use Permit Administration

- **Training**
training of staff on how to provide better counter service and how to elicit all necessary information form the applicant
- **Evaluation of staff performance**
on a quarterly basis evaluation of staff performance of CRO's and land use staff
- **Staff incentive program**
to award staff on standards of achievement at work
- **LUP information video**
an informational video on the LUP process and PNRS system for applicants inquiring at the front counter
- **Improved counter/reception layout**
a better layout design to develop a user friendly atmosphere for the public

Interagency Coordination

- **Study of ocean management issues**
to ensure consistency with ASCMP
- **Coordinated ASG planning**
a task force group is selected from various government agencies to elicit the implications of development decisions on coastal resources and to provide review of ASCMP activities (i.e. LUP, PNRS process)

Personnel

- **PNRS Coordinator**
coordinates the major permit reviews, supervises the permitting section, and does all correspondence for PNRS
- **Public Information Officer**
does filing, records and produces minutes of PNRS meeting, handles public notices and manage database
- **Compliance Review Officers**
receive applications, assist applications with the procedures, site visit the projects, make a preliminary recommendation of a file to the PNRS coordinator, complete permit forms, monitor violations and issue stop orders, etc.

STEP II: VISIONING FUTURE STRATEGIES**LIST 1: EDUCATION/AWARENESS PROGRAM**

With the Three Year Environmental Education Plan finalized, ASCMP is focusing on the plan as a guided tool to increase its public awareness outlined by the following goals: to raise public awareness of environment and human impacts, to change harmful behavior, and to build public acceptance of the need for environmental management.

THREATS

- miscommunication between ASCMP and villages
- lack of understanding between traditional resource use and western resource management

TASKS

- **Traditional activities**
 - reef walks
 - wetlands walks
 - beach clean-ups
- **Innovative approaches**
 - e.g. a contest for decorating 55 gallon drums used as trash receptacles
- **Sponsor a number of education activities for teachers and students**
 - e.g. a four-day workshop for sixth-grade teachers focused on the coastal management program and its activities and on integration of environmental education into classrooms
- **Summer coastal discovery program**
 - a summer day camp with one week of half-day sessions that allow students to learn more about CZM issues and environment
- **The buddy system**
 - a mentor employee supervises two students working in the ASCMP office
- **Education activities to accompany specific ASCMP projects**
 - e.g. a public education accompanied the project of solid waste management in SMA
- **Coastweeks**
 - commercials
 - T-shirt & screen
 - request line: youth gets vice their opinions through a music request line program
 - opening/closing: invite students, educators, church leaders, youth groups, government leaders, and members of private sectors
 - island clean up
 - coastweeks workshop/training: two-day workshop for the school educators
 - fund for DOE: high school symposium, educational materials, Environmental Field Day
 - art & tide calendar: students from all school compete for the best 15 drawing for the calendar
 - coastal sports activities: i.e. beach volleyball, kayaking, coastal marathon and coastal aerobics
- **Student Activities**
 - mini-science fair, poster, essay, art, speech contest and performing arts
- **Public awareness campaign**
 - Mural lane: a display of local talent displaying appreciation of Samoa's environment
 - commercials: focus on current affairs and environmental concerns
 - PNRS headline news
 - video shows: for youth groups and the schools
 - ASCMP staff uniform and identification pins: to enhance staff visibility in-house and out in the field
 - a 25-30 page booklet highlight ASCMP's achievement over 15 years

- **Customer service**
redesigning the customer service area for a more user friendly atmosphere; include audio/visual area while customers wait
- **Portable display**
intended to order portable display booth for site presentations and functions

STEP II: VISIONING FUTURE STRATEGIES**LIST 3: COMMUNITY BASED WETLANDS MANAGEMENT PROJECT**

American Samoa's remaining wetlands, dominated by mangrove communities, are being threatened, primarily by filling for residential and commercial use, and by illegal solid waste. The ASCMP has initiated a number of projects to protect wetlands, the most innovative of which involves working with village councils to enlist their support in enforcement of wetlands regulations.

THREATS

- Filling for housing development
- Conversion for plantation and agricultural use
- Livestock raising
- Waste dumping
- Overexploitation of mangrove for fire wood
- Upstream pollution

TASKSProtection of Wetlands through Regulations

- **Comprehensive Wetlands Management Plan** for the Islands of Tutuila and Anu'u as part of the foundation for revitalized local planning efforts (ASCMP, 1992)
- **Manu'a wetlands Management Plan** (1993)
- **Participatory planning and village ordinances**
 - The village council of Leone accepted a wetlands delineation and adopted a resolution prohibiting additional wetlands fills (ASCMP, other agencies)
- **Special management area designations and management planning** for two wetland areas on Tutuila
 - The development of village based management and regulatory systems for the special management areas
- **Delineation of four wetland areas in the Manu'a Islands** as a foundation for special management area designation
 - The village of Olosega in Manu'a identified cultivated areas and natural areas on maps and made wetland boundaries.
- **An island-wide enforcement program** developed by village conservation officers, includes monitoring all wetlands described in the Management's Plans. All wetlands on Tutuila are visited weekly or bi-weekly. The pulenu'u of each village meets with the enforcement officer and discuss the status of the wetland area. A stop order tracking program was updated and revised and is now used by CRO's and VCO's to monitor wetland violations associated with the administrative rules (stop orders).
- **Village liaison/facilitator program**
 - Leone, Nu'uuli (FY94)
 - Malealoa, Olosega and Ofu (FY95)
 - Tula, Masefau, Aunu'u and Ta'u (FY96)

Wetlands Restoration

- **Leone, Nu'uuli**
 - wetland resolution, wetland ordinances, delineation and survey of the outside perimeter of the wetland area, the final map approved by the village council (FY94)
 - restoration (FY95)
 - leoleo monitoring (FY96)
- **Tula, Alao**
 - primarily **garbage removal**
 - contract for **hydraulic engineer to design drainage plan**
 - contract for **excavation and clean-up** of site
 - **re-planting/re-seeding of wetland vegetation**

Technique for Protection/Restoration

- **Geographic Information System (GIS) of wetland management capacity** within ASCMP to support village based management efforts and to monitor the status of wetlands
- **Wetland assessment skills** (USEPA fund)
- **Training in wetlands assessment**
- **The delineation of wetland boundaries** to a scale useful for planning and permitting (USEPA fund)
- **A public awareness campaign and education program** as a foundation of on which village wetland management planning can be built (USEPA fund)
- **Wetlands; a source of life video**

Personnel

- **A subcommittee of the ASCMP Task force guides the project.** Members of the subcommittee includes members of the Task Force and representatives from the village areas selected to be included in the project
- **ASCMP wetlands specialist**
- **Village conservation officers**
- **Contractual services**
 - **wetland delineation: detailed characterization and analysis** (1993)
 - **Manu'a's wetlands study** (1993)
 - **technical support for wetlands restoration** (1994)
 - **detailed characterization of Manu'a wetlands** (1994)

SECTION II: VISIONING FUTURE STRATEGIES

LIST 4: COASTAL HAZARD ASSESSMENT AND MITIGATION PROJECT (CHAMP)

CHAMP is an on-going effort by ASCMP to reduce the effects of coastal hazards in American Samoa. The emphasis is upon participatory planning by bringing those who will benefit from the ordinances into the development process.

THREATS

- Hurricanes, landslides, floods, earthquakes, tunamis, and coastal erosion

TASKS

Territorial Level Regulatory Program Development

- **Recommendations to the ASCMP and other agencies on hazard mitigation activities at the territorial level**
- **Incorporation of a formal risk analysis for individual development projects, including siting criteria and risk assessment procedures in to the PNRS process**

Participatory Planning and Management System at the Village Level

- **Village hazard mitigation plans could include:**
 - the reallocation of structures from more hazardous to less hazardous areas
 - prohibitions on construction in certain shorelines subject to serious erosion
- **Village regulations**
based on the mitigation plans, agreed to by consensus
- **Complete Village ordinances** on mitigation which guides development and construction in the village and establishes a monitoring program by the Village council
- **A village based enforcement procedure**
Village ordinances are approved and monitored by the village mayors who enforce location, landslide, construction standards through implementation of village fines and penalties/follow-ups
- **Expand the concept to the 23 villages** not included in the first round of planning and **refine the program in the 20 village** already included
- **Village preparedness plans**
guides the village and local populace on actions during disaster situation, and provides information on weather warnings, evacuation, shelters, emergency procedures, etc.
- **Public awareness**
ASCMP staff produced supporting materials which give the populace understanding of what a coastal hazard is, how it can affect the Territory, how to cope with it through preparedness and mitigation in a Parental Guide for Coastal Hazards and Coastal Hazard Game. The ASCMP staff also produced and continually air TV programs and newspaper articles on CHAMP.

Personnel

- **The Community Task Force and a sub-committee of the Task Force**
reviewed all the territorial disaster plans and provided comments for the inclusion of the latest version for the Territory. It also provided feedback on legislation on location and assisted in designing the mitigation program for CHAMP.
- **A senior participatory planning facilitator**
 - serves as the program contact with the community
 - extensive experience in working with village leader

- **Coastal hazard specialist**
the thinking machine who implements the CHAMP program, files progress and quarterly reports, designs future program developments, monitors progress to date, and writes grants for CHAMP and program documents.
- **Village Hazard Mitigation Task Force**
comprised of Territorial Emergency Management Coordination Office, Natural Resource Conservation Service, Department of Public Works, National Weather Service, and ASCMP. This task developed the village preparedness and mitigation plans, completed territory wide village presentations on those and provided training to the village community on mitigation. The members serve as advisors on CHAMP.
- **Village hazard specialists**
14 village personnel across the Territory who were employed under ASCMP and provided training on location, development of standards, construction methods, landslide mitigation techniques etc. They will monitor and report any violation of the village ordinances to the village council as well as notify ASCMP for issuance of a stop order and action.

STEP II: VISIONING FUTURE STRATEGIES**LIST 5: MARINE DEBRIS PROJECT (MAD)**

The American Samoan Government has taken steps to solve the problem of marine debris. ASG enacted the Litter Control Act of 1990, and ASEPA has embarked on an aggressive public awareness and public education program aimed at reducing the problem. However, ASEPA and ASCMP found that these measures were not sufficient to ameliorate the problem. As a result, ASCMP has undertaken the marine debris project (MAD), which has two components: territorial level regulations and village level planning.

THREATS

- Flotable surface debris such as plastics, wood, vegetation, suspended soils such as eroded soil are harmful and unappealing.
- Heavier debris and suspended solids, decaying organics, glass and metals can destroy coral reefs and cover the ocean bottom, and harm marine life.

TASKSOutside the Project

- **ASG**
 - the Litter Control Act 1990
 - a contract with Harbor Refuse Collectors to provide regular cleanup patrol of the harbor
 - establish Marine Patrol to fine boat owners/operators found dumping garbage into AS waters
- **ASEPA**
 - screens across streams to catch debris before it reaches Pago Pago Harbor

New Legislation and Regulations

- **Advanced disposal fees** for (levied with the excise tax) and/or restrictions on selected imports
- **An increase in fines** for "accumulated solid waste" (dumped trash)
- **An enterprise fund** to support municipal solid waste management
- **Establish a dedicated fund for solid waste management**
- **The posting of signs on littering**
- **charge for collection services**
- **charge for an advance disposal fee for solid waste management (SWM)**

Village Based Litter and Marine Debris Reduction Planning

- The planning and management is built upon planning procedures developed as part of CHAMP and utilize the facilitator who participated in CHAMP
- **Village oriented strategies and solutions** could include organized cleanup activities, recycling and sorting efforts and village ordinances prohibiting dumping
- **Village plans regulations and enforcement procedures**
- **Village level regulations on solid waste management (SWM)**
 - village level SWM workshops
 - video on marine debris

Personnel

- **ASCMP Community Task Force and sub-committee** represent cooperating agencies and guide MAD
- **Senior planning facilitator**
- **solid waste/debris specialist**

STEP II: VISIONING FUTURE STRATEGIES

LIST 6: NONPOINT SOURCE POLLUTION MANAGEMENT (NPSP)

The American Samoa Environmental Protection Agency (ASEPA) is working cooperatively with ASCMP on development and implementation of the 6217 program (non point source pollution program)

THREATS

- Pesticides, chemicals, wood, wastewater, garbage, fertilizers, oil, and gasoline can all be carried into nearby waters without safeguards.
- Construction sites are the largest source of sediments and soil during stormwater runoff in urban regions.

TASKS

6217 Program

- Completion of **draft program document**
- **public education** on NPSP
- **6217 program**
 - workshops
 - radio show
 - fact sheets
 - erosion control booklet
- Development of **storm water design guidances**
- **Computer data on rainfall-water quality**
- **Site planning guidances**
- **Soil erosion guidances** for contractors

Projects to Support the NPS Program (funded, not implemented)

- **The watershed management plan**
- **The sedimentation source assessment and modeling**
- The demonstration projects on **urban best management practices (BMPs)**
- **Guidance on agricultural BMPs**
guidance on agriculture specially developed for farmers

WORKSHOP STEP 4: ASCMP BUDGET SCENARIO OVERVIEW

The American Samoa Coastal Zone Management Program is fully funded in its entirety by the Federal Government of the United States of America. The recent budgetary and political climate in Washington D.C. is seriously putting the ASCMP in a fiscal alert. The funding for ASCMP for 1997 is figure at \$668,000. This proposal is a shocking 34% reduction from the current year funding. In the light of this funding cut, a series of precautionary measures are now in the works. The following is a summary of a consolidated Grant budget with three "fifth" year scenario plans attached to prepare ASCMP for any probable cuts in the year 2002. (Please see the following page for a more detail break down of the budget and what types of activities are attached to the different sections of funding.)

Scenario 1. In the year 2002 Funding from NOAA/OCRM will be the same as FY 96/97 at \$668,000 (This represent a 34% funding reduction from FY 95/96) .
ASCMP will have to come up with a deficit of \$390,800 in order to maintain FY 95/96 level of services.

Scenario 2. In the year 2002 Funding from NOAA/OCRM is predicted to drop to \$397,500 (This represent a 60% funding reduction from FY 95/96)
ASCMP will have to come with \$612,300 in order to maintain FY 95/96 level of services.

Scenario 3. In the year 2002 Funding from NOAA/OCRM is predicted to drop to \$265,000 (This represent a 74% reduction from FY95/96)
ASCMP will have to come with \$744,800 in order to maintain FY 95/96 level of services.

Summary of Consolidated Grant Budget	FY 95/96	Proposed FY 96/97	% Change From 1996	Scenario1 2002	% Change From 95/96	Scenario2 2002	% Change	Scenario3 2002	% Change
Section 306/306A	\$ 530,000	\$ 555,000	4.72%	\$ 530,000	0.00%	\$ 397,500	-25.00%	\$ 265,000	-50.00%
Section 309	\$ 249,800	\$ 113,000	-54.76%	\$ 89,000	-64.37%	\$ -	-100%	\$ -	-100%
Section 6217	\$ 103,000	\$ -	-100.00%	\$ -	-100%	\$ -	-100%	\$ -	-100%
Section 308	\$ 27,000	\$ -	-100.00%	\$ -	-100%	\$ -	-100%	\$ -	-100%
Charleston Grant (associated to Sec. 306)	\$ 100,000								
Total Federal Contributions	\$ 1,009,800	\$ 668,000	-34%	\$ 619,000	-39%	\$ 397,500	-60.64%	\$ 265,000	-73.76%
Makeup to maintain 96 level budget		\$341,800		\$390,800		\$612,300		\$744,800	

ASSUMPTIONS:

1. Fiscal Year 95/96 is used as a based year because this is best represent ASCMP's level of services to maintain the American Samoa's coastal integrity
2. Each of the 3 scenarios plan ahead into the 2002 - five years from FY 96/97
3. Because of the tremendous difficulty in assuming what will happen in the future of these funding, the scenarios are constructed for discussion purposes only.
4. Inflation is constant and there is no need to build in an any index to adjust the total expenditure.
5. Following 3 assumptions are based on the current political climate of shifting current federal responsibilities of back to the individual states.
6. Section 308 and Section 6217 is completely eliminated from NOAA/OCRM funding.
7. Section 309 is either being phased out or is maintained with a weighted formula (current range).
8. Section 306 is being streamlined and is cut to barebone minimum.

Note: The Charleston Grant is a one time funding associated with Section 306 of the NOAA/OCRM funding.

The slight increase in funding for Section 306 is due to a rollover of undistributed funds in the previous fiscal cycle - this gain is not expected to repeat.

WORKSHOP STEP 4: ASCMP BUDGET SCENARIOS BY PROJECT

The purpose of this spreadsheet is to represent activities that are currently being funded by the various sections of federal grants.

(X) indicates activities in area that lacks funding and are in jeopardy. This does not mean that the activities will be cut.

This spreadsheet only attempts to show participants of the mini workshop how crucial this funding reduction is and how they relate to individual activities in the ASCMP. The three scenarios play out the possibilities of future cuts and how to reallocate these activities in order to ensure the survival of the ASCMP.

Consolidated Grant Budget	FY 95/96	Proposed FY 96/97	% Change From 1996	Scenario1 2002	% Change From 95/96	Scenario2 2002	% Change From 95/96	Scenario3 2002	% Change From 95/96
Section 306/306A	\$ 530,000	\$ 555,000	4.72%	\$ 530,000	0.00%	\$ 397,500	-25.00%	\$ 285,000	-50.00%
General Administration									
Evaluation/312Rcmdn									
Grant Management									
Miscellaneous Office Expenses									
Legal Affairs									
PNRS									
Interagency Coordination									
Land use Permit Administration									
Monitor/Enforcement									
Public Education & Awareness									
Coastweeks								(X)	
Public Awareness Campaign								(X)	
Department of Education								(X)	
Project Administration									
CHAMP						(X)		(X)	
MAD						(X)		(X)	
CBWMP						(X)		(X)	
6217 Programs						(X)		(X)	
Contractual Services									
ASCZM Decade in Review								(X)	
CZM Conference								(X)	
Section 309	\$ 249,800	\$ 113,000	-54.76%	\$ 89,000	-64.37%	\$ -	-100%	\$ -	-100%
CHAMP									
Education						(X)		(X)	
Monitor & Enforcement						(X)		(X)	
Administration						(X)		(X)	
Village Level M&E						(X)		(X)	
Village level Admn.						(X)		(X)	
MAD									
Education						(X)		(X)	
Monitor & Enforcement						(X)		(X)	
Waste Collection						(X)		(X)	
Administration						(X)		(X)	
Village Level M&E						(X)		(X)	
Village level Admn.						(X)		(X)	
Com. Base Wetland Mgmt Pgm									
Education		(X)		(X)		(X)		(X)	
Monitoring & Enforcement		(X)		(X)		(X)		(X)	
Administration		(X)		(X)		(X)		(X)	
Technical Assistance		(X)		(X)		(X)		(X)	
Village Level M&E		(X)		(X)		(X)		(X)	
Village level Admn.		(X)		(X)		(X)		(X)	
Section 6217	\$ 103,000	\$ -	-100.00%	\$ -	-100%	\$ -	-100%	\$ -	-100%
Nonpoint Source Pollution		(X)		(X)		(X)		(X)	
Agricultural BMP		(X)		(X)		(X)		(X)	
Urban BMP		(X)		(X)		(X)		(X)	
Technical Assistance		(X)		(X)		(X)		(X)	
Section 308	\$ 27,000	\$ -	-100.00%	\$ -	-100%	\$ -	-100%	\$ -	-100%
Wetland Restoration Projects									
Technical Assistance		(X)		(X)		(X)		(X)	
Monitor/Enforcement		(X)		(X)		(X)		(X)	
Charleston Grant (associated to SEC. 306)	\$ 100,000								
Total Federal Contributions	\$ 1,009,800	\$ 668,000	-34%	\$ 619,000	-39%	\$ 397,500	-60.64%	\$ 285,000	-73.76%
Makeup to maintain 96level budget		\$ 341,800		\$ 390,800		\$ 612,300		\$ 744,800	

APPENDIX B: AMERICAN SAMOA'S NON-POINT SOURCE POLLUTION PROGRAM SUB-CATEGORIES

Agriculture

In American Samoa, the presence of large scale commercial farms and agribusinesses is not an issue. However, there are some commercial agribusinesses, in addition to many subsistence farming communities.

Crops found in American Samoa include traditional crops such as taro, yams, ta'amu, banana, coconut, papaya, pineapple, tapioca, and sweet potato. Fruit trees grown are oranges, limes, sour soup (salape) golden apple, mangos, and breadfruit.
(American Samoa Environmental Protection Agency, (1995) pg. 38).

According to the American Samoa Nonpoint Source Pollution Report, 16 percent of the land is occupied with commercial agriculture, the potential impact to water quality due to *soil erosion and sedimentation* is significant.

Mitigation factors to control soil erosion are contour planting (revegetation), wind breaks, mulch of coconut leaves and branches, nitrogen fixing ground cover with traditional crops, sediment basins and filter strips.

Another aspect of agriculture that contributes to the decline of human health is *confined animal facilities*. In American Samoa the chief culprits include chicken or pig farms. These farms produce manure and other runoff pollutants that eventually enter surface waters. Some of the mediation factors that can control this type of pollutants are waste storage containers, waste treatment lagoons and compost facilities.

Finally the last component of agriculture on water pollution is *pesticides*. These chemicals are used for pest control measures and the aiding of crop growth. Pesticides in the area is not high in magnitude, but due to the heavy rainfall and the development of the Tafuna-Leone Plain, contamination of ground water is possible.

Pesticide management controls include: inventory of pest problems, soil characteristics, pest management strategies that minimize pesticide use, and the encouragement of organic farming.

Urban Runoff

Another important source that contributes toward NPS pollution is urbanized areas. During urbanization, pervious spaces, including vegetated and open forested areas, are converted to land uses that usually have increased areas of impervious surfaces. This results in increased runoff volumes and pollutant loadings. As the population increases, there is a corresponding increase of urban runoff pollution. Usually these pollutants enter surface waters without being treated. Urbanization includes manmade structures,

activities and development in urban areas that also cause serious environmental damage. These occur not only by what we leave behind (litter, chemicals, petrochemicals, and waste products), but also by what we take away (vegetation, wetlands/marshes, soil and other natural protection).

The new development management measure for urban runoff is to be applied to control urban runoff and treat associated pollutants generated from new development, redevelopment peak runoff rate and relocated roads, highways, and bridges. This measure is supposed to reduce suspended solid loadings and runoff rates.

(Draft Executive Summary - Hawai'i's Coastal Nonpoint Source Pollution Control Program, (1995), pg. 7)

Contained in the A.S. Coastal NPS pollution report, *the Watershed Protection Management measure* protects watershed areas by a series of criteria:

- (1) Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss;
- (2) Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and
- (3) Site development, including roads, highways, and bridges, to protect to the extent practicable the natural integrity of waterbodies and natural drainage systems.

The most effective way to achieve this management measure is to develop a comprehensive program that incorporates protection of surface waters with programs and plans for guiding growth and development.

(A.S. Coastal NPS Pollution Program, (1995) pg. 55)

Mitigation measures that serve to protect watersheds are: resource inventory and information analysis and planning implementation of a comprehensive program.

The site development management measure and the management measure for planning, siting and developing roads and highways apply to all site development activities including those associated with roads, highways and bridges. This measure protects areas susceptible to soil loss, limits the increase of impervious areas, limits land disturbance activities such as clearing, grading and cut and fill activities, and limits disturbances of natural drainage features and vegetation.

The construction site erosion and sediment control management measure applies to all construction activities on sites less than 5 acres that do not have a pollution discharge elimination system. It is used to control erosion and sediment loss from those sites. Mitigation practices include check dams, wind erosion controls, retaining walls and vegetated filter strips.

Construction site chemical control management measures. This measure seeks to: (1) limit application, generation, and migration of chemical substances; (2) ensures the

proper storage and disposal of toxic materials; and (3) apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.

Existing development management measure applies to all urban areas and existing development in order to reduce surface water runoff pollutant loadings from such areas. This measure identifies priority local and/or regional watershed pollutant reduction opportunities, contains a schedule for implementing controls and where appropriate preserve, enhance or establish buffers along surface waterbodies and their tributaries.

New onsite disposal system (OSDS) management measures ensures that new OSDS are located, designed, installed, operated, inspected, and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into ground waters. Its main objective is to discourage the installation of garbage disposal and reduce hydraulic and nutrient loadings.

Pollution prevention management measure implements prevention and education programs to reduce urban runoff pollution generated from the (1) improper storage and disposal of household chemicals; (2) lawn and garden activities that improperly dispose of leaves and yard trimmings; (3) turf management on golf courses and parks; (4) and the discharge of pollutants into storm drains.

Roads, Highways and Bridges for planning, siting and developing. This practice seeks to: (1) protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss; (2) limit land disturbance such as clearing and grading and cut and fill to reduce erosion and sediment loss; and (3) limit disturbance of natural drainage features and vegetation.

Mediation measures for roads and bridges include siting measures (where roads will be placed with minimal cut and fill measures), selecting environmentally sound route locations and placing permanent erosion and sediment controls (e.g., vegetated filter strips, grassed swages, pond systems, infiltration systems, constructed urban runoff wetlands and velocity controls). Any buffer, check dam, or silt fence should be cleaned or checked out periodically.

Marinas and Harbors

Although this is not as significant as the two previously mentioned, at least from the standpoint of American Samoa, marinas and harbors do have some effect. The only significant harbor/marina on Tutuila is the Pago Pago Harbor. There are smaller boat piers and bays in the surrounding areas, but they are not nearly as numerous or dangerous as they are in other locales such as Hawai'i or Guam. However the impacts that boating and marinas do cause are not easily ignored. Marinas release untreated waste products, paint chips, cleaning materials that contain unhealthy levels of copper, zinc and mercury and petrochemicals.

This subsection is divided into two categories, (1) siting and design of the harbors; and (2) operation and maintenance. Again, both classifications seek to minimize the harmful byproducts of human activity nearshore.

Siting and Design:

Marina flushing and residence time. Effective design takes into account. The time water remains stagnant and resides within the marina. If waters are excessively stagnant then pollutant concentrations can rise to unhealthy and unacceptable levels. Effective design takes this into account and attempts to mitigate this. Poor design will ensure that pollutants from cleaning materials, detergents, petrochemicals, and heavy metals will adversely affect marine resources, water quality and human health.

Habitat assessment. This measure protects against the adverse effects on coral reefs, wetlands, shellfish resources or other important riparian and aquatic habitats. Locating harbors near sensitive areas may have adverse impact on marine life and fisheries. This is based on the premise that marina locations should not destroy important aquatic habitat, nor diminish the harvestability of organisms in adjacent habitats.

Storm water runoff management measure. Effective siting measures design marinas with boat hull maintenance areas to minimize contaminated runoff, utilizing filtration basins, treatment systems and vegetated filter strips to increase water quality. Principal pollutants in runoff from marina parking area and hull maintenance are suspended solids and organics (usually oil and grease). Toxic metals from boat hull scraping and sanding are also part of the pollutants.

Water quality assessment management measure. In the predevelopment phase, monitoring and physical modeling of surrounding ambient waters can be used to determine whether a water quality problem may exist. High pollutant levels in water quality can effect the propagation of fish, shellfish, and wildlife, and with people who use these recreational waters.

Operation and Maintenance

Solid waste management. Operators of harbors are required to properly dispose of solid wastes (trash, sanding and paint chips) produced by repair and maintenance of boats and limit entry of waste to surface water. Without adequate disposal facilities, operators are in violation of federal law and pose an extreme risk to surrounding surface waters and wetlands.

Liquid material management. Operators must also provide adequate storage, contaminant and disposal facilities for liquid materials like solvents, oil, paints and the recycling of these materials. Waste oil, waste gasoline, used antifreeze, diesel waste and kerosene are dangerous without adequate disposal to corals and nearby fisheries.

Public education measures. Public education, outreach and training programs can be instituted for boaters and operators to educate against improper disposal. Without these types of measures the general public may be unaware of the damage that their actions produce.

Hydromodification

Hydromodifications are alterations of the hydrologic cycle which include channelization, channel modification and streambank and shoreline erosion control and restoration. Channelization projects attempt to alleviate flooding concerns, aide in the navigation of boats through streams and rivers and stabilize streambeds. However, if not carefully studied and planned, these alterations can have a negative effect on surface waters, receiving bodies and wetlands.

Channelization and modification. Ensures that the planning process for these projects address changes to physical and chemical characteristics of surface waters that may occur. These engineering systems on rivers and streams that facilitate flood control, drainage and navigation may have an adverse impact on physical and chemical reactions of surface waters if not adequately mitigated.

Instream and riparian habitat restoration. Management measures that can prevent or correct the impact of these projects such as levees, compound channel designs or constructed meanders to protect riparian habitat. Without adequate safeguards these modified streams may carry more pollutants into receiving waters.

Management for chemical and pollutant control. Limits generation and migration of toxic substances, ensures proper storage and disposal of toxic materials and maintains vegetation. Pesticides, chemicals, wood, wastewater, garbage, fertilizers, oil and gasoline can all be carried into nearby waters without these safeguards.

Streambank and shoreline erosion. Stabilization of streambanks with vegetation and marsh creation are effective ways in keeping nearby soils from being carried into surface waters. Without buffer zones to reduce concentrated flows, wetlands, wildlife habitats and coastal areas can be effected both visually and environmentally.

Wetlands

Because wetlands are a separate environmental issue in this report, the analysis of wetlands and Non-Point Source Pollution's effects of these areas will be brief. Wetlands and riparian areas are important in NPS pollution by intercepting surface runoff, subsurface flow and certain groundwater flows. These areas also remove, transform and store pollutants such as sediments, nitrogen, phosphorus and heavy metals. In American Samoa wetland areas an important storage location for surface waters that are later tapped for potable usage. Maintaining water quality in wetlands is therefore very important.

Important mediation activities for the restoration of wetland areas using vegetated treatment systems, replacing native plants and using properly engineered systems.

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COMMENTS AND UPDATES

The following are editorial comments made by American Samoa representatives for this report after it was printed.

Solid Wastes and Marine Debris by Mike Dworsky - American Samoa Power Authority

Solid Waste prior to weight testing in February - March, 1996 was all estimated (pages 29-30).

Solid waste management was transferred to ASPA in April 1995. There is a need to coordinate legislative efforts with ASPA to assure adequacy of any legislation while avoiding duplication (page 36).

Waste composition and volume have been completed in March 1996. It replaces estimates used in the March 1992 study. American Samoa has one landfill at Futiga. Scrap metal is deposited at the Airport site. There is a need to involve the marine debris management program in the "Paradise 2000" campaign to avoid duplication (pages 61-66).

ASPA is already enabled with the power to create a solid waste charge and an advanced disposal fee. "Paradise 2000" and Americore are working on an "adopt-a-highway/beach/stream" program. More waste receptacles are certainly possible. However, the contractor (T&T) would charge more for collecting. Park and Recreation may pick up waste, but needs to establish policies for these purposes. Securing the receptacles to avoid cans disappearing is a good idea, but they need to be picked up and emptied at the back of a collection vehicle (pages 97-101).

ASPA has the ability to charge a solid waste rate that could be a combination of a minimal fixed amount at a percentage of electric charge (\$0.04/KW hours). The fee could be applied as a part of Power/Water utility bill. The proposal is currently before the ASPA Executive Director and Board. The incentive would be that the less power you use, the less you pay for power and solid waste (page 125 - Recommendation 8).

ASPA is interested in developing a municipal recycling facility where all waste are deposited, separated, and items would be disposed as follows: aluminum is crushed and shipped off-island; glass is crushed and pulverized and used to replace beach sand; tires and batteries are separated out of waste stream; green wastes is separated and composted, or periodically burned. All remaining paper, plastic, food products would be incinerated to reduce the volume placed in the landfill (pages 143-144 - Recommendation 2).

**Non Point Source Pollution, Marine Debris and Solid Waste by Sheila Weigman -
American Samoa Environmental Protection Agency**

ASEPA has had responsibility for NPSP since 1988. Section 6217 is the responsibility of both EDPO/ASCMP and ASEPA. Marine debris enforcement is already the responsibility of the Department of Public Safety and the Marine Patrol. We cannot delegate any programs to the United States Coast Guard because it is a federal agency (page 6).

The village NPSP Demo Project was a limited program under sec. 6217 for one year. It has been under sec. 319 by ASEPA, but limited to requests from villages and the availability of funds (page 9).

The marine debris litter law, has been in place with increased fines (page 36).

The NPSP plan and program has been in place since 1988. Section 6217 asked ASEPA to respond to some specific sources, most of which EDPO/ASCMP, ASEPA, ASPA, etc. were already addressing. These programs were not necessarily developed because of federal legislation (page 43).

ASEPA already implements the NPSP program with EDPO/ASCMP oversight of sec. 6217 projects, including monitoring and enforcement. It would be difficult to change the many components of sec. 6217 implemented via the PNRS. In the long term, the most important function of sec. 6217 will be education and cooperation by the public and assisting them with installing BMPs, technically and functionally. The MAD program was developed in response to the problem of the public dumping trash into streams, on land, and the ocean as we felt people had few alternatives. Vessels caused some problems, but were not the major problem addressed by the MAD program (page 61).

The MAD program is not a large program, at all. The solid waste programs implemented by ASPA, ASEPA, Public Health, etc. complement the MAD program, but are not necessarily a part of it (page 62).

Most of the responsibility for the MAD has been already delegated to other agencies or has been their responsibility (page 66).

Paradise 2000 already is targeted to address MAD. MAD is not the only source of funding for litter and solid waste education (page 99).

Coordination of solid waste was discussed. There is currently a Solid Waste Enforcement Committee with all agencies who have responsibility and have expressed interest in this issue, including EDPO/ASCMP. The group meets on a monthly basis and have implemented many elements cooperatively - litter law implementation, enforcement village by village, etc. We do know the steps each agency is taking (page 100).



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