

THE OVERALL ECONOMIC DEVELOPMENT PLAN FOR GUAM 1989 - 1993

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DEPARTMENT OF COMMERCE
GOVERNMENT OF GUAM**

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MESSAGE FROM THE GOVERNOR AND LIEUTENANT GOVERNOR OF GUAM

The next five years will present numerous challenges and opportunities, with unprecedented economic growth and the pursuit of Commonwealth status. So we must plan for the future to capture the benefits in this unique period of Guam's development.

With the OEDP we take our first focused step along the journey to integrating our future development into a dynamic and ever evolving process of change and growth. This requires an unfaltering commitment to this process to define and realize a vision of an improved economic and social environment for Guam.

Guam needs to shift from a reactive mode of approaching the development of our economy to a proactive mode that applies the practices of formal analysis to plan explicit and integrated strategies for the future. Proactive management of economic development calls for initiating action that will address anticipated potential opportunities and constraints and their effects which could influence the future of our Island. This results in preventative or facilitative actions to maximize the realized benefits from economic development.

Our efforts to stimulate and sustain economic growth should take place within a framework of carefully defined policies, goals and objectives and must be consistent with the resources available. The process of establishing these policies, goals and objectives and their implementation requires a structured process that needs to be adhered to for them to be fully realized with minimal negative side-effects.

The OEDP addresses the development of the major sectors of Guam's economy. It provides the structured framework and actions to carry out the Plan. All of the programs developed from the Plan should be complementary and integrated into a cohesive macro-approach to development in a concerted effort to comply with the policies. Now it is up to us to implement and monitor these actions; therefore, all agencies and departments within the Government of Guam should develop operational plans that are consistent with the OEDP to expedite its implementation.



FRANK F. BLAS
Lieutenant Governor


JOSEPH F. ADA
Governor

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A. Introduction

The following is a discussion of the general approach which was applied in formulating the OEDP. This discussion covers the basic ideas of how economic development has been approached and the steps involved in planning. There is a description of the broad objectives and some of the issues involved, with a listing of the basic steps which have been followed in the planning process.

The basic purpose of the Plan is to guide economic growth so that it moves toward the desired results. In general, these desired results include a broader economic base, fuller employment, greater employment opportunities, higher wages and salaries, an improved standard of living, and equity in the distribution of the benefits of economic growth.

B. Planning Process

The OEDP represents an effort by both the public and private sectors to guide the use of Guam's resources and coordinate the investment programs, policies and projects needed to achieve desired development.

Within the government's limited mechanisms to shape the direction of the economy, it is the government's role to devise a policy framework that provides incentives to elicit desired behavior from both private and public entities and to plan an appropriate public sector investment program that includes investing in infrastructure and basic services which will foster productive activities.

The approach to the development planning process used in the OEDP represents a combination of the structuralist (utilizing positive commands and negative controls to guide and direct the economy) and neoclassical views (relying heavily on markets and the price mechanism to form the economy) of development planning in the economy. In most countries, neither of these views alone has proven to be a fully satisfactory guide to development planning. The preferred combination, devising a framework of price and other incentives to guide both public and private activity and designing an appropriate public investment program, has shown the most success within the real world system where markets perform imperfectly due

to a lack of adequate information or sufficient competition, along with the lack of accounting for the indirect costs and benefits (externalities) associated with development and the economy.

The dynamic nature of the economy necessitates periodic reviews of the OEDP. To be an effective guide to development the Plan must reflect changes in the economy over time, along with an improved information base for decision making, which may necessitate changes in emphasis and projects to facilitate continued development in line with set policies and goals. Therefore, the OEDP is not a static document, but rather a process that reflects continued efforts to refine the development process.

C. Sectoral Plan

Sectoral analysis is concerned with the examination and assessment of the resources, needs, problems, and opportunities in individual sectors of the economy, for the purpose of:

- Assisting consideration of economy-wide policies and strategies;
- Enabling judgements on sector development policies and strategies that will enhance the contribution of the sector to the island's economic development;
- Determining investment priorities in the sector which is a crucial step toward identifying specific projects and any preinvestment studies required; and
- Evaluating the capacity of principal institutions in the sector to implement desired policies, programs, and projects.

A sector is comprised of the producing or operating units in the economy that share a common function or output. There are five "lead" sectors making up Guam's economic structure. These "lead" sectors are the productive activities by which economic growth is expanded and will, therefore, be the core elements around which the plan will revolve. They are:

- 1) Tourism
- 2) Agriculture
- 3) Marine Resources
- 4) Aquaculture
- 5) Commerce/Manufacturing/Service.

Other sectors of the economy have been considered passive, in that their growth is in response to the growth in the lead sectors. For example, growth

in retail and wholesale trade is in response to growth in the lead sectors of the economy, such as tourism. Therefore, development strategies have not been provided for the passive sectors. The impact of the lead sectors on passive sectors was taken into account when overall economic impacts were evaluated.

The five lead areas of the economy serve to form the primary emphasis of subsequent economic policy. In the process of developing the economy along these lines, various supportive elements have been identified. These are:

- Infrastructure, Water and Waste Water, Energy, Solid Waste, Communications, Roads and Other Public Facilities;
- Manpower/Labor;
- Education/Training;
- Institutional Capacity, which refers to the ability of government and private entities to function in an appropriate manner to encourage economic growth, including their ability to plan and to implement these plans.

The role of these elements in the overall development of the economy is to support the policies made for the lead sectors. It is recognized that, at times, the policies made for the lead sectors may be constrained by the ability of the supportive elements to adequately provide the necessary support functions.

An implementation strategy incorporating all the sectoral plans will be developed. This process requires setting development priorities within and between sectors, as well as resolving the intersectoral conflicts which may arise.

D. Project Cycle

The following discussion on the project cycle is taken from "A Guide to Project Planning and Appraisal in the South Pacific" (Written by: A. McDonald, D.B. Evans, and F.V. Sevele for the South Pacific Commission).

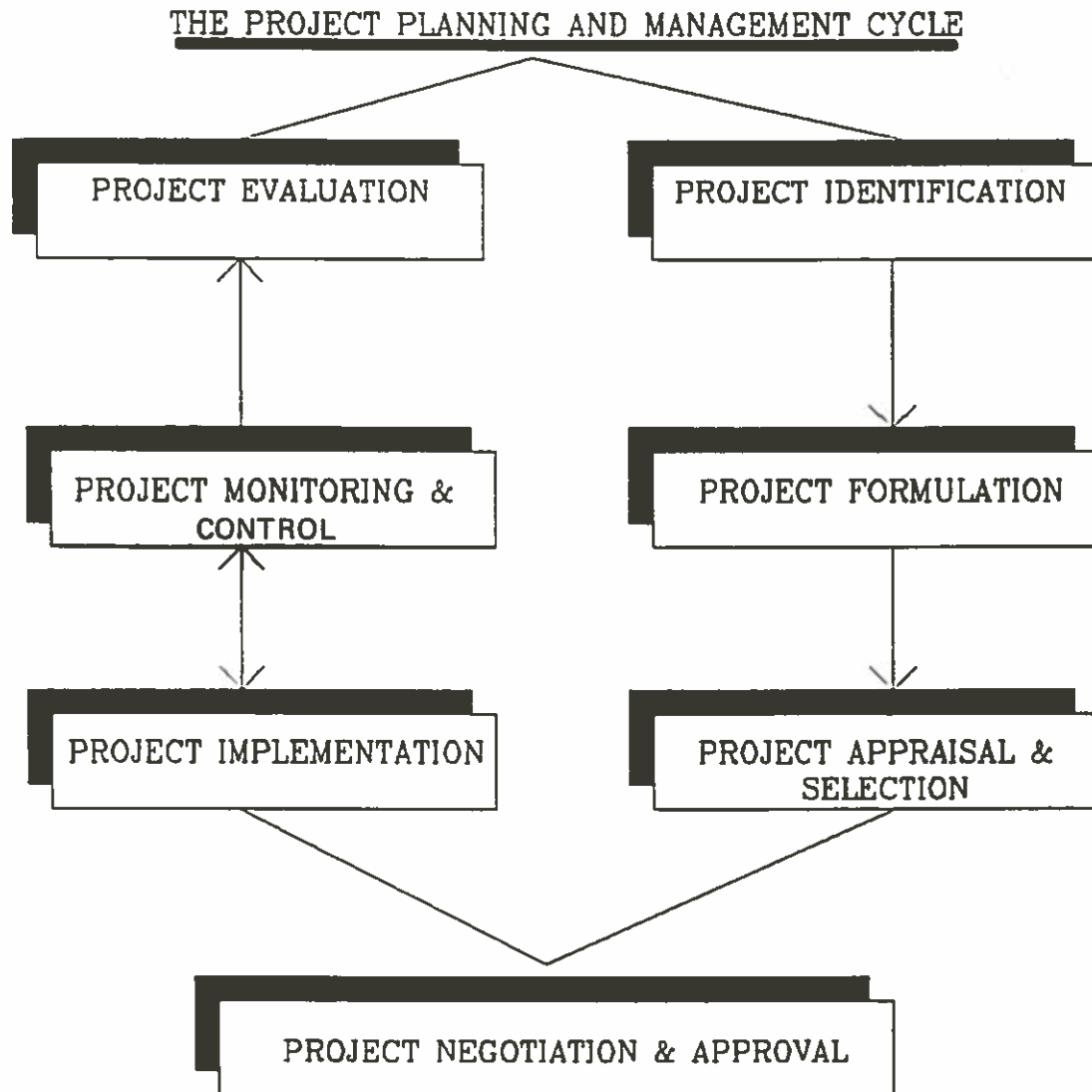
Project identification is merely the first step in a cycle of project planning and management. Various stages in this cycle include the following steps (Refer to Figure 1):

- 1) **Project Identification** - the identification of projects to overcome problems or fulfill development opportunities in the context of national objectives.
- 2) **Project Formulation** - designing the form which a project will take based on resource availabilities and national objectives.
- 3) **Project Appraisal and Selection** - assessing and comparing the costs and benefits of different projects that are consistent with national objectives. It is necessary to ensure this because resources are limited and the "best" project(s) should be selected for this reason.
- 4) **Project Negotiation and Approval** - arranging for the necessary resources for implementing selected projects and ensuring that the final detailed plan is still consistent with national objectives.
- 5) **Project Implementation** - applying the necessary resources to the project.
- 6) **Project Monitoring and Control** - obtaining information for feedback on the physical, financial, etc. progress of the project during implementation and rectifying or accommodating any problems.
- 7) **Project Evaluation** - assessing on an ex post facto basis the extent to which the project design was feasible, the project implementation was effective, and the extent to which the project achieved its stated aims. Many projects may have to be an ongoing rather than a once and for all process.

The cyclic nature of these steps arises for two reasons:

- Project monitoring is itself a feedback process. Information obtained during monitoring may result in changes to project implementation to rectify problems encountered and to take advantage of unforeseen benefits.
- Project evaluation may provide information which can be used in formulating similar projects at a later date. Alternatively it may reveal issues which result in the identification of new activities which should be carried out (i.e. new project(s) which could be undertaken).

Figure 1



It should be remembered that the time taken to complete the cycle can be quite extensive. Often projects do not even begin to be implemented for a number of years after they were first identified and evaluation may not be required for a decade.

E. OEDP Committee and Reviewing Bodies

It is a statutory requirement of the Economic Development Administration (U.S. Department of Commerce) that there be an OEDP Committee which guides the preparation of the OEDP document. The Committee must be representative of the community so that all viewpoints are considered. The OEDP Committee is confirmed by the Governor of Guam.

1988 INVITED OEDP COMMITTEE MEMBERS

<u>NAME</u>	<u>AFFILIATION</u>
1. Mr. Peter R. Barcinas* Director Department of Commerce	Government/Commerce/ Planning/Fisheries Aquaculture
2. Ms. Eloise R. Baza President Chamber of Commerce	Private Sector
3. Mr. Joey Cepeda General Manager Guam Visitors Bureau	Tourism
4. Mr. Frank Cabrera Ms. Miki Leon Guerrero Representatives Bureau of Planning	Government/Planning
5. Ms. Menang Diaz Field Representative Guam Federation of Teachers	Education/Union
6. Mr. Edward A. Guerrero Director Department of Labor	Government/Labor
7. Mr. Tass Gutierrez Director Retirement Fund	Government/Fiscal Management

* Chairman

- | | |
|--|--|
| 8. Mr. Tom Hertslet
President
T.A. Enterprises Incorporated | Private Sector/Maritime
Affairs Committee |
| 9. Mr. John Martinez
Administrator
GEDA | Government/Industrial
Development/Finance |
| 10. Ms. Barbara McCarron
General Manager
Island Ceramics | Manufacturing |
| 11. Mr. Tom Blas
Representative
Department of Agriculture | Government/Agriculture/
Fisheries |
| 12. Mr. Jose Ramos
President
Guam Community College | Government/Education/
Labor/Manpower |
| 13. Mr. Manny Leon Guerrero
Representative
Department of Education | Education |
| 14. Mr. Gerald Perez
Vice President Retail Operations
Duty Free Shoppers Limited | Private Sector/
Professionals |
| 15. Ms. Julie M. Perez
Director
Agency for Human Resources Dev. | Government/Unemployed/
Under-employed |
| 16. Mr. Al Pickens
Managing Partner
Peat Marwick, Mitchell & Co. | Private Sector/
Professionals |
| 17. Mr. Paul Leon Guerrero
Representative
BBMR | Government/Fiscal
Planning/Resources |
| 18. Mr. Anthony L.G. Santos
General Manager-Pacific Region
Guest Transportation Systems (USA) Inc. | Commerce/Transportation |

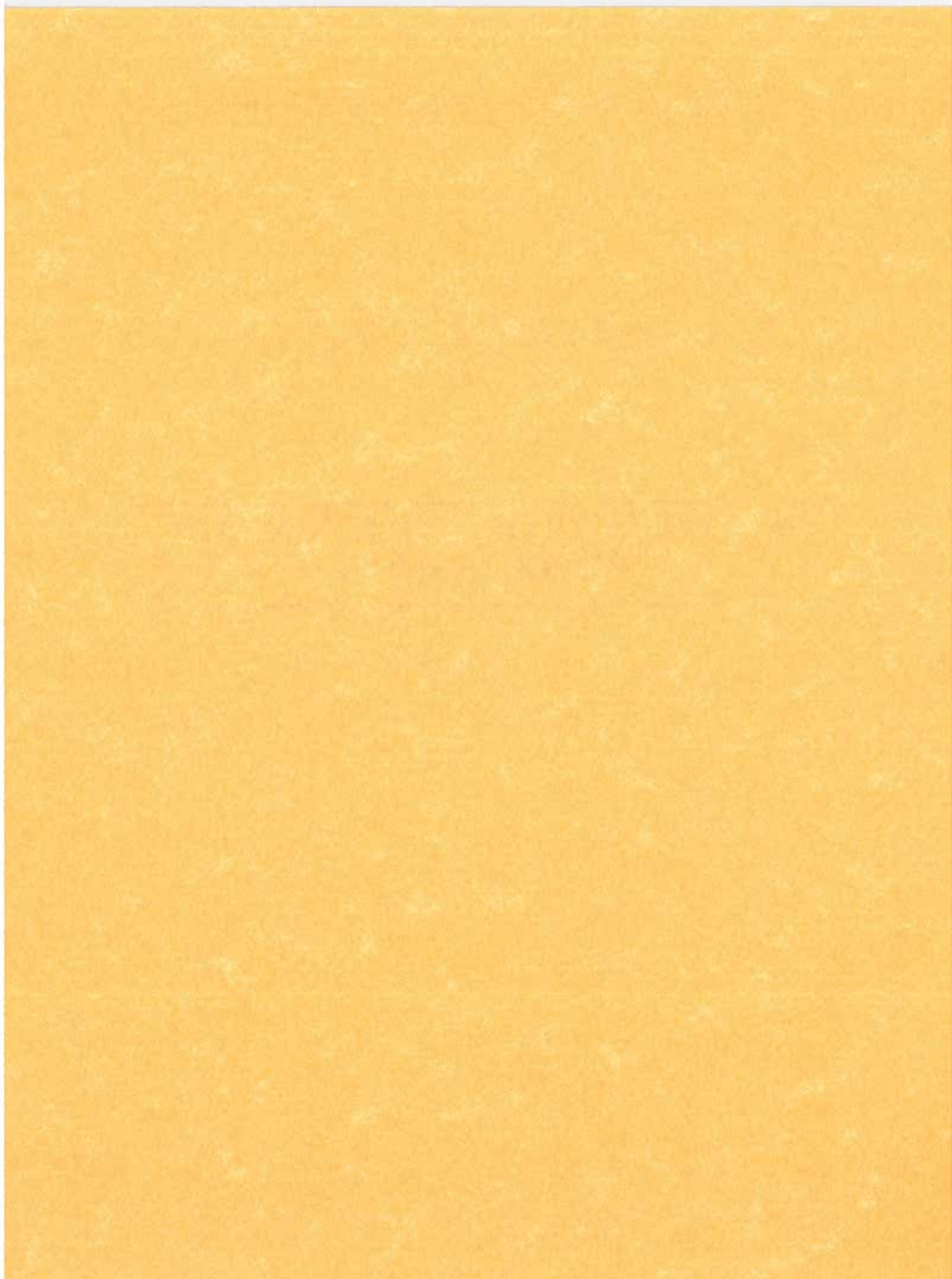
F. Work Plan for the OEDP Committee

The Overall Economic Development Plan (OEDP) will be finalized and transmitted thereafter to EDA. Annual reviews of the plan will be made to monitor its implementation and to realign projects based on changes in the economy.

Work on the sectional components of the Comprehensive Economic Development Plan (CEDP) will continue where the OEDP leaves off. The data will then be drawn together to form the draft of the CEDP. The draft CEDP will be circulated for comments to public and private entities and public hearings will be held. Ultimately, the CEDP will be presented to the Guam Legislature for adoption of the plan as the official economic planning document for Guam. Sectoral components of the CEDP have been completed in the areas of fisheries and aquaculture. The planning documents, *Territory of Guam Fisheries Development and Management Plan* and the *Aquaculture Development Plan for the Territory of Guam*, were adopted by the Legislature.

S e c t i o n T w o

ASSESSMENT OF THE ECONOMIC ENVIRONMENT



III.

ECONOMIC DEVELOPMENT

A. Concept of an Island Microstate and Its Impact on Economic Development

Island Microstates refers to small island nations or territories that are remote from continental land masses and large population centers (Forster, Unpublished). Guam is considered an island microstate which shares many of the problems and possibilities for development with other small islands. Commonalities among these microstates concerning constraints of development fall into two general areas, which consist of the following:

Limitations due to variety:

- Limited resources and environment constrain variation in development and the spreading of risk over a number of activities and areas. As a consequence a single negative incident, such as a storm or decrease in tourism, could have a major detrimental impact on the microstate's economy. This creates a precarious economic base with uncertain revenues and employment.
- Microstates are frequently dependent upon a wide variety of imports, and price changes are immediately felt in the economy. Shocks to the economies of microstates are common and frequent.
- With a limited population, it is difficult to provide the various manpower needs that an economy or society demands. Critical skills necessary for creating and maintaining economic development, market research, management, finance, organization, and advertising are often absent in the microstate. These services can be imported, but doing so may negate any comparative advantage. In addition, with a small population base there is less potential for amassing capital and other resources necessary for economic development.

Limitations due to scale and remoteness:

- Limitations related to scale and remoteness constitute the greatest obstacle to microstate economic growth, especially for industrialization. Remoteness impacts both on the public and private sectors. In the public sector it impacts in the following ways:
- No matter the size of state there is a minimum level of government required. Microstates are well below the optimum size for efficient provision of public services. The per capita cost of government increases as size decreases.

- Changes in technology that impact on services such as air and ocean ports, hospitals and waste treatment require significant capital investments. For example, changes in shipping technology to containerization and use of larger ships have made it necessary for significant capital investments in port facilities to remain competitive in trade and services associated with an ocean port.
- Many of the services performed by the private sector in larger countries are not viable in areas with smaller populations. The government must therefore directly provide these services at a loss or offer a subsidy to a private sector operator.

Scale problems also face the private sector. Manufacturing or other facilities in a microstate often cannot reach economies of scale by production for the domestic market alone. Expanding the market by exporting to reach scale economies is difficult. Microstates are price takers and as such must assume all transportation costs in their exports. The importation of some or all of the inputs of the manufactured product, along with the cost of transportation in exporting, makes it difficult to compete in the world market. It is in part for this reason that microstates have specialized in agricultural development for export, since agriculture is less subject to the economies of scale relative to manufacturing.

Commonalities among island microstates in opportunities for development fall into two main areas, which consist of the following:

Increase exports:

- Exports provide foreign exchange which helps to balance the trade. To maintain a comparative advantage the production must be at an optimum level requiring a certain scale of operations. In order to reach economies of scale and become competitive, it may be necessary to increase exports by specializing in a limited number of products. Common export commodities and activities include mining and agricultural products, fishery products, tourism, military bases and transfers. Since land and labor are limited resources, greater productivity per unit of land and labor is critical.
- Microstates within a region can work cooperatively to reach the required economies of scale. Centralized processing and shipping facilities along with trade agreements can facilitate development of exports from a region.
- Exports increase producer profits, but generally at the expense of local consumers who pay higher prices. If these profits are equitably distributed among the population these higher costs may be offset.

- Strategic location for trade, shipping and air routes and military bases provide opportunities for a selected number of microstates. However, as technological changes occur the advantages may be reduced.
- Tourism is considered an export that utilizes resources which are often the major resources the microstate has to offer, namely, white beaches, sunshine, warm weather and warm water. The greatest impact of the tourist industry is sometimes the initial construction of tourist infrastructure. Tourism is usually externally controlled and is subject to large fluctuations. The actual costs and benefits of tourism must be closely examined relative to all the development options open to the microstate.
- Manufactured products exported by a microstate within its region can provide the comparative advantage, mainly through reduced transportation costs, to become viable.

Import substitution:

- Imported products often provide an increased variety of goods at a lower price to the consumer and tend to increase consumer consumption, since his real income would be increased by the lower cost of goods.
- The resources freed or displaced by imports should be used for other productive purposes or otherwise the cost of the idle land, capital and labor should be reflected in the true cost of the import.
- An increase of imports reduces the money multiplier effect and the breadth of the economic base. Import substitution can be a means of increasing interindustry transactions, providing a more diversified and stable economy.
- Pursuing a policy of import substitution should be tempered to reflect true costs. It should be concentrated in areas where increased domestic production would allow for economies of scale and are protected from imports by transportation costs.

The decisions to pursue a course of action and the means to carry it out through developing the tourist, agriculture, manufacturing or service industries need to be carefully addressed in a coherent development policy indicating the various costs and benefits and their distribution.

B. Economic Development Process

In the planning process opportunities and constraints to economic development become more evident. An area of constraint in the public sector that negatively impacts on efficient economic development has been the

misunderstanding of the "economic development process" (Figure 2). This misunderstanding manifests itself in a number of ways that result in inefficiencies, and lack of coherence and direction in the implementation of programs to foster development.

The identification of desired and realistic types of development has been a major stumbling block to coherent long-term planning and development. The identification of the types of productive activities and industries desired are needed so that the limited resources can be focused on these specific activities and industries. The OEDP will help facilitate this focusing of desired growth.

Additional manifestations of the misunderstandings of the economic development process is evident in various proposed organizational changes to the components of the development process. A proposed inverting of certain components of this process would lead to further inefficiencies. For example, financing decisions should not occur prior to the accomplishment of careful analysis and planning nor with disregard to statistical data and economic indicators. What is needed is a consolidation of the information gathering, analysis, planning and implementation components within government. These individual components have been fragmented under current government organization which has historically lead to poor decisions, ill-considered investments, inappropriate policies and inefficiencies in the allocation of the government's limited resources.

The components of the economic development process are presented in Figure 2.

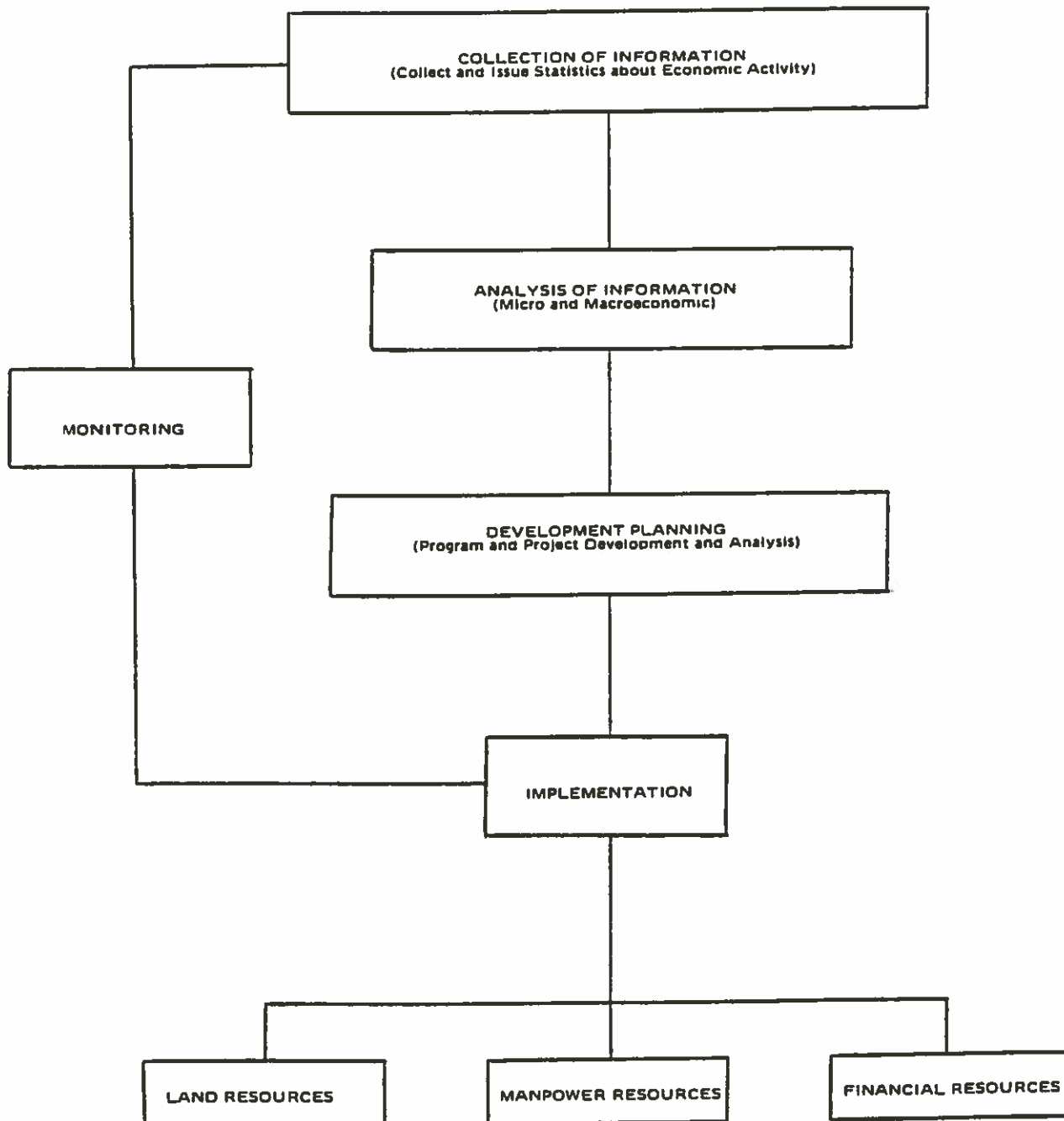
The *collection of information* is the basis for the analysis of the economy and is necessary to make realistic projections and plan for future development.

The purpose of *analysis of information* is to provide an economic assessment of the current situation and potential for growth in Guam's major industries, which will serve as a basis for sectoral and comprehensive planning programs. It is necessary to evaluate relevant economic data and statistics which pertain to various economic development projects and programs, as well as domestic and foreign trade.

Development planning is required to guide the orderly growth of Guam's economy. Proper planning is an important step in the allocation of resources, and providing a directional approach in the economic development process. It consolidates all pertinent data and information along with policies to formulate projects which will lead to the desired objectives/goal

Figure 2

Diagrammatic Presentation of the Economic Development Process



set forth in the plan. Planning is a tool used to realize integrated development. Without this tool, development becomes haphazard, and unfocused, and leads to inefficiency, lost opportunities and revenues, along with a lower standard of living for the society as a whole.

Implementation of programs and projects is an important step in the realization of development as set forth in plans. The obtainment and allocation of capital, manpower and land resources to carry out the programs and projects is required along with monitoring these programs to assure proper implementation in accordance with development objectives.

C. Statistical Information Base

The government should provide the public and private sector with a socio-economic base of data to make proper policy decisions about the future. Despite all the statistical developmental programs that have been carried out successfully over the past fifteen years, there is still a need for greater emphasis on future statistical development. Realizing the government's limited resources and finances, the changing times bring about the need for more sophisticated statistical information, and precise demographics (i.e. the National Accounts System).

The goals of any country's statistical system should be:

- 1) Develop an integrated and comprehensive statistical information system to serve the economic and social development planning and management needs of the country.
- 2) Ensure coordination of the operations of government in the collection, compilation and dissemination of statistics and related information in a timely manner.
- 3) Provide timely economic information to guide government policy decision makers. (Often needed information is very slowly processed, making policy design and implementation more difficult.)
- 4) Provide information to help the public and policy makers evaluate existing development programs in order to help determine whether they are, in fact, achieving their goals.
- 5) Provide information to help fashion new programs to address unmet development needs and to improve the ongoing process of strategic

planning at the government level. (If strategic planning is to become strategic public management, timely information is essential.)

The government and the public alike are becoming increasingly aware of the importance of having at their disposal, quantitative information on a variety of subjects in order to permit intelligent planning, and as a basis for decisions regarding the diverse and complex economic and social problems of today.

Statistics are used by governments in six main ways:

- 1) For routine administrative control: Statistics are indicators which serve as a check on administrative actions. For example, if the cost of living suddenly increases when the government has introduced a system of price control, this might indicate that the system is not working properly.
- 2) For Policy Making: Apart from making decisions or actions on current matters, the government has to make laws or decide on policies for the future. The role of statistics in policy making is to look at what happened in the past and to help establish results to be expected in the future.
- 3) Planning for economic development: To help speed up economic development, many countries adopt formal economic development plans. A country establishes a set of targets or goals and they adopt different policies and programs to reach these targets. The role of the development plan is to coordinate all these and to decide on priorities. Statistics are very important when the plan is being prepared; they help determine what resources are available and what targets can be reached.
- 4) Individual researchers: Statistics produced by individuals are usually the result of experiments and other studies, often with a view of discovering scientific facts.
- 5) Individual organizations: Many business firms and other organizations produce statistics concerning their own activities.
- 6) International agencies: The United Nations collects and publishes statistics on different subjects, based on data received from individual nations and organizations.

Guam, has not been able to meet the increasing demand to improve its socio-economic data base. In many cases, Guam has had to rely on the resources and experiences of donor governments and international/regional organizations (e.g., ESCAP and SPC) to help achieve its goals and meet the

demand for statistical information. There are efforts by many regional and international organizations to uplift statistical development in areas such as Guam.

There is a need to solidify Guam's statistical agencies into a progressive and continuous operation. The Economic Research Center of the Department of Commerce is currently responsible for producing many forms of statistical data dealing with the business and economic conditions of the island. This information is used both on an international/regional and local level. The compiled import/export trade figures, the consumer and wholesale index price, the inflation rate, the Gross Island Product and Per Capita figures are examples of the current available information. In addition, there is a continuous need for improved demographic statistics as well as timely and accurate labor force information. These data will ultimately provide Guam's decision makers and researchers with a useful macroeconomic tool for projecting future economic development.

To address the need for improved statistical information, the Governor of Guam has formed the Task Force on Government Information Systems and Data Processing which is responsible for formulating policies to ensure the orderly growth coordination, and control of computerization of the system. This task force has as its primary goal the development of a strategy to make optimum use of modern information technology as a tool in monitoring and accelerating the social and economic development of the territory.

The objectives of the Task Force include:

- 1) Survey the supply of and demand for information;
- 2) Survey the data and information interaction as well as the human resources availability and needs within and between Government of Guam agencies to identify needed information networks;
- 3) Develop recommendations for access and use of on-line databases;
- 4) Determine guidelines for the purchase and lease of appropriate computer hardware and software;
- 5) Analyze the requirements for data storage, software, and security;
- 6) Survey and develop recommendations for the expertise required within each agency or department to operate an ADP system to its best capacity;

- 7) Formulate recommendations for the possible development of a Central Statistical Office that would coordinate the collection of statistical information and authorize the release of "official statistics"; and
- 8) Investigate and use regional advisory services that are available to assist the Task Force, such as SPC, ESCAP, and the Department of the Interior.

At this time, the Task Force has requested the assistance of a study team to appraise the current Department of Administration Financial Management System (FMS). The study team will be made up of Government employees familiar with accounting and computer systems. This was chosen as the first task to be accomplished by the Task Force because of the widespread use of the FMS by Government entities. Once it has been decided whether the current FMS would make an effective financial database system and one has been created, the Task Force will appraise the general data collection and storage procedures of the Government in an effort to establish centralized statistical databases for use by Government of Guam agencies.

D. Objectives of Economic Growth

It is recognized that there are limits to growth and that both fast and slow growth may be undesirable. Slow growth may result in unemployment, low wages and, in general, poverty conditions for some of the island's population. Fast growth may lead to greater social disintegration, with the resulting problems of crime, delinquency, and adverse cultural change. The faster the growth, the greater the probability of a subsequent major economic downturn or local depression. Guiding the economy so that it expands at the appropriate rate is, therefore, an important objective. A second objective is to maximize career options for the local residents. Career options allow freedom in determining what kind of work one wishes to pursue. It also provides on-island opportunities and vertical mobility.

The purpose of this plan is, therefore, twofold:

- ° To guide the direction and pace of economic growth; and
- ° To choose an optimum mix of activities needed to achieve desired results such as increases in income and career opportunities. In addition, each economic sector has a set of policies, goals and objectives which will give direction to the kind of growth desired. This growth should follow the path which has been identified as the most beneficial and feasible route for growth.

IV.

CHANGES IN THE ECONOMY

A. General Changes

Since the 1987 OEDP, Guam's economy continues to undergo major changes particularly in the areas of construction, tourism, manufacturing and services. Of the smaller industries, the aquaculture industry shows the most promising growth, particularly with the development of the Guam Aquaculture Development and Training Center. The other smaller industries, such as fisheries and agriculture, have remained as relatively stable contributions to the economy.

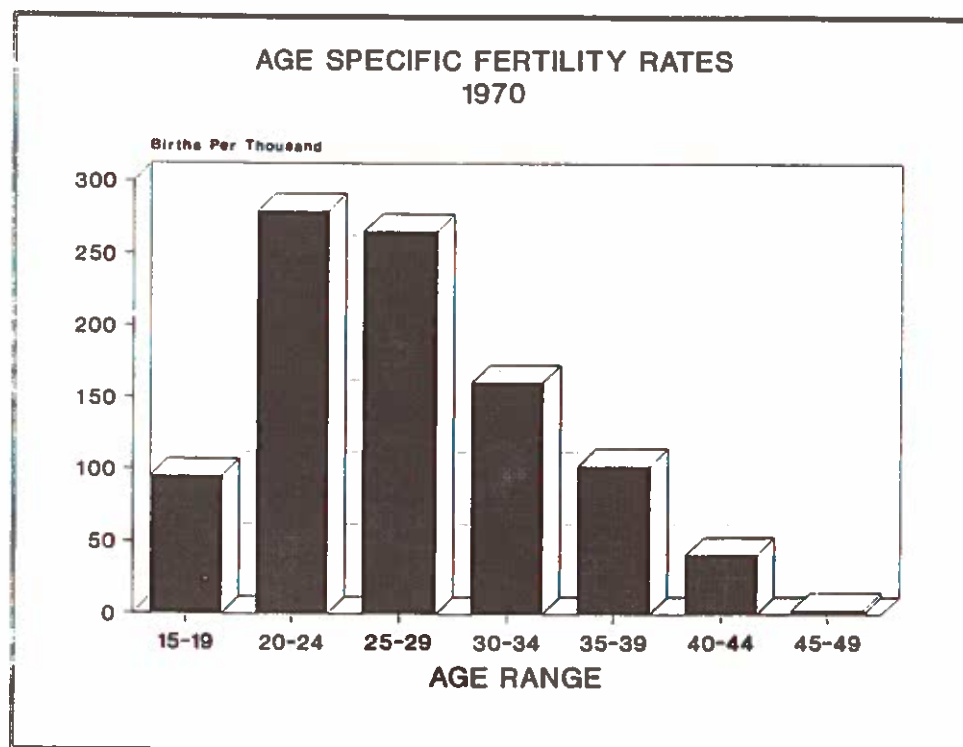
B. Population

According to the 1980 Census of Population and Housing, Guam's total population was 105,979. The projected total population for 1987, as computed by the Census and Population section of the Guam Department of Commerce, is 123,675 persons. Of the total population in 1980, more than 49% were born on Guam. After those born on Guam, the next largest category of birthplace for the population was the United States (21.7%), followed by persons born in Asia (21.4%). Of the total persons born in Asia, 16% were born in the Philippines. In 1980, Guam's male population was approximately 52% of the total population. Of the total male population, 49% were born in Guam. For females, who made up 48% of Guam's 1980 population, 52% were born on Guam. According to the 1980 Guam Monograph, average annual rates of growth for Chamorro, Caucasian, Filipino and other ethnic groups between 1960 and 1980 were 2.9%, 1.5%, 8.1% and 9.8%, respectively, which illustrates the increased migration of Filipinos and other races to Guam. The Chamorro population represented 45.1% of the total population in 1980, a percentage that is likely to decline further in the near future if present rates of growth continue. Differential migration streams, especially strong outmigration of Chamorro people, and immigration of Filipinos and other Asians, seem to be the main determinants of present trends.

On the average, Guam's population can expect to live longer than most other populations in the world. When a female baby is born on Guam, it can expect to live for about 76 years; a male may live for about 70 years (Flores, 1981). These life expectancies can be largely attributed to the low Infant Mortality Rate (IMR) on Guam. This rate reflects the number of children that die in

the course of the first year after birth per thousand live born children. The most recent data on vital statistics show a surprising drop in this measure, from an already low ratio of 21 per thousand in 1970 to 16 in 1980 and about 9 in 1986. Good health care facilities, in combination with better pre-natal care and a healthier environment, may be the main causal factors in this development. The overall Crude Birth Rate has been gradually declining since the early seventies and appears to have undergone a drop from about

Figure 3

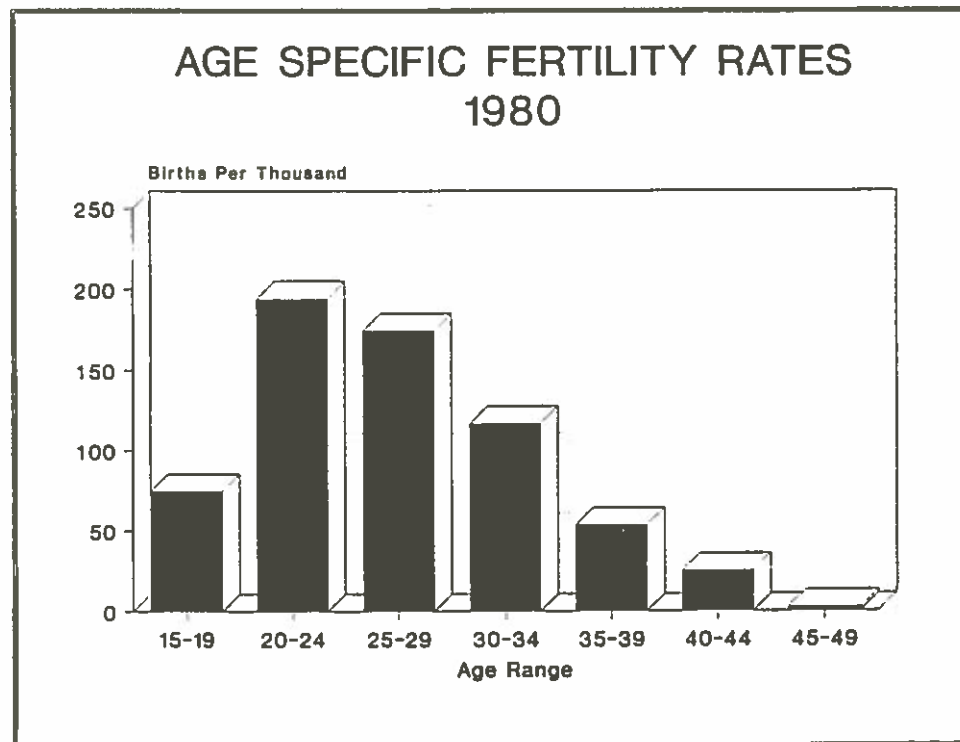


Source: Census and Population Division, Guam Department of Commerce

34 per thousand in 1970 to 28 in 1980 and about 27 in 1986. Age-Specific Fertility Rates (see Figures 3 and 4) show that women tend to bear children during a more limited span of years, thereby also limiting their Total Fertility Rate, which amounted in 1980 to about 3.2 (compared to 4.7 in 1970). This means that a woman would have 3 live-born children during her reproductive lifetime.

Guam's population is young; 35% constitutes children under 15 years of age, whereas 6% of the population is over 65 years of age. Comparable percentages for the state of Hawaii are 25 and 8, respectively (State of Hawaii Databook, 1980). Tables 1 and 2 present numbers and percentages of the population in three age groups (0-14, 15-64, 65+) by ethnicity. Table 3 shows dependency ratio by ethnicity. The child dependency ratio (the ratio of the population under 15 years of age per 100 persons 16 to 64 years of age) was 56 for the total population in 1980; the old aged dependency ratio was 4. The overall dependency ratio in 1980 for Guam's total population was 60.

Figure 4



Source: Census and Population Division, Guam Department of Commerce

These tables also illustrate the effect migration has on population composition. An interesting new development seems to have evolved only recently: an increase in federal military retirement and disability payments coming into Guam, may indicate an increase in return migrants. These people probably

Table 1

**Population by Ethnicity and Age, Guam
1980**

ETHNICITY					
AGE GROUP	CHAMORRO	CAUCASIAN	FILIPINO	OTHER	TOTAL
Under 15	19,901	7,717	6,835	2,519	36,972
15 to 64	26,199	18,903	14,758	6,162	66,022
Over 65	1,745	281	854	105	2,985
Total	47,845	26,901	22,447	8,786	105,979

Table 2

**Percent Population by Ethnicity and Age, Guam
1980**

ETHNICITY					
AGE GROUP	CHAMORRO	CAUCASIAN	FILIPINO	OTHER	TOTAL
Under 15	41.6	28.6	30.4	28.7	34.9
15 to 64	54.8	70.3	65.7	70.1	62.3
Over 65	3.6	1.0	3.8	1.2	2.8
Total	100.0	100.0	100.0	100.0	100.0

Table 3

**Dependency Ratios By Ethnicity, Guam
1980**

ETHNICITY					
AGE GROUP	CHAMORRO	CAUCASIAN	FILIPINO	OTHER	TOTAL
Under 15	76.0	40.8	46.3	40.9	53.0
Over 65	82.6	42.3	52.1	42.6	60.5
Total	82.6	42.3	52.1	42.6	60.5

Source: "Guam's People: A Continuing Heritage", The Interagency Committee on Population, Government of Guam, 1988.

are Chamorros of about 40-50 years of age who have retired from military service and have settled in Guam, bringing their families with them. The combined effect of a decline in fertility, high life expectancy and increasing return migration of elderly people to Guam will affect the age structure of the population of Guam.

Strong immigration of guest workers from the Philippines, mainland Asia and Micronesia, many of whom have established their families on Guam, may influence demographic statistics in such a way that the return migration rates may appear less significant.

A set of population projections has been developed by the U.S. Bureau of the Census based on observations and various assumptions as to the relative impact of developments in fertility and mortality. The medium projection series resulted in the following total population numbers for the years 1990, 2000 and 2020: 131,401, 158,438, and 217,681, respectively. These projections assume that the total fertility rate will remain constant, that no migration occurs, and that the life expectancy at birth remains at the 1981 levels shown in Flores' life tables. Over this period, the proportion of children will slowly decrease, as the "Baby Boom" generation completes its child bearing years and the smaller "Baby Bust" generation moves into those ages. The increase in the number of elderly people will be especially concentrated in Guam's female population, who generally outlive their male counterparts, resulting in a somewhat lopsided population composition for the older age bracket. These trends have important implications which will impact on the labor pool, education of the children, and care and housing of the elderly, and should be taken into consideration by the appropriate departments and agencies responsible for providing services in each of these areas.

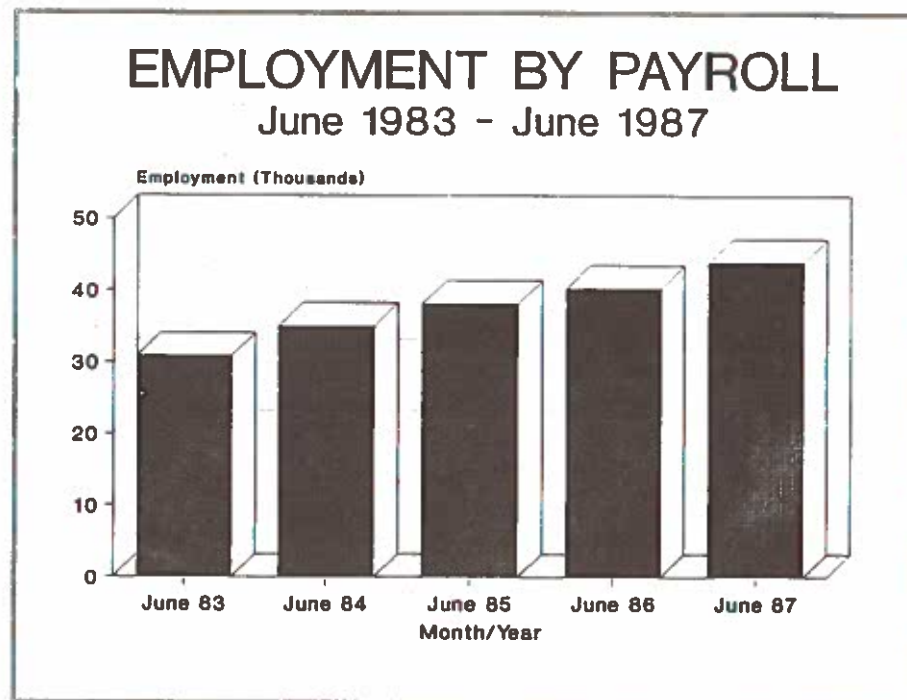
C. Employment and Unemployment

Until 1984, public sector employment comprised more than 50% of the total labor force. The public sector on Guam has traditionally served as a form of employment subsidy due to the limited job opportunities in the private sector. This trait is characteristic of a small island economy that has not had sufficient time, capital and resources to diversify and mature. However, recent growth in the private sector has reversed this trend.

Guam's total payroll employment as of March 1988, was 46,930 (preliminary), of which 29,450 or 63% comprised the private sector employment and 17,480 or 37% comprised both the federal (7,060) and territorial (10,420) government. Total payroll employment in March 1988 increased by about

6.4% over March 1987 total of 44,100. However, a significant increase of about 36% can be seen when compared to March 1984 total of 34,500 (Figure 5).

Figure 5



Source: Guam Department of Labor

A clearer picture of the total payroll employment is presented in Table 4. Of the total employment in the private sector in March 1988, the largest category was trade with 31%, followed by the services category (30%) and the construction category (15%). Significantly, the construction category has almost tripled its number of payroll employment when compared to March 1984. The total employment in the private sector has steadily increased in the last 5 years as shown in Table 4. Unlike the public sector, whose total fluctuates each year.

Table 4

**Employment by Payroll
March 1984 thru March 1988**

Employment Category	March 1984	March 1985	March 1986	March 1987	March 1988p
<u>Private Sector</u>					
Agriculture/Fisheries/Aquaculture	140	120	140	230	160
Construction	1,530	2,750	4,220	4,470	4,330
Manufacture	1,370	1,190	1,300	1,780	1,900
Transportation & Public Utilities	1,550	1,860	1,950	2,270	2,820
Trade (Retail/Wholesale)	5,620	7,090	7,400	8,100	9,120
Finance/ Insurance/ & Real Estate	1,380	1,820	1,820	2,010	2,170
Services	4,150	6,570	6,670	7,800	8,950
Total Private Sector	15,740	21,400	23,500	26,660	29,450
<u>Public Sector</u>					
Federal Government	6,610	6,840	7,120	7,120	7,060
Territorial Government	9,810	10,340	10,520	10,320	10,420
Total Public Sector	16,420	17,180	17,640	17,440	17,480
Total Payroll Employment	32,160	38,580	41,140	44,100	46,930

p: Preliminary

Source: Current Employment Survey (CES), Bureau of Labor Statistics, Department of Labor, Government of Guam

In view of cutbacks in federal spending, a shift from public to private sector employment should be encouraged. Accomplishing this requires that employment opportunities be created with comparable wages in the private sector.

As shown in Table 5 below, the average hourly earnings in the private sector in March 1988 have increased in the categories of construction, manufacturing, finance, insurance, real estate, and services when compared to the March 1984 totals. Total private sector average hourly earnings have steadily increased in each succeeding year to a high of \$6.27 in March 1988.

To be fully cognizant of the unemployment situation in Guam, one must delve into Guam's past. Prior to the Spanish-American War of 1898, Guam

Table 5**Average Hourly Earnings in Private Sector
(Dollars)****March 1984 thru March 1988**

Employment Category	March 1984	March 1985	March 1986	March 1987	March 1988
Agriculture	5.09	4.99	4.67	4.40	4.43
Construction	7.24	7.19	7.87	7.52	8.17
Transportation & Utilities	5.63	5.48	5.98	5.26	5.74
Trade	8.69	9.11	8.62	8.67	8.50
Finance, Insurance & Real Estate	5.60	5.52	5.36	5.67	6.36
Service	5.45	5.70	5.91	6.01	6.02
Total Sector	4.67	4.90	4.97	5.11	5.15
	5.77	5.91	6.12	6.14	6.27

Note: Wage, hour and earning information is reported for production workers only. Average weekly hours information is different from standard or scheduled hours because of such factors as absenteeism, labor turnover, part-time, overtime work, and stoppages.

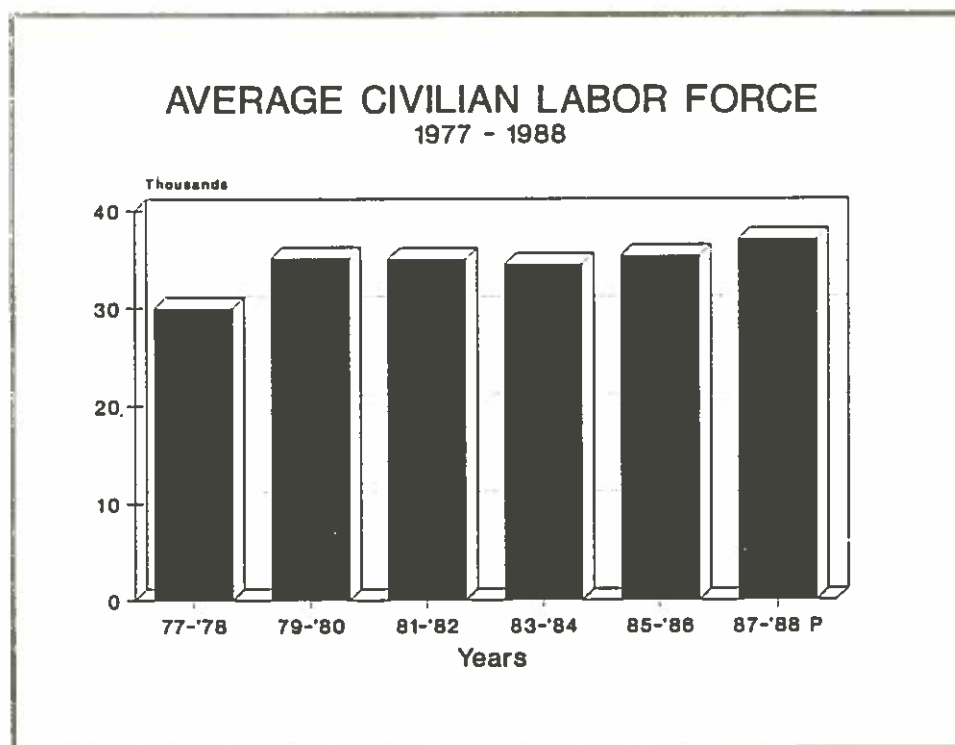
Source: Current Employment Survey (CES), Bureau of Labor Statistics, Department of Labor, Government of Guam

was sustained by a subsistence economy with people living off the land. Cash was scarce; a barter system flourished. Following the defeat of Spain in 1898, Guam was ceded to the U.S. and moved from an agrarian to a wage based economy with the local government providing readily available employment for island residents. This dependence on the local government for jobs has prevailed until recently wherein the public sector employment, for the first time, accounted for less than 50% of the total labor force. This shift is largely attributed to a growing private sector. Tourism in particular, currently provides nearly 5,510 jobs in the private sector's labor force (SRI International, March 1986). Island leaders have agreed that in light of recent cutbacks in federal spending, the future of Guam's economy lies in an expanded private sector. Notwithstanding numerous federal constraints which continue to impede Guam's economic growth, the general consensus is to settle for a federal "helping hand" rather than the obligatory federal "hand outs" of past years, thus representing an important attitudinal change. In order to forge ahead, Guam must continue to nurture its private sector in that a flourishing and vibrant private sector inevitably leads to greater economic advantages and opportunities.

Whereas the United States, since its inception, was built on a foundation of free enterprise, Guam suffers from cultural lag as a result of the United State's paternalistic relationship with the Territory. In view of recent federal administration economic reform policies, a shift from paternalism to relative self-sufficiency should be encouraged.

Guam continues to suffer from what sociologists refer to as the "brain drain". Since World War II, out-migration, primarily to the U.S., has been a recurring problem and a serious concern. The initial tide of migrants to the U.S. are composed of local residents who enlisted in the military and opted to retire in the U.S. Following this exodus was the departure of residents seeking to acquire higher education in the U.S.

Figure 6



P = Projected

Source: Guam Department of Labor

Natural disasters such as Typhoon Karen in 1962 and Typhoon Pamela in 1976 also contributed to out-migration in that the island consequently lay devastated. Barring the advent of tourism with President Kennedy's lifting of security restrictions in 1962, the public sector continued to be the major source of employment. Many residents who obtained degrees of higher learning in the U.S. decided to remain there attracted by employment opportunities available outside the public sector. According to the 1980 decennial census, 32,132 Chamorros, of Guamanian ancestry, currently reside in the U.S. which means that approximately four out of every ten Chamorros now live abroad.

Each year, an average of 2,500 individuals, high school and college graduates and high school dropouts, enter the labor force. Some may enter the military, others may continue their education, but the majority will seek local employment. Given the local government's austerity program and employment "freeze" policy, these individuals have no alternative but to seek employment in the private sector.

Guam's civilian labor force experienced a slight decrease from 1980 to 1983. However, the labor force began increasing in 1984, and has maintained an average growth rate of approximately 3% as seen in Figure 6. The total civilian labor force reached an all time high of 36,540 in December 1987.

Even with the growth in the size of Guam's labor force, it is likely that Guam's private industries will experience a shortage of workers. There are many job-creating developments such as the Micronesian Shopping Center and the Nikko Hotel which will require the employment of more workers than ever before.

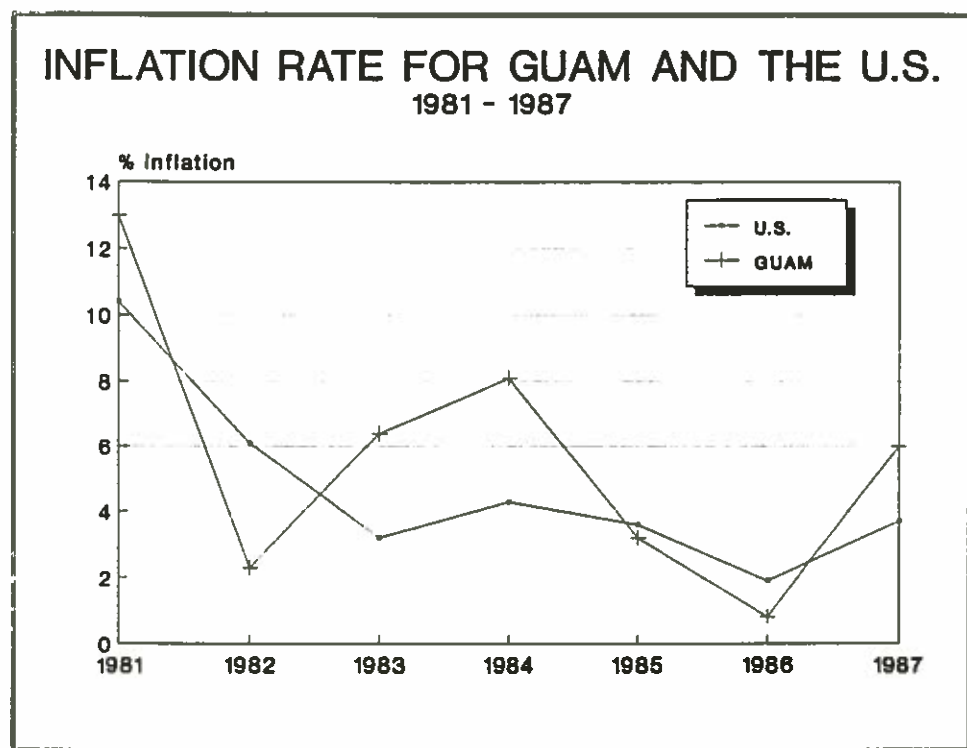
It is possible that a limited build up of the labor force will restrain economic growth. Although Guam's labor force is currently experiencing an increase, the sheer size of projected growth in the economy may require additional labor.

D. Income

According to the last annual income survey conducted by the Guam Department of Labor in 1985, the median household income was \$19,380 and the mean household income was \$23,310. The estimated average adjusted gross income for taxpayers in 1984 and 1985 was \$16,628 and \$18,411, respectively.

Approximately 80-90% of the island's consumer goods are imported annually resulting in a higher cost of living compared to other areas in the United States. Being a small insular community, Guam continues to be affected by external economic forces beyond its control. This is evident in Guam's inflation rate, which has significantly exceeded that of the United States (Figure 7). The unusually low inflation rate that occurred in 1976 is attributed to a super typhoon that caused major damage to the island's economy.

Figure 7

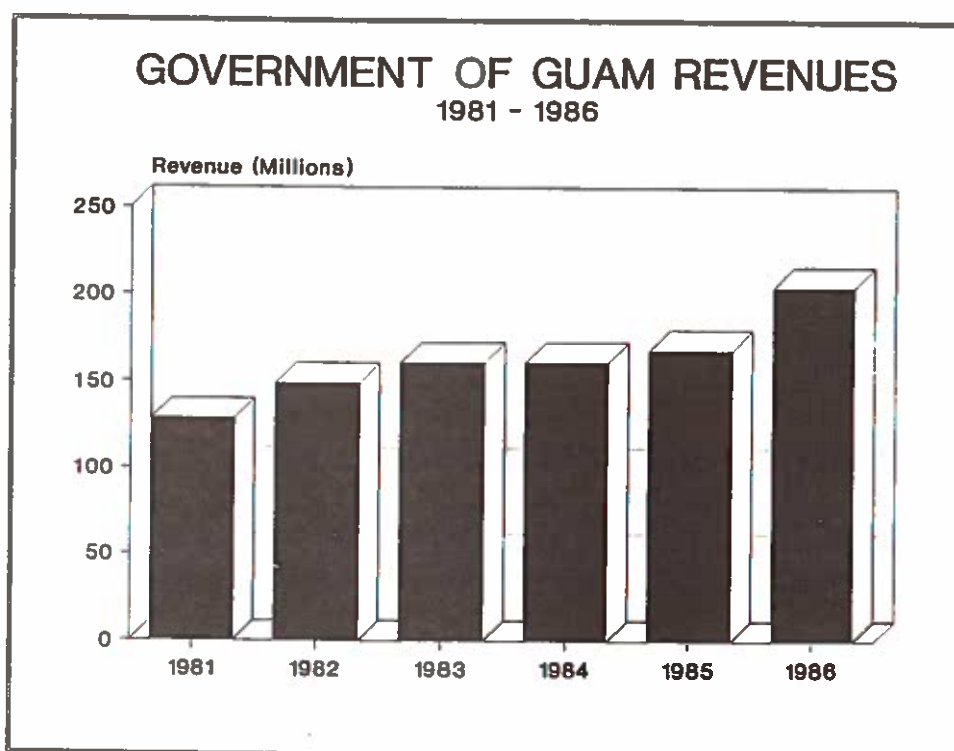


Source: Guam Department of Commerce

The estimated breakdown of Guam's per capita income over the past four years is as follows: 1982 - \$6,080; 1983 - \$6,798; 1984 - \$7,438; 1985 - \$7,424; and 1986 - \$8,507. The 1986 figure is approximately 50% below the average U.S. per capita income. From 1982 through 1986, Guam's per capita income averaged an 8% annual growth rate, compared with the island's inflation

average of 5% over the same period. A more accurate measure of the level of income and a country's wealth than per capita income alone, is a per capita income/cost of living ratio. Guam's relatively low per capita income and high cost of living, compared to the U.S., emphasizes the relatively depressed nature of Guam's economy in terms of living standards. Furthermore, this correlation is reflected in the large number of individuals participating in

Figure 8



Source: Guam Department of Administration

some form of public assistance program. For example, during the period ending June 1987, a monthly average of 4,016 households, or 16,449 individuals, participated in the U.S. Department of Agriculture's Food Stamp Program, which disbursed approximately \$8 million. In addition to the Food Stamp Program, a monthly average of 6,234 individuals are beneficiaries of

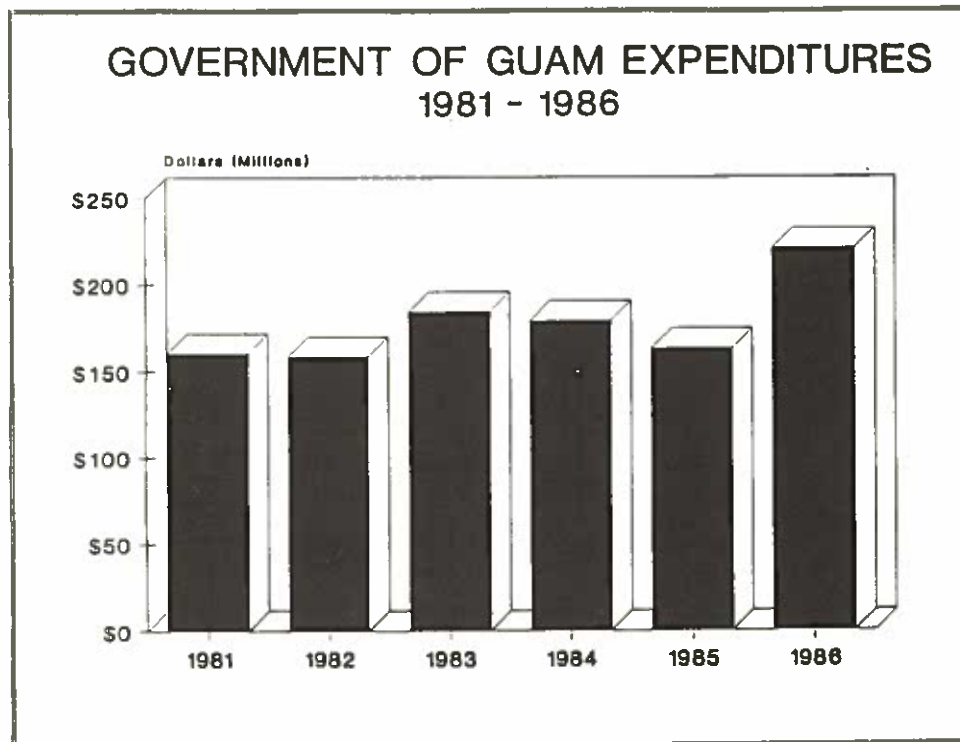
other public assistance programs. In summary, 18% of the total estimated population of 123,675 receives some form of public assistance.

A total of approximately \$10.4 million was expended on public assistance programs during the period ending June 1987. In light of the federal government's shifting views to move from a consumptive to a more productive society, any effort to expand the private sector would be most welcome.

E. Government Finances (Executive Branch)

The General Fund is the major operating fund of the Government of Guam. All tax receipts, licenses, registration and other fees not earmarked are deposited into the General Fund. The revenues of the General Fund are annually appropriated by the legislature for operations of the executive

Figure 9



Source: Guam Department of Administration

branch, including subsidies for certain autonomous and semi-autonomous agencies. These revenues are also used to fund specific capital improvement projects.

Total revenue in the General Fund in FY 1986 was \$204,512,603, amounting to a 21% increase over FY 1985 (see Tables 6 and 7). The largest revenue source for this period was income taxes, representing 38% of total revenues, followed by gross receipts taxes, representing 18% of total revenues. The most significant increase in revenue, in terms of dollar amount, in FY 1986 was seen under Taxes, amounting to an additional \$29,491,948, or a 22% increase over the previous year (See Figures 8 and 9). Although there was an increase in revenues from FY 1985 to FY 1986, the cost of government still exceeded the revenues in FY 1986 by \$22,863,162. Furthermore, the unreserved General Fund deficit, decreased from \$109.8 million on September 30, 1985 to \$87.2 million on September 30, 1986 (See Table 8). The decrease is primarily a result of a \$45 million general obligation bond that was issued in FY 1986. Thus, although the unreserved General Fund deficit decreased, the General Fund related indebtedness actually increased. The Government's revenue base for this fiscal year has been eroded as a result of the Tax Reform Act of 1986. In addition, the operating cost of government increased dramatically as a result of pay raises for all government employees.

The unreserved General Fund deficit and related long-term debt as of September 30, 1987 is estimated to be \$170.3 million. Refer to Table 9 on the Deficit Analysis of the Government of Guam for Fiscal Years 1985 through 1990.

It is clear that the financial condition of the Government is very poor. In order for the Government to correct this situation, it must first determine how to address the deficit. Governor Ada's transition team on deficit reduction identified the major causes of the deficit as:

- Budgeted revenues often exceed actual revenues;
- Appropriations consistently exceed the estimated revenues;
- Expenditures are incurred for which there are no appropriations;
- Allotments are not always revised when actual revenues are less than estimated revenues;
- Subsidies (through transfers) to agencies which operate based on user fees have consistently been increased.

Table 6

GOVERNMENT OF GUAM
GOVERNMENTAL FUNDS AND EXPENDABLE TRUST FUNDS
COMBINED STATEMENT OF REVENUES, EXPENDITURES, AND
CHANGES IN FUND BALANCE
For the Year Ended September 30, 1985
With Comparative Totals for the Year Ended September 30, 1984

	General Fund	Special Revenue Funds	Debt Ser- vice Funds	Capital Projects Funds	Expendable Trust Funds	1985 TOTAL (Memoran- dum Only)
REVENUES:						
Taxes	\$133,468,364	\$7,758,367	\$0	\$0	\$0	\$141,226,731
Licenses, Fees & Permits	5,201,937	1,963,622	0	557,229	786,445	8,509,233
Use of money & Property	253,557	412,731	17,993	949,402	0	1,633,683
Federal Contributions	29,299,177	26,950,426	0	10,579,446	0	66,829,049
Other	504,420	4,163,372	0	0	256,707	4,924,499
TOTAL REVENUES	168,727,455	41,248,518	17,993	12,086,077	1,043,152	223,123,195
PROGRAM EXPENDI- TURES						
General Government	29,986,562	14,354,840	0	9,675,613	0	54,017,015
Protection of Life & Property	24,354,306	475,079	0	0	0	24,829,385
Public Health & Community Services	13,552,301	22,619,085	0	648,229	0	36,819,615
Individual & Collective Rights	3,339,698	10,328,800	0	47,170	602,761	14,318,429
Public Education	60,732,306	6,607,564	0	902,005	0	68,241,875
Environmental Protection	1,248	1,087,862	0	0	0	1,089,110
Economic Development	3,870,473	2,908,998	0	0	4,478	6,783,949
Other	265,858	2,207,110	0	0	241,493	2,714,461
TOTAL EXPENDITURES	136,102,752	60,589,338	0	11,273,017	848,732	208,813,839
TOTAL REVENUE OVER (UNDER)	32,624,702	(19,340,819)	17,993	813,061	194,420	14,309,357
OTHER SOURCES (USES)						
Addition to Long Term Debt	78,700	35,126,553	0	0	0	35,205,253
Transfers In	14,490,930	18,686,435	7,560,859	35,826,220	33,273	76,597,717
Transfers Out	(60,413,908)	(34,858,186)	0	(8,694,052)	(17,799)	(103,983,945)
Other Sources	867,379	1,425	0	0	7,172	875,976
Other Uses	(7,392,878)	(200)	0	0	0	(7,393,078)
TOTAL SOURCES (USES)	(52,369,777)	18,956,027	7,560,859	27,132,168	22,646	1,301,923
EXCESS (DEFICIENCY) OF REVENUES & OTHER SOURCES OVER EXPENDI- TURES & OTHER USES						
	(19,745,074)	(384,792)	7,578,852	27,945,229	217,065	15,611,280
FUND BALANCE, OCT. 1, 1984	(69,212,179)	9,322,092	0	8,724,046	1,195,026	(49,971,015)
FUND BLANACE, SEPTEMBER 30, 1985	(\$88,957,253)	\$8,937,300	\$7,578,852	\$36,669,275	\$1,412,091	(\$34,359,735)

Source: Department of Administration, Government of Guam.

Table 7

GOVERNMENT OF GUAM
COMBINED STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE
For the Year Ended September 3, 1986

	General Fund	Spe- cial/Trust Federal Fund	Capital Projects Fund	Debt Ser- vice Fund	TOTAL
REVENUES					
Taxes	\$162,965,312	\$ 9,085,041	\$0	\$0	\$172,050,353
Licenses, Fees and Permits	3,239,318	2,581,971	0	0	5,821,289
Fines and Forfeitures	101,367	435,670	0	0	537,037
Federal Contribution	33,401,102	37,455,746	0	0	70,856,848
Others	4,805,504	291,902	2,137,568	533,434	7,768,408
Total Revenues	\$204,512,603	\$49,850,330	\$2,137,568	\$533,434	\$257,033,935
EXPENDITURES:					
General Government	\$34,489,939	\$4,736,038	\$0	\$0	\$39,225,977
Protection of Life and Property	27,445,940	597,252	0	0	28,043,192
Public Health and Community Services	20,979,868	28,441,315	0	0	49,421,183
Individual and Collective Rights	3,294,393	0	0	0	3,294,393
Public Education	66,229,814	6,637,222	0	0	72,867,036
Environmental Protection	241,701	2,242,913	0	0	2,484,614
Economic Development	3,580,479	10,427,489	0	0	14,007,968
Others	313,912	1,582,945	3,447,238	5,157,187	10,501,282
Total Expenditures	\$156,576,046	\$54,665,174	\$3,447,238	\$5,157,187	\$219,845,645
REVENUES OVER (UNDER) EXPENDITURES	\$47,936,557	(\$4,814,844)	(\$1,309,670)	(\$4,623,753)	\$37,188,290
OTHER SOURCES (USES) OF FUND:					
Amortization of Long-Term Debt	(\$14,823,543)	\$0	\$0	\$0	(\$14,823,543)
Additional to Long-Term Debt	45,000,000	0	0	0	45,000,000
Operating Transfer-In	248,550	12,232,568	3,341,078	8,514,555	24,336,751
Operating Transfer-Out	(49,583,467)	(6,467,802)	(3,614,358)	(3,340,733)	(63,006,360)
Others	(\$437,509)	787,578	(984,776)	(1,282,450)	(5,917,157)
Total Other Sources (Uses) of Fund	(\$23,595,969)	\$6,552,344	(\$1,258,056)	\$3,891,372	(\$14,410,309)
REVENUES AND OTHER SOURCES OVER (UNDER) EXPENDITURES AND OTHER USES	\$24,340,588	\$1,737,500	(\$2,567,726)	(\$732,381)	\$22,777,981
ADJUSTMENT OF PRIOR YEARS REVENUES & EXPENDITURES	(120,268)	0	0	0	(120,268)
ADJUSTMENT TO BEGINNING BALANCE	(2,654,739)	0	0	0	(2,654,739)
FUND BALANCE - OCTOBER 1, 1985	88,957,253	8,336,318	30,175,947	7,578,852	42,866,136
FUND BALANCE (DEFICIT) SEPTEMBER 30, 1986	(\$67,391,672)	\$10,073,818	\$27,608,221	\$6,846,471	(\$22,863,162)

Source: Department of Administration, Government of Guam.

Table 8

**GENERAL FUND
BALANCE SHEET
September 30, 1986 and 1985**

<u>ASSETS</u>		
	1986	1985
Cash - Note 1	\$5,551,055	\$32,014,239
Receivables - Note 2 Taxes (Less Allowance for Doubtful Accounts of \$26,277,990 in 1986 and \$24,197,971 in 1985)	12,100,293	11,179,826
Other Receivables - Note 3 (less Allowance for Doubtful Accounts of (\$605,704 in 1986 and \$605,765 in 1985)	132,390	5,005
Interfund Accounts Receivables - Note 4	3,012,027	4,929,733
Deposits and Other Assets	22,305	22,305
TOTAL ASSETS	\$20,818,070	\$48,151,108
 <u>LIABILITIES AND FUND EQUITY</u>		
Liabilities:		
Accounts Payable - Note 5	\$8,722,630	\$39,316,369
Accrued Payroll	5,643,771	9,529,394
Interfund Payables - Note 6	26,992,319	24,089,513
Payable to Federal Agencies	-0-	248,545
Deferred Revenues - Note 7	7,422,389	34,566,539
Deposits and Other Liabilities	39,428,633	29,358,001
TOTAL LIABILITIES	\$88,209,742	\$137,108,361
Fund Equity:		
Reserve for Related Assets - Note 8	\$44,863	\$22,305
Reserve for Encumbrance	10,325,180	7,294,490
Continuing Appropriation - Note 9	9,449,217	13,567,654
Unreserved Fund Balance (Deficit)	(87,210,932)	(109,841,702)
Total Fund Equity (deficit)	(\$67,391,672)	(\$88,957,253)
TOTAL LIABILITIES AND FUND EQUITY	\$20,818,070	\$48,151,108

Table 9

**DEFICIT ANALYSIS
GOVERNMENT OF GUAM
FISCAL YEARS 1985-1990
(Millions of Dollars)**

	G/Fund Deficit	G/Fund Related L-T-Debt	Total G/Fund Deficit and L-T-Debt	Reduction/ Growth
Per Audit Sept. 30/Oct. 1, 1985 (Fiscal Year End 1985)	(\$109.8)	(\$19.7)	<u>(\$129.5)</u>	
Per Book Sept. 30/Oct. 1, 1986 (Fiscal Year End 1986)	(\$87.2)	(\$45.0)	<u>(\$132.2)</u>	(\$2.7)
Projected Sept. 30/Oct. 1, 1987 (Fiscal Year End 1987)	(\$88.9)	(\$80.5)	<u>(\$169.4)</u>	(\$37.2)
Projected Sept. 30/Oct. 1, 1988 (Fiscal Year End 1988)	(\$84.5)	(\$68.7)	<u>(\$153.2)</u>	\$16.2
Projected Sept. 30/Oct. 1, 1989 (Fiscal Year End 1989)	(\$78.4)	(\$58.1)	<u>(\$136.5)</u>	\$16.7
Projected Sept. 30/Oct. 1, 1990 (Fiscal Year End 1990)	(\$70.1)	(\$46.9)	<u>(\$117.0)</u>	\$19.5

Note: This excludes the unfunded pension liability and the accrued annual leave of all funds as well as the obligations of the bond.

The Governor's plan is targeted to reduce the General Fund deficit and related long-term debt by \$56.6 million from FY 1987 to FY 1990 as shown in Table 9. Additionally, the Governor's initiatives are designed to provide funding for needed capital improvement projects for infrastructural development.

F. Gross Island Product

The Gross Island Product is a measure of the total production of goods and services produced in Guam in a one year period. The Gross Island Product is similar to the Gross Domestic Product and can be defined in two ways: First, it is equal to the total final sales of goods and services within a calendar

year; and second, it also is defined as the total value-added of the economy per year. Final sales refers to purchases made during the year that are not resold and value-added is the difference between total sales and total purchases.

Use of the Gross Island Product to measure the economy provides an abstract representation of the real economy. Specific use of gross production indicators provides a vital link to economic analysis. A decline in the recorded Gross Island Product may very well correspond to periods of high unemployment, business downturn, lower tax revenue, less construction and general economic distress. Similarly, a rising Gross Island Product may correspond to periods of low unemployment, increased profits, high investment, more construction, etc. Thus, Guam's Gross Island Product is a shorthand method to allow businesses and the government to make prudent decisions regarding the economic state of Guam.

The use of the value-added is another method to view the economy of Guam. The difference between total sale and total purchases is defined as production, and by summing up all sectors of the economy, provides an alternative method to determine the Gross Island Product.

An example of what can be ascertained from information gathered in the development of the Gross Island Product is as follows:

In 1984, retailing accounted for approximately 31.8 percent of Guam's gross business income and combined with wholesaling, the two sectors comprise 41.4 percent. The growth of Guam's insurance, real estate, and financial sector in 1984 was responsible for 13.2 percent of the gross business income. The agricultural sector contributed only 1.4 percent to the total and represents the smallest sector of the economy (Table 10).

As a comparison, the wholesale and retail sectors in 1985 and 1986 contributed 46.7 and 50.4 percent to the economy, respectively. Noteworthy is the fact that by 1986, the insurance, real estate, and financial sector increased to 17.7 percent which is reflective of the change in the economic posture of Guam. The agricultural sector declined to 0.6 percent by 1986.

The wholesale and retail sectors show a steady incline in gross business income basically due to the increase in tourism and tourism spending. With added hotels and apartments scheduled to be constructed, the anticipated growth is projected to double in the future.

Table 10

**Sectoral Contribution of Gross Business Income
(Percent)
1976-1986**

	Agriculture	Construction	Manufacturing	Transportation	Wholesale	Retail	Insurance, Real Estate, Finance	Services	TOTAL
1976	0.2	10.1	24.0	2.2	7.3	35.0	10.1	11.1	100.0
1977	0.2	12.0	24.2	2.1	10.9	30.1	9.2	11.2	100.0
1978	0.4	14.1	23.8	2.1	6.9	33.0	8.8	10.9	100.0
1979	0.5	11.3	22.0	2.4	9.6	32.8	7.9	13.4	100.0
1980	0.3	7.2	30.6	2.4	8.3	31.6	6.8	12.7	100.0
1981	n.a.	n.a.	n.a.	n.a.	8.5	34.7	n.a.	n.a.	100.0
1982	n.a.	8.5	4.9	6.9	10.3	31.4	11.3	26.4	100.0
1983	0.2	4.4	6.9	10.1	9.6	32.9	7.7	28.5	100.0
1984P	1.4	9.3	2.9	13.2	9.6	31.8	13.2	18.3	100.0
1985P	.4	5.7	3.0	5.5	10.5	36.2	17.9	20.5	100.0
1986P	.6	2.8	2.7	6.1	14.4	36.0	17.7	19.5	100.0

P: Preliminary

Source: Department of Commerce, Government of Guam.

In dollar figures, the retail industry accounted for the largest portion, or \$57,562,657, of the island's GIP in 1984, with services (exclusive of finance, insurance and real estate services) contributing the next largest portion, or \$33,173,911. The manufacturing and agricultural sectors both accounted for the two lowest portions contributing only \$5,252,651 and \$2,549,395 respectively (Table 11).

In comparison, in 1985, retailing almost doubled its 1984 figure with a contribution of \$96,566,226. The services sector also saw a major increase contributing \$54,708,151. Another notable change is in the insurance, real estate, and finance sector with a contribution of \$47,749,770, almost double the amount in 1984 and a reflection of the increasing number of businesses entering these markets.

In 1986, the retail sector shows a substantial increase over 1985 contributing \$112,368,264 which can be expected in a commerce/service oriented economy. The wholesale industry almost doubles its 1985 figure with a

Table 11

	Gross Island Product Value-Added (Dollars) by Industry 1982-1986				
	1982	1983	1984	1985P	1986P
Agriculture	—	611,246	2,549,375	1,122,469	1,840,183
Construction	16,606,692	10,555,627	16,768,265	15,148,783	8,827,237
Manufacturing	9,667,869	15,217,104	5,252,651	8,190,764	8,493,840
Transportation	13,334,130	24,217,104	23,890,909	14,725,843	18,980,848
Wholesale	20,123,079	22,954,368	17,449,797	27,958,085	45,021,829
Retail	60,948,908	78,437,795	57,562,657	96,566,226	112,368,264
Insurance, Real Estate, and Finance	22,034,928	18,457,197	23,979,191	47,749,770	55,313,257
Services	51,261,846	67,953,243	33,173,911	54,708,151	60,981,657
Total Value-Added	193,977,452	238,413,713	180,626,776	266,170,091	311,827,115

P: Preliminary

Source: Department of Commerce, Government of Guam

contribution of \$45,021,829. Services and Finance, Insurance and Real Estate also had significant increases (Table 11).

When Guam is compared to other Pacific basin islands, it ranks 4th in Gross Island Product. Papua New Guinea has the highest figure with French Polynesia and Fiji second and third respectively. However, Guam has the highest Per Capita Income of all these islands with a figure of \$7,503. French Polynesia and New Caledonia rank second and third respectively (Table 12).

The public sector also plays a major role in the island's GIP. In 1984, the total Gross Island Product for the public sector was \$616,279,000, a substantial increase from the previous years. In 1985 and 1986, this figure decreased slightly at \$545,362,000 and \$561,428,000, respectively. It should be noted, however, that 1985 and 1986 figures are still preliminary (Table 13).

The Gross Island Product of Guam, although a relatively new concept to government, and businesses as well, will soon prove useful to many, as it becomes the most general descriptive measure of Guam's economy. Con-

Table 12

**GROSS DOMESTIC PRODUCTS/GROSS ISLAND PRODUCT
AND PER CAPITA INCOME**

COUNTRY	GDP/GIP Year	GDP/GIP (\$US) (000s)a,d	Per Capita (\$US)a,d
American Samoa	1985	187,500	5,282
Cook Islands	1980	17,748	1,003
Fiji	1985	1,022,747	1,460
French Polynesia	1985	1,137,479	6,583
Guam	1985	888,003	7,503 ^b
Kiribati	1984	27,698	444
Nauru	c	c	c
New Caledonia	1983	831,092	5,716
Niue	1984	3,825	1,319
Papua New Guinea	1985	2,380,278	717
Solomon Islands	1983	156,128	619
Tokelau	1980	816 ^R	488 ^R
Tonga	1983	79,303	831
Tuvalu	1985	2,799	325
Vanuatu	1982	80,000	800
Wallis/Futuna	1983	153	15
Western Samoa	1980	115,260 ^R	737 ^R

Note:

- a. Estimates based on 1985 SPC population figures.
- b. Subject to revision.
- c. Nauru does not publish national income figures.
- d. Conversion rate
 - December 1982 \$1A = \$1.02 US
 - December 1983 \$1A = \$0.91 US
 - December 1984 \$1A = \$0.88 US
 - December 1985 \$1A = \$0.7s US

Source: South Pacific Economies 1986 Statistical Summary; Economic Research Center, Guam Department of Commerce; U.S. Bureau of the Census.

R = Revised

tinued development of the island's Gross Island Product will serve as a guideline to statistical research and provide a base to project the islands future economic planning.

Table 13

**Private and Public Sector
Gross Island Product and Per Capita Figures**

	EMPLOYEE COMPENSATION					OPERATING SURPLUS				
	1982	1983	1984	1985 ^P	1986 ^P	1982	1983	1984	1985 ^P	1986 ^P
Public Sector										
Territorial Government	\$87,968,000	\$130,557,000	\$101,256,000	\$110,315,000	\$122,809,000	N/A	N/A	N/A	N/A	N/A
Non-Profit Public Bodies										
- (UOG, GOC, GMH)	23,483,000	25,135,000	28,530,000	22,841,000	17,711,000	N/A	N/A	\$7,210,000	N/A	N/A
Federal Government										
- (Administration)	131,431,000	116,231,000	134,430,000	131,421,000	158,833,000	N/A	N/A	N/A	N/A	N/A
Federal Government										
- (Military)	124,256,000	167,428,000	278,418,000	182,656,000	201,876,000	N/A	N/A	N/A	N/A	N/A
Sub Total	387,136,000	412,351,000	541,634,000	457,033,000	500,829,000	N/A	\$7,210,000	7,210,000	N/A	N/A
Territorial										
- Government Ent.	22,877,000	25,508,000	22,142,000	26,576,000	30,410,000	\$5,422,000	10,304,000	26,773,000	\$23,105,000	\$12,253,000
USPO	3,428,000	3,811,000	3,698,000	3,753,000	3,978,000	N/A	N/A	N/A	N/A	N/A
Sub Total	26,305,000	29,419,000	25,830,000	30,331,000	34,388,000	5,422,000	10,304,000	26,773,000	23,105,000	12,253,000
Total										
- Public Sector	343,444,000	441,770,000	567,464,000	487,364,000	535,215,000	5,422,000	10,304,000	33,983,000	23,105,000	12,253,000
Private Sector										
Private Establishments	120,520,899	140,838,206	117,498,728	144,587,236	121,252,993	17,778,535	42,842,383	12,794,657	58,327,557	75,212,174
Owner Occupied	N/A	N/A	N/A	N/A	N/A	57,184,434	60,560,727	63,987,020	87,403,303	70,809,808
Agriculture	6,086,921	5,330,290	6,714,000	8,122,979	7,004,707	N/A	N/A	N/A	N/A	N/A
Fishery	1,325,000	1,431,705	1,930,720	2,275,025	2,081,214	N/A	N/A	N/A	N/A	N/A
Aquaculture	225,840	169,900	232,285	382,931	624,108	N/A	N/A	N/A	N/A	N/A
Total										
- Private Sector	128,158,860	147,869,101	126,373,731	153,328,171	130,943,022	74,962,969	103,433,109	78,791,877	125,730,870	146,021,760
GRAND TOTAL	\$521,602,860	\$569,639,101	\$693,837,731	\$640,692,171	\$666,158,022	\$80,384,969	\$113,737,109	\$110,774,877	\$148,835,870	\$159,274,760

Table 13 (Continued)

Private and Public Sector
Gross Island Product and Per Capita Figures

	DEPRECIATION					INDIRECT BUSINESS TAXES					TOTALS				
	1982	1983	1984	1985 ^P	1986 ^P	1982	1983	1984	1985 ^P	1986 ^P	1982	1983	1984	1985 ^P	1986 ^P
Public Sector															
Territorial Government	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$87,888,000	\$130,557,000	\$101,258,000	\$110,315,000	\$122,809,000
Non-Profit Public Bodies															
- (JOG, GCC, GMH)	\$16,055,000	\$5,744,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	38,538,000	30,879,000	33,740,000	22,841,000	17,711,000
Federal Government															
- (Administration)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	131,431,000	116,231,000	134,430,000	131,421,000	159,633,000
Federal Government															
- (Military)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	124,258,000	187,428,000	279,418,000	182,858,000	201,876,000
Sub Total	16,055,000	5,744,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	383,184,000	418,085,000	549,844,000	457,033,000	500,829,000
Territorial															
- Government Ent.	7,238,000	17,805	\$14,891,000	\$34,752,000	\$13,819,000	N/A	N/A	N/A	N/A	N/A	35,538,000	48,817,000	63,606,000	84,435,000	58,482,000
USPO	142,000	141,000	141,000	141,000	141,000	N/A	N/A	N/A	N/A	N/A	3,570,000	4,052,000	3,829,000	3,884,000	4,117,000
Sub Total	7,381,000	12,946,000	14,832,000	34,893,000	13,960,000	N/A	N/A	N/A	N/A	N/A	39,108,000	52,869,000	67,435,000	88,329,000	60,599,000
Total															
- Public Sector	23,436,000	18,690,000	14,832,000	34,893,000	13,960,000	N/A	N/A	N/A	N/A	N/A	422,302,000	470,784,000	616,279,000	545,362,000	561,428,000
Private Sector															
Private Establishment	26,724,993	23,830,887	26,572,393	31,839,791	29,902,528	\$28,764,359	\$28,536,527	\$25,707,055	\$33,248,210	\$22,108,455	193,789,898	237,150,002	182,370,831	287,882,784	248,477,150
Owner Occupied	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	57,184,434	80,580,727	63,997,020	67,403,313	70,809,806
Agriculture	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6,088,821	5,330,280	6,714,000	6,122,878	7,004,707
Fishery	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,325,000	1,431,705	1,830,720	2,275,025	2,061,214
Aquaculture	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	225,840	188,900	232,285	362,831	624,108
Total															
- Private Sector	26,724,993	23,830,887	26,572,393	31,839,791	29,902,528	28,764,359	28,536,527	25,707,055	33,248,210	22,108,455	259,611,181	304,871,824	255,444,858	344,147,042	328,876,785
GRAND TOTAL	\$50,160,993	\$42,520,887	\$41,404,383	\$66,732,791	\$43,862,528	\$28,764,359	\$28,536,527	\$25,707,055	\$433,248,210	\$22,108,435	\$680,913,181	\$775,435,824	\$871,723,858	\$889,509,042	\$890,404,785

Note: 1982 1983 1984 1985 1986

GROSS ISLAND PRODUCT \$680.9M \$775.4M \$871.7M \$889.5M \$890.3

PER CAPITA INCOME \$6,147 \$6,848 \$7,530 \$7,516 \$7,359

POPULATION 110,759 113,230 115,758 118,338 120,977

G. Construction

History and Status

Since 1980, and particularly in the past three years (1985-1988), there has been a significant recovery in the construction industry as evidenced by the increasing number of residential housing, commercial, apartment/condominium and hotel/resort start ups (see Figures 10 and 11).

The construction industry plays a significant role in economic development and is an indicator of economic activity on Guam. Hence, a surge of construction activity will often indicate growth, whereas a decline in construction activity may indicate a slump or recession in Guam's economy. Therefore, economic activity in one of the lead economic sectors is often measured by the level of construction activity in that sector.

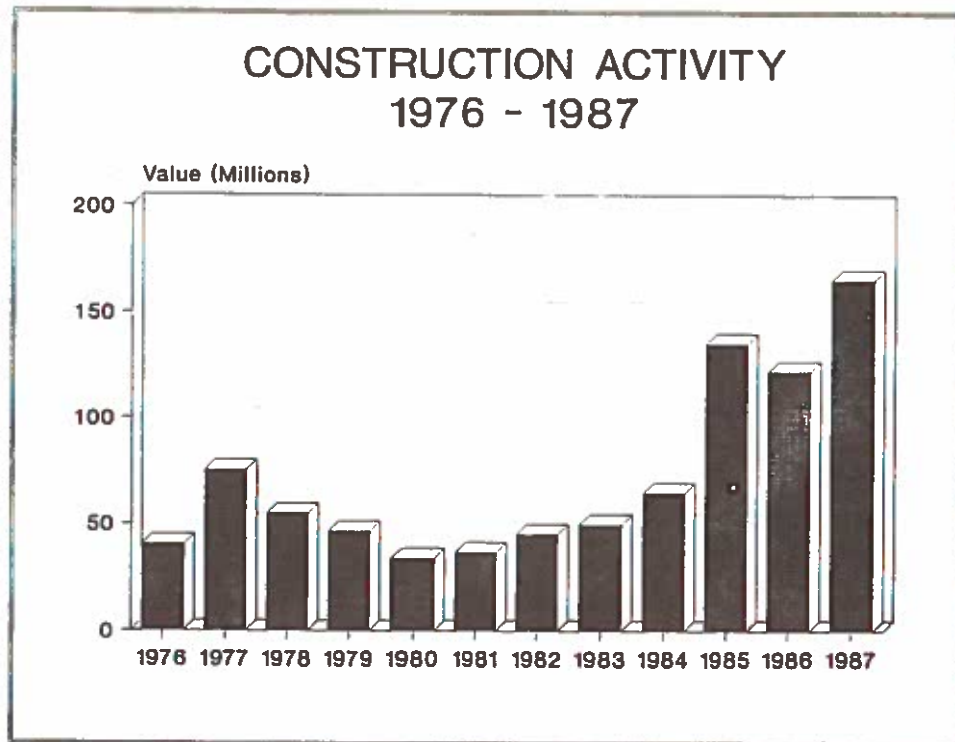
Factors that have contributed to Guam's growth in the construction industry in the past five years have been population growth, rescission of the adverse effect wage rate, a decline in the prime interest rate and world oil prices and the appreciation of the yen against the dollar. The latter contributed to increased investments in tourism facilities and government spending on infrastructure improvements. Lastly, anticipated and actual federal spending on military projects also contributed to growth in construction activities.

Both public and private sectors have contributed to the rise in new construction projects between 1985 and 1988. Ongoing developments from the public sector include infrastructural improvements of roadways, waterways, sewage systems and powerlines. Most significant is an islandwide road widening and improvement project currently underway and expected to be completed by 1990. Various phases of this project, most notably the reconstruction of Marine Drive (Route 1) from Tamuning to Agana and from Dededo to Yigo, were completed in December 1987. Recently completed private sector construction projects include the Pacific Star Hotel, a \$75 million, 19 story, 436 room hotel which opened in June 1987; the 70 unit Sun Route Hotel; the expansion of the Pacific Island Hotel (Phase I), Dai Ichi Hotel, Guam Plaza Hotel and Okura Hotel; numerous office and commercial buildings, apartment and condominium complexes; and housing/subdivision projects such as the Umatac village subdivision (Phase II).

Other major construction projects completed in or expected to be completed in 1988 include the Micronesian Shopping Center, a \$20 million shopping mall; Hatsuho Oka Towers, a \$27 million condominium project; Hatsuho

Golf Course, a \$2 million 18-hole golf course in northern Guam; and Hakubotan Duty Free Shop and Warehouse. Projects that began in 1988 include the new Palace Hotel, a \$60 million, 405-room hotel, the new Bank of Guam building, a 10 story commercial/office complex, the Guam Plaza Hotel addition and a number of other private commercial projects.

Figure 10



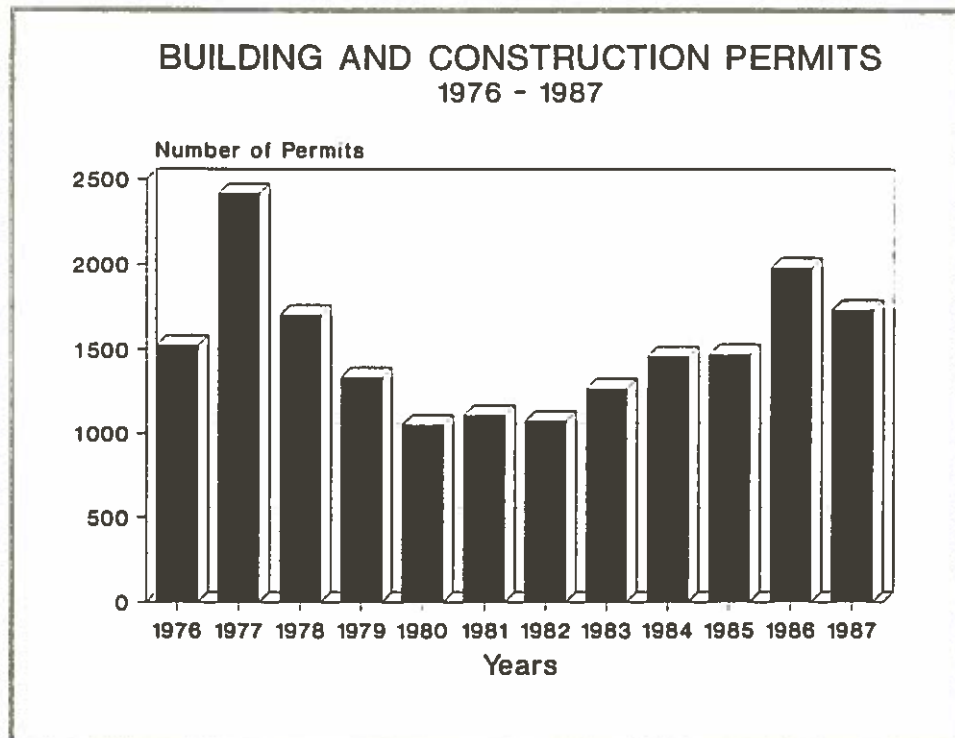
Source: Guam Department of Public Works

The federal government also contributed to the rise in construction activities with the completion of a new Post Office building in 1987. Further developments can be anticipated as the military foresees the completion of its ammunition wharf and expenditures of more than \$56 million in FY 1988 (Table 14).

Construction activity as presented in Figures 10 & 11 and Table 15 increased over 61% in the number of permits issued from 1982 to 1987 and increased

by over 265% in construction value for the same period. From 1986 to 1987, construction activity increased 35% in value, after a decline of 9.8% from 1985 to 1986. This increase occurred despite a decrease in the number of permits issued for the same period largely because of an increased number of large apartment and condominium projects in 1987.

Figure 11



Source: Guam Department of Public Works

After a growth period of four years (1982-1986) construction was thought to be leveling off with decreases in both construction permits issued (Table 15) and in the number of individuals employed in the industry in 1987 (Table 16). However, this decrease in 1987 in the number of projects was offset by the fact that they were higher value, large construction projects which resulted in the highest ever construction activity in terms of value.

First quarter statistics for 1988 indicate that construction activity on Guam has not slowed down. For this period, 478 permits were issued at a total value of \$31,112,000 surpassing the first quarter 1987 figure of 356 permits at

Table 14

MILITARY CONSTRUCTION PROJECTS Fiscal Year 1988	
PROJECT	COST
<u>NAVY</u>	
Mobile Construction Battalion Camp Covington Bachelor Enlisted Quarters and Mess Hall	\$14,700,000
Naval Facility Public Works Facility	650,000
Naval Magazine Ordnance Maintenance Facility	10,800,000
Naval Ship Repair Facility Equipment Maintenance Facility Repair Wharves Improvements	8,460,000 5,100,000
Naval Supply Depot Supply Maintenance Facility	5,700,000
Navy Public Works Center Boiler Plant Modification	<u>2,360,000</u>
TOTAL NAVY	\$47,770,000
<u>AIR FORCE</u>	
Andersen AFB Add-Alter Physical Fitness Center Alter Unaccompanied Enlisted Personnel Housing	\$3,600,000 <u>5,100,000</u>
TOTAL AIR FORCE	<u>\$8,700,000</u>
TOTAL GUAM	\$56,470,000

Table 15

BUILDING AND CONSTRUCTION PERMITS BY NUMBER AND VALUE
(Value in x \$1,000)
1982-1987

CONSTRUCTION		1982		1983		1984		1985		1986		1987	
		NUM-BER	VALUE*	NUM-BER	VALUE*	NUM-BER	VALUE*	NUM-BER	VALUE*	NUM-BER	VALUE*	NUM-BER	VALUE*
Residential	N	255	\$10,484	252	\$12,558	307	\$14,856	362	\$20,832	311	\$29,933	453	\$38,968
	A	347	3,351	339	3,993	389	3,880	377	3,702	432	5,614	531	8,046
Apartments and Dormitories	N	2	4,002	4	6,809	12	2,721	16	3,841	12	11,613	41	40,159
	A	10	951	10	115	16	676	14	1,724	35	2,213	31	2,482
Hotel	N	1	3,000	5	1,008	1	11,000	2	56,800	0	0	4	4,907
	A	1	80	5	80	0	0	0	0	0	0	26	1,815
Condominium	N	0	0	0	0	0	0	1	3,000	1	320	4	29,829
	A	1	20	0	0	0	0	0	0	0	0	0	0
Commercial	N	16	2,093	39	10,683	23	6,931	41	8,689	45	27,302	45	17,468
	A	166	2,598	152	3,354	168	8,294	160	5,578	724	6,441	244	4,959
Industrial	N	2	78	2	480	0	0	0	0	2	390	0	0
	A	1	1	0	0	0	0	0	0	1	1	0	0
Non-Profit	N	2	14	7	1,098	2	1,002	0	0	2	513	2	608
	A	2	13	9	731	4	123	3	119	8	531	9	402
Gov Guam	N	39	15,267	39	5,633	61	7,655	75	22,197	72	30,589	36	8,665
	A	0	0	0	0	0	0	0	0	0	0	5	45
Miscellaneous	N	228	3,208	403	3,174	475	7,284	418	8,954	333	6,689	300	6,681
TOTAL		1,073	\$45,160	1,266	\$49,716	1,458	\$64,422	1,469	\$135,436	1,978	\$122,149	1,731	\$165,034

NOTES:

N = New

A = Addition

* = Values for construction projects were not adjusted for inflation but reflect the estimated costs of projects at the time the permits were issued.

Source: Department of Public Works, Government of Guam

Table 16

**Quarterly Totals of Construction Employees on Payroll
1982-1988**

Year	Number of Employees			
	Jan-Mar	Apr-Jun	Aug-Sept	Oct-Dec
1988	4,330p	4,630p	n.y.a.	n.y.a.
1987	4,470	4,170	4,030	3,950
1986	4,220	4,500	4,640	4,880
1985	2,580	2,950	3,200	3,500
1984	1,800	1,770	2,250	2,810
1983	1,240	1,380	1,200	1,450
1982	1,740	1,560	1,350	1,210

Notes:

n.y.a. = Not Yet Available

p = Preliminary

Source: Department of Labor, Government of Guam

\$26,542,000. Also, over 300 more jobs were filled in the construction industry in the first quarter of 1988 than in the fourth quarter of 1987. An additional 300 more jobs were added in the second quarter of 1988. The high level of construction activity in the first half of 1988 reflects the overall economic and population growth the island has been experiencing and is expected to continue experiencing for the next five years, particularly as the service and tourism base increases.

As presented in Table 15, between 1982 and 1987 the category of construction projects with the largest value ever achieved for a single year was the hotel category at \$56.8 million in 1985, followed by new apartments at \$40.1 million in 1987, residential projects at \$38.9 million and Government of Guam infrastructure projects at \$30.6 million both in 1986. Also, during 1982 through 1987 the greatest increase in new construction took place in residential construction projects, followed by Government of Guam projects, hotels, commercial projects (office buildings, retail buildings, amusement establishments, etc.), apartments, condominiums and miscellaneous projects. The least growth has been in the industrial sector followed by non-profit projects. For 1987 alone, the highest growth occurred in new

apartments followed by residential, condominiums and commercial buildings respectively.

In terms of employment figures (refer to Table 14 above), construction employment peaked at 4,880 in December 1986 and declined throughout 1987. In December 1987, construction employment stood at 3,950, a decline of about 19% from the December 1986 peak. This decline was a reversal of the predominately upward trend in construction employment which began in December 1983. However, despite this decline in 1987, employment in the industry still remained relatively high when compared to the levels reached from 1982 through 1985. Overall growth in construction employment from its lowest decline in September 1983 to its peak in December 1986, represents an increase of approximately 307%.

Opportunities and Constraints

» Constraints

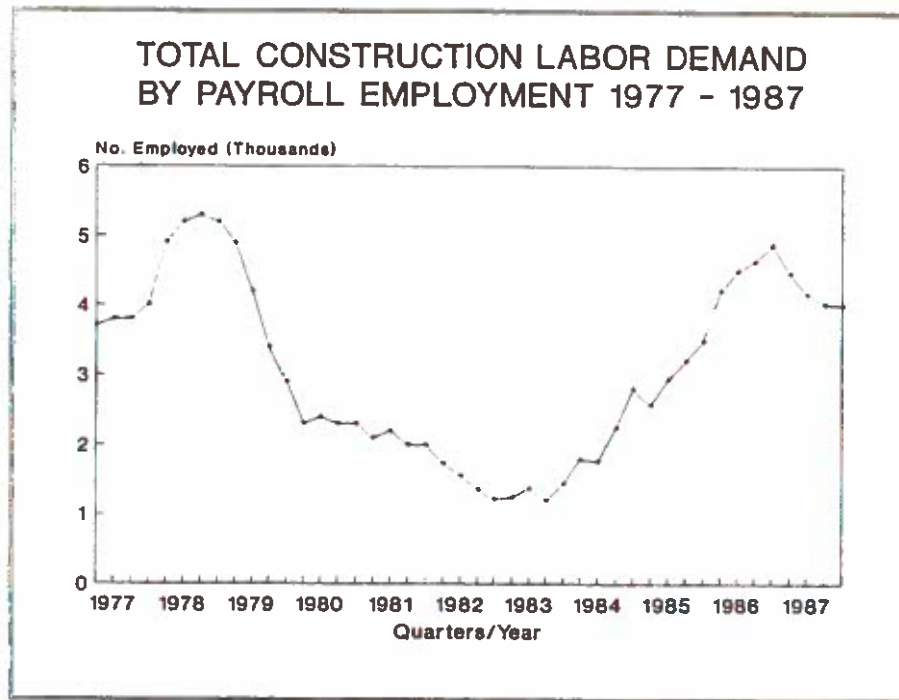
Although Guam is in the midst of a construction boom, it would be an error to expect this boom to sustain its momentum over an extensive period for two primary reasons. The first is the lack of adequate infrastructure to support a continued increase in demand by private development projects and the second is the cyclical nature of construction activity, which affects the need for skilled construction workers.

Currently, the lack of adequate infrastructure (primarily water and sewer systems) throughout parts of the island makes it difficult to support some current as well as future construction projects. The government is trying to address this problem by upgrading and expanding the current water and sewer systems; however, lack of funding remains as the biggest setback. Until such time that funding for water and sewer projects are secured for the most critical areas in which plans have been developed, major private construction projects such as apartments, hotels, and condominiums may have to be kept at the planning stages.

Construction activity is very cyclical in nature because of external factors beyond Guam's control such as national and world economic conditions, interest rates, activity in the tourism industry, and the availability of skilled labor to work in the construction industry. This results in large changes in the demand for labor in the construction industry. These changes in demand are reflected in Figure 12 which shows Construction Employment over a 10 year period (1977 to 1987). The relatively small land area and Guam's distance from the U.S. does not afford the advantages of flexibility and

additional opportunities as does the Continental United States with its larger geographic area.

Figure 12



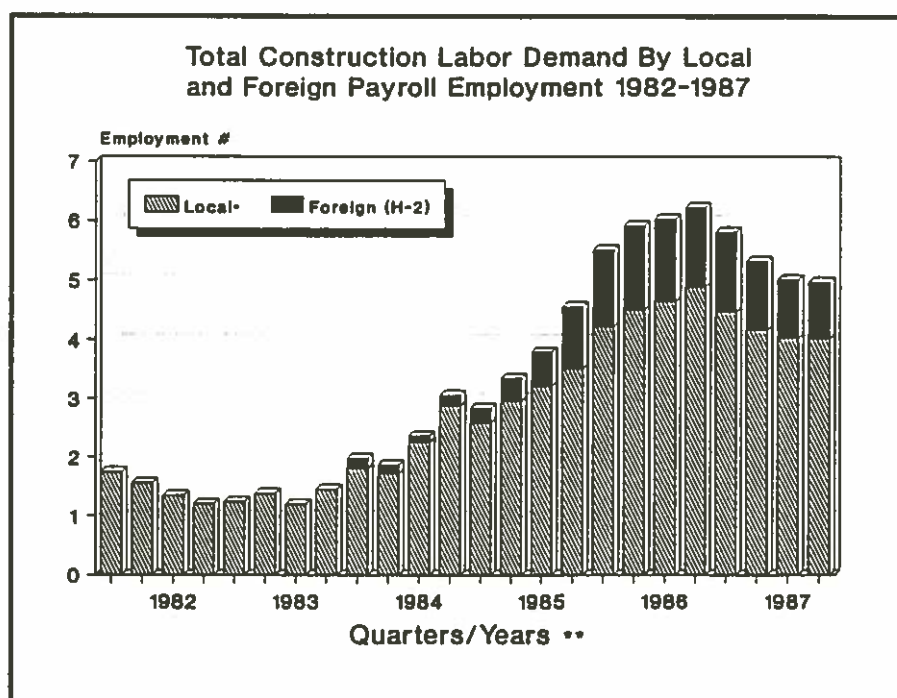
Source: Guam Department of Labor

From 1984 through mid 1988, Guam lacked the skilled labor force to meet the labor demands of the construction industry. As mentioned earlier, Guam can only support a limited number of permanent base jobs in the construction industry. As such, it is occasionally necessary to bring workers from foreign countries such as the Philippines, Korea, China or Japan to fill the island's short-term needs. The H-2 visa program allows the territory to meet its temporary needs during an expansion period, with the added advantage of minimizing unemployment once the level of activity recedes.

There is a need to determine the optimum number of local residents required to meet the needs of the construction industry so that a coordinated and well designed training program can be implemented. All efforts, such as the Government of Guam Apprenticeship Program, should be supported to

maximize the participation and employment of local residents in the construction industry. At the same time caution should be exercised to avoid an excessive supply resulting in disenfranchised unemployed workers. The peak cyclical employment demands of the industry will have to continue to be filled by utilizing off-island workers. Failure to do so would significantly hamper economic growth on the island.

Figure 13



Source: Guam Department of Labor

The H-2 program has been criticized in recent years as a practice which diverts wage and salary flows off Guam and undermines efforts to train and employ local workers in construction trades. In fact, the passage of the American labor preference provision, which requires companies winning Department of Defense (DOD) construction contracts on Guam to use American or resident alien labor on military construction unless it is demonstrably unfeasible or causes a prohibitive increase in contract costs, is aimed at discouraging foreign companies from continuing to insist on using H-2 alien labor. The provision ensures that local workers get the first opportunity at DOD construction work.

Although some may argue that the H-2 program deprives local residents of employment in the construction industry, statistics from the Guam Department of Labor show that of the 4,020 individuals employed in the construction industry as of December 30, 1987, 3,068 (76.3%) were residents of Guam, while the remaining 952 (23.7%) were aliens (Figure 13). Over a thirty-nine month period commencing in September 1983, a minimum of 2,341 (63.6%) of the 3,680 new positions filled in the industry were filled by local residents. These numbers should provide adequate evidence that efforts to exhaust the local labor pool before bringing in foreign personnel continues to meet with significant success. In fact, even without the foreign workers, the percentage of Guam's labor force in the construction trades is higher than that for the fifty States.

One other constraint to the positive development of the industry is absence of data necessary to more accurately evaluate the actual volume and value of construction activity during any given year. Construction activity statistics provided by the Department of Public Works simply indicate the number of building permits issued in that year and the estimated value of the proposed project. They do not indicate the actual year that a project begins since the life of a building permit as established by the Contractor's License Board, is 180 days which means actual construction may fall in the following year. Since Public Works assigns standardized values for each construction category in order to assess uniform permit fees, the building statistics do not provide the actual costs of the project upon completion such that the actual total value of construction projects remains unknown. Furthermore, figures are not revised to show cancelled construction projects, nor are building permits correlated with occupancy certificates to verify the project's completion for applicable projects.

» Opportunities

The construction industry can expect continued opportunities for growth over the next five years because of the following factors: the completion of Government infrastructure expansion and upgrading projects in 1988-89 and further infrastructure upgrading planned over the next five years; skilled labor demands in the construction trades are being met; the outlook for the economy particularly in the areas of tourism, commerce and services continues to look bright; and population growth and therefore demands for residential housing and related services continues to increase.

With regard to infrastructure demands being met, a listing of the government of Guam's infrastructural projects, various phases of which have begun in FY 1988 and are expected to be completed by the end of FY 1989, is

Table 17

APPRENTICESHIP TRAINING PROGRESS REPORT
(December 1981 to June 1988)

	Dec. 1981	Dec. 1982	Dec. 1983	Dec. 1984	Dec. 1985	Dec. 1986	Dec. 1987	Dec. 1988
TRADES								
Air Conditioning & Refrigeration	5	4	6	6	10	12	7	9
Automotive Mechanic (Gas & HDE)	7	5	7	4	11	7	6	7
Carpenter	17	7	6	9	50	51	32	36
Cement Mason	1	3	3	13	48	63	35	27
Drafter (Civil & Mechanical)	4	5	3	3	5	1	1	1
Electrician (W.I & Industrial)	14	6	10	23	29	25	12	20
Heavy Equipment Operator	3	2	2	6	7	10	6	8
Iron Worker (Reinforcing)	0	0	0	2	5	7	3	3
Painter	0	0	1	8	2	4	1	1
Plasterer	0	0	0	0	3	0	0	0
Pipefitter	0	0	0	0	0	5	0	0
Plumber	15	0	2	5	11	12	4	5
Sheetmetal Worker	1	0	0	4	2	6	0	0
Welder	0	1	2	1	2	2	1	1
OTHER TRADES								
Auto Body Repair	0	0	0	0	0	1	1	2
Cable Splicer	0	0	0	0	1	1	0	0
Electronic Technician	0	0	0	1	3	2	0	0
Lineman	0	0	0	0	1	0	0	0
Machinist	0	1	1	2	0	1	1	0
Small Engines	0	1	1	1	1	1	0	0
Xerographic Technician	0	1	1	2	1	0	0	0
Auto Electrician	0	0	0	0	0	0	1	2
TOTAL	67	36	45	90	192	211	106	122

Source: Guam Community College

provided in Appendix G. Several of the projects listed are specifically designed to meet the demands of current and proposed development projects in the tourism industry. Examples include a sewage reversal project in Tumon, a Tumon Relief Waterline project and a Clearing and Maintenance of Tumon Beach project. Several phases of the islandwide road widening and improvement projects were completed during FY 1988 and additional phases are expected to be completed or started in FY 1989. In addition, the Guam Telephone Authority (GTA) has improved its telecommunication system with the installation of fiber optic "digital" lines throughout the island in 1988. This development is a marked improvement over the old copper wire "analog" system. Also, the Public Utility Agency of Guam (PUAG) has completed some phases of its water transmission line projects improving the level of water distribution throughout various parts of the island. Additional projects for both GTA and PUAG are either in the design, bidding or implementation stages. These improvements in infrastructure will enable the island to accommodate additional private development projects which, when combined with the government infrastructure projects will provide increased employment opportunities for construction workers.

There are ongoing programs at the Guam Community College (GCC) to provide a steady stream of employees skilled in the construction trades and these programs have helped to reduce the number of H-2 workers needed at the present time. As a result of the cooperative efforts between the Guam Department of Education and the U.S. Department of Labor, Spring of 1988, approximately 413 residents from Guam and various Micronesian states were undergoing training of some type in the building trades at the Community College compared to 355 individuals in Spring of 1987. In addition, as of June 30, 1988, 122 persons were placed with 38 contractors through the GCC apprenticeship program (refer to Table 17, Apprenticeship Training Progress Report) and as of July 21, 1988, 16 were employed in construction through the maintenance trade and on-the-job training programs administered by the Guam Agency for Human Resources Development (AHRD).

The information below pertains to the Agency for Human Resources Development Program Status for Construction Related Occupational Training (period of July 1, 1987 to July 21, 1988). Programs involved with training for construction-related occupations are under Hospitality/Tourism training in maintenance trades and under the On-the-job training programs. The status of each program and total participants are as follows:

1) Hospitality/Tourism Training in Maintenance Trades

Subcontractor:	Guam Community College
Training Period:	4/1/88 to 7/21/88
Trainees Enrolled:	15
Trainees Completing and Placed into Employment:	9
Positions Employed:	Building Maintenance Apprentice Maintenance Repairer Cement Mason Apprentice Apprentice Carpenter

2) On-the-Job Training

Subcontractor:	Private Sector Employers
Training Period:	7/1/88 to 6/30/88
Trainees Enrolled:	21
Trainees Completing and Placed into Employment:	6
Trainees Active/Ongoing Training:	7
Positions Employed:	Sheet Metal Mechanic Drafter, Architecture Constuction Worker Carpenter Plumber Trainee Pipe Fitter Surveyor Helper

As a result of the construction boom, which began in 1983, GCC has been offering an accelerated training program, which provides the necessary construction skills in certain fields to students in a two year program instead of the usual four. In addition, the University of Guam is now offering a degree program to prepare more qualified individuals to teach vocational and technical trade skills.

With an average annual growth rate of 8% for 1977 through 1987 in the tourism industry (refer to tourism sector section) and an estimated average annual growth rate of about 11% for the most recent five years (1983-1988) opportunities for increased activity in the construction sector are proportionately great. As of June 1988, over 3,000 hotel rooms have been approved by the Territorial Planning Commission for construction with more hotel development projects currently being considered for approval. Along with

this are numerous construction projects for tourism-related support businesses, such as attractions, retail, commercial and service activities, proposed for construction (Tourism Section). With this surge, tourism projects should keep the construction industry busy and healthy for the five year period of this plan.

Opportunities for increased construction activity also lie in the commerce and service sectors. As of June 1988, a number of new office commercial buildings were completed such as the UIU building, Hengi Plaza building and Tropical Color Center building. Construction on the new Bank of Guam building, a ten story commercial/office complex also began in July 1988. Additional office space and retail commercial building projects are expected to develop as the demand for additional services and products increases and as the private sector continues to grow.

The population of Guam is growing at a rate of approximately 2.2% per year. The military population, although relatively stable has increased about 5% since 1980. With these increases in population there has been a steady increase in the demand for residential housing. A number of apartment complexes were completed in the first half of 1988 and a number of new apartment, townhouses and condominium will either be completed or started in the second half of 1988. A continuous flow of new applications for residential housing, apartment and condominium projects have been processed by the Department of Public Works in 1987 and 1988 which will mean continued construction activity and opportunities for more activity in this area in the years ahead.

Lastly, opportunities exist for improvement of the statistical data collections procedures for construction activities. More comprehensive data must be collected and meaningfully presented to enable industry analysts to better predict and assess the true growth of the industry for any particular month or year.

H. Military

The presence of the military, in terms of the number of civilian personnel employed, the number of active duty personnel and military dependents living here, the portion of the island's acreage occupied and the amount of revenues generated has played, and will continue to play, a significant role in the development of Guam's economy despite congressional reductions in the military budget for FY 1989.

As of March 31, 1988, the Department of Defense (DOD) employed an estimated 5,984 civilian personnel as compared to 6,356 on June 30, 1987 (FY 1987), a decrease of 5.8%; out of that total, 544 were U.S. Navy/Marine employees, 413 were U.S. Air Force employees, 11 were U.S. Army employees and 16 were employed by various other DOD agencies. The decrease in civilian personnel reflects congressional military budget cuts over the past year. In July 1988, because of budget constraints, the Navy cut 124 Civilian Navy Public Works Center jobs; however, the positions had been classified as temporary. The Public Works Center employed 1,479 civilians before the cut.

The total military population as of March 1988 amounted to 20,229, an amount that comprises about 17% of the island's total population and represents a decrease of 14.5% from June 1987. The total military population consists of both active duty personnel (8,771) and military dependents (11,451) of all branches of the Armed Forces - Navy, Air Force, Army and Marine Corps. In May 1988, the Air Force announced a decrease of about 400 positions due to changes at Andersen Air Force Base resulting from reorganization decisions by the Air Force's Strategic Air Command.

There have been increases in active duty Navy personnel since 1980. The most recent increases in Guam's Navy population is attributed to the homeporting of the U.S.S. Haleakala at Naval Station, Apra Harbor in 1986. The Haleakala, an ammunition ship, joined the submarine tender U.S.S. Proteus and the three supply ships at Naval Station - the U.S.S. Niagara Falls, the U.S.S. San Jose and the U.S.S. White Plains. The Haleakala's work force consists of 20 officers and 320 enlisted personnel and about 121 dependent family members of the crew have relocated to Guam.

An editorial article in the July 6, 1988 Pacific Daily News entitled, "Military role still strong on Guam", reported the following:

"While Guam has taken a beating in military cuts over the past year, the truth is that our military population is still higher than it was eight years ago as we entered the 1980s.

Island military activities have always been a cornerstone of Guam's economy, and remain so, despite cutbacks. There is simply no way to predict the future of the military on Guam with the Philippine base negotiations so completely up in the air.

There is no question the military, with a payroll of \$143.4 million and a payroll of \$142 million, is a major factor in Guam's strong economy. It also seems true the military economy has fallen, for the first time, to second place behind tourism as a percentage of Guam's gross-island product.

The impending visit of Secretary of State George Shultz to Manila shows the importance of the Philippine-base talks to the U.S. Guam's role as a major military base also depends on these stalled talks. Guam's economy can soar or drop depending on the outcome of these negotiations. Right now we can do nothing but await the decisions made in Manila and Washington." JCM. (PDN, July 6, 1988)

In 1988 negotiations were underway between the U.S. and the Philippines with regards to the extension of U.S. military base leases in the Philippines beyond 1992, resulting in speculation that the leases would not be renewed. In the event such a scenario actually occurred, Guam would be considered as one of the first alternatives to the bases in the Philippines. The impact of military bases from the Philippines being moved here would be substantial, although at this point in time, no study, economic, social or environmental, has been conducted on the impact, both negative and positive, of such a

Table 18

**Guam Land Use Plan Releasable Lands
Transferred to the Government of Guam
(Acres)
1977**

Branch/Agency	Location	Amount	+
Executive Branch:	Agana Springs	25.0	
	Cocos Island	22.0	
	Harmon Guam Annex	25.0	
	Veteran Cemetery	21.0	
	Naval Hospital Incinerator	1.3	
	Santa Monica Road	1.6	
Commercial Port:	Cabras Island	871.05	
	Agat Boat Basin	3.29	
Guam Housing and Urban Renal Authority:	Camp Edusa-Dededo	24.0	
Guam Airport Authority:	Airport	70.0	
TOTAL		1,064.24	

Source: Bureau of Planning

major military buildup, and whether or not Guam can obtain the maximum benefits from such a move.

The military controls about 40,000 acres on Guam, an acreage portion of about one third of the island's total surface area. In 1985, however, the Department of Defense agreed to return about 4,465.34 acres of excess federal land to the people of Guam. As of October 1987, 968.34 acres have been transferred to the government, with the largest parcel being 871.05 acres at Cabras Island, which is under the Port Authority of Guam's jurisdiction. However, approximately 500 acres of this parcel is submerged land. The remaining will be used for expansion of the Port's operations and for an industrial park. Other federal lands that have been transferred to the Government of Guam are listed in Table 17.

However, development of the largest parcel of land at Cabras Island is restricted under the Brooks Amendment which requires that funds generated by the sale or lease of this land be reverted to the federal government and that the land cannot be sold or leased at below market value. This has delayed development because the money generated by the use of the land cannot be utilized for its maintenance and upgrading and the Port Authority cannot attract manufacturers, transportation companies, shippers, etc. to expand or introduce their operations on this site by offering below market rates on the lease of this area. Over 90% of all goods leave and enter the island through the Port such that future development of this land is critical to the expansion of economic activities on Guam.

Federal expenditures was Guam's leading source of revenue in FY 1987. In FY 1987, \$681 million was distributed to Guam by the federal government. These distributions included \$103 million in grants, \$388 million for salaries and wages, \$70 million for direct payment to individuals, \$118 million for procurement and \$2 million for other programs. In addition, the federal government returned to the Government of Guam \$44 million in September 1987 for FY 1988 Section 30 funds and an estimated \$45 million is expected to be returned for FY 1989. Section 30 funds are federal income taxes taken from local federal workers that are reverted back to the Government of Guam.

Military construction for FY 1987 amounted to \$57.3 million. Nine military projects amounting to \$56.4 million were proposed for construction in FY 1988 and projects amounting to \$48.1 million, originally about \$71.8 million, are being proposed for FY 1989. A major project scheduled for FY 89 is a proposed \$26.3 million Relocatable Over the Horizon Radar system. Despite the drop of \$23.7 million from the military construction budget for

FY 1989 due to restraints on spending which included a Navy warehouse and maintenance facility on Guam, military construction figures for FY 1989 still remain substantial. With the construction boom the island has been experiencing since 1983 and through 1988, the loss of that project will not have a major impact on the construction industry. The remaining proposed projects will still represent more employment opportunities, more payroll, more business opportunities and more economic growth for Guam.

An editorial article in the July 6, 1988 Pacific Daily News entitled "Construction High", reported the following:

"Congress has been chopping away at military budgets in the past year, but Guam, on the basis of a new \$26.3 million Relocatable Over the Horizon Radar project, won't suffer much.

Military construction has been high on Guam for the past few years, contributing to an island-wide construction boom. Last year's construction budget was \$64.47 million. This coming year will see a drop to \$47.9 million, still a substantial figure.

That radar project, set for Northwest Field, may be one of the largest single construction projects ever for Guam, emphasizing again the importance of Guam in the overall picture.

This is an interim year in construction. Guam was hurt when a \$23.7 million Navy warehouse facility was cut, but this could be added next year." JCM. (PDN July 6, 1988)

I. Impact of the Negotiated Compacts in the Region

The year 1987 was a special year for the Western Pacific. The island region is entering a new era of political independence and self-government in a lasting "sphere of influence" of the United States. Three of the former four entities of the Trust Territory of the Pacific Islands now enjoy a new political status. The Federated States of Micronesia (FSM) and the Republic of Marshall Islands are semi-independent countries in free association with the United States while the Northern Mariana Islands (CNMI) is a U.S. Commonwealth. The fourth, the Republic of Palau, is finalizing its "Compact of Free Association" with the United States. Guam, a Territory of the United States since 1898, is drafting "Commonwealth" political relationship with the U.S.

In conjunction with this new political era, the United States has agreed to provide over \$3 billion in financial and economic assistance to the Region. At least 40% of this aid is to be spent to develop the infrastructure of the Region in the next 15 years. The Northern Mariana Islands recently signed a

second Covenant Funding Agreement of \$176 million with the United States. In addition, Guam and the Northern Marianas have floated bonds worth at least \$500 million for construction and housing development. Moreover, the United States has extended numerous federal economic programs and trade and tax benefits to promote economic and business growth in the Region. Depending on international political conditions, a potential exists for the United States to undertake a multi-billion dollar military build-up in the Western Pacific namely Guam, Northern Marianas, Marshalls and Palau.

The following is a discussion on the impacts of two such compacts in relation to Guam. First, is a narrative on the impact of the Compact of Free Association with the United States and the Federated States of Micronesia and the Republic of the Marshalls. What follows is a discussion on the effects of the Commonwealth of the Northern Marianas Islands with the United States.

The Compact of Free Association between the United States and the Federated States of Micronesia and the Republic of the Marshall Islands defines the relationship between the United States and these neighboring islands of Guam in terms of immigration, defense, trade, U.S. financial assistance and other matters.

The compacts are a monumental event in the political evolution of Micronesia, of which Guam is a part. As a result of the compact, the relationship of the Marshalls and the FSM to the rest of the world is radically changed from being wards of the United States within the Trust Territory of the Pacific Islands to fledgling members of the world of nations.

Because of this new era in the history of the region, many officials and those knowledgeable about Micronesia feel that Guam, as the largest land mass and most developed island in the area, stands to be heavily affected by the implementation of the compact. Since the FSM and Marshalls are less developed in their economies and in their infrastructures than Guam, many feel that Guam will be a jumping point for many businesses initiating ventures in those neighboring islands.

Although the Guam Chamber of Commerce and the Guam Department of Commerce do not keep data on the number of Guam firms involved in business in the rest of Micronesia, officials in both the private and public sectors feel the number is substantial. Those firms doing business in the rest of Micronesia could be as diverse as the small vendor providing magazines to the "mom and pop" stores throughout the region, to the Bank

of Guam, which despite its insular name has branches in all of the large islands in the area.

Businesses in the FSM most likely will utilize Guam-based services and purchase goods from Guam wholesalers. The Marshalls, although almost at the exact midpoint between Guam and Hawaii, seems to be moving toward an economic "linkage" with the larger market of Hawaii and points in the South Pacific rather than a connection with Guam.

Guam's increasing role as the regional center for Micronesia is beneficial for Guam-based businesses in that these enterprises, with their broader markets, will be more likely to secure product distribution rights. Such a situation, however, can be viewed as detrimental to the future growth of distributorships in the limited markets of the FSM or the Marshalls if Guam continues to be considered as the area's hub by outside companies and suppliers.

According to 1983 figures from the Guam Department of Commerce, Guam businesses exported \$24.6 million in goods to what was then the Trust Territory (the FSM, the Marshalls, the Republic of Palau and the U.S. Commonwealth of the Northern Mariana Islands). This represents an increase of just over \$6 million from 1980. No breakdown of the \$24.6 million is available for 1983, however, the most recent available figures, being first quarter 1984 figures, show a breakdown of exports by dollar value as follows: \$871,385 to the FSM; \$132,896 to the Marshalls; \$398,754 to Palau; and \$4,688,937 to the Northern Mariana Islands. Although there are no current figures on exports to those areas, officials speculate that there has been an increase in exports running parallel with the relative growth of the Micronesian economies.

The compact also contains "American preference" provisions which apparently give advantages to U.S. firms in pursuing contracts in the FSM and Marshalls. Section 106 details construction contract assistance to U.S. firms for major infrastructure projects in the FSM and Marshalls. Guam firms should seek details from the U.S. Agency for International Development about eligibility for such contract assistance.

In any case, speculation abounds that Guam will benefit economically as the FSM in particular, and the Marshalls to a lesser degree, will turn to Guam-based companies for the durable goods and services upon which they will build their economies and infrastructures.

The Compact of Free Association also revokes all U.S. Visa requirements previously imposed upon Trust Territory Citizens. Guam may not find the

potential increases in immigration beneficial in terms of its effects on the island's social systems and infrastructures. This potential negative impact is ironic because it stems from Guam's presence in the region as the island most developed in terms of economy and social infrastructure. Because the island's economy is larger and more diverse, and its social systems capable of providing more services, Guam may find itself the adopted home of neighboring islands' citizens seeking a higher standard living. For instance, FSM and Marshalls' citizens find Guam's minimum wage standard of \$3.75 per hour very attractive. In the FSM and the Marshalls the minimum wage is just above a dollar an hour. And, with the compact granting unrestricted travel into the United States to FSM and Marshalls citizens, many speculate Guam will be the first stepping stone for those islands seeking to improve their standing in life. The \$3.75 minimum wage is just one factor affecting islanders' decisions to immigrate to Guam. Because the neighboring islands are still underdeveloped and their population growing, unemployment is a problem for many people. The lack of opportunity is forcing islanders to look elsewhere and first on the horizon is Guam, the economic hub of the region. This potential immigration from the FSM and Marshalls also includes people seeking better education and social services.

The number of students from the former Trust Territory now being educated in Guam public schools is about 800. The Government of Guam absorbs all the cost, which is significant considering that the annual cost per student is about \$2,800, not including residual services for health programs and busing. Also not included in the above figure are the costs for children needing special education because of learning disabilities or physical handicaps. Some educators theorize that as the FSM and Marshalls develop their school systems to serve the greatest number of students, and as such, those with special needs will find it necessary to be schooled in Guam.

As FSM and Marshalls citizens immigrate to Guam for economic opportunities, better education and public services, Guam's social systems and infrastructures could be strained, thus diluting the quality of service to the community as a whole.

It should be noted that once the political impasse over the status of Palau is overcome, many of the same conditions speculated above will apply as well.

The impact on Guam from the Covenant between the Northern Marianas and the United States may be the greatest in the area of immigration and may cause concern for officials of the islands. There has been a high level of out-migration of Northern Marianas citizens to Guam, primarily, as well as to other areas of the United States over the last 10 years.

According to the 1980 Census Monograph of Guam, approximately 3% of the total population is comprised of persons born in Micronesia, of which 2,124 were from CNMI, 921 from Belau, 769 from FSM and 39 from the Marshall Islands. In addition, migration from these islands to Guam have been most active during the years between 1977 to 1980.

Through the Commonwealth covenant, Northern Marianas citizens were granted, among other things, U.S. citizenship (although the Immigration and Naturalization policy sometimes deviated from that), thus providing access to better paying jobs in the United States and Guam, as well as the opportunities offered in the U.S. military.

Additionally, because of the longer presence of the United States on Guam, Northern Marianas citizens, as with FSM citizens, and to a lesser degree citizens of the Marshalls, are attracted by the services and education provided by the Government of Guam.

Despite the proximity to Guam, and the Northern Marianas' cultural ties to the Chamorros of Guam, there is little statistical data on the out-migration of Northern Marianas citizens. Undoubtedly, though, Guam stands to be significantly impacted by Northern Marianas citizens looking for better paying jobs, as well as better government services and public education. Again, as in the case of the immigrant citizens of the FSM and the Marshalls, the Government of Guam will absorb the cost of these immigrants' demands on social infrastructures.

In an economic sense, the Northern Marianas is still developing, albeit quite rapidly, and just as rapidly discovering the problems of growth - the inadequacy of Saipan's infrastructure, the dilemma of alien labor and the social costs of progress as reflected in social change. However, the future looks bright with assured U.S. funding and participation in federal programs.

In tourism, the government has taken an extremely aggressive posture in capturing a greater share of Japan's tourist market. Air routes to and from Japan have been developed, construction and renovation of hotels (both luxury and medium-priced accommodations) and improvements to airport-related facilities have strengthened Saipan's position as a competitive destination for the Japanese traveller. Because of the anticipated continued increase in Japan's outbound market, Saipan in particular will be a major point of activity in terms of establishment of tourism-related businesses.

Again, because of Guam's position in the region as the area's most developed island and role as the hub of Micronesia, Guam businesses could stand to gain from the growth of the Marianas. Local businesses here could capitalize by supplying the services and durable goods that would fuel growth in the economies of our northern neighbors and throughout the region.

V. POLICY FOR ECONOMIC DEVELOPMENT

A. INTRODUCTION

Due to limited resources available for economic development, which includes land, labor, and capital, it is important to set policy direction to further development on Guam and to identify programs and projects which would assure the greatest benefit to the island. However, in the past the Government of Guam has lacked a comprehensive economic development policy aside from general governmental policies and short-term economic development goals. In view of this need, legislative action has been proposed which will establish an economic development policy for the Territory of Guam (Resolution No. 34, 19th Legislature; refer to Appendix A). The policies established in the OEDP will provide the foundation for determining the course of action to follow in fully developing the five leading economic sectors of Guam's economy.

The planning and decision process that leads to the formation of any policy and its subsequent implementation is critical in capturing the greatest benefit for the good of the island as a community. Due to Guam's position as an island with finite resources, there is a pressing need to be much more cognizant of the important role proper decision making plays in impacting on the island's future. Careful planning is essential to the prudent utilization of these resources through the establishment of policies and the identification of realistic goals and objectives to successfully implement these policies.

Of equal importance to the planning process is the adherence of agencies to these policies once they have been established. Inconsistent application of rules and regulations, or the absence of them to guide economic development, has often resulted in the misuse, or less than optimum use, of the limited resources. The implementing tools and mechanisms presently existing which are used to guide economic development need to be carefully scrutinized. Included in this review should be the programs or rules and regulations governing the functions of the Guam Economic Development Authority, the Territorial Planning Commission, and the Subdivision and Development Review Committee.

Guam is a relatively small community and it is imperative that we look beyond the immediate and often self-interest oriented actions which occur both in the public and private sectors. The long-term benefits must also be

considered in circumspect to safeguard the wise management and utilization of our finite resources.

This section of the OEDP lists the Government of Guam's current general policies, followed by action strategies which represent specific actions to help implement the policies. Tax reform, privatization of government services and investment incentives are discussed in detail in this section, since they are representative of the tools that form the transition from policy statements to actions which facilitate their implementation.

B. GENERAL GOVERNMENT POLICIES

The current administration of the Government of Guam has identified eight major areas of policy which it will strive to implement through administrative and legislative channels. These are listed below:

1. Political Status

- a. Seek "Commonwealth" political status to gain true self-determination through obtaining greater control of the political, economic, social and cultural issues which will impact on Guam's future, and to alleviate federal constraints to economic development on Guam.
- b. Fully participate in regional and international organizations and activities which can cost effectively benefit Guam and promote the awareness of Guam in the regional and international community.

2. Government

- a. Improve coordination within the government and with the private sector to increase the efficiency and effectiveness in providing services.

3. Economic Development

- a. Promote economic development of the Territory as a means of improving the revenue base, reduce the deficit, diversify the economy, increase the standard of living and ensure optimum career opportunities for the emerging work force.
- b. Approach economic development from a regional perspective and promote the development of regional cooperation in trade.

- c. Actively pursue the firm establishment of Guam as an economic leader in the Micronesian region, while interacting with the Pacific Rim Countries in east-west trade.
- d. Encourage foreign investment to meet the long-term development policies and objectives of Guam which will maximize the flow of capital within the domestic economy.
- e. Provide appropriate infrastructure in a timely and efficient manner to support economic development.
- f. Expand and improve the commercial viability of agriculture and aquaculture activities.
- g. Facilitate development of all levels of fisheries to the fullest extent economically and manageably viable while maximizing benefits to Guam.
- h. Improve the timely flow of information on the economy to improve the efficiency in making policy and investment decisions.
- i. Provide appropriate business investment incentives that enhance the desired type and level of economic growth on Guam.
- j. Improve and streamline the regulatory process to ensure a consistent system for the equal application of appropriate regulations and permits.

4. Planning

- a. Establish and maintain a Strategic Planning Program in the Government, which identifies long-term (10-20 years) policies and goals, to guide and improve the efficiency and effectiveness in the allocation of Island's resources.
- b. Improve coordination in the economic development process between planning, project development and implementation.
- c. Implement agency/department level Operational Planning that is consistent with the Government's long-term Strategic Plan and integrated with the budgetary process.

5. Revenue/Budget

- a. Reduce and control Government of Guam General Fund deficit through reduction in the cost of government; increase cost efficiency in delivery of services; spur growth in the economy; and implement innovative cost saving and revenue generating programs.
- b. Reform the Guam Tax Code through delinkage from the Federal Tax Code in a manner that will be conducive to economic growth, and responsive to the particular needs of the Territory, along with assuring equity in its application.

6. Resource Allocation

- a. Fully identify the living and non-living marine resources and properly manage their development for the sustained benefit of Guam.
- b. Utilize and maintain Government of Guam land resources wisely. Implement a government land leasing policy that provides the greatest long-term benefits to the community as a whole.
- c. Privatize government functions that would be more efficiently carried out under private sector management, while assuring equity in distribution of the services or public goods to the community.

7. Employment

- a. Increase employment opportunities and career options in the private sector.
- b. Prioritize the placement of the resident labor force. Henceforth, H2 certification should be allowed only in cases where there are truly no local qualified personnel.

8. Education

- a. Improve the quality of education to better prepare the youth for useful and meaningful careers.
- b. Coordinate all education and training activities among all pertinent institutions and agencies to improve the quality, efficiency and effectiveness of the educational and training services provided.

C. ACTION STRATEGIES

The following action strategies identify issues that are more specific than the previous general policies, and capture a sense of the current economic climate. These directives call for a commitment to a plan of action that will help the Government of Guam effectuate an agenda of change. These action strategies go beyond good government and focus on needed transitions that are crucial for Guam to adapt to a rapidly changing environment.

1. Promote future tourism growth by identifying and developing island attractions and amusements that are beneficial to the general public of Guam and the tourists alike.
2. Initiate a shift in focus of development resources from an established hotel industry to alternative economic activities that need start-up support.
3. Establish a realistic "user fee" schedule for additional demands on the island's infrastructure that reflect a cost/benefit analysis and develop a method of assessing "Impact Fees" to shift the direct burden of tourist-related infrastructure demands to the benefited businesses.
4. Examine the need for Qualifying Certificate incentives for future hotel development, by evaluating alternatives such as discontinuation, reprioritization and other innovative incentive programs.
5. Identify and encourage market integration of local products and produce with the markets within the tourism industry sector.
6. Implement a zoning land use policy that plans ahead and identifies the desired long-range development rather than having zoning modified on an as need basis to fit short-term individual needs.
7. Make infrastructure need projections based on zoning definitions. Follow density constraints that reflect the level of development and quality of life desired.
8. Develop recognition and a marketing campaign for "Made in Guam" products, to support local manufacturers and provide effective enforcement of the Guam Product Seal.

9. Establish new dependable markets and provide a method of produce grading to establish local quality control to support Guam's agricultural, fisheries and aquaculture producers.
10. Reduce the trade deficit by 10% within a five year period by substituting local products and produce along with an increase in export products and services.

D. TAX REFORM

The Tax Reform Act of 1986, which was passed by the U.S. Congress and signed by the President in 1986, has resulted in an erosion of Guam's income tax base. The Tax Reform Act is estimated to reduce the revenue base by approximately \$13 - \$18 million after its full implementation in fiscal year 1988.

Even though Guam still mirrors the U.S. Tax Laws, Section 1272 through 1277 of this same Act provides Guam with an opportunity to delink from the U.S. Internal Revenue Code (IRC). In response to the opportunity to develop a code for Guam, the Governor has established a Tax Reform Commission. This Commission is tasked with reviewing the present income tax laws, as well as all other forms of taxation on Guam. The Commission is tasked with reviewing the pros and cons regarding Guam's delinkage from the IRC. The Commission will also oversee the preparation of a new code if it is decided that Guam should delink. In addition, the Commission will be responsible for negotiating the agreement which is required between the Government of Guam and the U.S. Treasury prior to the implementation of any new income tax laws on Guam.

E. PRIVATIZATION

In 1962, after the Naval Security clearance requirements were lifted, the private sector began to grow to meet some of Guam's needs for goods and services. Because the private sector was not able to meet many of Guam's needs, the Government of Guam had to fulfill those needs. Today, the private sector has grown significantly and can now meet many of Guam's service needs. However, the privatization of government services is not the cure-all for the perceived or real illness of government. Neither will it result in the immediate reduction of government expenditures or size. Rather, the objectives of privatization are:

- To stabilize the growth of government so that the private sector grows faster and offers more opportunities;
- To provide better and more efficient service to the consumer; and
- To stimulate economic activity in the private sector.

There are basically three methods that can be applied to the privatization of the public sector:

- Selling of revenue-sharing certificates to the public;
- Turning major public assets over to private control; and
- Encouraging private investment into areas which have traditionally been the preserve of the public sector.

Of foremost concern in the privatization program is the protection of existing employees. Privatization must present attractive employment opportunities and incentives for government employees whose jobs are being transferred to the private sector. The programs for privatization must allow for flexibility in the optional transfer of existing government employees to similar jobs within government left vacant by attrition. Additionally, a re-training program must be part of the privatization program.

The determining factor in identifying which government service can be privatized is the existing capability of the private sector. Public services currently provided by the government are candidates for privatization. However, the government must assume a watchdog role to ensure the citizens of the community are paying a fair price for the service.

The regulation function of government is the proper mechanism to assure the accountability of the private enterprise providing services. This is best illustrated by the current practice of the government's regulatory agency with the motor vehicle inspection stations. The Department of Revenue and Taxation oversees the safety inspection process and monitors the accuracy of the inspection equipment at the privately-run inspection stations. The inspection stations respond to the market forces by striving to provide better inspection services, e.g., shorter waiting time, better facilities, etc.

The objective of privatization should be to help stabilize government growth, provide better service to the consumer and stimulate economic activity within the private sector.

The present administration has recognized that both the public sector and private sector have significant roles to play in the provision of services to the consumers of the Territory. In addition, the importance has been recognized

by examining each service and determining which is provided more appropriately and beneficially under the auspices of the Government of Guam, or a private entity. Moreover, taking into consideration the prevailing financial exigencies the government is under, privatization is an alternative which can reduce the cost of the Government, while maintaining a high level of service to the people. Acknowledging the need to privatize has led to the following Executive Guidelines for privatization.

- Privatization is not mere rhetoric, it is an actual alternative to direct Government administration of certain services.
- The rights of all consumers of a particular service must be defined and protected.
- All privatization efforts are to be conducted publicly.
- Every privatization effort, in specific application, must be in the best economic interests of the Territory.
- The rights of all affected Government employees shall, at all times be protected.
- Locally-owned, managed and qualified businesses must be accorded first-right-of-refusal privileges in association with any privatization initiative. Further, efforts shall be made to encourage the development and participation of local individuals or groups in the implementation of privatization in specific cases.
- The regulatory presence of Government will be maintained in all privatization initiatives as appropriate, to guard against arbitrary increases in user fees and charges, and to guard against changes in scope, type or quality of services which are detrimental to the people of Guam.

To take into account the above considerations, objectives, and guidelines, a Privatization Advisory Council (hereinafter referred to as the Council) was established in the early part of 1987 by the Governor of Guam. Thus far, the Council has developed five recommendations to the Governor - three of which called for steps to privatize the telephone system, residential trash collection services performed by the government's Public Works Department, and the Port Authority of Guam. The Council emphasized to the Governor that these steps were recommended by a committee of private citizens and that the steps were contingent upon the Governor's approval.

The following are the five recommendations approved by the Council:

Recommendation 1. - A public commitment to privatization of at least one government service must be made before the end of 1987.

Recommendation 2. - A major utility service should be designated as Guam's model for privatization; this model will serve as the basis for all future privatization projects in the Territory.

Recommendation 3. - Initiate steps to privatize the Guam Telephone Authority in gradual phases.

Recommendation 4. - Privatize residential garbage collection services now being done by the Department of Public Works into specified franchise districts.

Recommendation 5. - Initiate a feasibility study, through its board of directors, for divestment of the Port Authority of Guam.

The Guam Telephone Authority (GTA) and the Department of Public Works (DPW) Solid Waste Collection Division topped the list of government entities most favored to be privatized by the Privatization Committee of the Guam Chamber of Commerce. In a report to the Chamber's board of directors in April 1987, the Committee concurred with the Governor's Privatization Council recommendations. After a review of 22 GovGuam autonomous agencies and other government services, the Chamber's Privatization Committee selected GTA, DPW Solid Waste Collection, and the Public Utility Agency of Guam's (PUAG) Water Distribution and Waste Operations as those to be given the most favored consideration.

Although many other entities were not selected for recommendation to the board, it wasn't because they were poor privatization candidates. The Committee's report indicated that they simply lacked the characteristics necessary to be most easily privatized within a limited time frame and with measurable positive impact on the local economy.

In a review of the three entities selected and thought to be the most suitable for a privatization campaign, the overwhelming choice of the Committee was GTA. Among the factors favoring GTA's selection were the following:

- ° Sales proceeds would contribute directly to the reduction of Government of Guam's deficit;
- ° Due to less-than-satisfactory delivery of service to its customers, it is felt that there would be widespread support among the community for GTA's privatization;
- ° GTA has a recent record of positive financial operations which enhances its marketability to prospective buyers;
- ° Several companies of high reputation and regional/local experience will compete to privatize GTA. The possibility of pursuing the privatization

of the military phone system under the A-76 Program will make their bids more attractive; and

- Poor local and international communications are viewed as the most critical infrastructure deficiency by most businesses, especially those considering Guam for Asian regional headquarters.

From among the "smaller" opportunities analyzed, the Committee also recommended DPW Solid Waste Collection as a potential target for privatization. Some reasons for privatizing that section were the following:

- Privatizing DPW Solid Waste Collection will have a fairly significant impact on the General Fund Deficit. Solid Waste Collection employs a large staff with a multi-million dollar annual budget. Nationally, savings under private contractors have been over 30%. Additionally, garbage trucks require significant capital and maintenance expenses.
- If user fees are implemented with privatization there is revenue generation potential. For example, by assuming 22,000 households, a \$5/month fee would result in \$1.3 million/year revenues, gross receipts tax collection of \$53,000 a year, and an undetermined amount of income tax.
- A successful, local private firm is established with experience and interest in privatizing solid waste collection. There is no need to go off-island.
- DPW Solid Waste Collection can be privatized in a way that results in opportunities for employees. The island can be divided into sectors. Sole source contracts for several sectors can be let to an employee-run company.

In arguments for the privatization of Guam's water distribution system, the report said that PUAG had much in common with GTA. "PUAG's problems are widely publicized and are generally obvious to the public. The constant outages, low water pressure, water rationing and availability problems in the south make for a broadly-based grassroots pressure for change. Excellent precedents exist for privatization of the water system and successful companies in this field have shown considerable interest in Guam's system," the report said.

The Committee pointed out that because of the "more complex and political questions" that surrounded PUAG, the water system was downgraded as an immediate candidate for privatization.

F. INVESTMENT INCENTIVES

Introduction and Background

The major question concerning government policies and the resulting incentives employed is, "How effective are the investment incentives in shaping the final decision of an individual or enterprise as to whether to invest?".

Investment incentives are used by the nations of the world as well as the individual States within the U.S. If used wisely, investment incentives (in conjunction with performance requirements) can be an important tool in implementing desired economic growth. Countries compete for the investment capital of businesses by providing a variety of incentives. However, this often intense competition between governments can result in counter-productive outcomes. Guam's policy makers would have to know what type of competition exists within the region for these limited resources. By knowing the policies employed by Guam's competing regional neighbors, a strategy can be developed to become more effective in reaching our objectives.

A study on business investment incentives is in progress at the Department of Commerce. The study will be evaluating investment incentives used on Guam and elsewhere and will provide recommendations on how to improve Guam's competitiveness for the limited resource of business investment capital while generating revenue for the island and fulfilling long term economic development goals.

The role of government in the private enterprise system is to ensure equal access to markets by entrepreneurs/companies without artificially imposed barriers created by government rules, regulations or policies that deter profit, or impose constraints of entry. Imposition or regulation of prices is appropriate in monopolies and occasionally an oligopolies. The "invisible hand" of supply and demand to determine pricing of goods and products are appropriate in competitive markets and excess profits do not exist for prolonged periods since entrance of the new competition, provided entry barriers do not exist, will again bring the supply and demand into balance with the elimination of excess profits.

Government policies towards business investment can take the form of either incentives or disincentives. Examples of incentives (+) and disincentives (-) as they affect business include those in Table 19 below.

Table 19

INCENTIVES AND DISINCENTIVES

<u>Affecting Revenues</u>	<u>Impact on Business</u>
Tariffs	+
Differential sales/excise taxes	+ or -
Export taxes/subsidies (including income tax credits)	+ or -
Quotas	+
Export minimums	-
Price controls (or relief from)	+ or -
<u>Affecting Revenues</u>	<u>Impact on Business</u>
Multiple exchange rates	+ or -
General over valuation of currency	-
Government procurement preferences	+
Production/capacity controls	+
Guarantees against government competition	+
Prior import deposits	+
Transfer price administration	-
<u>Affecting Inputs</u>	
Tariffs	-
Differential sales taxes (and exemptions therefrom)	+ or -
Export taxes/subsidies (including utilities)	+ or -
Quotas	-
Price controls	+
Multiple exchange rates	+ or -
Subsidy of tax for public-sector supplies	+ or -
Domestic content requirements (including R&D)	-
Prior import deposits	-
Transfer price administration	-
Limits on royalties, fees	-
Multiple deductions for tax purposes	+
Cash or in-kind grants for R&D	+
<u>Affecting Components of Value-added</u>	
Capital	
Direct Subsidy	+
Cash grant	+
Tax credits/investment allowances	} Specify if reduces book value:
Subsidized leasing	} taxable or not

Cost of capital goods	
Tariff/sales tax exemption on imported/ domestic equipment	+
Prior import deposits	-
Local-content requirement for capital equipment	-
Limits on use of used equipment	-
Subsidized buildings	+
Subsidized cost of transportation	+
Cost of debt	
Subsidized loans	+
Loan guarantees	+
Covering of foreign exchange risks on foreign loans	+
Priority of access (including limitations on foreign firms)	+ or -
Cost of equity	
Subsidized equity through public investment agencies	+
Exemption from capital gains taxes/registration taxes	+
Dividend tax/waiver	+ or -
Guarantee against expropriation or differential treatment	+
Limitations on debt/equity ratio	-
Controls/taxes on remitted dividends	-
Minimum financial/in-kind ratio	-
Corporate tax	
Tax holiday/reductions	+
Accelerated depreciation	+
Special deductions and valuation practices (inflation adjustment; multiple plant consolidation)	
Tax sparing and double-taxation agreements	+
Loss-carry-forward provision	+ or -
Contractual stabilization of rates	+
Labor	
Wage subsidies (including indirect, i.e., multiple deductions of wages for tax computations/reductions of taxes on labor)	+
Training grants	+
Minimum wage	-
Relaxation of industrial relations laws	+
Local labor requirements	-
Land	
Cash subsidy for purchase/rental	+
Exemption/rebate of taxes on land	+
Not classified	
Limitations on foreign ownership	
Free-trade zones	
General preinvestment assistance	
Countertrade requirements	
Foreign exchange balancing requirements	

SOURCE: S.E. Geisinger and Associates. 1985. Investment Incentives and Performance Requirements. Praeger

When deciding the type of incentives to be used, it is critical to evaluate them from both the government's and business' perspective. When evaluating from the business perspective, it is important to know how the incentive weighs in the decision to invest or not. The simplistic bottom line for a business decision can usually be summed up in the potential for profits within an acceptable degree of risk. However, in reality, this decision is usually a complex process that involves the interaction of a number of variables, which include financial, logistical, competitive and strategic factors, risk, legal structure, geographic location, and available incentives, to name a few.

Tax exemptions offered to foreign investors often only result in the loss of tax revenue without much incentive effects. This is the case if the home country offers tax credit for the taxes paid in the host country, then tax exemption by the host country implies a loss of tax revenue without an incentive effect. If the home country has a tax system that allows deductions of foreign-taxed income, tax exemptions in the host country could be, in some cases, disadvantageous. Tax incentives in the host country are only effective if the home country provides tax credit for the amount of taxes exempted by the host country (Lee, 1986; ESCAP/UNCTC Joint Unit on Transnational Corporations). Therefore, it is necessary to be aware of the treatment of tax exemptions in the home country in offering such incentives.

A tax concession is a poor tool for promoting development for several reasons. Lower taxes for favored enterprises mean either higher taxes or lower service levels for some persons and businesses, which may partially or fully offset the favorable effect of the tax concession. Once in place a tax concession is difficult to remove, even though it may be ineffective or counter-productive from a development perspective. It is difficult to make the financial advantage that the concession provides commensurate with a business' favorable effect on growth. Tax concessions for one class of businesses cause other businesses to seek similar treatment, with the likely consequence being erosion of the tax system's ability to generate revenue and its public acceptability. Ledebur and Hamilton (1986) found that direct and flexible methods of assistance, such as loans, grants, and principal and interest buy downs are strongly preferable to tax concessions.

Incentives can also be divided between those targeted at foreign or external investment sources and those targeted at local or internal sources. Investment incentives which address these two sources of capital should be considered in the development of an overall strategy for promoting economic growth. The limitation of incentives to one or the other source can hamper the maximization of benefits to an economy.

The policy makers and those who carry out the programs need to be fully cognizant of the options and impacts of investment incentives as tools in implementing economic development, along with knowing when they are applicable and are likely to generate the desired investment decision. Imprudent and indiscriminate use of incentive programs can result in lost revenue and carry little or no impact on business' decision making process.

☐ **Recommendations** (*Investment Incentives*)

- 1) *Establish uniform procedures and criteria* in granting investment incentives. Three basic criteria should include:
 - a. Determine if the assistance is necessary for the business to locate in Guam.
 - b. Determine if benefits (private sector and public) would exceed the cost of the assistance. If benefits do not exceed the costs then the assistance would not be an efficient use of resources.
 - c. Determine if assistance to the business precludes assistance to other businesses that would generate greater public and private sector gains per dollar of assistance.
- 2) Because an applicant business has an incentive to overstate its needs (more assistance means greater profits) GEDA should develop and maintain a *capability for assessing (auditing) the accuracy of the information* supplied by the applicant.
- 3) When *weighing the benefits against the costs* of assisting a business, GEDA should determine the total government subsidy provided to each business. It should calculate costs as the total assistance provided under all territory-administered programs and should base indices of the effectiveness of assistance programs, such as "cost per job" on all assistance costs, not on the assistance provided under a single program. Comparisons will be facilitated if all costs are stated in present value terms.
- 4) *Targeting:* In disbursing assistance, GEDA should try to generate the greatest possible income gains.
 - a. Businesses that add diversity to the economy should be favored over those that do not (if other factors are equal). A new industry would receive a high priority.
 - b. Assistance should be provided only if there is good reason to believe that the business would over the long run be profitable without assis-

tance. Subsidies should not be provided on a continuing basis once the profitability of locating in Guam is established. GEDA should then use marketing efforts to attract businesses in similar or complementary (input-supplying) industries.

- c. Businesses that pay higher wages should have priority over those that pay lower wages.
 - d. Assistance should be directed to businesses that produce exports or import substitutes. Among such businesses, those that purchase a larger share of their inputs from Guam producers should have priority.
- 5) *Develop procedures for gathering, monitoring and evaluating information about the effects of GEDA's activities.* GEDA should implement cost-accounting procedures that track the costs of its assistance programs and make this information available to the public.
- 6) *Pursue tying the issuance of Qualifying Certificates for developed sectors of the economy (e.g., hotels) to the purchase of products (manufactured or agricultural) produced on Guam.* This would provide a stimulus to other sectors of Guam's economy with improved market linkages and multiplier effect. The tying of tax rebates to a "Buy Local" program will enhance the benefits captured by the local economy while effectively providing a multiple sector incentive.
- 7) *Specific tax incentives should be critically evaluated* to determine if they are the most cost effective means for accomplishing selective social and economic goals. The following criteria should be considered in evaluating tax exemption devices:
- a. Is an existing exemption serving its original social or economic purpose, or have conditions changed that alter the effectiveness of the tax exemption device?
 - b. Would a direct subsidy or government expenditure be a more effective and efficient alternative to the tax exemption?

Currently, Guam has several investment incentive programs in the areas of tax incentives, tariffs, manufacturing and trade, and foreign sales corporations.

Guam's Investment and Tax Incentives

Aside from the numerous financial institutions on Guam, the Guam Economic Development Authority (GEDA) provides the following tax incentives:

- 75% tax rebate on corporate income tax up to 20 years;
- 100% abatement on real property income tax up to 10 years;
- 75% rebate on corporate dividend tax up to 5 years; and
- Abatement on gross receipts tax on petroleum and alcoholic beverages up to 10 years

Other tax incentives are:

- Firms licensed to do business on Guam pay a territorial income tax based on a tax code that mirrors the IRS Code; however, they do not pay Federal income taxes.
- Tax aspects of off-shore lending, whereby interest earned by a bank through the operation of an off-shore lending facility in Guam is not treated as a Guam-source of income for tax purposes.
- Duty-free status.
- General Headnote 3(a) and the Generalized Systems of Preferences.
- No gross receipt tax on exports and most wholesale activity. (In March 1985, the government repealed the 4% gross receipts tax in efforts to encourage wholesale trade activity and keep overall consumer prices down.)

Duty-Free Tariff System

Guam is a duty-free port and as such no tariff is levied on imported consumer goods. There is no tariff on materials which might be imported and used to manufacture finished products on Guam.

Manufacturing and Trade

As mentioned above, Guam's status as a duty-free port allows ample opportunity to import materials for manufacturing. Guam is a participant in two major trade programs which benefit export-oriented manufacturing, namely, Headnote 3(a) of the U.S. Tariff Code and the Generalized System of Preference (GSP). For Guam to benefit from the two programs, it would have to engage in an industry wherein the product normally has a high duty and the component costs are considerably lower than in the country to which it is exported.

General Headnote 3(a) provides a valuable trade status to Guam and other outlying territories of the United States. The benefits that Headnote 3(a) has for Guam is that it provides manufacturers with a financial incentive to obtain duty-free treatment for products, from the territory entering into the U.S. Customs Territory. The recently enacted "Caribbean Basin Economic Recovery Act", (CBERA), Title II of Public Law 98-67 amends General Headnote 3(a) by increasing the foreign content requirement. Articles must not contain foreign materials to the value of more than 70% of their total value (or more than 50% of their total value for articles described in section 213(b) of the "CBERA").

The Generalized System of Preferences or GSP, on the other hand, permits lesser developed countries (LDC's) and territories greater access to markets of developed nations; thereby, reducing barriers of imports from the LDC's and territories. Guam, in particular, is a beneficiary territory to the countries of Japan, Australia, the European Common Market and Canada. The reduced import barriers and tariffs provided under GSP allow goods manufactured or produced on Guam easier access to the developed markets of participating nations.

On April 1, 1987, Japan implemented a drastic reform of its Generalized System of Preferences (GSP) in order to contribute to the expansion of exports by developing countries pursuant to the Action Program for improved market access announced in July 1985.

The main features of the reform are:

- Unlimited application of zero preferential tariff rates to a large number of industrial products on which preferential ceiling limits have been hitherto imposed. These products will be administered under the escape clause system under which preferential import is suspended only when it threatens to injure domestic industries;
- Large expansion of ceilings (30% on average) for those products remaining under the ceiling system; and
- Other improvements including expansion of GSP coverage.

Foreign Sales Corporations

Investors interested in exporting can obtain financial benefits through the establishment of a Foreign Sales Corporation (FSC) on Guam. Guam became the first eligible jurisdiction to provide financial incentives for the establishment of Foreign Sales Corporations (FSCs), through Guam Public Law 17-26, known as the Export Incentive Act. FSCs are foreign incorporated subsidiaries of U.S. parent corporations which have engaged in

export transactions after December 31, 1984 and have actual business operations abroad. This added incentive has attracted over 300 Guam-licensed FSCs. Generally, FSCs were created to replace the Domestic International Sales Corporation (DISC). FSCs have parallel tax benefits to DISCs but differ in that FSC tax benefits apply to all exporters regardless of their progress in increasing sales. These changes were prompted in part because of objections by the European community that DISC rules were an illegal export subsidy under the General Agreement on Tariffs and Trade (GATT).

An FSC is partially exempt from paying U.S. income taxes, realizing tax savings of up to 26.4% on the profit from its export transactions. The FSC is generally required to pay U.S. taxes on the balance of its non-exempt income. Actual tax savings are dependent on the FSC's U.S. corporate shareholder's tax bracket.

Provisions under the Deficit Reduction Act of 1984, which President Reagan signed into law on July 18, 1984, prohibit Guam and other territories or possessions from taxing a FSC on foreign trade income until calendar year 1987. However, as noted, Guam has recently enacted an FSC export incentive act extending the territorial tax holiday through the year 1997 to FSCs operating on Guam. Benefits under this incentive include:

- No sales or use taxes;
- No franchise taxes;
- No State or gross receipts taxes; and
- 100% income tax rebate on foreign trade income exempted under the Internal Revenue Service (IRS) Code.

FSC's can be formed by manufacturers, export groups, such as export trading companies, and other non-manufacturers, such as American farmers in agricultural cooperatives and certain export services. The only pure service exporters that can qualify are architectural and engineering services for foreign construction projects and management services for unrelated FSCs. A FSC can function as a principle, buying and selling for its own account, or as a commissioned agent. It can be related to a manufacturing parent or it can be an independent merchant or broker.

Investment Incentive References

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VI. RESOURCES AVAILABLE FOR ECONOMIC DEVELOPMENT

A. INTRODUCTION

The annual operating budget is an important internal and external planning tool for government. Because of the public nature of government monies, parties both inside and outside of government participate in the development of the annual operating budget. Taxpayers, citizens, governing board members, government employees, and others compete with each other to have scarce government resources allocated to their preferred government program service activities.

Once adopted, a government annual operating expenditure budget is formally enacted into law through the passage of an appropriations measure. Appropriations establish spending mandates and provide the legal authorization for government spending activities during the year.

B. BUDGET SUMMARY

The operating budget of the Government of Guam is comprised of four components; the Executive Budget, Judicial Budget, Legislative Budget and Autonomous Agencies Budget. The first three components are primarily funded from the General Fund and the last from revenue collected from its operations. The Executive, Judicial and Legislative Budgets are adopted by the Legislature and autonomous agencies budgets are adopted by their respective boards. Additionally, funding assistance from the Department of Interior, as in past years, is expected for FY 1988.

C. REVENUES

Fiscal year 1988 budget levels were based on projected General Fund Receipts of \$227,589,510; Autonomous Agencies Operating Revenues of \$138,956,231; Federal Grants totalling \$38,557,268; and \$19,641,000 in Special Funds. Total operating revenues projected for FY 1988 were \$424,744,009.

General Fund

The largest source of revenue for the government is the General Fund, comprised of Income Tax, Gross Receipt Tax, and Section 30 Funds. Together these areas alone accounted for approximately 90% of the total General Fund revenue estimates for Fiscal Year 1988. The estimated revenues to be derived for the General Fund for Fiscal Year 1988 were \$227.6 million. This represents a 9.5% or \$19.7 million increase over the expected revenue of \$207.9 million for Fiscal Year 1987.

Special Revenue Fund

Special revenue funds are used to account for the proceeds of specific revenue sources that are legally restricted to expenditure for specified purposes. Such funds include, but are not limited to: the Tourist Attraction Fund; Housing Revolving Funds; Public Utility Agency of Guam Fund; Parks Fund and Abandoned Vehicle and Streetlight Fund. The total Special Revenue Fund projected for appropriation in FY 1988 was estimated at \$19.6 million. As in FY 1986, revenue projections for the Territorial Highway Fund have been excluded since this fund has been earmarked for the retirement of the Highway Bond, pursuant to Public Law 18-2.

Federal Grants

Approximately \$38 million was projected in federal assistance for Fiscal Year 1988. This was inclusive of federal matching programs and 100% federally funded programs and did not include Capital Improvement or Technical Assistance Program funds. Of the total \$38 million, an estimated \$25 million or 91% was earmarked to fund the 100% federally funded programs and \$13.5 million or 9% for federal matching programs. These funds are used to operate all federally funded programs within the Executive Branch and include all federal funds received by the University of Guam, Guam Community College and Guam Mass Transit Authority. The largest recipient in federal assistance for Fiscal Year 1988 was the Department of Public Health and Social Services with \$12.0 million and the Department of Education ranked second at a level of \$11.8 million.

Autonomous Agencies Operating Fund

Funds for autonomous and semi-autonomous operating revenues for FY 1988 were anticipated at \$139 million. These autonomous agencies are each governed by a board of directors and operate independently from the other branches of government.

Funding from the Department of Interior

Over a period of thirteen years, 1974 to 1987, approximately \$144 million in capital improvement funds have been awarded to Guam from the Department of Interior. These funds have been utilized in implementing projects varying from construction and economic development, to technical and typhoon related assistance programs. The breakdown is as follows:

<u>PROJECT CATEGORY</u>	<u>AMOUNT AWARDED</u>	<u>PERCENTAGE</u>
Construction	\$106,930,000	74%
Economic Development	5,990,000	4%
Technical and Typhoon Related	<u>31,011,000</u>	<u>22%</u>
TOTAL	<u>\$143,931,000</u>	<u>100%</u>

Recognizing the importance of ensuring a viable water system, capital improvement funds have been consistently designated for water projects. Over the thirteen year period, approximately \$29.1 million was granted for the upgrading and development of the island's water systems, involving the construction of water distribution lines for the northern, southern, and central districts, and reservoirs throughout the island. In addition, during this same period Guam has received approximately \$77.9 million for capital improvement projects related to recreation, health, safety, transportation, education, and economic programs, inclusive of a major economic site development project for Tumon Bay, which is currently near completion.

Guam also received financial assistance under the Economic Development Loan Fund (EDLF), which has provided funding for small business groups pursuing agricultural, fishing, tourism, and manufacturing endeavors. The Guam Economic Development Agency (GEDA) administers the EDLF and to date, has dispensed approximately \$6 million in EDLF funds. The remaining balance of approximately \$31 million has been awarded mostly for technical and typhoon-related assistance in the mid-seventies, inclusive of projects such as the construction and installation of typhoon-proof power poles and the updating of the financial management system for the Government of Guam.

The Department of Interior's financial assistance to Guam over the four year period of 1984-1987 and FY 1988 and 1989 requests are as follows:

<u>CAPITAL PROJECTS</u>	<u>APPROPRIATIONS</u>	
<u>1984</u>		
1. Tumon Bay Construction	\$11,350,000	
Subtotal		\$11,350,000
<u>1985</u>		
1. Guam Memorial Hospital	\$5,610,000	
Subtotal		\$5,610,000
<u>1986</u>		
1. Penitentiary Dormitory	\$1,216,000	
2. Water Improvements	2,954,000	
3. Mental Health Facility	190,000	
Subtotal		\$4,360,000

<u>FY '88 Request</u>	<u>Amount Requested (Millions)</u>
1. Maimai-Chalan Pago Water Transmission Line ¹	\$2.65
2. Mangilao Reservoir ¹	1.51
3. Solid Waste Landfill Facility ²	4.30
4. Waster Distribution Lines - Agat	4.70
5. Gayinero-Takano Water Transmission	.85
6. Guam Memorial Hospital	2.20
Total Request	\$16.21

<u>FY '89 Request</u>	<u>Amount Requested (Millions)</u>
1. Ordot Landfill (total needed)	\$2.700
2. Guam Memorial Hospital Expansion and Equipment	7.200
3. Camp Watkins Infrastructure (road, storm drain, water, sewer)	5.840
4. Agat Waterline Replacement	5.200
5. Gayinero-Takano Waterlin	.950
6. Fire Equipment	2.625
7. Agat/Santa Rita Sewer Treatment Plant	10.600
8. School Repairs and Renovation	24.000
9. Harmon Access Road	2.230
10. Commercial Port Industrial Park	8.262
11. Mental Health Building	2.190
Total Request	\$71.797

¹ Most likely to be funded.

² Partial funding expected.

D. GOVERNMENT OF GUAM STATEMENT OF ESTIMATED REVENUES FISCAL YEAR 1988

Table 20

TOTAL ESTIMATED REVENUES GOVERNMENT OF GUAM FISCAL YEAR 1988

CLASS OF REVENUES:

I. GENERAL FUND

Taxes:

Local Income Tax Collection		
Government of Guam	\$101,644,732	
Federal Income Tax Collection		
U.S. Government (Section 30 Funds)	<u>35,027,687</u>	
Subtotal		\$136,672,419

Other Taxes:

Gross Receipts Tax	\$67,320,620	
Real Property	4,037,605	
Others	<u>2,903,921</u>	
Subtotal		\$74,262,146

Revenues from Fees & Charges:

License and Permits:	\$4,068,734	
Fines & Forfeitures	118,124	
Use of Money and Property	1,346,362	
Revenue from U.S. Immigration	289,127	
Charges for Services	<u>2,841,469</u>	
Subtotal		\$8,663,816

Other Revenues

National School Lunch & Breakfast		
Program/SAFA	\$4,596,819	
Miscellaneous Revenues	<u>3,394,310</u>	
Subtotal		\$7,991,129

TOTAL GENERAL FUND REVENUES

\$227,589,5

II. FEDERAL GRANT-IN-AIDS

Federal Grant-In-Aids Requiring Matching Funds:*

Civil Defense	\$95,132	
Public Health & Social Services	7,852,190	
University of Guam	1,248,746	
Library	67,825	
Guam Environmental Protection Agency	1,020,137	
Agriculture	136,901	
Labor	921,443	
Vocational Rehabilitation	1,104,200	
Insular Arts Council	257,050	
Guam Community College	711,801	
Commerce	<u>40,000</u>	
Subtotal		\$13,455,425

Table 20 (continued)

eral Grant-in-Aids (100% Federal Grants) - Executive Branch		
U.S. Department of Education	\$10,973,397	
U.S. Department of Transportation	458,294	
U.S. Department of Labor	2,283,319	
U.S. Department of Agriculture	5,298,824	
U.S. Department of Health & Human Services	3,797,931	
U.S. Department of Commerce	610,607	
U.S. Department of Interior	928,400	
U.S. Department of Energy	211,071	
U.S. Department of Justice	203,462	
Federal Emergency Management Agency	110,979	
National Foundation on the Arts & Humanities	30,000	
National Science Foundation	<u>195,559</u>	
Subtotal - 100% Federal Grants		
(Inclusive of Guam Community College and University of Guam)	\$25,101,843	
TOTAL FEDERAL GRANT-IN-AIDS		\$38,557,268
*Inclusive of Federal Grants requiring in-kind match.		
III. SPECIAL FUNDS		
Tourist Attraction Fund	\$5,159,000	
Housing Revolving Fund	435,000	
Abandoned Vehicle & Streetlight Fund	330,000	
Parks Fund	40,000	
Guam Contractors License Board	285,000	
Land Survey Revolving Fund	230,000	
Professional Engineers Fund	30,000	
Public Utility Agency of Guam Fund	<u>13,132,000^c</u>	
TOTAL SPECIAL FUNDS- LOCAL REVENUE		\$19,641,000
IV. SEMI-AUTONOMOUS AND AUTONOMOUS AGENCIES FUND		
Guam Airport Authority Local Revenue	\$9,038,299	
Guam Telephone Authority Local Revenue	14,000,000	
Guam Power Authority Local Revenue	65,270,000	
Guam Housing Corporation Local Revenue	4,215,469	
Guam Economic Development Authority Local Revenue	550,000	
Guam Memorial Hospital Authority Local Revenue	29,533,000	
University of Guam Local Revenue	1,344,100	
Port Authority of Guam Local Revenue	14,600,000	
Guam Rental Corporation Local Revenue	294,396	
Guam Community College Local Revenue	110,967	
TOTAL SEMI-AUTONOMOUS & AUTONOMOUS AGENCIES FUND		<u>\$138,956,231</u>
GRAND TOTAL - ALL REVENUES		\$424,744,009

Source: Department of Administration, Government of Guam
Bureau of Budget and Management Research

E. GOVERNMENT OF GUAM RESOURCE ALLOCATION

Table 21

FUNDING SOURCE FY 1987

	General Fund	Federal Fund	Other	TOTAL
I. LEGISLATIVE BRANCH	\$7,049,140			\$7,049,140
II. JUDICIAL BRANCH	\$4,775,848			4,775,848
III. EXECUTIVE BRANCH				
Gov't Wide Support	31,672,503	\$369,115	\$458,000	32,499,618
Community Services	8,196,159	1,710,584	13,518,961	23,425,704
Guam Env. Protection	240,000	1,020,137		1,260,137
Economic Development	4,173,043	1,531,201		5,704,244
Parks & Recreation	2,896,961	110,000	40,000	3,046,961
Public Safety	31,312,957	409,573		31,722,530
Public Health	19,755,812	12,584,124		32,339,936
Education	81,035,025	11,796,398		92,831,018
Indiv. & Coll. Rights	<u>4,601,185</u>	<u>3,415,833</u>	<u>230,000</u>	<u>8,247,018</u>
TOTAL	\$195,708,633	\$32,946,965	\$14,246,961	\$231,077,571
IV. SEMI-AUTONOMOUS & PUBLIC DEFENDER (Subsidy)	\$17,903,004	\$5,610,343	\$3,812,833	\$27,326,180
V. MISCELLANEOUS (Retirement Fund & COLA Allocations)	\$13,977,873		\$1,106,930	\$15,084,803
VI. SEMI-AUTONOMOUS & AUTONOMOUS AGENCIES FUND (Board Approved Budget)				
Guam Airport Authority			\$9,038,299	\$9,038,299
Guam Telephone Authority			14,000,000	14,000,000
Guam Power Authority			65,270,000	65,270,000
Guam Housing Corporation			4,215,469	4,215,469
Guam Economic Development			550,000	550,000
Guam Memorial Hospital Authority			29,533,000	29,533,000
Port Authority			14,600,000	14,600,000
Guam Rental Corporation			<u>294,396</u>	<u>294,396</u>
TOTAL			\$137,501,164	\$137,501,164
VII. Department of Interior				
Maimai-Chalan Pago Water Transmission		\$2,650,000		\$2,650,000
Mangilao Reservoir		1,510,000		1,510,000
Solid Waste Landfill Facility		<u>4,300,000</u>		<u>4,300,000</u>
TOTAL		<u>\$8,460,000</u>		<u>\$8,460,000</u>
GRAND TOTAL	<u>\$227,589,510</u>	<u>\$47,017,308</u>	<u>\$156,667,888</u>	<u>\$431,274,706</u>

Table 21 (Con't)

FUNDING ALLOCATION				
Operation	\$227,589,510	\$38,557,308	\$156,667,888	\$422,814,706
Capital Improvement Project		8,460,000		8,460,000
Other	-0-	-0-	-0-	-0-
TOTAL	\$227,589,510	\$47,017,308	\$156,667,888	\$431,274,706

Sources: Department of Administration, Government of Guam
Bureau of Budget and Management Research

F. FUTURE PLANNED RESOURCES FOR CAPITAL IMPROVEMENT PROJECTS

The current financial situation of the Government of Guam has excluded major capital improvement projects from being funded from the General Fund. Since the Department of Interior Funds are limited and are requested two years in advance, many urgent infrastructure improvement projects will then be left unfunded. Two badly needed projects are the construction of the Sewer Reversal Project and completion of the San Vitores Road.

Public Law 19-5, further amended by Public Law 19-9, established an Infrastructure Improvement Fund. The increase in the Hotel Occupancy tax which goes into the Tourist Attraction Fund will be allocated in the amount 25% to the Infrastructure Improvement Fund (see Table 22). The fund will be used to pay debts incurred from the following projects:

1. Tumon Bay Sewage Reversal Project	\$ 6.5M
2. Umatac-Merizo Road Widening	1.5
3. Merizo Pier Expansion Project	2.0
4. Inarajan Boat Launching Ramp	.2
5. Merizo-Inarajan Road Design	.7
	10.4M

Table 22

TOURIST ATTRACTION FUND/INFRASTRUCTURE FUND PROJECTION
Fiscal Year 1988 thru 1990

	FY '88 6 Months	FY '88 6 Months	FY '89 6 Months	FY '89 6 Months	FY '90 12 Months
Tourist Attraction Fund Projected Revenues (Gross)	3,108,565	5,086,743	5,086,743	5,651,937	11,334,929
25% Earmarked Infrastructure Fund	0.25	0.25	0.25	0.25	0.25
Total	777,141	1,271,686	1,271,686	1,412,984	2,833,732
	FY '88		FY '89		FY '90
Infrastructure Improvement Fund	2,048,827		2,684,670		2,833,732

ASSUMPTIONS:

1. The Occupancy Rate Tax will be greater than 10% of the average room rate.
- The number of available rooms in June 1987, being 3,611 rooms, will remain constant with no major hotel development open within the next three years.
3. The average hotel occupancy rate for all hotels will be 86% year round up to and including FY '90.

Source: Bureau of Budget and Management Research, Government of Guam

VII. INFRASTRUCTURE AND SUPPORT SERVICES TO ECONOMIC DEVELOPMENT

INTRODUCTION

A key area of public sector investment promoting economic development is the construction and upgrading of infrastructure. It has become very evident in the preparation of the OEDP that there is a lack of a coherent and coordinated plan to address the pressing problems facing Guam's basic facilities.

The objectives of expanding economic infrastructure are: first, to provide various needed services such as water and power to support the expansion of economic activities; second, to establish an efficient network of communications; and finally, a working plan to guide the pace of economic development to reduce the future costs of uncontrolled growth. In this plan, two types of infrastructures will be considered. They are: 1) physical infrastructure; and 2) administrative infrastructure.

The physical infrastructure includes: a) Water, b) Energy, c) Waste, d) Communications, e) Roads, and f) Industrial Parks/Enterprise Zone/Incubators. The administrative infrastructure includes: g) Defined Guidelines for Rules & Regulations Governing Development, h) Supportive Elements: Manpower/Labor, Education/Training and Institutional Capacity.

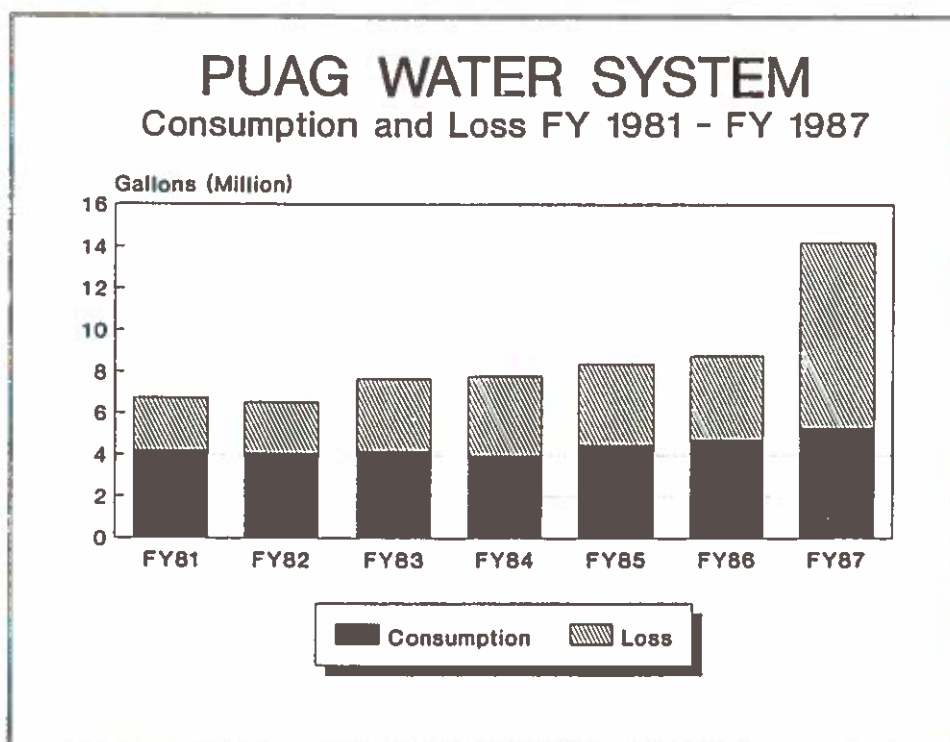
Planning programs of varying degrees of sophistication occur within the individual agencies responsible for infrastructure, namely roads, power, water, sewage, and telephone. There is a lack of coordination of major projects of one agency with those of another. For example, the installation of concrete power poles along a roadway which was to be widened was not coordinated. The implementation of the road widening shortly after the installation of the power poles necessitated the relocation of the poles. These avoidable inefficiencies are costly especially with the limited financial resources to implement projects to relieve major constraints of infrastructure that inhibit economic development. Therefore, a formalized coordinating mechanism to minimize such inefficiencies and to coordinate future needs for infrastructure with forecasted economic development needs to be installed. This could be through future OEDP committees (subcommittees) or a body that will assure the proper coordination and planning within the framework of obtainable financial resources for implementation.

B. UTILITIES

Water

Total annual average water production rose approximately 35% from 6.39 billion gallons in FY 1982 to 8.72 billion gals in FY 1986 aided by steady increases in PUAG's operating budget in the last 4 years. Total consumption, however, only increased 14.4% during the same period. The remainder of water production - referred to as the unaccounted usage of water, increased 64% from 2.46 billion gals to 4.05 billion gals during the same period. Percentage of loss due to inefficiencies such as line leakages and illegal line tapping increased from 37.0% in FY 1982 to 46.5% in FY 1986. Figure 14 shows the total annual production, consumption and unaccounted usage by fiscal year.

Figure 14



SOURCE: Public Utility Agency of Guam (PUAG)

According to figure 14, it seems as though total water demand was sufficiently met by the available supply. However, this does not reflect the actual situation since the consumers, especially the southern residents, are subjected to water rationing during the dry months. The FY 1986 efficiency rate of 53.5% is very low compared to efficiency rates of 80% to 90% in the mainland U.S. (source: Civil Engineering, Bureau of Reclamation, Department of Interior).

There are several possible explanations for such a high rate of unaccounted usage of water. The first is the most obvious. PUAG's primary waterlines were installed over 40 years ago, and they are conspicuously leaking large amounts of water, especially in the southern area. The second possible explanation is that any government tapping of PUAG's water, for firefighting, water provisions during emergencies, etc, is included in the unaccounted usage. A third possibility is the inaccuracy of meter calibration, especially the industrial water meters. A PUAG engineer expressed concern that inconsistent calibration servicing of the water meters may slightly understate the legitimate water consumption levels. Finally, there have been reports of illegal tapping of PUAG water lines for private or commercial purposes, which would also be regarded as unaccounted usage.

Regardless of the explanations, the figures show that the percentage of water lost or unaccounted for is rising and this "trend" is expected to continue.

PUAG's water supply consists of three different sources; deep well, springs/streams, and purchases from the Navy/Air Force, which account for 81.3%, 3.2%, and 15.5% of the water supply, respectively. In FY 1986, daily demand for water exceeded PUAG's water production by approximately 3.9 million gallons per day (taking into consideration the unaccounted usage). This deficit was more or less offset by the water purchased from the Navy and the Air Force in FY 1986. At the rate of \$1.30 per 1000 gallons charged by the Navy, improvement in the water delivery and monitoring system that reduces the unaccounted usage by 30%, for example, would eliminate the current purchases from the military, and save PUAG approximately \$1.8 million annually.

According to estimates produced by PUAG's engineering division, by FY 1990, when we consider the projected increase in population, even with a projected increase in annual water production, the daily average deficit will grow to approximately 5.3 million gallon per day. Purchases from the Navy and the Air Force cannot offset such an increase in the water supply deficit because the military's water production capabilities will not increase significantly in the future (military population remains fairly stable over time

and the minimum amount of water that they are required to sell to the civilian population remains at 3.25 million gallons per day). The solution for the projected deficit cannot be reached by reliance on the military purchases. PUAG must instead increase the efficiency of the existing system as well as additional resources of available water.

According to the Northern Guam Land Study (GEPA), there are approximately 60 million gallons of deep well water available for use daily. Present daily water consumption amounts to only about 25 million gallons per day (including military consumption). The current shortages are not caused by the lack of water on the island, but are caused by inefficiencies in the existing system. Even if we assume that the unaccounted water usage levels cannot be reduced significantly, it is possible to increase production through developing ways to tap the unused water sources through investments in capital improvement projects (CIP's).

Sewer

Currently, the biggest constraint factor to development, especially in the Tamuning area, is the overloaded condition of the sewer system. The problem lies in both the line capacity and the capacity of existing sewage treatment plants. There are a total of 27 proposed developments in the Tamuning area which include hotels/motels with over 3,300 rooms, condominiums/apartments, and commercial buildings. All of these projects have been approved by the Territorial Planning Commission (TPC), but many are being denied permits by the Guam Environmental Protection Agency (GEPA) because of the lack of sewer infrastructure. Without significant improvements to the existing water/sewage facilities, these development projects will be put on hold indefinitely. In an attempt to deal with such conditions, a Capital Improvement Project (CIP) committee was formed by the administration in early 1987. The CIP committee is presently considering possible means of improving the system. For example, additional sewage lines are being laid along Marine Drive in Tamuning which will direct more sewage to Agana Treatment Processing Plant from the Tamuning area. Also, the Public Utility Agency of Guam is planning on diverting sewage flows intercepted by Mamajanao Pump Station, including flows coming from Tumon area to the Northern District sewage treatment plant. Tamuning sewage would be rerouted to the plant that is currently underutilized (See Table 23). The sewage reversion project is estimated to cost approximately \$1 million, partially to be financed by a Federal EPA grant, but complete funding source has not been identified. The project is estimated to be completed by the end of FY 1990.

Table 23

Design Capacity Current Load of Sewage Collection
and Treatment Facilities
As of October 1988

(X's millions of gallons per day)

Treatment Plant	Design Capacity	Current Load
Northern (see note)	12	2.5
Agana*	12	7.5
Agat	.75	1.2
Merizo/Umatac	.5	.3
Inarajan	.2	n.a.
Baza Gardens	.6	.14
Commercial Port	.05	.02

* = Sewage Reversal Project which is scheduled to be completed in FY'90 should transfer about 2 mgd from the Agana Treatment Plant to the Northern Treatment Plant.

n.a. = Not available

Source: Public Utility Agency of Guam, Government of Guam

Approximately \$3-\$5 million of Federal CIP funds are presently being allocated to PUAG. A bulk of these funds are being used to cover the agency's increasing operational costs, and the remaining balance that will actually bedirected to the badly needed CIP's is insufficient to cover existing problems.

The CIP's that are considered as top four on the Guam Construction Grant Priority list for FY 1988 are:

- ° Baza Gardens Sewer Treatment Plan Modifications
- ° Agat/Santa Rita Sewer System, Phase I
- ° Agat/Santa Rita Sewer System, Phase II
- ° Talofofo Sewer System.

The total projected cost of the above projects is \$13,559,170.

Because of the lack of funds to implement the needed projects, very little future planning is being undertaken and many essential tools for planning are being compromised. For example, the most recent General Planning Map available to the planners is outdated by about 13 years and the Water Facility Master plan currently used in selecting and prioritizing CIP's is 10 years old, and needs to be updated.

If the Government of Guam considers economic development a primary objective, it must address the inefficiencies which exist in the infrastructure and constructively work to find ways to improve them in order to prepare the island for economic and social development.

☐ Recommendations (Sewer)

It is apparent that infrastructure deficiencies are becoming a direct blockade to economic development. Presently, the government is becoming aware of the various existing problems. However, we must go further than mere problem recognition. We must develop a sound policy which will provide clear directions and produce results in the form of realistic future planning and funding identification.

Recent CIP meetings considered ways to pass on the cost of infrastructure improvements to the private developers. PUAG currently does not charge connection fees or have assessment charges for installing in new pipes, etc. Given the lack of funding resources, we must search for alternative means of financing improvements. For example, Hotel Nikko scheduled to be built in the Tumon Bay area will be assessed infrastructure improvement/connection fees.

This type of strategy is workable, but it is a short term solution at best. Even if adequate pipelines are installed, there are no guarantees that water supply levels or sewage lines and treatment capabilities will be increased accordingly to handle the community's growing demands. Again, a major policy decision that addresses the overall condition of Guam's infrastructure is in order.

Energy

Guam's power has been supplied by a joint effort of GPA and Navy according to the Power Pool Agreement established in 1972 as an interim measure. Recently, in October, 1987, the Power Pool Agreement terminated. On November 30, 1987, negotiations commenced between the Navy and GPA to nullify the joint powerpool agreement and enable GPA to become the sole energy provider for both the civilian and military sectors. On December 7,

Table 25

**Average Number of Scheduled, Direct Flights
and Average Revenue Passenger Seats Per Week
By Carrier and Route
As of December 2, 1988**

	Continental Air Micronesia		Japan airlines		All Nippon Airways		Northwest Orient		Hawaiian Airlines	
	Flights P/W	Seats P/W	Flights P/W	Seats P/W	Flights P/W	Seats P/W	Flights P/W	Seats P/W	Flights P/W	Seats P/W
Narita	14	2718	7	2584	7	2205	7	2800	n.a	n.a
Fukuoka	7	819	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Osaka	n.a.	n.a.	4	2112	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Nagoya	11	1569	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Okinawa	3	351	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Manila	7	929	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Port Moresby	2	156	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Honolulu	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6	1200
Honolulu/Los Angeles or San Francisco	6	1602	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Saipan	22	3280	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Rota/Saipan	3	351	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Koror	4	478	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Yap/Koror	3	234	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Truk/Ponape	2	156	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Truk/Ponape/Majuro/ Kwajalein/Johnston/ Honolulu	3	234	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a
Truk/Ponape/Kosrae/ Kwajalein/Johnston/ Honolulu	1	78	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a

Note: The number of seats available may vary slightly due to changes in the type of flight utilized.

n.a = Not applicable

Source: Airlines: Division of Economic Development and Planning, Department of Commerce, Government of Guam

attributed to a more favorable economic climate with increased construction activity and increased tourism activity resulting in lower unemployment and greater demand for goods and services.

Guam presently has five international air carriers serving the island, providing direct scheduled service to Japan, the Philippines, Papua New Guinea,

Hawaii, Saipan, Majuro, Kwajalein, Johnston Island, Koror, Ponape and Truk. There is also one nonscheduled commuter airline serving the Mariana Islands, including Guam, Saipan, Rota and Tinian. Additional air service is provided by a nonscheduled commercial carrier to Nauru, Manila and Hong Kong. Some airlines also supplement their service with extra section and charter flights.

In calendar year 1986 to the present, there were numerous additions in air service to and from Guam. The most significant was All Nippon Airway's (ANA) introduction of six flights a week between Guam and Narita, Japan. This was the inauguration of ANA's first international flights. ANA is Japan's largest domestic carrier. In June of 1988, ANA increased its flights to Narita by one, making it a daily service.

Hawaiian Airlines introduced new service to Guam in May of 1987, with two flights a week from Honolulu, Hawaii. They went on to increase their flights to six times a week in January 1988. Their entry into this route broke a monopoly previously held by Continental Airlines. Continental Air Micronesia, the Pacific arm of Continental Airlines, added three new cities to its network with one flight a week to Fukuoka, Japan in June of 1987, one flight a week to Port Moresby, Papua New Guinea in November 1987 and three flights a week to Okinawa, Japan in April 1988. In addition, they increased their flights to Manila by one, making it a daily route, in March 1987 and also added three flights a week to Okinawa, Japan in April, 1988. They also started a charter service between Guam and Niigata, Japan on February 20, 1988. Direct flight service to Brisbane and Sydney will be initiated by Continental in April 1989. (See Table 25 for flight frequency.)

With respect to facilities, the Guam International Air Terminal is presently capable of handling five 747 jets simultaneously. With air traffic increasing rapidly, the Guam Airport Authority has stepped up their master plan which calls for expansion of the terminal to increase its capacity from five to nine jetways, as well as, expansion of the receiving and processing areas. Phase I of the master plan update was completed in April 1988 and projects that there will be up to four million passengers arriving and departing through Guam's airport by 1992. The reasons for such a positive increase are discussed in detail under opportunities. To serve airport related businesses and support services, the Guam Airport Authority is in the process of constructing a 30-acre industrial park adjacent to the terminal access area at a total cost of \$2 million and is projected to be completed by mid 1989. Basic infrastructure will be provided to include water, power and sewer services, in addition to, security fencing and service roads. The main access road to the site was completed in May 1988. Potential users and uses of this site include

air transshippers, freight forwarders, importers, exporters, light manufacturers, perishable food handlers and others needing proximity to air freight and/or passenger services, as well as, customs/agricultural space for produce fumigation, cooling facilities and related activities.

Opportunities and Constraints

» Constraints

Under present air traffic agreements between the United States (U.S.) and foreign countries, and given Guam's small population, there are limited opportunities for growth in the area of new air passenger carriers servicing Guam. While most U.S. and numerous foreign carriers have rights to fly to Guam, these rights are unlikely to be exercised as they do not have rights to go beyond Guam to other points. With regard to foreign carriers, without beyond rights, it would not be cost effective to fly between Guam and other countries, with the exception of Japan, as the traffic would be unlikely to justify the service. Beyond rights must be obtained during negotiations with the foreign carrier's government, the U.S. government, and in the case of the carrier desiring to fly to another foreign point beyond Guam, also with that country's government. Furthermore, the U.S. has a policy of not allowing foreign carriers rights to provide service between two U.S. points, known as cabotage, so it is highly unlikely that a carrier could obtain beyond rights to service Guam and another U.S. point. For these reasons, most foreign carriers are more interested in flying to major U.S. cities offering larger populations, a more attractive destination and more connecting flights from those points.

With regard to U.S. carriers, service between Guam and Hawaii is currently being provided at a sufficient level by Continental Air Micronesia (COAM), Hawaiian Airlines, and via Japan, by Northwest Orient Airlines. It would be unlikely that a carrier would wish to enter this market with the present level of service. Furthermore, because most passengers prefer direct service without stops along the way, most carriers would be unlikely to add a stop in Guam on their way to destinations around the Pacific Basin, as it would make the route less attractive.

» Opportunities

While there are numerous constraints to the development of additional air passenger services, there are several areas in which Guam has advantages. The most important are that Guam and Saipan are now considered co-terminal points, or viewed as one destination by the U.S. and Japan, and service between Japan and Guam and Saipan is now negotiated separately from

other transportation services between Japan and other points in the U.S. As a result, this route for both U.S. air carriers and Japanese air carriers is not used as a negotiating tool to leverage rights for service for other U.S. carriers. Furthermore, restrictions on flight frequencies and on the number of seats on routes between Japan and Guam and Saipan were recently deregulated. This has already resulted in the introduction of larger aircraft on routes to Narita by Continental Air Micronesia, and has also resulted in their added service to Fukuoka, Japan. More rapid additions and expansions on routes between Japan and Guam and Saipan are likely to follow in the future, as long as the increases in tourist arrivals continues. Additionally, passengers can now be flown by Japanese carriers between Saipan and Guam, as it is not being considered as cabotage. This makes it easier to sell Guam and Saipan as a dual destination for Japanese visitors.

Air carriers in the region are beginning to view Guam from a regional perspective, given its geographic position in relation to the islands of Micronesia, and to the Pacific Rim Countries. Continental Air Micronesia realized this advantage early as it developed Guam into its major hub. It has continually added routes and frequencies to the islands of Micronesia, including Saipan, Palau, Yap, Truk, Ponape, Kosrae, Kwajelein, and Majuro, and to various Asian cities including Manila, Narita, Nagoya, Fukuoka, and in late 1987 and early 1988, to Okinawa and Port Moresby, respectively.

Continental also announced plans for starting service to Brisbane and Sydney, Australia on April 1, 1989. Furthermore, as the islands of Micronesia develop their tourism infrastructure and services, Japanese visitors leaving from four major cities in Japan and carried by four different airlines, totalling more than half a million tourists for both the Northern Marianas and Guam, will increasingly be sold tour packages including one or more of these other islands utilizing Guam as the focal point for air transportation services. They may be stopping in Guam for one or more nights, transitting for a few hours or simply waiting in the aircraft as it is refueled and reprovisioned. Moreover, as the standard of living in the Asian countries of the region increases and as some of these countries relax existing travel restrictions, traffic throughout the area will see continuing increases likely to impact on Guam because of its central location.

There are many other factors that will stimulate growth in air traffic to Guam. First, the Guam Only Visa Waiver will enable visitors from certain countries to come to Guam without a U.S. Visa. Japan, Australia, New Zealand, Taiwan and Hong Kong are the most likely candidate for growth. Second, the relaxation of all travel restrictions for South Koreans in early 1989 and Northwest Orient's seven flights a week to Korea (six via Narita)

increase the potential for more Koreans to visit Guam. Third, the Japanese Government is actively pushing its "Ten Million" program to promote greater leisure time and overseas travel by Japanese which is likely to result in more visitors to Guam. Fourth, the Guam Airport Authority reported that there are plans for a cruise ship service which would target up to 800 Japanese to fly to Guam, board the cruise ship to visit other islands of Micronesia and return to Guam to fly passengers back to Japan. This cruise service has the potential to increase air traffic by up to 40,000 passengers a month. Last of all, the increase in new hotels, golf courses and condominiums will promote a new surge in travel to Guam by Japanese over the next five years. In particular, there is already an increase in weekend travel and this type of travel is expected to grow over time.

Expanding on another factor mentioned earlier, which offers future opportunities for Guam, is the relatively low airport fees charged on Guam and the support services available to airlines. These including refueling, reprovisioning their in-flight kitchens and engaging aircraft maintenance services. As a result, Guam has been experiencing an increase in technical landings by airlines for some time. Some of these airlines include Philippine Airlines, Singapore Airlines, Flying Tigers, China Air, Korean Airlines and Toa Domestic Airlines. Any airline can ask Guam for a technical landing, however, these airlines usually do not have rights to pick up or drop off passengers in Guam. At the same time, they bring in revenue to Guam by paying landing fees and other related fees for airport services. They also generate gross receipt taxes through the purchase of fuel, in-flight meals and related supplies, maintenance services, or simply through expenditures of the flight crew if they stay on Guam for one or more nights waiting to complete their return flight. An example of all of these activities is Toa Domestic Airlines' charter service to Palau from Japan. The airline drops passengers in Palau and then comes to Guam for several days layover to await the return to Palau to pick up departing passengers. Before departing Guam, they refuel and take on in-flight meals. If maintenance service is required this can also be accomplished while on Guam. Although technical stops on Guam are not being marketed to other international airlines at present, this is a new area for revenue generation to be considered by the Guam Airport Authority.

Air freight services are another area in which growth is expected to take place in the near future. Until recently, the demand for air freight services has remained fairly constant. However, because of an increasing tourist population, an increasing military population, and a general increase in the indigenous population in the past two years, the demand for perishable consumer goods, additional mail service and the transport of other low volume, high profit consumer goods has gone up. With increased demand

for air freight services for goods coming from the U.S. Mainland bound for Guam, Northwest Orient Airlines (NWO) found that while it had sufficient flight frequencies and cargo space on their West Coast-Narita routes, they could not accommodate cargo movement between Narita and Guam. As a result, they initiated an agreement with both Japan Airlines (JAL) and All Nippon Airways (ANA) to carry their cargo from Japan to Guam. COAM found itself in the opposite situation, needing air freight capabilities between the West Coast and Narita, so they followed suit with an agreement for Japan Airlines to carry their air freight on that portion of the route, which could then be transported to COAM aircraft in Narita for Guam. Although these arrangements are an improvement, they will be unable to meet the growing demand for air freight without expanding in the near future.

The investment of large sums of federal monies, which are being utilized to develop the infrastructure of the new nations of Micronesia, is expected to increase their ability to attract investors. As a result, the standard of living in these islands is expected to increase, stimulating an increased demand for consumer goods. It is highly likely that much of these goods will be transshipped through Guam, resulting in an increased demand for COAM's air freight services. Furthermore, JAL was previously transporting an increasing number of garments produced in Saipan to Narita and on to the U.S., however, this was identified as cabotage and was stopped in late 1985. As a result, Saipan's garment manufacturer's have been utilizing airlines based on Guam to ship their products to the U.S., resulting in increased air freight movement on the Saipan-Guam-U.S. Mainland route. In addition, Sigallo Pac, Ltd., based in Guam, recently expanded their garment factory's production on Guam, further increasing the demand for air freight services.

At present Guam is not serviced by any air freighters going to and from the U.S. Mainland but this is likely to change in the near future, given the aforementioned factors. However, at the present time Guam can only accommodate a 747 passenger aircraft carrying freight or a DC-8 freighter. The equipment required to load and unload a 747 freighter has not been available on Guam since Pan American Airways discontinued their services to Guam in 1984. This lack of equipment is likely to present a constraint to future expansion of air freight service.

Until recently, air freight was handled directly between the shipper and the carrier, resulting in the shipper paying the highest rates possible. Recently, one freight forwarder negotiated rates with the airlines for consolidated shipments, resulting in lower rates for the shipper. With increased competition in the future, these rates are likely to be further reduced.

In summary, increases in both air passengers and air freight activity clearly demonstrate the need for expanded airport facilities mentioned early in this section. Furthermore, other support businesses will also grow and new businesses are likely to spring up. Some of these include inflight kitchens, bus companies, taxi services, tour companies, air freight forwarders, warehouses, trucking firms, air freighters, freight handlers which decide to handle the loading and unloading of aircraft and maintenance of air freighters and passenger aircraft.

Sea

Status and Changes

At present, approximately 90 percent of the island's total imports are brought in through the Commercial Port. As of May of 1986, about 60 percent of Guam's imports came from the United States (U.S.) and more than 76 percent of the exports were sent to the U.S. The balance of Guam's trade involves Japan, Taiwan, the Philippines, Hong Kong, and to a lesser extent, Australia, New Zealand and the islands of Micronesia. Opportunities exist for expanding service to Europe, Australia and New Zealand, as well as introducing service to Thailand, Indonesia, Malaysia and other ports not included in present routes of shipping lines calling at Guam's port.

In FY 1987, Guam was served by 28 shipping lines, handled by 11 agents. A total of 1,150 vessels called on Guam during FY 1987. Of the 28 shipping lines, 19 provide scheduled service for general cargo. Among the 19 shipping lines, two have operations based out of Guam's Commercial Port. They include American President Lines and Sea Land Services, Inc., which are both U.S. carriers. They are the only carriers providing service between Guam, Hawaii and the U.S. Mainland. Furthermore, 18 of the 19 general cargo carriers provide service to the Far East, 16 provide service to Saipan and 6 provide service to various ports of call in the other islands of Micronesia. Many of these shipping lines also provide services to Europe, South America, the Middle East and the South Pacific via connecting carriers.

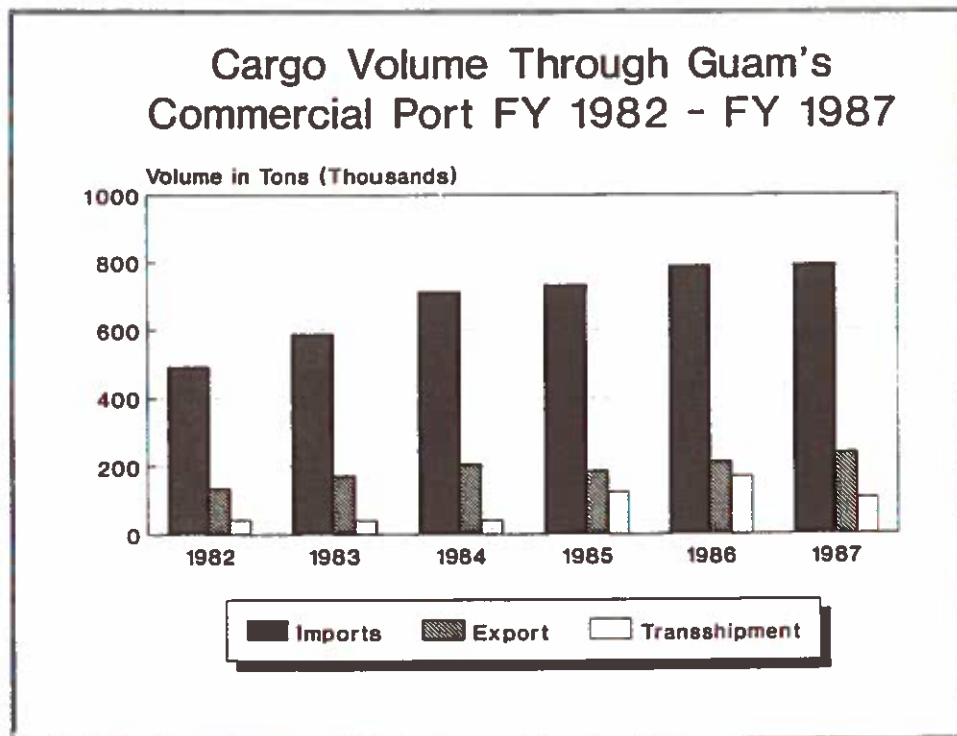
In terms of cargo movement, Figure 17 demonstrates six years of continuous growth in imports. This is a result of increased construction activity throughout Guam.

The Commercial Port of Guam's 74-acre facility features 86,000 square feet of warehouse space for breakbulk storage, maintenance and repair facilities, and a paved 33-acre storage yard for containers, automobiles and general

cargo storage. The Port is equipped to move containerized, unitized, break-bulk and tuna cargo as efficiently as other ports of the world. Specific facilities include 2,700 feet of dock divided into four berths ranging from 28 to 33 feet in depth, a fuel pier and access to two additional berths for large tankers and passenger vessels. Commercial Port can accommodate vessels with a maximum draft of 37 feet. Furthermore, the storage yard holds 758 stalls for chassis mounted containers with 160 equipped to serve refrigerated containers. Cargo handling equipment includes two gantry cranes, two straddle carriers, one container top lifter, one container side loader, a mobile crane, 29 tractors and 39 forklifts of various load capacities.

Guam's location straddles the north-south shipping lanes from Japan to Australia and the east-west routes connecting Southeast and East Asia with Micronesia and the United States. By virtue of its location, Guam is receiving increasing amounts of goods from Asia, Australia, New Zealand and the U.S. Opportunities in shipping activities are expected to grow with the anticipated economic development associated with the CNMI, the Republic of Belau, the Federated States of Micronesia and the Republic of the

Figure 17



Source: Port Authority of Guam

Marshall Islands, with Guam becoming a major supplier of goods and services to much of Micronesia.

To expedite import, export and transshipment activity, the Commercial Port offers efficient loading, unloading and storage services, with refueling during cargo handling to further minimize turnaround times. The Port's communications center in the administration building also facilitates transshipment activity. Local agents provide additional services, including pilot and tugboat services, ship repair facilities and chandlery services.

There are several projects currently in-progress or scheduled for the near future which will improve the Port Authority of Guam's ability to provide services to its customers. These projects are as follows:

- 1) Upgrading of petroleum handling facilities at a cost of \$1.0 million with the start of construction targeted for mid - 1989;
- 2) Replacement of storage tanks on the petroleum storage facility at a cost of \$4.5 million which is scheduled to begin in mid-1990;
- 3) Phase II of the Agat Small Boat Harbor at a cost of \$2.2 million which will begin in early 1988 and is scheduled for completion in 1990;
- 4) Expansion of the container yard at a cost of \$3.5 million with start upscheduled for mid 1989 and completion is expected to be in mid-1990;
- 5) Resurfacing of the container yard at a cost of \$1.5 million beginning in mid-1990 and expected to be completed in late 1990;
- 6) Fender system upgrade, dock repairs and docking appurtenances at a cost of \$1.5 million to begin in mid 1989, with a completion date in early 1990;
- 7) Proposed construction of berth F-7 at a cost of \$4.5 million and is forecasted to begin in FY 1990 to be completed in FY 1993.
- 8) Coral head removal at a cost of \$150,000 forecasted to begin in mid1990 with estimated completion within two months;
- 9) Construction of additional office space at a cost of \$500,000 is scheduled to begin in early 1990 and completed late 1990;
- 10) Maintenance and repair building expansion and renovation at a cost of \$700,000 to begin in early 1990 and completed in late 1990; and

- 11) Cabras Island Industrial Park development at a cost of \$6.5 million, will begin in early 1989 and is expected to be ongoing until the site is utilized at full capacity.

Opportunities and Constraints

» Constraints

Constraints to developments related to cargo transportation services by sea primarily revolve around federal laws and their applicability to Guam. The discussion of these federal constraints was taken from the *Essential Ocean Transportation Service* study prepared by the Port Authority of Guam in May, 1986. The first is Public Law 96-418, Section 818 (b) (2), which is known as the Brooks Amendment. This law transferred 927 acres of federal land and submerged areas to the Government of Guam. These lands are essential to expansion of services in the area of Commercial Port, however, the law restricts the use of this land by requiring that the sale or lease of the land be equal to or in excess of the fair market value as determined by the General Services Administration. Furthermore, the money generated from the sale or lease of the land, less reasonable development costs incurred by the Government of Guam, is to be deposited in the U.S. Treasury. As a result, the fair market value requirement prevents the Government of Guam from enticing businesses to locate on this land near the Port, through the provision of lower rental rates. Furthermore, the money generated from land leases will not be available for upgrading and maintaining Port facilities and services.

The Omnibus Territories Act of 1984 amends this section by providing that reasonable development costs, not to exceed 30%, be a fixed standard percentage of such monetary consideration received by the Government of Guam. While this amendment is a slight improvement, it should be further amended to permit leases at less than fair market value in order to attract businesses to develop this area, and it should allow the Government of Guam to retain the money from the sale or lease of this land for purposes of improving and expanding facilities and services at the Port.

The second federal constraint involves the applicability of U.S. cabotage laws which require that goods transported between Guam and the U.S. must be transported by U.S.-owned and registered shipping companies, whose rates are higher than those charged by foreign shipping companies. These laws are the Shipping Act of 1916 and the Intercoastal Shipping Act of 1933, which are designed to protect U.S. shipping companies from foreign competition.

Arguments for allowing foreign flag vessels to enter the Guam-U.S. trade state that it would not be detrimental to the U.S. maritime industry because the volume of trade is comparatively negligible. Additionally, because approximately 50 percent of shipping volume between these points consists of military cargo, which by federal regulation must be transported on U.S. registered and owned vessels, U.S. shipping companies would be guaranteed this traffic, further minimizing the impact of a Guam exemption from cabotage laws.

Concerns on the opposite side, state that if Guam became an "open port" the quality of shipping services would decrease, because while domestic carriers must provide a minimum level of service to Guam, foreign carriers are not similarly regulated and could stop services at any time. Furthermore, U.S. carriers are limited to no more than a 9% increase in their rates per year, while foreign carriers have no such limitation. Thus, it is felt that the cost of shipping would increase in the long-run.

One possible solution recommends that Guam be declared an "open port" on a trial basis. This would determine the impact of allowing foreign carriers the opportunity to serve Guam and would allow shippers the opportunity to benefit from less expensive, possibly more frequent service, to and from the U.S.

The last federal constraint impacting Guam in the area of cargo movement by sea transportation is a requirement that certain vessels used in Guam, including dredges, commercial fishing vessels and possibly tugboats, be built in the U.S. This Federal Citation is 46 U.S.C. App. 292, approved May 29, 1906.

Given Guam's location, over 5,000 miles from the continental U.S. and its ship yards, it is excessive, unreasonable and costly to require that vessels used in or around Guam be U.S. built. The impact of this requirement is that dredging activities and the development of the local commercial fishing industry have been severely hampered by this requirement. This law should be amended to provide that any vessel used in connection with Guam, whether otherwise required by law to be a U.S. flag vessel or not, shall not be required to be built within the U.S. It should be noted that although the current law for cargo ships carrying cargo between Guam and the U.S. requires that they be U.S. flag vessels, they need not be built in the U.S. Furthermore, the Commonwealth of the Northern Marianas (CNMI), prior to becoming a commonwealth, was exempt from the requirement that their commercial fishing vessels be built in the U.S. by virtue of a Presidential

Proclamation. Also, foreign built dredges may be utilized, and are being utilized in the CNMI.

» **Opportunities**

There are numerous opportunities that can be capitalized on in the area of cargo transportation by sea. At present, there are many services not being provided or are being provided on a very limited basis. These services represent opportunities for the development of new businesses and the expansion of existing businesses on Guam. The first area of service is that there are no freight forwarders or carriers providing regularly scheduled movements of consolidated container shipments into full loads to the East Coast. A shipper is required to pay the full container rate in order to guarantee that a shipment would depart on schedule. However, once the shipment lands on the West Coast, there is no guarantee it would reach the East Coast. Furthermore, if the shipment is going to someplace other than the major cities serviced by the carrier, it is unlikely that the carrier would arrange the surface transportation of the shipment.

In June of 1987, one freight forwarder began providing less than container load consolidation service between Guam and any point in the U.S., including the arrangement for customs clearance and surface transportation. However, this service is still not provided on a regularly scheduled basis as containers are still held in Guam until a full load can be consolidated. At the same time, this forwarder began to provide door-to-door service for any shipment to anywhere in the U.S. Prior to this period, door-to-door service was not available to Guam's residents and business community. It should be noted, that because the forwarder consolidates individual shipments into a full container load for transport to or from the West Coast on a regular basis, they are able to obtain lower rates from the carrier and provide lower rates to the shipper. However, for less than container load shipments going beyond the West Coast, the shipper will be paying a higher rate, using a freight forwarder, than what the carrier would charge. This is because the forwarder guarantees that the customs clearance and the arrangement of surface transportation to any point in the U.S. will be taken care of and that the shipment will reach its destination. The carrier, on the other hand, will not clear the item with customs and, if the shipment is going to a city other than where the carrier provides surface transportation to, the shipper must arrange for someone to handle the on-going surface transport. Also, the carrier will only provide service to a specific point in particular cities, and will not provide door-to-door service.

It should also be noted that a shipment coming from the West Coast to Guam, costs much less than the cost of a shipment going to the West Coast from Guam. This is because there is less cargo leaving Guam, such that the carrier charges more to make up the difference. Also, shipments from the Orient, being transshipped to the U.S. through Guam, cost approximately twice as much as it costs to ship the same shipment in the opposite direction. This is because there is very little competition on the route between Guam and the U.S. Only two carriers provide direct service to the West Coast from Guam. As of June 1987, the market between the Orient and Guam was not being served by any freight forwarders. The entry of freight forwarders into the market, providing less than container load service from the Orient to Guam or transshipped through Guam to the U.S., can lower the transportation costs to the shipper significantly by consolidating shipments. This would increase the marketability of the shipper's product, while also providing for the documentation, handling and routing of the shipment. In the case of goods from the Orient bound for Guam's market, this would result in lower costs to the wholesaler, retailer, and ultimately, the consumer. This service is likely to be introduced in the future as increasing amounts of goods are shipped to Guam from the Orient.

Other services not being offered on Guam include bonded warehouses and truckers, customs clearinghouses and customs brokers. The reason is that Guam's customs regulations, originally formulated and passed in 1954, were written at a time when Guam received only a few ships and sea planes a year and much less goods were imported. As a result, the customs regulations, which have seen limited changes, are relatively informal and non-restrictive as compared to U.S. customs regulations. An example of this is that Guam's regulations do not require that goods being transported beyond the port of entry, prior to being cleared by Customs, be moved by a bonded trucking firm and stored in a bonded warehouse to await customs clearance prior to being released to consignees. So there has been no reason for trucking firms and warehouses to be bonded. At present, under the Department of Commerce's policy (not regulation), Customs will only release containers not yet cleared by them to three freight forwarders, who have warehouses which meet certain requirements, to insure that the containers remain secure and closed until they can be cleared. This is likely to change in the future as Guam's cargo transportation industry expands and the need for stricter customs regulations increases. The same is true for the lack of customs clearinghouses and customs brokers. Guam's custom's documentation requirements have not reached a point of complexity whereby the aforementioned business would be warranted. These businesses specialize in customs documentation when it is too complex and too time consuming to be handled by the shipper and the consignee. However, this is also likely to change,

especially with the growth of foreign goods imported to Guam. As customs regulations are amended and added to, becoming more complex and more restrictive, new businesses will start up to meet the changing needs of shippers and consignees.

There currently are no individuals trained as appraisers to insure that declarations, concerning the value of shipments, are accurate. In this respect, it is highly probable that the Government of Guam is losing revenue, from both gross receipt taxes and use taxes, because of false customs declarations. In order to increase revenues, the Department of Revenue and Taxation should train personnel to become certified customs appraisers to insure that gross receipt taxes and use taxes are assessed accurately on imports to Guam.

D. INDUSTRIAL PARKS/ENTERPRISE ZONE/INCUBATOR

Industrial Parks

The establishment of an Industrial Park represents a pivotal point in the further development of Guam's manufacturing and service sectors. This is an important component in our economic development program in promoting these sectors of the economy. The manufacturing sector, in particular, is one of the weaker sectors of our economy and requires the application of a concerted effort to promote new investment. The Industrial Park will fulfill a major need in the provision of basic infrastructure and the availability of sites required by investors in establishing light manufacturing or service oriented businesses.

We have been successful in attracting the interests of investors in many areas. However, Guam has not been able to accommodate those that require the support of an industrial park because the existing parks have reached their saturation points. If new sites are developed, they will provide the means to stimulate industrial development and further our efforts in diversifying the economy while providing numerous jobs and assisting Guam in realizing a greater degree of self-sufficiency.

There are currently three Industrial Parks being operated on Guam and one in the planning stage. The parks that are being operated are E.T. Calvo Memorial Industrial Park, the Harmon Industrial Park and the Cabras Island Industrial Park. These three sites are maintained by the Guam Economic Development Authority (GEDA). The proposed Industrial Park is the Guam Airport Industrial Park, being developed by Guam Airport Authority with aid from the U.S. Economic Development Administration (EDA).

By the end of March 1987, there were 14 tenants leasing from GEDA in the E.T. Calvo Memorial Industrial Park in Tamuning. Among the businesses leasing property space are: Guam International Trade Center, Guam Fresh Inc., FHP, Massey Tire, B&B Furniture, Star Company, Guam Power Authority, Coral Marine Center, and more recently, Tropical Color, U.S. Postal Service, and Hakubotan, Inc. Excluding the building for the U.S. Postal Service, over \$40 million in investment has already been made in this particular industrial park. With Tropical Color and Hakubotan Inc., and the expansion of Coral Reef Marine Center, an additional investment of \$1,705,000 will be realized, adding 59 employees to the present total of 634 employed by businesses located in this park. They represent a total payroll of \$6,539,614. Furthermore, the 14 tenants account for a total annual rental of \$183,194 leasing a total of 752,058 square feet.

There are presently seven businesses leasing a total area of 1,842,403 square feet in the Cabras Island Industrial Park from GEDA. Among the tenants are: Esso, Eastern Standard, Mobil International, Kaiser Cement and Gypsum Co., and Casamar Guam, Inc. The total annual rental fees from these tenants amount to \$103,255. The total investment from the seven tenants is over \$28,000,000. The total number of people employed in the leased property is 221 accumulating a total annual payroll of \$4,372,756. The businesses in this park engage in petroleum products distribution and production, net and ship repairs, shipping services, cement distribution, warehousing, and trucking.

Four businesses are currently leasing property from GEDA in the Harmon Industrial Park. Some of the businesses are: Charles L. Corn Enterprises, Harmon Field Warehouse Joint Venture, Central Pacific Ironworks, and Guam Dry Cleaners. Charles L. Corn Enterprises is subleasing part of its warehouses to two other firms, while Harmon Field Warehouse Joint Venture is subleasing to 12 firms. Total annual rental fees realized in this Park is \$40,844 which accounts for a total rented area of 723,070 square feet. Presently, there are about 429 people employed in the Park accumulating an annual gross payroll of about \$2,567,180.

Guam Airport Industrial Park (Proposal)

This project would provide for the development of approximately 30 acres of undeveloped land located adjacent to the Guam International Air Terminal into an efficient industrial park with the provision of the basic infrastructure including water, power, sewage, security fencing and service roads.

A Public Works grant preapplication was submitted to the Economic Development Administration (EDA) of the U.S. Department of Commerce on February of 1986 to fund the site preparation of approximately 30 acres set aside for the airport industrial park. The funding would cover the cost of leveling and compacting the area, providing utility lines, sewage connections, building a service road and integrating a road system with the Rt. 10A Access. The amount applied for from EDA was \$1,000,000 out of a total project cost of \$2,500,000. \$1,500,000 will be funded by the Guam Airport Authority. For more information on proposed Industrial Parks refer to the program strategies section of the Commerce/Manufacturing Sector.

Enterprise Zones

Enterprise zones are mechanisms used to promote economic development. They accomplish this by providing business (tax) incentives to existing and new businesses in a specifically designated area. The specific objectives of establishing an enterprise zone are:

- 1) Net Job Creation
- 2) Improved Capital Investment
- 3) Industrial Revitalization in a designated area.

There are two schools of methodology in enhancing the enterprise zone development: A) Traditional Urban Redevelopment Subsidies or Grants (Federal); and B) Various Expansion (Tax) incentives (State and Local).

Traditional Urban Redevelopment Strategy is a continuation of the provisions of the Enterprise Zone Act of 1984 - (Secretary of Housing and Urban Development, in consultation with other Federal agencies, would designate up to twenty-five zones each year for the first three years of the program). The requirements for qualification includes criteria such as: pervasive poverty in a given area, relatively large population with at least 20% unemployment rate, eligibility for the urban development action grant program, etc.

Some of the Federally designated incentives (once qualified) include: elimination of capital gains taxes in the zone investments; additional three, five, or ten percent tax credit for investments within zones; availability within the zones of small issue industrial revenue bonds; permitted use of accelerated cost recovery for industrial revenue bond financial property; and other incentives.

There are various state or local government sponsored expansion incentive strategies that can be implemented to develop an enterprise zone. Some of the possible incentives that can be used are: gross income tax exemptions, lender interest, interest income credits, wage deductions, employer credits, inventory tax abatements, revolving loan funds, etc. Some of the above incentives are being used by GEDA to encourage economic activities, but they have not been applied to a specifically designated zone.

Although none of the areas on Guam can meet the Federal subsidy standard of 20% unemployment rate, our local government's effort in applying this concept in the infrastructure planning could have a profound effect in achieving desired goals.

Incubators

The business incubator concept is becoming a widely accepted approach to creating new ideas, such as new products, new employment and new technologies. It accomplishes this by providing small-scale start-up businesses with an edge to survive rigorous competition through reducing high rental fees and providing various services needed for survival and growth.

The goals of the individual incubators differ to some degree, but are based on one main principle - to increase the survivability of the small entrepreneurs, who are plagued by a very high new business failure ratio. According to research on small businesses, undercapitalization and poor management are found to be the main causes of new business failures. The Business Incubators attempt to minimize these risks.

Business Incubators are generally structured to provide an affordable office or working space to be shared by a number of infant firms often at below market rates. One important aspect that distinguishes the Incubators from a traditional multi-tenant office building is the extent of the shared services that are centrally provided by the incubator management. These services range from basic janitorial service or clerical services to a complex network of business management consulting services. The centrally-provided services are significant, because by getting involved in an incubator program, an infant firm with a modest budget will have access to services essential for survival and growth at an affordable rate.

The whole process is representative of so-called "Technology-Venturing". The Technology Venturing process enables various institutions, such as Universities, Government, or the private sector to "take and share risk in integrating and commercializing scientific research, new technologies, and

business opportunities" to become a part of the whole entrepreneurial process. The incubator, in effect, enables these institutions to participate in a commercial joint-venture with entrepreneurs.

While the Business Incubators are conducive to the growth of the small businesses, many organizations are going further to use this concept as an innovative economic development tool which can be used in conjunction with other development strategies such as the Enterprise Zones mentioned previously. Some of the developmental goals include technology based development, economic diversification, and community revitalization, which can be realized through linking such critical entrepreneurial factors as talent, technology, capital and knowledge in a productive package called the incubator.

Presently, there is a proposal to consider the possibility of establishing an incubator center (referred to as Entrepreneurial Center) on Guam. *A Preliminary Assessment of Incubator Application on Guam* is a study being conducted by the Department of Commerce, which will clarify various potential roles of incubators in Guam's economy.

Development of strategies, such as the Enterprise Zones and Incubators, have good potential to become viable infrastructure for commercial development. They must be seriously considered in order to establish a successful network of infrastructure to enhance our economic development.

E. DEFINED GUIDELINES FOR RULES & REGULATIONS CONCERNING DEVELOPMENT

There are various procedures, laws and regulations that must be adhered to by businesses and developers. These items make up the administrative infrastructure for economic development. If the administrative infrastructure is inefficient, cumbersome, confusing and time consuming, it creates an unproductive environment in which businesses must operate. In this respect, it can be a definite obstacle to economic growth. The following discussion will look at certain deficiencies or problem areas that impact several key processes which must be followed by individuals engaged in business or development. This will include the issuance of business licenses, the issuance of building permits, the Territorial Planning Commission/Territorial Seashore Protection Commission and the Subdivision and Development Review Committee and last of all, the proposed revisions to Guam's land-use laws and regulations.

Issuance of Business Licenses

All businesses, whether a corporation, partnership or sole proprietor, must have a license to do business on Guam. The only businesses exempt from this requirement are those directly involved in agriculture, aquaculture and fisheries production, which market and sell products in their natural state. Licenses are obtained through the License and Registration Branch of the Department of Revenue and Taxation for a fee ranging from \$25 to \$500 depending on the type of business (see Table 23).

The process involved in obtaining a license requires that the applicant obtain clearances from various Government of Guam agencies. The clearances from the following agencies are required by all applicants, except those whose place of business is their household. These agencies include: the Business Privilege Tax Branch of the Department of Revenue and Taxation, which requires that the applicant be assigned a taxpayer's Gross Receipt Account Number and that the applicant pay any tax obligations outstanding to the Government of Guam; the Department of Land Management, which ensures that the location of the place of business is in accordance with zoning of the locale; and the Department of Public Works, which insures that the building/space has met with all provisions of the law concerning Certificate of Occupancy with regard to the construction, alteration, enlargement or use of any building or structure. Other departments and agencies which provide licensing and clearances include:

- Department of Public Safety
- Department of Parks and Recreation
- Guam Environmental Protection Agency
- Educational Endorsement - Director of Education, Guam Community College, Provost and University of Guam, President
- Contractor's License Board or Guam Board of Contractors
Office of the Consumer Advocate/Attorney General's Office
Department of Labor

The determination, as to which clearances are required, depends on the type of business involved, the location of the place of business and the type of commodity sold or manufactured.

Present procedures for obtaining a business license can be long and tedious if the applicant's initial contact with the Business License and Registration Branch of the Department of Revenue and Taxation results in inadequate instructions concerning required clearances. This is a highly likely event as the guidelines for clearances are inadequate. At this time, they simply

describe the function of each of the agencies and provide examples of what types of businesses would require their clearance. However, this description frequently does not contain a complete list of applicable businesses, leaving the determination to individual interpretation.

In order to minimize the possibility for confusion and misinterpretation there must be clear, decisive written instructions indicating which clearances are required for each category of business, under each possible situation. One method would be for the Department of Revenue and Taxation to develop a matrix for all categories of businesses, with the possible alternative situations under each category that would impact on clearances required along the left side and all of the possible clearances along the top. Marks would then be placed to indicate all clearances required for each category of business, for each situation.

This matrix should be developed through a cooperative effort of all of the agencies required to give clearances to any type of business. At this time, an evaluation should take place to determine whether or not there should be any changes in requirements for clearances and which clearances are actually essential for which types of businesses.

Because the process of obtaining clearances can be long and tedious, the Department of Revenue and Taxation developed a "One Stop Business License" process, whereby Revenue and Taxation staff handles all processing required for an individual's business license. However, the department does not have a written listing of the types of businesses eligible for this processing. Furthermore, this process has been ineffective, in that, in almost all cases, at some point in the process, the applicant is needed to clarify questions concerning their business or they must personally obtain certain clearances. Examples of the latter include obtaining a clearance from the Guam Police Department concerning criminal records or a health permit from the Department of Public Health and Social Services.

Another related problem to the above is a lack of consistency among personnel in the various agencies as to what constitutes grounds to give a clearance. Both personnel from the Department of Revenue and Taxation and applicants themselves, have frequently encountered situations when an agency applies different requirements for giving clearances. This process is still left to a considerable amount of individual interpretation.

Each agency must clarify in writing, requirements that must be met for clearances, and in what cases, if any, would exceptions apply. Once this is accomplished, the procedures must be carried out on a uniform basis. Fur-

thermore, if changes are made to the requirements, the agency in question must inform the Department of Revenue and Taxation prior to the change taking effect.

Based on the above clarifications, the Department of Revenue and Taxation should re-examine their One Stop Business License procedures to determine in which cases it can be applied and then determine exactly what information the applicant must provide in order for them to be applicable. If the applicant does not provide complete information the department should not accept their application for the one stop procedure.

Issuance of Building Permits

Building permits are issued by the Building Permits and Inspection Division (BPID) of the Department of Public Works (DPW) and are required for the development projects listed below.

- Construction, installing, erecting or replacing a building or part of a building such as a patio, porch, garage, outside kitchen, storage shed, fence, wall, floor, roof, door, or window, etc.
- Adding, repairing, or replacing plumbing, electrical and ventilation systems or structural foundations.
- Constructing utility systems.
- Demolishing any part of a building.
- Any other development activity that may affect the structure on a property.
- The erection of signs, either free-standing or attached to a structure.

Applicants must bring a set of plans for the project in question to the BPID at DPW and obtain and complete an application for a building permit. The application and plans will be reviewed to determine which clearances/permits are required, prior to granting the building permit. This is determined by the type of development project involved, the intended use of the structure, the zoning of the project site and the actual location of the structure. The following agencies may be required to provide clearances depending on the aforementioned factors:

- Guam Environmental Protection Agency;
- Department of Land Management;
- Department of Agriculture;
- Public Utility Agency of Guam;
- Guam Power Authority;

- Guam Fire Department;
- Department of Public Health and Social Services;
- Guam Housing and Urban Renewal Authority;
- U.S. Army Corps of Engineers; and
- Contractor's Licensing Board.

Once the required clearances are obtained, the plans go through a plan check by DPW for applicable structural, architectural, mechanical, plumbing, electrical and hydraulic reviews. If the plans are found acceptable, based on these reviews, a building permit is granted.

This process has the same basic weakness as the process for granting a business license, in that there is no written, definitive list describing the required clearances for each type of development project for each set of possible circumstances that affect the need for various clearances. As a result, the determination as to which clearances are required for each applicant's project is left to the individual reviewing the application. In this manner, applicants are likely to receive ambiguous instructions concerning the need for specific clearances, resulting in delays in projects and considerable dissatisfaction on the part of the applicant.

In order to prevent this problem in the future Department of Public Works should specify in writing, the necessary clearances for all likely construction projects, under all of the corresponding variables that would affect which clearances would be required. Any exceptions to these specifications should also be in writing, and current copies of these specifications should be distributed to all pertinent agencies.

**Territorial Planning Commission (TPC)/
Territorial Seashore Protection Commission (TSPC)
and the Subdivision and Development
Review Committee (SDRC)**

The Department of Land Management (DLM) is required to review all applications for building permits for new construction projects. Their review is necessary to ensure that the project meets the following criteria:

- 1) that the location of the project is within the proper zoning
- 2) that it meets all requirements for that zoning, including setback, height, parking, density and usage

- 3) Guam Territorial Seashore Protection Act and Territorial Beach Area Act;
- 4) Subdivision and Development Review Committee;
- 5) Wetlands Regulations; and
- 6) Flood Hazard Area Regulations.

Information was gathered through a series of interviews of pertinent local and federal agencies and private sector individuals and groups, concerned with development of land or who were directly affected by the zoning laws and regulations of Guam. There was also an open hearing to review and evaluate the goal statements and recommendations relative to rewriting the laws and regulations, which further refined the actual revisions. The overall objective of this endeavor was to eliminate inconsistencies, update standards and provide the basis for effective enforcement of the laws and regulations.

The following list is an overview of considerations addressed by revising Zoning, Subdivision and Seashore Protection legislation which was taken from the *Revisions to Guam's Land-Use Laws & Regulations*, Maraman and Taniguchi-Ruth & Associates, for the Bureau of Planning, Government of Guam, 1986:

- 1) The existing Zoning Subdivision and Seashore Laws are amended by parts rather than rewritten as a whole.
- 2) Standards are strengthened with only a minimum of change to present standards. In general, the present yard, height, parking, and other standards are workable. They are tightened to close loopholes and provide for concise interpretation. It is a concern that extensive modification of current standards will create a new assortment of legal-nonconforming buildings and uses.
- 3) The "Purpose" Section of all codes are strengthened. The Territorial Seashore Protection paragraphs are considered the strongest and are used as a format.
- 4) Definitions are augmented. Existing definitions are updated and new definitions are added.
- 5) The Territorial Planning Commission is renamed the "Land Use Commission". No new commission is created. Renaming is to clarify that the

commission is providing zoning determinations while the Central Planning Commission will fulfill its mandate by providing planning guidance.

- 6) A Zoning Administrator position is created. The Zoning Administrator will function as staff to the Commission in lieu of the Territorial Planner. The Territorial Planner will be involved in long-range planning rather than day-to-day zoning administration. (They may be the same individual.)
- 7) SDRC is the responsible authority for review and approval of Subdivisions. The Commission will function primarily as an appeal body for subdivisions.
- 8) Parking "P" and Limited Commercial "LC" Zones are deleted. Neither of these zones presently exists or are being used.
- 9) Central Business "CB" zone is created. This covers the "New Agaña" area as delineated on the zoning map.
- 10) Planned Development "PD" zone application requirements are expanded. Planned Development Zones will become more important as a method to clarify and evaluate large scale, mixed-use or non-typical developments.
- 11) Resort Zone is established as a floating zone. The interim rules and regulations remain in effect except for Tumon Bay which has specific rules and regulations developed by the Tumon Bay Master Plan.
- 12) Territorial Seashore Protection Law and Territorial Beach Act are included with the zoning law. These laws overlap in many areas and have the same general objectives, type of standards, administration and enforcement objectives.
- 13) Conditional Uses are expanded. Uses which are allowable in any zones will be identified and those which are prohibited in any zone without special review are established (quarries, open storage of junk, auto wrecking, slaughter houses and meat processing plants).
- 14) All junk yards will be required to obtain a permit or be discontinued.
- 15) Additional categories of auto parking are included. Present requirements will not be changed. Handicapped parking is required. Parking space area is reduced from 180 SF to 160 SF.

- 16) Nonconforming buildings are qualified by an amortization period. The basis will be Uniform Building Code building types and the effective date will be from the year 1967, the date when the land-use master plan was implemented.
- 17) Sign regulations are further elaborated. More concise definitions, locational requirements and allowances are added to existing and new size criteria.
- 18) Beach Sand Mining will require a permit.
- 19) Community Development Plan/Land Use plans are to be adopted by the Commission. These plans will become the long-range basis for zoning determinations.
- 20) Impact Statements are required for change of agriculture lands and areas of particular concern. Agencies are responsible to locate areas of particular concern, development standards and review impact statements. Areas of particular concern include wetlands, flood hazard, conservation reserve, ground water protection zones and historic districts.
- 21) Agriculture Subdivisions will allow one-acre lots. Water service, fire hydrants, roads and storm water disposal must be available for all Agriculture Subdivisions. Sewers must be available for residential densities.
- 22) Application fees are increased and review time periods are established.
- 23) Expiration periods are established. Variance, conditional use and planned development permits expire after two years.
- 24) Penalties are increased. Enforcement authority will remain with the Department of Public Works Building Official.

These changes to Guam's land-use laws and regulations are essential in order for properly planned development to take place. From time to time it is essential to review these laws and regulations to insure that they remain relevant to changing conditions in the physical, social and economic environment. New businesses are being introduced on an almost daily basis and the development of laws, regulations and procedures must be able to address their impacts, as well as, their needs.

F. Supportive Elements

Manpower/Labor

As of March 1988, employment on Guam grew to a new all time high of 46,930 jobs. Over the prior year the largest increase is shown in the private sector (5%), followed by the Territorial Government (1%). Federal government jobs declined (-1%) over the previous quarter. Private employment gains were primarily in jobs under the Services category (430), Construction (380), Retail Trade (290), Transportation & Public Utility (190) and Finance, Insurance & Real Estates (60). Based on Table 24, private sector employment, which comprised 63% of total employment exceeded public sector employment by 26%, a significant reversal of trends in the composition of Guam's labor force. Until quite recently, public sector employment had accounted for more than half of the civilian labor force. The significance of this positive phenomenon cannot be overstated in that a growing private sector is providing more employment opportunities for those seeking employment.

An overview of Guam's employment by occupation is provided herein. Employment as a percent of the labor force and unemployment rates for major occupational categories are listed in Table 25.

On the basis of this information, employment projections by occupations were prepared by the Guam Occupational Information Coordinating Committee in cooperation with the Bureau of Labor Statistics, Department of Labor and the Department of Commerce covering annual job openings in Guam between 1984 - 1990. A summary of employment projections is listed in Table 27).

In order to meet the needs of an ever-increasing labor force, education and training institutions must meet the challenges of providing the necessary curriculum to ensure job placement in the labor market. The Work Incentive Program (WIN) is a federally funded program administered jointly by the Department of Labor and the Department of Public Health and Social Services. The program is to assist recipients of Aid to Families with Dependent Children (AFDC) in obtaining gainful employment so that they may become self-supporting and, consequently, reduce or eliminate their welfare grants. During FY 1986, 194 persons were placed in unsubsidized employment. By the end of FY 1986, a total of 540 were deleted from the program for reasons such as employment, change of eligibility status under welfare, and exemption from work requirements due to ill-health. All persons receiv-

Table 26**Percentage Breakdown and Unemployment Rate of Guam's
Labor Force by Occupational Category****March 1988**

Occupational Category	Percent of Labor Force	Unemployment Rate
<u>All Occupations</u>	<u>100%</u>	<u>4.5%</u>
Professional, Technical and Managerial	28.2	1.1
Clerical and Sales	26.1	4.3
Service	15.7	4.3
Agricultural	1.5	7.0
Processing	.8	13.4
Machine Trades	4.1	2.6
Benchwork	1.6	3.2
Structural Work	13.1	4.7
Miscellaneous	7.5	2.1
Not Classifiable (see note)	1.4	89.4

Note: Approximately 1.4% of the balance fall under this category. Workers in this category are new workers seeking employment who have not identified a specific occupational category.

Source: Department of Labor, Bureau of Labor Statistics

ing AFDC benefits (unless otherwise exempted for reasons such as health, handicap, home responsibility, advanced age or student status as determined under the AFDC guidelines) are required to register with the Work Incentive Program.

The Department of Labor administers the island's Senior Community Service Employment Program (SCSEP) which employs economically disadvantaged persons 55 years of age or older. Services provided to the participants included job counseling, health examinations, and job placement. During FY 1986, SCSEP had 137 participants working 20 hours weekly in subsidized jobs serving the elderly community and the public in general.

Guam's worker compensation law is patterned after the Federal Longshoreman and Harbor Worker's Compensation Act. Guam's statutes entitle an employee to certain benefits when injured by accident arising out

Table 27

**Average Annual Employment Openings
on Guam by Occupational Title
(Covering the Period of 1984 thru 1990)**

OCCUPATIONAL TITLE	OPENINGS DUE TO GROWTH	OPENINGS DUE TO SEPARATIONS	OPENINGS PER OCCUPATION
Managerial & Administrative Occupations	167	85	252
Professional, Paraprofessional, Technical	302	179	481
Sales and Related Occupations	162	127	289
Clerical and Administrative Support Occupations	315	201	516
Service Occupations	346	189	535
Agriculture, Forestry and Fishing	21	56	77
Production, Operating, Maintenance Occupations	447	207	654

Source: Guam Occupational Coordinating Committee in cooperation with the Department of Labor, Bureau of Labor Statistics, and the Department of Commerce.

of and in the course of employment. Benefits are usually derived through insurance coverages solely at the employer's expense. Recorded accidents in the private sector exceeded 800 while the local government sector totalled slightly over 150. The cost of workman's compensation to the private sector in Guam exceeded \$1,750,000 for FY 1984 while disbursements amounted to no more than \$750,000.

Education/Training

The University of Guam has a wide variety of academic and career-oriented programs being pursued by more than 2,500 students each semester. The primary objective of the University is to develop managerial and technical resources with a high level of competence for the private and public sectors. It has four colleges: the College of Agriculture and Life Sciences, the College of Business and Public Administration, the College of Education, and the College of Arts and Sciences. The College of Business and Public Administration offers technical assistance to businesses. The College of

Agriculture and Life Sciences provides an extension service with the usual community-directed education in agriculture and home economics. The University also has three major research components: the Water and Energy Research Institute, the Micronesian Area Research Center (MARC), and the Marine Laboratory.

Guam Community College was established as a community college by Public Law 14-77, in November 1977 with the primary commitment to provide Guam's public and private organizations with skilled workers. The College was formed from the existing Guam Vocational-Technical High School and the Adult Education Program from the Department of Education, as well as programs previously administered under the Community Career College from the University of Guam, and the Apprenticeship Program from the Department of Labor.

Aside from its academic and occupational training responsibilities, P.L. 14-77 gave the College oversight over a number of state (territorial) functions. The College is the State Agency for Vocational Education, the State Agency for Adult Education, and the State Agency for the General Education Development (GED) Equivalency Diploma.

Today, the Guam Community College offers a number of programs at the high school, college and adult levels. It grants vocational, adult and GED high school diplomas, Technical certificates, Journeyworker Certificates, and Associate Degrees.

The College, through its high school (secondary education) program, provides entry-level skill development through trade (occupational) clusters. In addition, the College, through its postsecondary program, provides in-depth technical education in various technical and para-professional occupations.

The College's apprenticeship and training programs are distinctly trade-specific and addresses the acquisition of craftsman skills. The Adult Education Program provides adult, career and continuing education services on a credit and non-credit basis.

Two private schools, the International Business College (IBC), and the Pacific Institute for Human Resources Development, provide practical business training. They also offer assistance to graduates in locating career opportunities in private businesses and government agencies.

The International Business College of Guam is accredited by the Accrediting Commission of the Association of Independent Colleges and Schools. The programs offered by IBC include accounting, secretarial, clerical, English as a second language, and airline-hotel. The programs offered by the Pacific Institute for Human Resources Development include secretarial, accounting, airline-hotel, tourism, para-legal, computer science, and cosmetology.

Government Agencies

Consolidated JTPA Council

The Consolidated Job Training Partnership Act (JTPA) Council was formed in January 1987 combining the Private Industry Council and the Guam Job Training Coordinating Council to better serve as an advisory committee to the Agency for Human Resources Development. Membership consists of 30% representation each from the private sector, government agencies, and community based organizations, with the remaining 10% from the general public. The Council sets up training programs through private training facilities directed towards the economically disadvantaged and toward attracting greater private sector participation in all aspects of local employment and training activities. The Council was formed under the JTPA Act under Federal Public Law 97-300. The Council also supports a training program for those who aspire to venture into small business entrepreneurship.

Agency for Human Resources Development (AHRD)

The Agency for Human Resources Development (AHRD) plans and coordinates all manpower needs, assessments, and employment programs, and administers programs funded under the provision of the Job Training Partnership Act (JTPA), Public Law 97-300, which came into effect on October 1, 1983. Basically, AHRD provides services to residents of Guam, the unemployed, and disadvantaged with temporary subsidized employment and training through work experience, on-the-job training, public service employment and other job related and supportive services. The skills learned under the JTPA program are geared to meet employer requirements and assist trainees in career development.

The general occupational areas for which the courses and other skills training are provided currently include, but are not limited to:

- Construction Trades
- Clerical Trades

- Professional and Technical Trades
- Service Trades
- Machines Trades
- Sales Trades
- Other occupational areas approved by the JTPA Council.

The first step in successfully delivering services to the economy is to identify the "growth" industries and occupations on island. This will be achieved through the implementation of continuous activities linking local employers with the employment and training system. Job development, marketing and special services to employers are categories of this activity type. By implementing these employer/labor market services, the AHRD can maintain a resource of available jobs for its trained workers and subsequently design training programs to meet employer requirements for demand occupations by specific industry.

The Agency for Human Resources Development's Operational Division provides job bank information to the Outreach/Recruitment and JTPA eligibility screening unit. Designated Outreach/Recruitment staff then facilitates the pooling of potential JTPA program applicants. All potential program participants must be screened under JTPA eligibility requirements, and then JTPA services and/or training are identified for the individual. Upon completion of the JTPA training and/or service components, the participant will be qualified to fill the position required from the Job Bank.

The following are activities that are sponsored by JTPA and administered by AHRD.

1) Employer/Labor Market Services

Title funds may be used to administer the following services which will link local employers with the employment and training system.

- a. Job Development - This service will focus on matching qualified participants with available jobs.
- b. Marketing - Advertising campaigns, personal contact efforts and media coverage may be funded to help local employers understand what JTPA has to offer them.
- c. Special Services - Special services to employers, but not limited to the following, may be funded:

- i. assistance with job task analysis, development or affirmative action plans, child care studies, etc.
- ii. training to assist economic development agencies enhance local development; assistance to economic development agencies by linking economic development services with employment and training services.
- iii. payment for industrial surveys or industrial attraction materials, and other services approved by PIC

2) Classroom Training

Classroom activities other than occupational training may be implemented in the Service Delivery Area (SDA - Territory of Guam) to enhance the employability of the participant. Specific programs include, but are not limited to:

- a. Pre-Employment Training
- b. General Education Development (GED) Preparation
- c. Basic Remedial Training

3) On-the-Job Training (OJT)

The purpose of the OJT is to train a participant in an actual work situation in which he/she will develop specific occupational skills or obtain specialized skills required by an individual employer.

4) Work Experience

Work experience is a short term or part-time work assignment with an employing agency. It is prohibited in the private-for-profit sector, and is designed to enhance the employability of individuals through the development of good work skills.

5) Exemplary Youth Programs

Education for Employment Program - Eligibility for this program is restricted to youths who have not attained a high school diploma or who have educational deficiencies despite the attainment of a diploma.

6) Participant Services

Participant services are payments made to participants or service providers for specific services which enable participants to take part in JTPA training activities. They include the following:

- a. Needs-Based Payments - These are made directly to participants to provide for general subsistence needs and additional expenses incurred from participation in training activities.
- b. Supportive Services - These are services that are necessary for the participation in a program, but not actually used as a part of the training activities - i.e., Childcare, Healthcare, Counseling, Residential/Meals Support, etc.

Guam Department of Labor

Guam Department of Labor is a department directly funded by the Government of Guam, but they are responsible for administering federally funded programs, such as the Guam Employment Service (GES), and for providing logistics and financial support for the Guam Occupational Information Coordinating Committee (GOICC).

1) Guam Employment Service

Guam Employment Service (GES), a 100% Federally funded program, operates through grants from the Employment and Training Administration, U.S. Department of Labor.

Guam Employment Service contributed to the placement of youths in the 1987 Summer Youth Employment and Training Program. The division was vested the responsibility of registering, interviewing, and referring all youths interested in summer jobs to either Agency for Human Resources Development (AHRD) or Department of Youth Affairs (DYA) accordingly.

During the registration period, 2,561 youths were registered of which 1,278 were determined eligible for the AHRD/JTPA Program. The remaining 1,283 who was deemed not economically disadvantaged were referred to DYA.

GES also sponsors on-going programs such as the Work Incentive Program (WIN) and Senior Community Service Employment Program (SCSEP) mentioned in the previous Manpower/Labor section.

2) Guam Occupational Information Coordinating Committee (GOICC)

GOICC is a committee composed of representatives from DOE, GCC, DVR, GEDA, AHRD, and DOL. GOICC is funded federally and is subject to act according to federal requirements. GOICC publishes survey data information on future labor market conditions which enables the Service Providers, such as Guam Community College (GCC) and University of Guam (UOG) to identify programs that will meet the demand of certain occupations. The survey information can also be used by the planners of AHRD and PIC to determine the occupations most suitable for their populations. Occupational Demand analysis contained in GOICC's publication, *Guam Occupational Information System Employment Projections by Industry and Occupation (1984-1990)*, is particularly important to job seekers, counselors and students.

GOICC also has access to the Career Information Delivery System (CIDS), which lists job options by titles, and may prove to be a useful counseling tool that can be used on Guam. Presently CIDS is not being utilized extensively in the educational sector for two reasons. The first is the lack of a computer system that is compatible with the software. The second reason is that the system is mostly based on the Stateside data, and the information does not apply to Guam. GOICC has been attempting to adjust the CIDS to fit Guam's employment needs, but their effort has not materialized into an effective system due to lack of resources and funding for the project.

The most recent development in the activities of GOICC includes coordinating available career information systems such as the CIDS into a centralized computer network. The support will come from the NETWORK program as proposed by the Welfare Reform Bill reported by the House Ways and Means Committee in H.R.1720. The career and job information will assist the students to prepare themselves for the right jobs through DOE's counselors, as well as assisting education/placement agencies to have access to necessary decision making data.

Department of Youth Affairs

DYA provides employment opportunities to financially disadvantaged students through programs such as the Summer Youth Employment Program. However, DYA is locally funded, and their summer programs are separate from the Summer Youth Employment sponsored by AHRD. It may be appropriate for the AHRD to coordinate with DYA in order to improve the youth employment programs.

Department of Vocational Rehabilitation (DVR)

As described by the Department of Vocational Rehabilitation, "DVR training programs are designed to train physically and mentally disabled adults to become employable in the economy. DVR is 80/20% Federal/Local funded and must plan these programs according to the laws and regulations of the U.S. Department of Education. Accordingly, DVR coordinates its programs with AHRD and other similar benefiting programs."

Department of Education (DOE)

DOE's labor related services are strictly responsible for coordinating academic criteria - i.e., changes in curriculum and instruction methods. DOE provides counseling within the school system, but is limited to academic counseling. Although DOE does not presently provide employment/place-ment counseling, the department does recognize a need to counsel students in their career and employment choices.

In the secondary level, Career Awareness Week is set aside in the Spring Semester, whereby counselors and teachers bring speakers to the students to orient them with various career fields available to them.

There is also an experimental Basic Practical Arts Program at the middle school level which exposes the students to some hands-on instruction in industrial arts, home economics, career education and other areas teachers would have expertise in. There is a similar program in the high school, however, there is no continuity with the program. This is definitely an area which needs to be further explored.

» Constraints

Guam's education and training infrastructure is one of the most important supporting elements for economic development. It is essential that education and training programs are further developed to fuel the labor needs of various industries. Guam's economic industries and Guam's labor pool must be connected by a carefully constructed network of information systems and actual training. This must be overseen by sound counseling that addresses the needs and interests of the labor pool.

Currently, several major bottlenecks exist in the education/training network which hamper the system from effectively meeting the employment opportunities that exist in Guam's economy. The first constraint is the lack of interested students to utilize the existing training programs. Specifically, the

hotel related education courses offered by the existing institutions are not being filled to their capacity. The second constraint, perhaps the cause of the first problem, is that there lacks a direct link between training program development and actual job placement, especially in the area of upper management level employment. There is a need to define and specify which areas of the educational system can be more directly linked, and more responsive, to the actual needs of the job market, and at the same time, enhance career and employment counseling systems to better coordinate the flow of information between employers training institutions in order that students become more accurately aware of what types of skills and preparation are needed for upward mobility in each potential job market. Currently, the OEDP subcommittee on education and training, which consists of representatives from AHRD, PIC, DOE, DOL, and Department of Commerce, is constructing a survey of the private sector businesses to assess the needs of the potential employers.

The third constraint in the education system is the lack of career choices information available for students. The existing information systems such as the Career Information Delivery System (CIDS) is not being utilized to its fullest potential. It is important in the longrun that students choose a career that best meets with their interests and strong points in order for the educational system to succeed in creating an efficient workforce.

The fourth potential constraint, especially in the near future is the lack of training for the skill needs of the service sectors. The skills that are now becoming most useful in Guam's expanding information based, service oriented workplace are the thinking, reasoning and communicating skills with much more emphasis in flexible training that will prepare the students to become more adaptable to the ever changing environment. Aside from the programs available at University of Guam, other existing institutions tend to concentrate mostly on apprenticeship, or vocational type programs that are limited in scope. In order to prepare Guam's labor force for the changing skill needs of the economy, the institutions as well as the educational agencies must seriously plan together to bring about changes in the existing programs.

Finally, through the OEDP subcommittee meetings, it became evident that there was a lack of coordination between governmental agencies in their educational planning process and implementation strategies. For example, each of the represented departments did not have a clear view of the operations of the other agencies regarding available information systems, educational and placement programs, and available federal funds. Most importantly, none of the agencies had a clear understanding of how they can

complement each other to promote efficiency in the educational system. There is a need to establish a coordinating committee to oversee the different operations of the various educational agencies and departments to bring about a streamlined network of training, counseling and placement programs which enhance and complement each other. The following is a list of the constraints mentioned above and possible ways of addressing them.

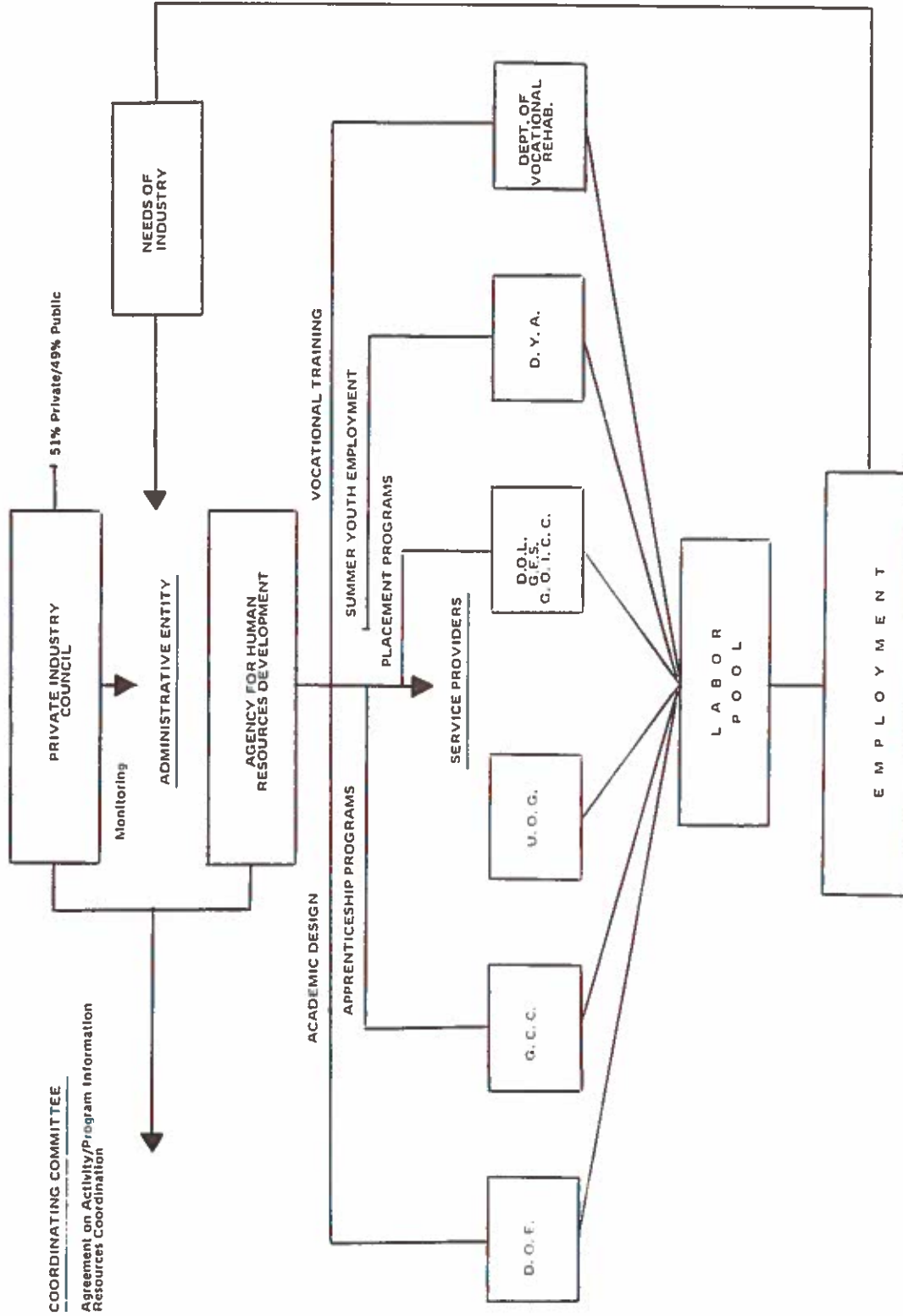
<u>Constraints</u>	<u>Education/Training Subcommittee Recommendations</u>
1) Lack of supply of students for training in boom sectors.	Coordinate student interests, specific needs of the business sectors through counseling, and business surveys.
2) Lack of direct link between training and employment in top positions.	Assess the skill needs of industry for upward mobility. Obtain information on what skills are lacking in Guam's trainees through business surveys, and regular periodic direct contact with specific businesses and representative groups.
3) Lack of available career choice information and needed skills for specific industries.	Development of formal information systems for and needed skills for specific industries students such as the CIDS/OIC.
4) Lack of service economy oriented training.	Incorporate needed skills such as reasoning, writing, communicating and research skills in addition to specific trade-oriented training programs.
5) Lack of coordination between the education/placement-related agencies.	Establish an educational coordinating committee to oversee the entire educational/training programs and coordinate the individual functions into a coherent process (i.e. address the above constraints and develop a plan to guide the existing education, placement, and counseling programs as well as information regarding student interests, occupation, and skill needs of private businesses).

Presently, there does not exist a coordinating body within the education/placement system which oversees the various functions and programs of the

Figure 21

EDUCATIONAL SYSTEM COORDINATION/LINKAGES

J T P A



above mentioned government agencies. Without a coordinating mechanism, problems which exist in the system are difficult to identify, and when unidentified, duplication of efforts as well as lack of efforts in solving the problems are some examples of the inefficiencies which result among the agencies. Figure 21 is a recommended outline of the Educational System Coordination/Linkages.

In the statewide *Job Training Plan for the Territory of Guam 1986-1988*, submitted by the Guam Private Industry Council (PIC) and the Agency for Human Resources Development (AHRD), there is an attempt to deal with this coordination problem that exists in the system.

The following are the methods of complying with the Coordination Criteria contained in the Governor's Coordination and Special Services Plan.

- a. An agreement must be written between the Agency for Human Resources Development (AHRD), designated Administrative Entity for the Job Training Partnership Act of 1982, by the Guam Private Industry Council and the providers that have a direct interest in employment and training services for the disadvantaged, such as: The Department of Education, the Guam Community College, the University of Guam, the Department of Labor, the Department of Youth Affairs, the Department of Vocational Rehabilitation, and other related agencies. The agreement must stipulate which services are to be provided by each agency and the SDA plan must also show that its activities are not duplicating existing services in other agencies.
- b. Contracts - Contracts must be developed with the Service Providers on a performance basis and shall have the duration of training, the nature of training plan, competencies to be achieved and the orientation to be provided. The potential service providers should enter into contracts to provide services not just according to their own mission but according to jointly agreed upon plans and it should be signed between the service providers and the Agency for Human Resources Development, Bureau of Budget & Management Research, Attorney General and the Governor of Guam.
- c. Joint Program Planning - Joint Program Planning by the PIC-SDA should be conducted to achieve effective coordination and activities. A survey on all current employment and training services, areas of service gaps, or unmet client needs should be conducted and compiled for the purpose of identifying the needs throughout the Territory, and assess the extent to which employment and training, rehabilitation services, public

assistance, and economic development represent a consistent, integrated, and coordinated approach to meeting such needs. The Agency for Human Resources Development (AHRD) and Guam Economic Development Authority (GEDA) have a written cooperative agreement to facilitate coordination in the form of training availability for JTPA clients.

- d. Exchanging Program Information - Information system should be shared among the participating agencies regarding the services provided to each client, the client's progress through the employment and training process, and problems the client might encounter in acquiring services. There is a written agreement between the Agency for Human Resources Development (AHRD) and Department of Labor (DOL) to integrate and coordinate programs that provide job training and placement services, such as the Guam Employment Service Job Development/Placement Program, Work Incentive Program (WIN), and Senior Community Service Employment Program (SCSEP), as well as other useful resources such as the Career Information Delivery System (CIDS).

Institutional Capacity

Institutional capacity, in the context we are using the term, refers to the ability of government or private institutions to plan for and manage the economy. Presently, there are several government agencies on Guam with statutory responsibilities relating to economic development and planning. Among these are: 1) Guam Bureau of Planning; 2) Guam Department of Commerce; 3) Guam Economic Development Authority; and 4) the Guam Department of Agriculture.

<u>Agency</u>	<u>Duties/Responsibilities</u>
Bureau of Planning	§62019(c) to conduct, or cause to be conducted, investigation, studies, surveys, research and analysis relating to...economic development of the community...(c) to prepare, or cause to be prepared... a comprehensive development plan which shall provide long range guidance for the economic development of the territory...*

* The economic development planning activities of the Bureau of Planning were transferred to the Department of Commerce in March 1979. The Bureau of Planning has retained its role of reviewing all economic plans to insure overall consistency.

Department of Commerce

§47060(a) to investigate, study and undertake ways and means of promoting and encouraging the prosperous development and protection of the legitimate interest and welfare of Guam business, industry and commerce...(f) to carry out such duties as may be assigned.**

** In 1979, P.L. 15-70, assigned the Department of Commerce to prepare a Ten-Year Tourism Master Plan. The organization of the planning process is presented in Figure 5.

Guam Economic Development

§53552(b) the Corporation is authorized to Authority control and implement that part of the basic plan for the economic development of Guam, assigned to it by the Governor of Guam. The Corporation shall also be an active participant in the development of said basic plan.

Agriculture

§12026 the Department shall protect and promote the agricultural resources and economy of the Territory of Guam.

Small Business Administration

The U.S. Small Business Administration is a Administration small, independent federal agency, created by Congress in 1953 to assist, counsel, and champion the millions of American small businesses which are the backbone of this country's competitive free-enterprise economy.

The mission of SBA, is to help people get in to business and to stay in business. To do this, SBA acts as an advocate for small business; at the direction of Congress, the Agency espouses the cause of small business, explains small business's role and contributions to our society and economy, and advocates programs and policies that will help small business. SBA performs this advocacy role in close coordination with other federal agencies, with Congress, and with financial, educational, profes-

sional and trade institutions and associations.

In the quasi-public arena, there is the Overall Economic Development Plan Committee and the Guam Growth Council. The Guam Chamber of Commerce represents the most active private entity relating to economic development on Guam.

Guam Growth Council

The Guam Growth Council is a group that consists of 5 private sector representatives along with 2 government representatives (Department of Commerce, Guam Economic Development Authority).

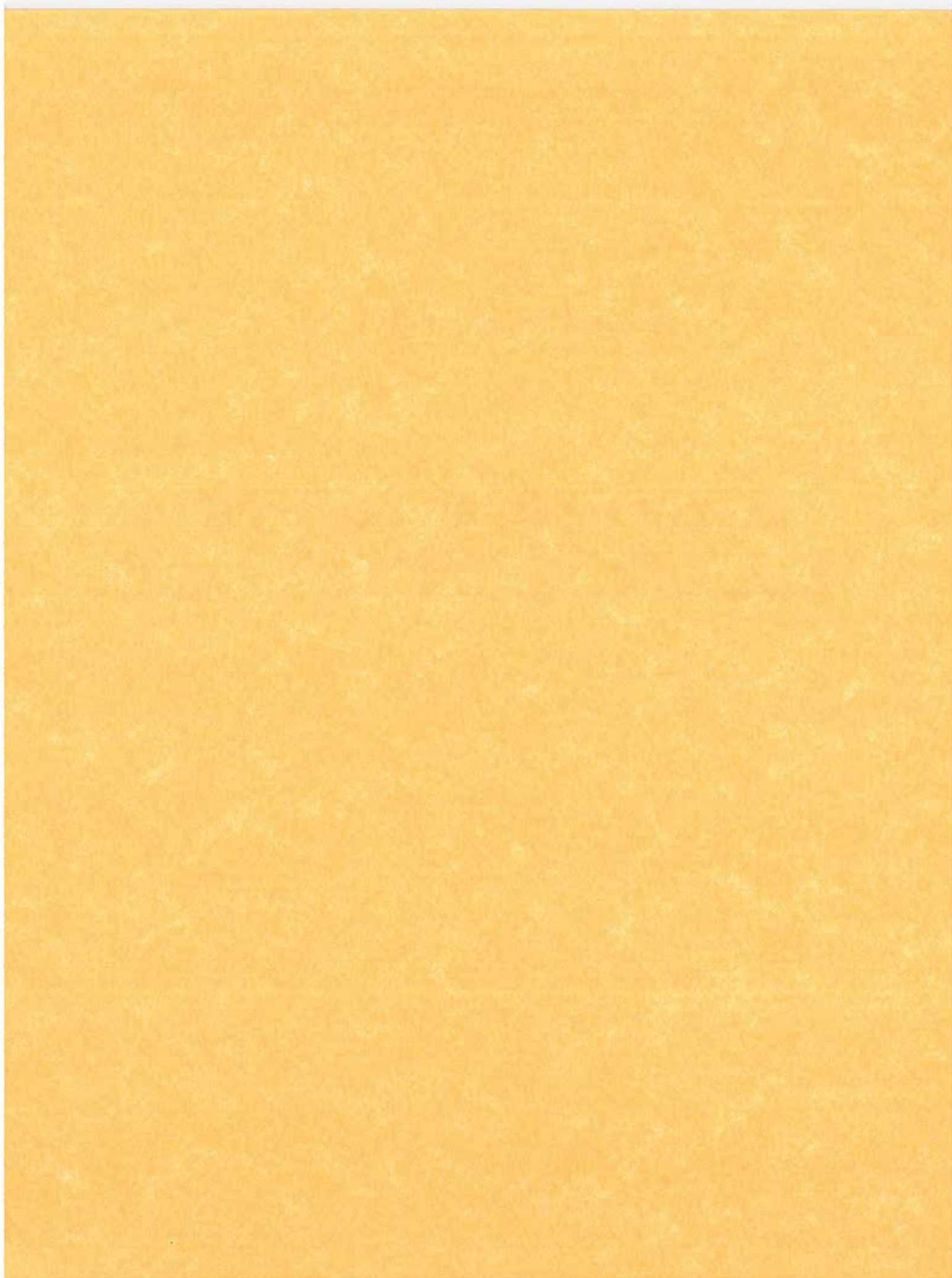
The purpose as outlined in by-laws and articles of Association stipulates that Guam Growth Council develop the following: Human Resources; Stimulation of tourism/recreation; Natural Resources; Attract new business and industry; Stimulate development of existing business and industry; Seek increased Federal technical and financial participation; Act as a referral service; and promote economic activity.

Guam Chamber of Commerce

Guam Chamber of Commerce is a private non-profit organization composed of local business sectors. Their primary goal is to attract new business and industry, stimulate existing businesses and improve the general economic conditions on Guam. The Chamber works closely with the SBA in sponsoring business seminars and actively initiates new measures to the legislation concerning business and commerce related issues, such as tax systems, privatization, etc.

S e c t i o n T h r e e

DEVELOPMENT OF LEAD SECTORS OF THE ECONOMY

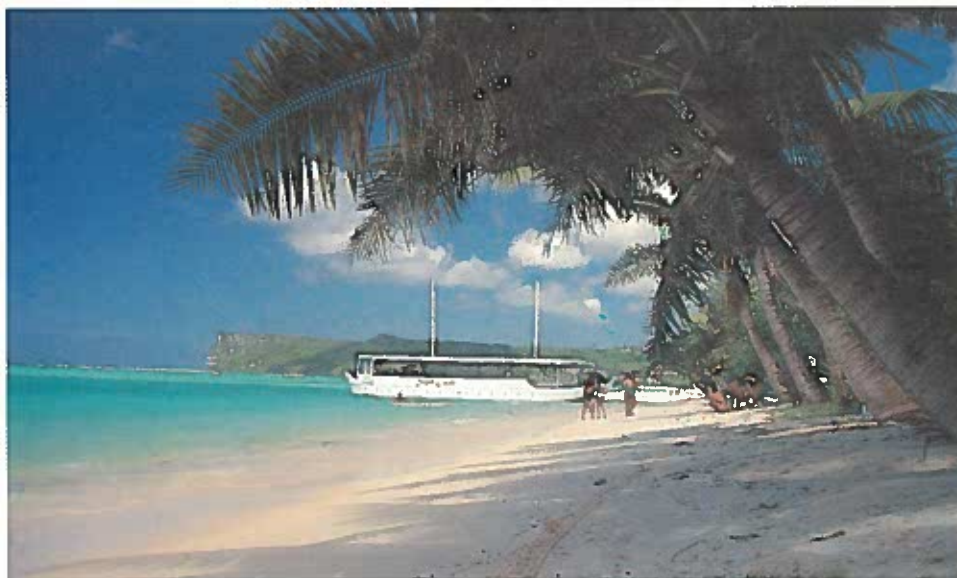


VIII.

TOURISM

A. HISTORY AND CURRENT STATUS

Tourism is Guam's largest private sector industry and is second only to federal expenditures in generating revenue for the island. The most recent tourism economic impact study, conducted by Stanford Research Institute International for the Guam Visitors Bureau (GVB), entitled *Economic Benefits from Tourism to Guam*, July 1986, estimated that in 1985 tourism contributed some \$250 million to the local economy. It also estimated that tourism produced approximately 5,510 jobs directly and an additional 7,751



Guam's pristine beaches and rich marine environment are its greatest natural assets. Swimming, fishing and water sports activities have been rated by tourists as some of the most enjoyable of all activities they participated in during their visit.

jobs were produced indirectly or were induced for a total of 13,261 jobs. Indirect jobs include, jobs with companies that provide services to the visitor industry, and induced employment consists of jobs resulting from the spending of earnings by the direct and indirect employees of the visitor industry. The study also stated that total payroll generated from the visitor industry from direct, indirect and induced employment amounted to an estimated \$153 million, or about one-third of Guam's total payroll for 1985.

Table 28

GUAM'S HOTEL ROOM INVENTORY, EXPANSIONS AND ADDITIONS

Location	Type	Name of Hotel/Developer	# of Rooms	# of New Rooms	Date of Completion
Tumon	H	Hilton International Guam Hotel	487	150	N/A
Tumon	H	Guam Beach Hotel	30	N/A	N/A
Tumon	H	Pacific Islands Club	272	200	1990
Tumon	H	Pacific Star Hotel	436	N/A	N/A
Tumon	H	Guam Dai Ichi Hotel	333	N/A	N/A
Tumon	H	Tropicana Hotel	192	N/A	N/A
Tumon	H	Guam Suehiro Hotel	38	?	?
Tumon	H	Fujita Guam Tumon Beach Hotel	283	167	?
Tumon	H	Terraza Hotel	20	N/A	N/A
Tumon	H	Guam Reef Hotel	295	172	?
Tumon	H	Guam Hotel Okura	224	112	?
Tumon	H	Guam Plaza Hotel	313	140	?
Tumon	H	Hotel Joinus	36	N/A	N/A
Tumon	H	Japan Pacific Dev. Hotel	—	140	?
Tumon	A/C	Sun Route Hotel	70	63	?
*Tumon	H	Hotel Leo Palace	---	382	?
Tumon	H	Hotel Nikko Guam	---	500	1993
Tumon	H	World Bell Hotel	---	309	1992
Dededo	HS	Island Garden Guest House	3	N/A	N/A
Tumon	H	Tumon Holiday Plaza	---	113	1989
Upper Tumon	BH	Polynesian Hotel	13	8	?
*Upper Tumon	A/C	Guam Horizon Hotel	104	N/A	N/A
Upper Tumon	M	Pagoda Hotel	41	N/A	N/A
Upper Tumon	H	United Overseas Inv. Hotel	---	242	?
Harmon	YH	Harmon Plaza Apts./Hotel	50	N/A	N/A
Dededo	H	Goodwind Dev. Corp.	---	450	?
Tamuning	H	Palace Hotel	---	405	1990
Tamuning	H	Guam Int'l. Trade Center Hotel	84	N/A	N/A
Tamuning	M	Executive Motel	13	N/A	N/A
*Tamuning	A/C	Mai Ana Hotel	77	N/A	N/A
*Tamuning	A/C	Guam Towers	3	N/A	N/A
Tamuning	M	Central Studio Motel	7	N/A	N/A
Tamuning	M	Hafa Adai Motel	14	N/A	N/A
Maina	A/C	Micronesian Hotel	60	N/A	N/A
*Toto	A/C	Kina Court Hotel/Motel	30	N/A	N/A
Agana	BH	Hotel Marina	50	N/A	N/A
Agana	BH	Plumeria Garden Hotel	78	N/A	N/A
Agana	BH	Cliff Hotel	40	N/A	N/A
Anigua	M	Island Motel	15	N/A	N/A
*Agat	M	Inn-on-the-Bay	---	70	1989
Merizo	H	Cocos Island Resort Hotel	128	N/A	N/A
Inarajan	H	Inarajan Shores	5	N/A	N/A
TOTAL			3,844	3,423	

Source: Department of Commerce, Government of Guam.

Notes: H = Hotel
 BH = Business Hotel
 M = Motel
 HS = Home Stay
 YH = Youth Hotel
 A/ = Apartment, Condominium or Studio
 N/A = Not Applicable
 ? = Expansion is planned but details are unavailable.
 * = Primarily caters to military personnel

The survey methodology for the above study consisted of reviews of existing studies, special data tabulations provided by the Departments of Labor and Revenue and Taxation, personal interviews and a mail survey of representatives from the public and private sectors. These figures should be viewed with some degree of caution, as the study qualifies its results with numerous estimations in the determination of employment figures, revenue generated figures and income figures. In terms of revenue generated from tourism, estimates were arrived at in an indeterminate manner utilizing all of the aforementioned methodologies. Furthermore, the report does not provide the size of the population surveyed, a specific description of what the population consisted of and the response rate obtained by the survey for each question.

An expenditure survey of Japanese visitors was conducted in July through August of 1986 by Merrill and Associates as a pilot project which estimated that the median level of expenditures per visitor was \$771.00. This figure was then multiplied by the total number of Japanese visitors arriving in Guam in 1985 for total gross receipts of approximately \$232 million. This amount is somewhat inflated because 66.5% of respondents surveyed noted that they shared the spending money with one or more persons. Of these respondents, we do not know how many reported expenditures for the group, or how many reported for just themselves. In addition, visitor arrival figures may include an unknown amount of double counting of those tourists who return from day tours to Saipan, Tinian and Rota.

Until recently, with the exception of the Cocos Island Resort Hotel located on Cocos Island off the southern coast of Guam, the majority of Guam's primary hotels catering to tourists have been located in the Tumon Bay area (see Table 28). They represent 3,029 rooms or 79% of Guam's total hotel/motel room inventory. Out of the fifteen hotels in Tumon, ten have 100 or more rooms, with the Hilton International Guam Hotel being the largest at 487 rooms and the Guam Beach Hotel being the smallest with 30 rooms. The remaining inventory of 815 rooms are located primarily in Upper Tumon, Tamuning and Agana, and is made up of twenty hotels/motels ranging in size from 3 to 128 rooms. Between 1983 and 1987, approximately eight hotel/motels have sprung up outside of the Tumon Bay area to serve the military, resident and business markets. Furthering this trend of growth outside of Tumon Bay are the following projects: a 405-room Palace Hotel, to be located at Alupang Point in Tamuning; a 242-room hotel, to be located in upper Tumon; a 450-room hotel, to be located next to the Micronesia Mall in Dededo; and the 78-room Inn-on-the-Bay Hotel, which will be constructed in Agat by mid-1989. The first three hotels will serve the tourist market while the Inn-on-the-Bay Hotel will be designed for military

personnel and for visiting friends and relatives of Guam's residents. This movement of hotels and other tourism-related facilities away from Tumon Bay will be encouraged in the proposed Southern Development Master Plan and in the Visitor Industry Master Plan. However, both plans will give careful consideration to the impacts of development in other parts of the island, particularly in the southern coastal villages of Guam, to minimize possible negative social, cultural and environmental impacts.



Cocos Island, located two miles off Guam's southern coastline on the Merizo lagoon, features a full service hotel with resort and day tour amenities.

Visitor arrivals for 1987 totalled 483,954, representing a 18.9% increase over the same period in 1986. This percentage increase more than doubled the increase experienced in 1986, which had previously been the highest increase since 1981 (See Table 29). However, it should be noted that an unknown degree of double counting takes place in the arrival figures. This is caused by visitors leaving Guam for day trips to Saipan, Tinian and Rota and being counted a second time on their return to Guam if they complete another questionnaire attached to the customs declaration form.

Japan, Guam's number one market, provided 85.3% of all visitors, followed by the U.S. Mainland, which provided 6.4% of all visitors to the island during 1987. Japan, Guam's primary visitor market, produced most of the 1987 increase with an additional 80,320 visitors representing a 24.2% increase from 1986. Most of that increase was seen in visitors from Kanto prefecture which had an additional 80,404 visitors or a 44.7% increase from the previous

Table 29**PERCENT CHANGE IN ANNUAL VISITOR ARRIVALS TO GUAM
1981 - 1987**

Year	Visitor Arrivals	% Change
1981	321,766	7.0
1982	326,389	1.4
1983	350,540	7.4
1984	368,665	5.2
1985	378,146	2.6
1986	407,070	7.6
1987	483,954	18.9

Source: Guam Visitors Bureau

year. Guam's share of Japan's overseas travellers in 1987 amounted to approximately 6.0% of the total estimated outbound figure of 6,825,000. Other important increases, while relatively small in number when compared to the increase in arrivals from Japan, included a 49% increase in arrivals from Korea for a total of 1,247 visitors; a 42% increase from Europe for 1,491 visitors and a 10% increase from the U.S. for a total of 31,161 visitors.

These increases, particularly the increase in Japan arrivals, can be attributed to several important factors. These factors include: 1) the substantial appreciation in the yen against the U.S. dollar; 2) an increase in available hotel rooms; 3) an increase in flights between Guam and Japan; and 4) effective marketing efforts by the private sector tourism businesses and the Guam Visitors Bureau (GVB). Other indirect factors which contribute to Guam's ability to attract more visitors include the upgrading and addition of new tourism attractions and facilities.

The first and primary factor directly contributing to Guam's increase in visitor arrivals was the substantial appreciation of the yen against the U.S. dollar. According to the Bank of Hawaii, the Japanese yen rate went from a high of 161 yen to the dollar on February 13, 1987, to a low of 132 yen to the dollar on December 30, 1987, amounting to an 18.0% increase. As a result, overseas travel became affordable to an increasing number of potential Japanese tourists, expanding Guam's most important market for visitors.

The second factor contributing to the increase in visitor arrivals was the expansion of existing hotel facilities and the anticipated construction of new hotels. During the past five years occupancy rates have been consistently high (see Table 30), making it more difficult to bring in increasing numbers of visitors. As a result, during this period, tour operators in Japan began to level off their promotions and sales of Guam as they could no longer be certain of guaranteeing clients' accommodations during peak seasons. However, in the last two years it became apparent that there would be additional rooms being added through existing hotel expansions and through the addition of new hotels resulting in an increase in marketing of Guam packages in Japan by the tour operators and hotels. The expansions and new additions included: the newest hotel to Guam, the 436-room luxury Pacific Star Hotel;



By the year 1991, Guam's hotel room inventory is expected to increase substantially, with over 3,500 additional rooms currently proposed or planned for construction.

the 70-unit Sun Route Hotel, also located in Tumon, complete with 2 bedrooms, a living-room, dining-room, kitchen and bathroom; the completion of a 130-room addition at the Dai Ichi Hotel and the 194-room addition at the Guam Plaza Hotel increased the hotel room inventory by 830 rooms. Furthermore, hotels with plans for expansion in the near future include the Pacific Islands Club with 200 new rooms planned by 1990, the Guam Reef Hotel with a 172-room addition, the Fujita Guam Tumon Beach Hotel with a 167-room addition, the Guam Hotel Okura with a tentative 112-room expansion, the Guam Plaza Hotel with a 140-room addition and the Sun Route Hotel with a 63-unit addition.

Table 30**MONTHLY HOTEL OCCUPANCY RATES
1983 - 1987**

Month	1983	1984	1985	1986	1987
January	83	85	79	74	93
February	101	94	94	97	99
March	100	94	90	94	97
April	74	82	77	87	78
May	73	73	73	76	78
June	89	84	86	97	94
July	80	86	78	91	105
August	92	90	86	98	97
September	105	93	91	93	92
October	82	75	73	74	61
November	85	80	80	83	68
December	81	73	74	77	71
AVERAGE RATE	87	84	82	87	86

Source: Guam Economic Development Authority, Guam Hotel and Restaurant Association

Future hotel projects include: the Tumon Holiday Plaza, a shopping center and 130-room hotel, which expects to have a December 1988 opening; the Palace Hotel, a \$65 million 405-room resort hotel to be located at Alupang Point in Tamuning; the Hotel Leo Palace with 382 rooms in Tumon; the Japan Airlines hotel division's plans for a 500-room Nikko Hotel on Gun Beach; the Goodwind Development Corporation's plans for a 450-room hotel in Dededo; a 140-room hotel in Tumon built by Japan Pacific Development; and a 242-room in upper Tumon built by United Overseas Investment, Inc.

The third factor was the introduction of four flights on the Tokyo-Guam route in March 1986 by All Nippon Airways (ANA), Japan's largest domestic carrier. These flights brought ANA into the realm of international operations for the first time. ANA then went on to add two additional flights per week in October of 1986, increasing the number of available seats on the Tokyo-Guam route by a total of 1,890 seats per week (See Transportation

Section for details on new air service to/from Guam). Continental Air Micronesia also added a daily flight to Fukuoka, Japan on June 1, 1987, providing 819 seats per week on this route and a twice weekly flight to Okinawa with 234 seats a week. The introduction of new service resulted in a more aggressive marketing, advertising and sales push for Japanese visitors to come to Guam on ANA and Continental.

The fourth factor, to bring in additional visitors from Guam's largest markets, was the marketing, advertising and promotion activities carried out by the hotels, airlines and tour companies, often in cooperation with the Guam Visitors Bureau (GVB). GVB focused its marketing strategy on Guam as the "Gateway to Micronesia" and utilized the theme of "Magnificent Micronesia" in its campaign.

In FY 1987, GVB budgeted approximately 43% of its total operating budget for the Japanese market, or \$988,078.00, for a comprehensive marketing plan for Japan, its most important market. However, with the appreciation of the yen, actual purchasing power decreased by approximately 26%. Even with this decrease, GVB managed to cover the cost of consumer and travel-trade advertising, off-season marketing, city promotions, travel-agent seminars, the development of high-caliber, publicity-generating events on Guam, as well as to retain the services of the Bureau's advertising agency in Japan, Meitsu, Bozell, Jacobs, Kenyon and Eckhardt, Inc. GVB utilized magazines and television as the primary advertising media for this market and tied in with major public events in Japan, such as city festivals, TV and radio promotions and sports coverage, thus gaining maximum exposure for Guam at minimal cost. Local events sponsored in part by GVB which gained media coverage in Japan included the Japan-Guam International Yacht Race, the Guam Triathlon Cup, the Yomiuri Giants Spring Training, the baseball Guam Open Tournament, the Trans America Ultra Quiz Show, the Cocos Cup International Boardsailing Competition, the Japan Airlines Guam Marathon, and the Salem Smokin' Wheels offroad races. GVB's activities in the Japan market are implemented with the assistance of the Bureau's branch office in Tokyo.

GVB's promotional efforts in the North America market day FY'87 were supplemented by their marketing representative, Trip-n-Tour of Micronesia, which represented GVB at major travel-trade shows, at conferences and on television travel programs direct mailings to travel agents and information services. Activities directed at this market included television, newspaper, radio and magazine coverage focusing on Guam; free trips to Guam made available as prizes on TV game shows; and participation in travel trade shows.

In other markets GVB also utilized the services of marketing representatives.

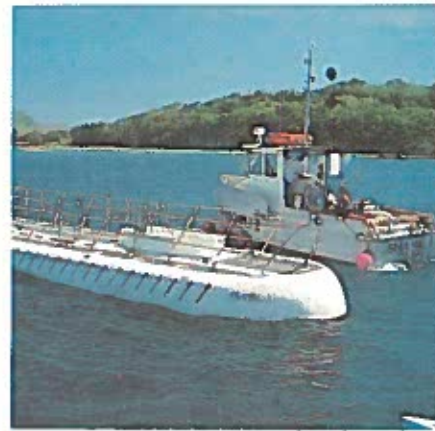
In the European market, GVB's marketing representative Dr. Heinz - Dietrich Duedder promoted Guam through his participation in seminars and trade shows, in addition to the media campaign conducted by GVB through major consumer and trade magazines and a popular TV game show. Also, in the Asia/Pacific area GVB's Taiwan marketing representative provided information, representation and public relations services for this country on Guam's behalf. Korea, a new potential market for Guam, received particular marketing efforts in 1987 with GVB's efforts directed at participation in travel trade and consumer events and magazine and newspaper coverage of Guam. GVB's budget for marketing and advertising in all of these areas outside of Japan came to \$305,786.00 in FY 1987.

In April 1988, GVB completed an intensive solicitation and proposal review process and contracted new representation services in Canada, U.S. mainland, Europe, Taiwan and Korea. Services in each market includes information, liaison and promotional activities; office space and phone lines, promotional materials distribution and participation on behalf of GVB at trade and consumer travel forums.

A number of new facilities and attractions were completed since 1986 or are currently in-progress. These new developments add to Guam's ability to attract new visitors and encourage repeat visits by current tourists. They include retail establishments, the most notable being the \$20 million Micronesian Shopping Center being constructed in Dededo, which will house approximately 100 shops, offices and restaurants and opened its doors for business in August of 1988. On a much smaller scale, there are many new buildings being constructed along Tumon Bay which are presently soliciting tenants for office and retail spaces.

Individual hotel properties completed several projects in 1987, enhancing their facilities and expanding their ability to provide services to both the visitor and the local community. The Pacific Islands Club completed Phase I of their expansion and upgrading project, including a new reception and lobby area, administrative offices, shops, dining and recreational facilities, an amphitheater and a 50-foot waterfall flowing into a spectacular four-acre rock and water park, which also contains a small chapel for weddings. Furthermore, the Guam Hotel Okura completed construction of its two-story convention and banquet facility and the Dai Ichi Hotel and Guam Plaza Hotel room additions also included new restaurants and shops, all of which increase their attractiveness to Guam's growing number of visitors.

A major addition to Guam's recreational facilities was the Hatsuho International Corporation's new \$16 million 18-hole golf course, club house and driving range in the Potts Junction area of Northern Guam, which opened in December of 1987. Another project being planned for the near future



The Atlantis Submarine underwater tours were recently added to Guam's inventory of tourist attractions. The 65-foot, 48-passenger submersible is approved for operating depths down to 150 feet.

involves a 300 square foot underwater sea observatory in Piti which is expected to cost between \$750,000 - \$1,000,000 to construct (Clifford Kindel, Personal Communications). Another ocean oriented business that has been growing on Guam is the business of selling water-related recreational activities. A newcomer to this business is the Alupang Bay Beach Club,

whose Alupang Bay beach facilities offer hovercrafting, jet skiing, surf jetting, windsurfing and wave skiing on canoes. The Atlantis Submarine operation, involving a \$5 million investment, began offering one-hour tours in October from a dive site off Cabras Island. Cocos Lagoon Resort Hotel, on Cocos Island at the Southern end of Guam, has added a seaplane and parachute sailing to the recreational activities offered to their guests. Along different lines, the latest of many shooting ranges has opened in Tumon next to Ipao Beach Park, with the expected western theme, providing the backdrop for an activity extremely popular with the Japanese market.

B. OPPORTUNITIES AND CONSTRAINTS

Constraints

The two most pressing constraints which, if not addressed, will seriously impair future growth in tourism development are inadequate infrastructure and a limited labor force.

Infrastructure

Infrastructure problems have plagued the Tumon/Tamuning area, where most tourism hotel and condominium development has taken place, to the point that it is virtually impossible for a new development to open its doors. This occurred because the Agana sewage treatment plant, which processes sewage from the rapidly developing Tumon/Tamuning area, has exceeded its processing capacity to the point that excess sewage occasionally overflows onto the roadway. As such, new developments in this area will not be allowed to hook up to the sewer system until a sewage reversal system is completed which will redirect the flow to a sewage treatment plant in Northern Guam. This project is forecasted for completion in late 1989.

To compound the above problem further, it has been determined by private developers and by the Guam Environmental Protection Agency that the recently expanded sewer and water lines in Tumon Bay are also inadequate to accommodate additional development beyond what has been approved up to February 1988. Other areas of Guam, including Southern Guam, are experiencing similar problems with existing sewer and water infrastructure being inadequate to absorb additional development.

☐ **Recommendations (Infrastructure):**

- 1) Proposed solutions to these problems include assessing new developments with a one time fee to cover their fair share of the cost of

expanding the sewer and water systems in their area. The Government of Guam is also assessing certain developments with the cost of drilling new water wells throughout the island. Both of these fees would be dependent on the size of the development.

- 2) In addition to the above solutions, an immediate re-evaluation of Guam's current and future growth patterns must be done and limits and timetables must be established on the allowable density of development throughout the island. The timetable and density limits must then be adhered to, to the extent possible. Once this is done, planning, funding and scheduling of expansion of infrastructure can be implemented. Furthermore, this evaluation and planning must be an on-going process to take into account changing conditions in the economy.
- 3) Past attempts to do this failed in Tumon Bay because density limits set by the Interim Hotel Zone Rules and Regulations and also by the Tumon Bay Master Plan were considered unreasonable in light of the rapid appreciation of land values in Tumon and developers were given variances to exceed these density limits. The result was that, with the recently approved construction projects in Tumon Bay, the capacity of the sewer and water systems was reached in less than one year after the expansion of was completed. A reoccurrence of this event can be prevented with adherence to reasonable growth limitations.

Labor Force

Guam's limited labor force is another critical constraint to future tourism development. As of March 1988, the Department of Labor reported that the total civilian labor force came to 37,440 people with an unemployment rate of only 4.3%. The latter represents approximately 1,700 people. This figure excludes U.S. military personnel and their dependents living on Guam at the time. However, even with their addition to the labor force, it is apparent that the demand for labor will easily exceed the supply of labor in a relatively short period of time.

Using an employment multiplier of 0.0134, derived by using the Kauai input-output model for tourism jobs, based on types of establishments (PBDC, 1983), there will be an increase of approximately 2,206 jobs by 1993 with an annual visitor arrival growth rate of 5% applied to the base year of 1987 and each year thereafter. With a higher growth rate of 10%, applied in the same manner as the 5% growth rate, there would be approximately 5,004 additional jobs in the tourism industry alone by 1993. However, the average annual growth rate of the civilian work force over the last ten years has only

been approximately 2.2%, based on figures provided by the Department of Labor. This would result in a work force totaling only 41,744 people, with an increase of about 4,304 people between 1988 and 1992. The additional jobs generated by a 10% annual growth rate in visitor arrivals exceeds projected additional growth in the labor force by about 16%. Zero unemployment is highly unlikely and other sectors are expected to grow by 1992, such that it will be improbable that Guam will be able to produce 100% of the additional labor needs generated by tourism in five years.

☐ **Recommendations (Labor):**

1) Recommendations to address the labor shortage should first be directed at maximizing utilization of the local labor force before seeking employees from areas outside of Guam. Measures which would address this objective include:

- Provide more direct information to new and existing entrants in the labor force on the job opportunities available in tourism;
- Develop more training and education programs, including Japanese language programs, designed to address actual on-the-job skills and knowledge, to develop a more employable, promotable labor force;
- Encourage employers to offer salaries, wages and benefits which are competitive with other sectors of the economy in order to attract potential employees to tourism; and
- Encourage employers to provide continuous training to upgrade employees skills and productivity to minimize the labor intensive nature of tourism.

Many employers have carried out the above measures in varying degrees; however, expansion of these efforts will be a continuous necessity to minimize the importation of labor to Guam.

2) Another approach for consideration is to plan and develop future growth of the tourism to be less labor intensive. This would involve the following:

- Develop a higher class of tourism facilities and attractions aimed at more affluent visitors such that tourism generates a higher level of income through smaller increases in visitors;
- Identify and target growth limits to tourism development predicated on Guam's ability to meet the needs generated by growth in tourism,

including employment, infrastructure, housing, public services, and recreation needs; and

- ° Develop the mechanism necessary to adhere to the growth limits in item 2.

There are other problems and constraints effecting the tourism industry which, while not as pressing as the infrastructure and labor constraints, should still be given serious attention. These problems and constraints include, but are not limited to, the items listed below.

Air Service

First, there is a lack of convenient air service to markets other than Japan, the U.S. Mainland and the Philippines.

☐ Recommendation (Air Service):

- 1) While expansion of markets utilizing indirect air routes with one or more stopovers is possible it is much more difficult than if there are direct flights between the destination and the point of origin. Therefore, Guam must aggressively pursue the need for direct air service to and from potential markets, such as Korea and Australia. One method is to lobby with foreign governments to have their national airlines incorporate Guam their first stop on their way to other foreign countries. Some of the airlines serving the Pacific Rim countries already have rights to service Guam.

Cost

Second, for most markets, with the exception of the Japanese market, is the relatively high cost of a travel, including air fare, hotel, meals, tours and transportation, to Guam and Micronesia which hampers substantial increases in the market. Compared with many other popular Asia/Pacific destinations Guam is considered expensive because the same level and variety of services and facilities are not available here.

☐ Recommendation (Cost):

- 1) It is recommended that the Government of Guam be selective in enticing foreign investors to the island who have the capital, expertise and past history of developing first class tourist accommodations, attractions and other facilities. Economic incentives should also be developed which make it attractive for existing businesses to maintain a consistently high standard of service and physical facilities. As such, visitors will feel they

are getting reasonable value for their money and Guam's level of service and variety and quality of facilities will be competitive with other destinations.

Travel Time

Third, is the lengthy travel time between Guam and certain markets, including the U.S. Mainland, Europe and Australia.

☐ **Recommendation** (*Travel Time*):

- 1) Until it becomes cost effective for airlines to purchase faster airplanes on a large scale, it is difficult to address this constraint. However, one way to minimize the perceived travel time is to sell Guam along with some other destination in the Pacific Basin. For example, Europeans often have extended vacations and travel to many destinations such that if they are going to Japan, Hong Kong, Singapore or the Philippines, a travel agent could encourage them to see one or more other destinations in the area, such as Guam.

Image

Fourth, is Guam's image in the travel industry as being a destination developed solely for the Japanese market with little interest in attracting other tourists. This is detrimental to Guam's ability to ever attract large numbers of visitors from other areas.

☐ **Recommendations** (*Image*):

- 1) There are many ways to approach this problem. Some of these may include:
 - Encourage international hotel developers and hotel management companies who cater to a wide variety of clientele to build hotels on Guam in order to increase the share of international chain hotels versus Japanese chain hotels;
 - Minimize the use of signs in the Japanese language which give visitors an impression of being in Japan; and
 - Develop promotional materials, including advertising, brochures and videos for separate markets, with a particular clientele or market in mind.
- 2) In this respect, promotional materials for the Japanese market should not be utilized to attract other non-Japanese markets. This holds true for

other printed materials as well, including menus, travel guides and magazines.

Cultural/Historical Attractions

Fifth is a perceived lack of significant cultural and historical attractions.

☐ **Recommendation** (*Cultural/Historical Attractions*):

- 1) There is a need for both large-scale and small-scale facilities and activities to highlight Guam's culture and history. The former includes such items as cultural centers and museums. Some examples of the latter may include the following:
 - Restoration of old structures;
 - Encouraging the sale of locally produced handicrafts and art work;
 - Identification and enhancement of places of cultural and historical interest with signs, descriptions and distinctive landscaping;
 - Encouraging the use of cultural and historical aspects in marketing strategies, such as utilizing Chamorro names for products, foods, places and buildings or utilizing the latte stone as part of an emblem, seal or logo; and
 - Encouraging the use of Chamorro or Spanish architectural characteristics in designing structures.

These attractions and activities will help to create a unique identifiable image for Guam and will perpetuate the history and culture for both residents and visitors. They will also have a wide market appeal and will increase the chances for a longer length of stay for visitors in order for them to see the additional attractions.

Older Market

Sixth is a lack of activities for older, more affluent visitors. Guam is presently geared towards the young, active Japanese market which will make it difficult to attract and maintain other market segments.

☐ **Recommendation** (*Older Market*):

- 1) Attractions such as cultural centers and museums, mentioned above, would also address this need. In addition, other facilities which could be developed include a first class marina for holding and maintaining foreign owned yachts and sailboats, night clubs and concerts featuring entertain-

ment directed at an older audience, more varied first class restaurants, botanical gardens and aquariums. These activities and facilities would all be appealing to the older, more affluent visitors as well as to visitors in many other market segments.

Monitoring/Enforcement Activities

Seventh, is a lack of monitoring and enforcement of rules and regulations applying to certain sectors of the visitor industry, including taxi operations, tour guide activity, park vendor activity, charter boat activity and Scuba diving activity.

☐ **Recommendation (Monitoring/Enforcement Activities):**

- 1) Monitoring and enforcement activities often do not take place for many reasons. The most frequently stated reasons are lack of manpower and funding for such programs. Another reason this issue has been avoided is because past attempts to implement some of these activities have resulted in the filing of strong protests from individuals engaged in the tourism industry. Also, some of the rules and regulations developed in the past were unreasonable, vague and even unenforceable in the manner they were written.
- 2) In order to develop reasonable, effective, enforceable rules and regulations for various tourism activities the parties affected by the rules and regulations should be given an opportunity to participate in their formulation. Any rules and regulations should be carefully reviewed by legal authorities to insure that they are within the law and will in fact be effective and enforceable. Also, funding and manpower must be allocated for consistent, continuous monitoring and enforcement programs in order to maintain a safe, attractive visitor industry.

Information

Eight, is a lack of information on the economic and social impacts of tourism development and a lack of market research information which in turn have lead to a lack of proper planning.

☐ **Recommendation (Information):**

- 1) Information gathering systems must be developed to monitor economic and social impacts of tourism. Also, periodic evaluations of this data should be carried out and utilized in the planning and development of tourism. Also, market research should be done on a regular basis and

widely disseminated so that both the government and private sector can address the needs and characteristics of potential and current visitors to Guam.

Beautification/Maintenance

Ninth, is a need for more beautification projects and better maintenance of public parks, beaches, overlooks and roadside areas. This is being addressed in part by GVB with funding from the Tourist Attraction Fund to cover areas that the Departments of Parks and Recreation and Public Works have been unable to address on a regular basis. However, a great deal more must be done.

☐ **Recommendations** (*Beautification/Maintenance*):

- 1) This has been an ongoing problem because of lack of manpower, equipment, funding and, at times, poor management of resources. Unless the expenditures of public funds are tied to some required level of performance beautification and maintenance activities will continue to be addressed on a sporadic basis.
- 2) It is therefore recommended that beautification and maintenance of the above mentioned areas be bid out to private firms who would be paid based on their performance of pre-determined contractual obligations.
- 3) Residents in the particular areas to be addressed, and even employees in the various agencies currently tasked with these responsibilities, should be encouraged to form businesses to pursue these contracts. However, if the latter wish to pursue a contract under the agency for which they work, they should be required to resign because of the conflict of interest it would present.

Internal Transportation

Tenth, is a lack of inexpensive, convenient transportation for the visitor. At present, it is costly for visitors to move about the island and they are frequently confined to relying on organized tours by tour companies and taxis for transportation. This limits the visitors' movements and decreases the opportunity for interaction with the local community. It also limits the visitors' spending patterns by confining expenditures primarily to places they are directed to by the tour companies and taxis. The latter is discussed further in the next problem area.

Moreover, inexpensive, convenient public transportation is an amenity usually found in major visitor destinations. The lack of this public service impacts on Guam's ability to compete on an equal basis with other destinations.

☐ **Recommendation** (*Transportation*):

- 1) This problem was addressed to a certain extent with the introduction of three new routes in March 1988, including a route which runs through the Tumon Bay area from Dededo and Agana. The other two new routes go through Agat, Umatac and Merizo and Yona, Ipan Talofofo, Inarajan. These routes were added to the original routes which go between Dededo, Agana, the University of Guam, Barrigada, Yigo and Tamuning with the main transfer points being at the Agana Shopping Center and the Guam Shopping Center in Tamuning.

The route into Tumon Bay runs about every 1 hours between 6:30 a.m. and 4:30 p.m. However, in order for the public transportation system to be truly effective in increasing the mobility of visitors to business, sites and activities not included in tours or frequented by taxis, the frequency, routing and hours of operation of the public transportation system must eventually be expanded. Also, information on how to use the public bus system must be made available to visitors.

Duty-Free Image

Eleventh, is the impression that only certain establishments are allowed to sell items duty-free to Guam's visitors. This confusion arises because many retail stores utilize the words "duty-free" in their name and advertising giving the impression that one cannot purchase items duty-free in establishments which do not specify they are duty-free.

☐ **Recommendation** (*Duty-Free Image*):

- 1) Guam's duty-free status is a significant attraction to the visitors and a clear understanding of this status should be effectively communicated to visitors in order to maximize the distribution of visitor expenditures. As such, the Government of Guam and the Guam Visitors Bureau should produce and distribute sufficient information to the visitors to insure that they are aware that all retail outlets are duty-free.

Commissions

Twelfth, is the practice of paying both legal and illegal commissions or per head fees to tour companies, taxi operators and tour guides to have visitors taken to particular businesses.

Illegal payments, known as *touting*, are paid "under the table" such that neither the business nor the recipient declares the payment and receipt of these monies; where as the legal practice of paying commissions and per head fees is accompanied by appropriate documentation by both parties. Both the legal and illegal practice have produced numerous complaints by businesses and entrepreneurs. They feel that this practice limits the movement and expenditures of visitors to those businesses who pay commissions/per head fees.

☐ Recommendations (*Commissions*):

- 1) It is clear that the illegal practice must be addressed by the Department of Revenue and Taxation and by the Guam Police Department. These agencies should investigate each allegation and determine the extent of this problem and take appropriate legal action to prevent it from occurring. The latter would require strict monitoring of these activities, appropriate penalties significant enough to discourage individuals from this activity and consistent enforcement of the law.
- 2) The legal practice of paying commissions and per head fees is part of the nature of Guam's visitor industry and, as it is viewed by many to be a constraint to the equitable distribution of tourism dollars throughout the economy it must be addressed. This characteristic, and the fact that most visitors travel on group or individual packages arranged in Japan with most other activities are sold through tour companies who handle the visitor from arrival to departure, make Guam's tourism industry unique. As such, it is imperative that residents of Guam be properly educated about the facts on how the tourism industry functions, and what is necessary to enter into what is Guam's most important economic sector.
- 3) It is incumbent upon the territorial and federal government agencies who offer technical and monetary assistance to small businesses to address this issue because it is viewed as a serious constraint to profitable entrance into the tourism industry. In order to encourage growth in tourism and to increase the distribution of economic benefits throughout the island and its residents, the Department of Commerce, the Guam Economic Development Authority, the Small Business Administration

and the U.S. Department of Commerce should solicit from the travel industry their expertise on what is required for small businesses to compete and operate within Guam's tourism industry. This information should then be made easily available to interested parties. There is a growing need for new services and attractions to meet the demands of a growing visitor population and it will be difficult to stimulate the growth of new businesses and entrepreneurial activities based on Guam to meet these demands unless this barrier is overcome.

Opportunities

Guam has numerous factors working in its favor for continued future growth in visitor arrivals, particularly in the Japanese market. For this market the key factors which will continue to make it a strong destination are:

- 1) Proximity to Japan, being only three hours away by plane;
- 2) Convenient direct air service, totaling 60 flights per week from five major cities in Japan;
- 3) Relatively inexpensive destination if travelling on a tour package, mainly because stays are generally short;
- 4) Tropical island with good year-round weather;
- 5) The long-term investments made by Japan's largest tour wholesalers, tour retailers, airlines and hotels;
- 6) Stable economy and government, with relatively inexpensive real estate for development;
- 7) Depreciation of the U.S. dollar against the yen, thereby, increasing the number of residents in Japan who can afford overseas travel;
- 8) Japan's Ministry of Transport's "Ten Million" promotional project, which targets an increase in overseas travel by Japanese to ten million by the end of 1991; and
- 9) The U.S. Immigration and Naturalization Service's Pilot visa waiver program for Japan, initiated in December 1988, will enable Japanese to visit Guam for up to 90 days without a visa.

The combination of the aforementioned factors indicate that Japan will continue to be Guam's primary market. These factors will also stimulate many of the opportunities for expansion in this market, such that the bulk of the opportunities for growth in Guam's visitor traffic for the next five years will be in Japan. In an overall sense, these opportunities will involve the following activities.

- Identifying new, more clearly defined market segments for promotional efforts. Examples of these market segments are as follows: by profession, such as office worker, students, farmers; by interest in recreational activities, such as golf, scuba diving, sport fishing, sailing, target shooting; by age groups, especially older travelers; by type of travel, such as honeymooners, convention business and incentive groups; and by rural and urban areas where promotional efforts have been minimal or non-existent.
- Developing and introducing new and improved amenities, services, attractions, activities and consumer goods to meet the more discerning demand of the increasing numbers of visitors Guam expects to have in the future. The increasing practice of targeting more specific market segments will further stimulate this need for the "new and improved" goods and services.

More specific opportunities to develop locally produced goods, services and food products for both the tourist and resident markets are discussed in the other lead economic sectors of this plan. The latter includes the Agriculture, Fisheries, Aquaculture, Manufacturing and Service sectors.



The Hatsuho International Golf Club opened its doors in early 1988 to cater to the island's increasing number of visiting golf enthusiasts.

While other areas are not as likely to realize large numbers of visitors to Guam when compared with Japan, there continues to be opportunities for growth on a smaller scale. For example in the North American and European markets, the Guam Visitors Bureau, travel agents, tour operators, airlines and hoteliers have combined their efforts to promote Guam as the "Gateway to Micronesia". By selling Guam and one or more of the other Micronesian nations, including the Commonwealth of the Northern Marianas, the Federated States of Micronesia, the Republic of Belau and the Republic of the Marshall Islands as a single vacation package with more than one destination it becomes more cost effective and more attractive for the consumers in these faraway markets.

Opportunities for growth in Europe and North America must be targeted at specific special interest groups who would have a strong enough interest in Guam and Micronesia to overcome the long travel time and expense involved in visiting this area. Some of these groups include scuba divers, archaeologists, sociologists, history lovers and adventure travellers. These travellers are less concerned with the quality of the amenities and services and more concerned with unique cultural, historical and physical characteristics in the destination.

However, opportunities also exist over the long-term to attract a broader group of travellers to Guam and Micronesia from Europe, North America, and particularly from Korea, Hong Kong and Taiwan. The latter have been experiencing continuing increases in their standard of living such that many of their residents can afford overseas travel. This market would begin with those who travel extensively and simply want to find a new destination but want the facilities and services to be fairly good. In addition, should Guam's visa waiver program apply to Korea and Taiwan, it would make it easier to fly to Guam at a moments notice. However, much remains to be done to provide a consistent level of information and promotional activities to encourage this broader public to travel to Guam and Micronesia. Furthermore, communications, transportation, infrastructure, services and facilities throughout Micronesia must also be upgraded to meet the needs of the broader market.

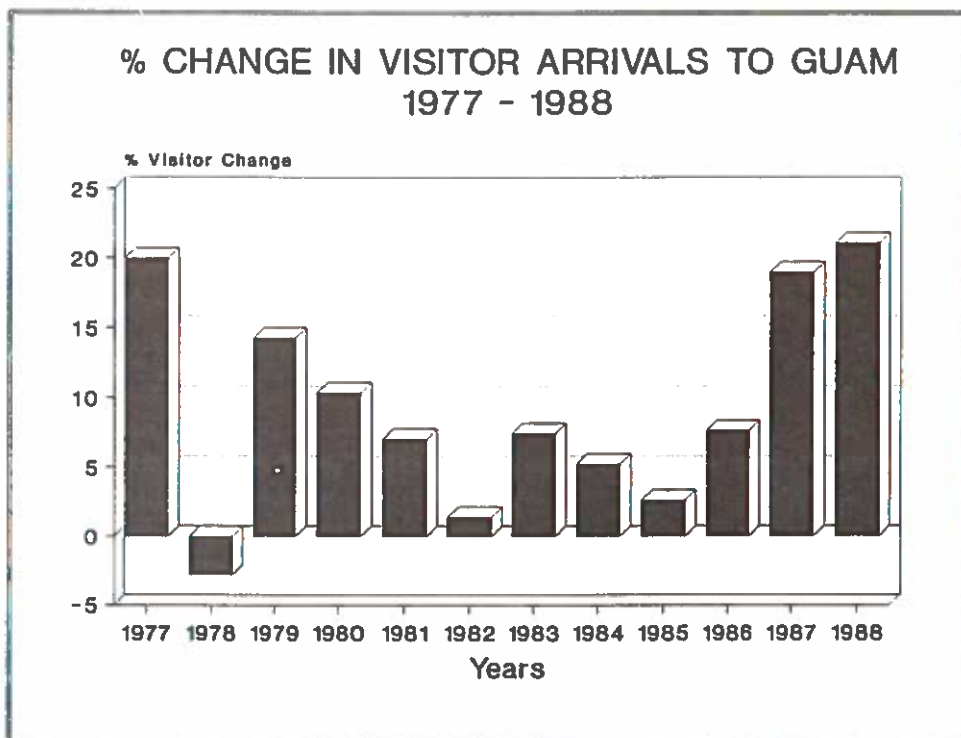
C. PROJECTED GROWTH

Historical trends show an average annual growth rate of approximately 8.2% for the past 10 years (See Figure 22). This rate is expected to increase as a result of the appreciation of the yen against the U.S. dollar and as a result of expected increases in aggressive marketing efforts by hotels, airlines and tour

companies to fill the added capacity in hotel rooms and the additional air seats on the Japan/Guam routes. Another contributing factor to a probable increase in growth is the fact that Guam's newest hotel, the Pacific Star Hotel, is being managed by a subsidiary of Guam's newest airline on the Japan/Guam route, All Nippon Airways (ANA). Furthermore, ANA Hello Tours, which is also a subsidiary of All Nippon Airways and wholesales tours to Guam, will almost guarantee that the Pacific Star's 436 hotel rooms and ANA's 2,205 revenue passenger seats per week will receive a sufficient occupancy level and load factor, respectively. Another new hotel planned for Guam, the 500-room Hotel Nikko Guam, will be in a similar situation as the Pacific Star Hotel. The Hotel Nikko will be operated by the hotel management division of Japan Airlines (JAL), which also has an affiliate tour company operating in Guam called JALPAK. With these new entries alone, Guam can reasonably look forward to a higher annual growth rate of at least 10% over the next several years.

Noting that Japan is Guam's primary market, producing 85.3% of all visitors to Guam, or 412,637 visitors in 1987, an average annual growth rate in arrivals of 10% between 1988 through the year 1992 would produce 664,556 visitors from Japan alone. This rate of growth is highly probable given the current yen exchange rate, and increased hotel and air seat capacity, and the government's commitment to the 10 million program. Applying a lower average

Figure 22



annual growth rate of 5% to the remaining 71,317 visitors from all other areas would produce 91,021 visitor by the end of 1992 for a total of 755,577 visitors. This lower growth rate for other markets is based on their average annual growth rate over the past ten years and takes into account significant positive increases in the last three years.

Table 31 shows revenue passenger seats available in December 1987 from Japan and from all other areas with varying load factors. If Japan arrivals were to grow at an average annual rate of 10% through 1992, the load factor required to accommodate this growth rate with existing capacity would be slightly more than 80%. This is an unlikely situation as present load factors are approximately 50% on routes to Japan. An accompanying increase of 10,401 revenue passenger seats per week would be required to accommodate this growth rate with a 50% load factor.

In terms of capacity to all other areas for the above average annual growth rate of 5%, present air capacity is more than sufficient to accommodate this rate with a 50% load factor.



Two new additions to Tumon Bay, Guam's major resort area, are the Pacific Islands Club water park, and (in the background) the deluxe 436-room Pacific Star Hotel.

With regard to hotel accommodations, the present inventory of hotel and motel rooms on Guam can accommodate up to 677,500 visitors, with a length of stay of four nights, 2 persons per room and an occupancy rate of 90%. Moreover, if planned expansions and new hotels are added to the existing

Table 31**TOTAL REVENUE PASSENGER SEATS AVAILABLE TO GUAM****1987**

Point of Origin	No. of Revenue Passenger Seats Per Week	Load Factor Revenue Passenger Seats Available Per Year					
		50%	60%	70%	80%	90%	100%
Japan	15,158	394,108	472,929	551,751	630,572	709,394	788,218
All Other Areas	8,533	221,858	266,229	310,601	354,972	399,344	443,716

Source: All Regularly Scheduled Airlines Servicing Guam in 1987 and the Department of Commerce.

hotel/motel room inventory, Guam can accommodate up to about 1,234,100 visitors under the aforementioned circumstances in 1992. This figure is almost double the approximately 779,413 visitors Guam would have in 1992 if the annual growth rate between now and then were to be 10%.

D. POLICIES

- 1) Balanced and integrated growth of the visitor industry with other sectors of the economic, social and physical environments which results in the maximum benefit to the people of Guam.
- 2) Preservation and enhancement of those natural, historical and cultural attributes that make Guam attractive to both residents and visitors alike.
- 3) Development and promotion of Guam as a unique, attractive destination for a variety of markets.
- 4) Increased cooperation between the private and public sectors in the planning, implementation and maintenance of strategies, programs and facilities for the improvement of the visitor industry.
- 5) Promote and maintain an understanding and awareness of the visitor industry as a valuable and essential component of Guam's economy.
- 6) Strive for continual increased quality and improvements in all areas of the visitor industry.

- 7) Improved data collection of tourism information and statistics for evaluating, planning and decision-making activities.

E. GOALS

- 1) Increase the annual economic benefits to Guam from the tourism industry at minimum of 10% each year.
- 2) Decrease the amount of leakages in the economy caused by the current structure of tourism by 5% each year.
- 3) Increase the distribution of economic and employment benefits of tourism, both direct and indirect, with development of tourism facilities and attractions in other areas, beyond Tumon, Tamuning, and Agana.
- 4) Steady decreasing of the visitor industry's need to seek resources, in terms of goods, services and manpower, from sources outside of Guam.
- 5) Strengthen and improve the quality of public infrastructure, buildings, services, facilities and attractions in the visitor industry such that it continues to be a significant sector of Guam's economy and a stable generator of income, employment and business opportunities.

F. OBJECTIVES

- 1) To formulate and implement both ongoing and periodic monitoring systems to measure and track tourism information and economic indicators by 1992 at a total cost of \$250,000.00 in order to improve evaluating, planning and decision-making of tourism activities and programs.
- 2) To evaluate, identify and prioritize new markets and market segments for Guam's tourism product at a cost of \$35,000.00 in order to achieve gradual market diversification, consisting of a minimum 5% growth in markets other than Japan through 1992, while striving to increase Guam's market share in Japan.
- 3) To develop and begin implementation of an island-wide ten-year tourism master plan for Guam by 1989. This would include the identification of potential areas for tourism development, identification of broad infrastructure requirements, formulation or expansion of tourism related

programs, and identification and recommendations for problems affecting tourism.

- 4) To develop and begin implementation of a development master plan of Southern Guam, giving special emphasis to tourism development, but including all types of development and their corresponding infrastructure requirements by 1990 at a total cost of \$130,000.
- 5) To conduct an annual review of tourism activities in relation to the Visitor Industry Master Plan in order to update and amend the plan if necessary and to ensure that programs continue to be effective in achieving their objectives.
- 6) Develop specific marketing strategies to promote on-island activities which provide opportunities for increased contact between visitors and residents in a variety of social and economic situations in order to encourage friendly exchanges and an understanding of tourism and its role in the community beginning in 1989 at a cost of \$50,000.00.
- 7) To develop a tourism unit within the Department of Education responsible for internal planning and coordinating of the expansion of tourism-related programs throughout the education system in order to increase the awareness and understanding of students about the tourism industry and to produce classes focused on the knowledge and job skills necessary to successfully compete in Guam's labor market at an initial cost of \$125,000.00.
- 8) To increase the number of effective, job-oriented programs at the community college level in various areas of tourism in order to meet the increasing demand for employees in this industry such that there is a 10% increase in students taking tourism-related courses each year beginning in 1989 at a cost of \$114,900.00.
- 9) To implement a Tourism Industry Management Program at the university level directed at providing instruction to at least 15 new aspiring candidates for management positions in the tourism industry a semester by 1989 at a cost of \$55,700.00.
- 10) To carry out a series of cleaning, maintenance and beautification projects directed at the areas most frequented by tourists including parts of each village, Tumon Bay beaches, parks and along main highways and roadways of Guam. These projects would begin in FY 1988 at a total initial

cost of \$2,831 million for the first year with the objective being to increase the number of repeat visitors by at least 2% points per year.

- 11) To design and create new tourist attractions in a manner that they will appeal to a wide range of socio-economic range of visitors and residents in order to provide a greater variety of activities while preserving and displaying Guam's history, culture and environment.
- 12) To create a Visitor Industry Education Council responsible for coordinating the development and implementation of tourism training and education programs and activities in all levels of the public education system which address private sector employment requirements by 1989 at a cost of \$115,000.00 for the first year. This office would act as a liaison and centralized communications link for all departments and agencies, the Guam Community College, the University of Guam and the private sector concerning tourism training and education programs.

G. PROGRAM STRATEGIES

In order for tourism to be an attractive, beneficial and profitable industry for Guam the policies for tourism must direct its development. The established policies for Guam's tourism industry focus on the following concepts: balanced growth; preserving and enhancing the island's natural, historical and cultural attributes; creating a unique destination, attractive to diverse markets; joint private and public sector activities for the development and maintenance of the tourism industry; encouraging the understanding and support of the industry by the resident population; and striving for continual improvements and upgrading in all aspects affecting tourism.

The program strategies developed for the tourism industry fall within the framework of the above policies and were developed to achieve the goals of tourism by addressing both the constraints to future tourism development and the objectives which tourism should achieve in its development. These strategies take the form of proposals for new or improved facilities, activities and procedures.

Strategy I (Increase Tourism Data Base for Decision-Making and Planning)

Implement the following technical assistance projects.

- Periodic Tourism-related Research Projects and Surveys

Previously noted as a constraint to tourism development was a lack of accurate information on the impacts of tourism which has in turn lead to a lack of proper planning of this industry. These two projects address this constraint by gathering information in areas including: the economic impacts and public costs of tourism; the travel trends and market characteristics affecting Guam's tourism industry; the factors impacting on forecasts for visitor arrivals; and corresponding growth in facilities and infrastructure. It also addresses the need for continuous data on visitor attitudes, expenditures and the social impact of tourism. All of this information is then utilized for proper planning of tourism development under the two remaining projects which provide for the best utilization of Guam's limited resources, maximizes the possible benefits derived from tourism's impacts and minimizes potential negative impacts.

Objectives addressed:

- To formulate and implement both ongoing and periodic monitoring systems to measure and track tourism economic indicators by 1992 at a total cost of \$250,000.00 in order to improve evaluating, planning and decision-making of tourism activities and programs.
- To evaluate, identify and prioritize new markets and market segments for Guam's tourism product at a cost of \$35,000.00 in order to achieve gradual market diversification, consisting of a minimum 5% growth in markets other than Japan through 1992, while striving to increase Guam's market share in Japan.
- To conduct an annual review of tourism activities in relation to the Visitor Industry Master Plan in order to update and amend the plan if necessary and to ensure that programs continue to be affective in achieving their objectives.

Strategy II (Implement Development Planning for Tourism)

The formulation and implementation of the following plans and actions.

- Visitor Industry Master Plan
- Southern Development Master Plan (Agat, Santa Rita, Umatac, Merizo, Inarajan, Talofofo, Malojloj and Yona)
- Infrastructure Development Planning for Tourism.

The Visitor Industry Master Plan will include but not be limited to chapters or sections on the following areas: 1) complementary development of other economic sectors with tourism; 2) generation of employment and business opportunities for residents; 3) training programs for residents for management positions; 4) tourism organizations and

regulatory functions; 5) development of tourism attractions and activities; 6) tourism education and training; 7) land use and infrastructure planning; 8) identification of sites throughout Guam for construction of tourism facilities; and 9) architectural and landscaping considerations.

The Southern Development Master Plan will concentrate on planning for all types of development in the aforementioned villages with particular emphasis on tourism development and infrastructure planning.

Infrastructure development planning calls the coordinated long-term planning of all infrastructure necessary to support growth in the tourism industry. This would alleviate the need for costly and inconvenient short-term solutions and allow for steady rather than erratic growth in tourism development.

Objectives addressed:

- To develop and begin implementation of an island-wide ten-year tourism master plan for Guam by 1989. This would include the identification of potential areas for tourism development, identification of broad infrastructure requirements, formulation or expansion of tourism related programs, and identification and recommendations for problems affecting tourism.
- To develop and begin implementation of a development master plan for Southern Guam, giving special emphasis to tourism development, but including all types of development and their responding infrastructure requirements by 1990 at a total cost of \$130,000.00.
- To coordinate the formulation and implementation of all infrastructure improvements and upgrading projects to prevent conflicts and maximize utilization of resources to begin in FY 89 at a cost of \$50,000.00.

Strategy III (Increase the Number, Quality and Variety of Tourist Attractions)

Implement the following projects:

- Prewar Governor's Palace Reconstruction
- Development of Underwater Trails
- Development of a Marine Life Display Facility at the University of Guam Marine Laboratory Oriented towards the General Public
- Annual restoration of major historical sites
- Development of a Botanical Garden at the Adelup Complex

- Formulate criteria to establish priorities for projects funded under the Tourist Attraction Fund which focus on development of cultural and historical attractions to be located throughout the island and which would be designed to appeal to a wide variety of markets and also to residents.

These projects are focused upon the need for more significant historical and cultural attractions in order to maintain Guam's attractiveness to the visitor and, at the same time, to serve the needs of the residents.

Objectives addressed:

- To design and create at least one new tourist attraction a year in a manner that they will appeal to a wide range of socio-economic range of visitors and residents to maintain Guam's competitive position as a dynamic destination to both tour operators and to repeat visitors, while at the same time preserving and displaying Guam's history, culture and environment.

Strategy IV (Improve Maintenance and Beautification of Tourism Sites)

Implement the following projects:

- Tumon Bay Annual Beach Maintenance
- San Vitores Boulevard and Village Beautification and Maintenance
- Annual Beautification and Maintenance of all Main Thoroughfares
- Essential Restoration, Repairs, Security and Maintenance of Restrooms Located in the Parks and Recreation Areas and Public Buildings.
- Construction of a Building for the Guam Visitors Bureau.

These projects involve improvements, maintenance and beautification activities throughout the island which must be given particular attention as they are key areas in which Guam has been lacking in the past. They are basics necessary to present an attractive image to the visitors in order to entice them to return and/or to give favorable word-of-mouth advertising to friends and relatives.

Objective addressed:

- To carry out a series of cleaning, maintenance and beautification projects directed at the areas most frequented by both residents and tourists including parts of each village, Tumon Bay beaches, parks and along main highways and roadways of Guam. These projects would begin in FY 1989 at a total initial cost of \$2.831 million for the first year

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with the objective being to increase the number of repeat visitors by at least 2% per year.

Strategy V (Increase and Encourage Mobility of Tourists)

Implement the following projects and programs:

- Develop and implement an island-wide mass transit system for use by both residents and visitors.
- Encourage the Guam Visitors Bureau to publish and advertise on a regular basis, in both print and television mediums, information which encourages visitors to participate in community events, exhibits, trade shows, cultural fairs, holiday activities and other activities that would encourage greater commercial and social interaction between the visitors and the resident population in order to promote a cultural exchange on a personal level and an understanding and appreciation between both groups.

The first project provides additional mobility to the visitors which is self directed and enables them to visit shops, restaurants, sites and community events they would otherwise miss by going on preset tours. It also provides closer contact with residents who use the same transportation service. Furthermore, it gives more opportunity to shops which cannot or do not give commissions to tour companies and taxi drivers to attract the visitor traffic. The second activity provides information to the visitor on these same shops, restaurants, sites and community events which may not be provided by the travel trade. As such, it promotes a greater likelihood that more visitors and more residents will have more interaction on a personal level.

Objective addressed:

- Develop specific marketing strategies to promote on-island activities which provide opportunities for increased contact between visitors and residents in a variety of social and economic situations in order to encourage friendly exchanges and an understanding of tourism and its role in the community beginning in 1989 at a cost of \$50,000.00.

Strategy VI (Address Tourism Education and Training Needs)

Implement the following projects:

- Creation of a Tourism Coordinating Unit within the Department of Education
- Creation of a Tourism Training Unit in the Guam Community College

- Creation of a Tourism Industry Management Program at the University of Guam
- Creation of a Visitor Industry Education Council (VIEC)

Until recently, tourism was given little attention in the education curriculum, however, with the current labor shortage and the need to stimulate interest in tourism employment the government must give greater emphasis to the development of tourism education and training programs. The above projects represent the beginning of a strong drive towards coordination between the public and private sector to provide appropriate curriculum for students at all levels in the public schools. At the same time, to prevent duplication of efforts and maximize utilization of resources in order to benefit a wider group of students, a coordinating body such as the VIEC is needed. This office would also provide for continuous communication between private sector input and the actualization of programs throughout the education system.

Objectives addressed:

- To develop a tourism unit within the Department of Education responsible for internal planning and coordinating of the expansion of tourism-related programs throughout the education system in order to increase the awareness and understanding of students about the tourism industry and to produce classes focuses on the knowledge and job skills necessary to successfully complete in Guam's labor market at an initial cost of \$125,000.00.
- To increase the number of effective, job-oriented programs at the Community College level in various areas of tourism in order to meet the increasing demand for employees in this industry such that there is a 10% increase in students taking tourism-related courses each year beginning in 1989 at a cost of \$114,900.00.
- To implement a Tourism Industry Management Program at the university level directed at providing instruction to at least 15 new aspiring candidates for management positions in the tourism industry a semester by 1989 at a cost of \$55,700.00.
- To create a Visitor Industry Education Council responsible for coordinating the development and implementation of tourism training and education programs and activities in all levels of the public education system which address private sector employment requirements by 1989 at a cost of \$115,000.00 for the first year. This office would act as a liaison and centralized communications link for all departments, agencies, the Guam Community College, the University of Guam and the private sector concerning tourism training and education programs.

H. TOURISM REFERENCES

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IX.

AGRICULTURE

A. HISTORY AND CURRENT STATUS

Prior to world war II, Guam was largely an agrarian society with subsistence agriculture as the major economic activity. After the war, employment opportunities became available in the federal and local governments and the private sector. As a result, the farmlands were neglected and the island's economy and lifestyle changed from agrarian to a service oriented society. The decline in the agriculture industry during the post war period can be seen in Table 32. For example, between 1940 and 1982 the number of farms changed only slightly, however, the total area of land in farms dropped dramatically. In addition, the average size of the individual farms decreased significantly.

Table 32

Farms and Land in Farms in Guam
1930 - 1982

Years	Number of Farms	Total Land in Farms (Hectares)
1930	2,104	N/A
1940	2,529	26,264
1950	2,262	10,025
1960	2,028	12,994
1970	1,999	11,582
1982	2,044	10,794

Source: Bureau of Census, U.S. Department of Commerce.

Today, the agriculture sector is relatively small, employing less than one percent of the total payroll employment on Guam (Guam Department of Labor, March 1988) and contributing only about \$7.5 million to the economy in 1987 (Guam Department of Agriculture). In 1987, the local production (pounds) of fruits and vegetable, poultry, beef and eggs decreased 5%, 3%, 23% and 7% respectively from the 1986 production figures (Figure 23 and Table 33). However, the overall value of production for 1987 has increased.

Figure 23

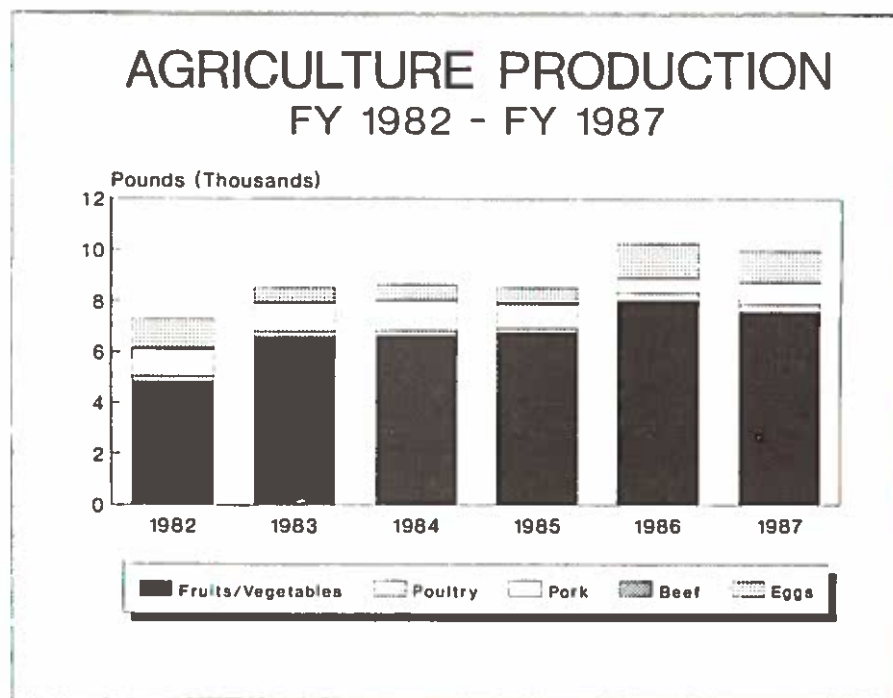


Table 33

Production of Primary Fruits and Vegetables on Guam
(Pounds x 1000)
FY 1981 - FY 1987

Produce Type	1981	1982	1983	1984	1985	1986	1987
Watermelons	2,098	1,868	3,713	2,785	2,475	3,042	3,546
Cucumber	536	487	599	590	734	788	272
Head Cabbage	12	218	172	519	255	139	50
Sweet Potatoe	249	56	84	183	133	95	83
Eggplant	129	86	75	90	76	74	53
Cantaloupe & Melons	139	149	501	574	555	570	461
Chinese Cabbage	132	60	33	68	65	67	101
Banana (Cooking & Eating)	352	240	144	221	210	413	450
Tomato	75	164	157	39	163	162	91
Long Beans	155	117	127	155	205	168	141
TOTAL	3,877	3,445	5,605	5,224	4,871	5,518	5,248

Source: Guam Department of Agriculture, Government of Guam

due to the 32% increase of pork production and the increase in price of fruits and vegetables (Table 34). The production of primary fruits and vegetable for 1987 has also decreased 5% from the 1986 production total of 5.5 million pounds as seen in Table 33. In terms of revenues which can be derived from the local production of fruits and vegetables, the breakdown provided in Table 35 shows that net revenues from yields per acre range from a low of \$849 for snap beans, to a high of \$17,098 for pineapple. Bittermelon, cantaloupes, honeydew, tomatoes, bananas and papayas are also identified as high revenue generating crops, netting an average revenue of \$11,196 per acre yield/per crop. These revenue figures support the profitable potentials of agricultural activity on Guam for even small-scale operations, particularly when considering that several crops can be grown and harvested within the same land area over a one-year period

Table 34

**Agricultural Products Grown on Guam
By
Type, Volume and Value
FY 1977 - FY 1988**

Fiscal Year	FRUITS & VEGETABLES		POULTRY		PORK		BEEF		EGGS		TOTAL
	Value (\$)	Thousand Lbs.	Value (\$)	Thousand Lbs.	Value (\$)	Thousand Lbs.	Value (\$)	Thousand Lbs.	Value (\$)	Thousand Lbs.	Current Dollar Value
1977	1,657,871	3,316	59,094	118	535,572	616	61,381	75	2,314,000	2,108	4,627,918
1978	3,174,409	6,349	80,600	124	889,950	1,047	62,050	73	2,527,800	2,298	6,734,809
1979	3,402,064	6,186	86,242	133	943,347	1,110	50,188	71	2,451,966	2,229	6,943,807
1980	1,636,288	2,976	63,600	91	868,064	964	49,400	52	2,086,522	1,814	4,703,874
1981	3,528,653	6,208	66,780	196	911,467	1,012	51,870	54	2,190,848	1,904	6,749,618
1982	3,383,111	4,833	70,119	206	957,041	1,063	54,464	57	1,622,186	1,134	6,086,921
1983	3,438,260	6,616	66,613	196	957,137	1,116	57,187	59	811,093	567	5,330,290
1984	3,738,615	6,631	69,700	205	998,096	1,166	55,590	51	902,462	593	5,764,463
1985	4,248,692	6,762	73,600	164	823,877	960	38,950	40	937,860	609	6,122,979
1986	4,293,772	8,035	137,250	305	494,500	575	25,220	26	2,053,965	1,308	7,004,707
1987	4,692,852	7,595	133,650	297	722,500	850	19,400	20	1,878,000	1,220	7,446,402

Note: The value of livestock is calculated using live weight at time of slaughter.

Source: Department of Agriculture, Government of Guam

Table 35

**Gross and Net Revenue of Selected Crops on Guam
by Estimated Yield Per Acre
1983**

Crop	Estimated Yield Lbs. per Acre	C.F.P. \$ per Pound	Gross Revenue \$ per Acre	Production Cost \$ per Acre	Net Revenue \$ per Acre
Chinese Cabbage	10,890	0.45	4,901	2,038	2,863
Head Cabbage	14,520	0.43	6,244	2,038	4,206
Daikon Radish	8,168	0.59	4,819	2,038	2,781
Bitter Melon	13,610	0.90	12,249	2,955	9,294
Cantaloupe	27,220	0.48	13,066	2,905	10,161
Cucumber	27,220	0.30	8,167	2,955	5,212
Honeydew	27,220	0.60	16,332	2,905	13,427
Local Melon (Pepino)	16,332	0.46	7,513	2,905	4,608
Watermelon	24,200	0.32	7,744	2,905	4,839
Field Corn	4,840	0.80	6,272	2,091	4,181
Sweet Corn	7,260	0.79	5,735	2,091	3,644
Snap Beans	5,445	0.70	3,812	2,963	849
Yardlong Beans	8,168	0.85	6,943	2,963	3,980
Eggplant	10,890	0.45	4,901	3,196	1,705
Bell Pepper	10,890	0.52	5,663	2,680	2,983
Tomato (standard)	12,705	0.98	12,451	3,005	9,446
Sweet Potato	21,780	0.35	7,623	2,448	5,175
Red Taro (& leaves)	9,075	0.75	6,806	3,952	2,854
White Taro	12,705	0.60	7,623	3,952	3,671
Banana	27,250	0.75	20,438	4,917	15,521
Papaya	45,400	0.45	20,430	11,103	9,327
Pineapple	68,607	0.75	51,455	34,357	17,098

Note: C.F.P. is Current Farmer Price obtained from a farm cooperative which collects a percentage surcharge on top of the prices quoted.

Source: Adapted from data provided by the College of Agriculture and Life Sciences, University of Guam.

Table 36

**Bonafide Farmers On Guam By District And Farm Type
1988**

Farm Type	Northern	Central	South	Total
Full-Time	38	11	60	112
Part-Time	8	6	19	33
Crops	30	11	65	106
Fruit Trees	22	3	5	30
Poultry	7	2	4	13
Swine	20	4	11	35
Cattle	9	1	3	13
Geese	2	1	0	3
Hydroponic	1	0	1	2

Source: Guam Department of Agriculture, Government of Guam

According to a 1988 survey conducted by the Guam Department of Agriculture, there were approximately 145 bonafide and 772 subsistence farmers on Guam. Of the total bonafide farmers, 112 were full time and 33 were part-time farmers. Furthermore, of the 145 bonafide farmers on Guam, 85 were members of one or more of the six farmers cooperatives. Table 36 provides a breakdown of bonafide farmers by districts and types of farms.

As part of an on-going program to develop agricultural parks, eight-hundred ninety-one acres of Government of Guam land in Ija have been identified for agricultural development. The development involves the construction of supplemental access roads, the installation of power and water, as well as an irrigation system and the subdivision of the land for potential farmers. Of the total 891 acres, 65 acres are being utilized by the College of Agriculture and Life Sciences (CALS) for its Agricultural Experimental Station, 300 acres have been identified for crop farming and the remaining acres have been identified for livestock and orchards. A paved access road, 1.2 miles in length (EDA Project No. 07-11-02054), has been constructed and provides access to the Agricultural Experimental Station, the proposed Agricultural Park, and other private lands. A 2-inch water line has been upgraded to a

4-inch water line which will provide potable water and an efficient and effective irrigation system for the Agricultural Experimental Station. However, still needed is the installation of power, feeder roads and installation of additional waterlines. In addition to the Ija Agriculture Park, 300 acres of land in Tract I, Y Seng Song, Dededo were identified and proposed as an agricultural park.

With respect to operational support of agriculture, there are four government agencies which have programs or projects providing direct support to the agricultural industry. Several other agencies operate programs which also relate to agriculture, particularly in terms of physical infrastructure and utility services.



A farmer tends to a successful bean crop that was cultivated at Ija, which is the proposed site of an agricultural park. Close to 900 acres in Ija have been designated for crop farming, livestock and orchards.

The Guam Department of Agriculture operates a number of programs including long-term leasing of government land to farmers, a farm loan fund, a crop insurance program, provision of water rate subsidies, farm equipment rentals, sale of seedlings, animal breeding services, plant protection and quarantine services, development of economic fruit and vegetable plant species.

Support to the agricultural sector from the Guam Department of Commerce is primarily through the sponsoring and producing of feasibility studies of infrastructure projects, the funding and implementation of pilot and

demonstration projects involving new technology, and in developing agricultural economic development plans.

The University of Guam, a member of the United States Land Grant Institution, provides agricultural education, and agricultural research and extension services. The College of Agriculture and Life Sciences (CALS) offers a bachelor's degree in agriculture and receives federal funds for departmental research and research conducted by the Guam Agricultural Experiment Station. A Cooperative Extension Service has been established within CALS to disseminate technical and management information to farm operators.



The black plastic strips on this newly tilled field in Barrigada is a soil preparation/crop cultivation project conducted with the assistance of the College of Agriculture and Life Sciences at the University of Guam.

Another agency involved in agricultural development is the Guam Economic Development Authority (GEDA). The primary focus of GEDA is on economic development in the private sector. The agency's function is to act as a catalyst for development. In relation to agriculture, GEDA administers an agricultural development fund, and also has an overall Guam Development Fund (federally funded) out of which agricultural loans may be allocated. Like the Guam Commerce Department, GEDA frequently becomes involved in infrastructure projects of importance to agriculture.

The Bureau of Planning, Department of Land Management, the Public Utility Agency of Guam, the Guam Power Authority and the Department of

Public Works administer programs relating to the development of land use, power and water resources, and road access. If agriculture is to be significantly expanded, these agencies must be actively involved in the development effort. Particularly in the areas of water resource development and distribution, irrigation, and roads, agricultural requirements are quite large.

To fulfill some of the technical needs, the U.S. Soil Conservation Service completed a soil survey of Guam which included maps classifying the different types of soils on Guam. The purpose of the soil survey was to provide soil data necessary to plan and manage land for irrigated and dryland agriculture, pastureland, woodland (forest lands), recreation, wildlife habitats, and watersheds. The soil survey of Guam also provides a useful basis for land-use planning regarding building site development, sanitary facilities and water management (Soil Survey of Guam, 1987).

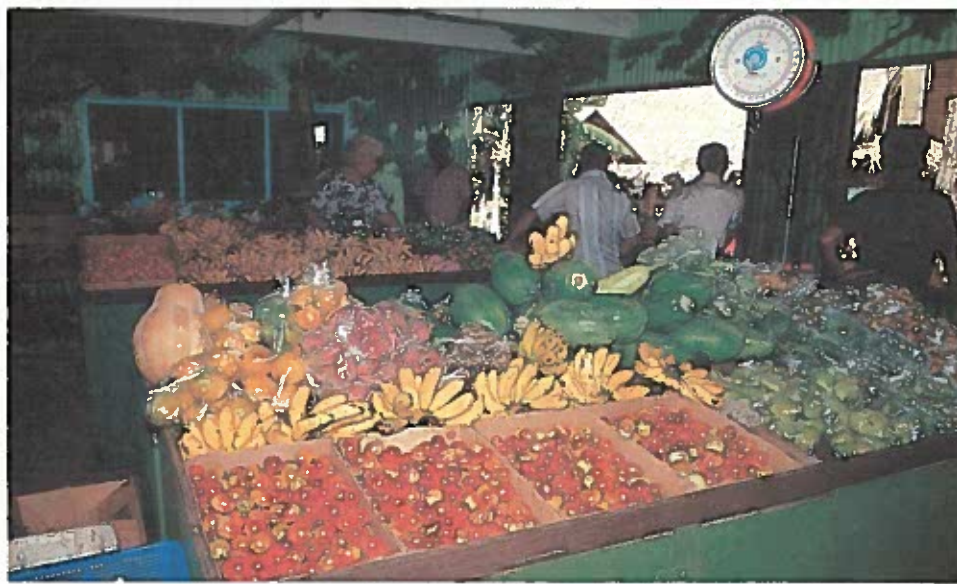
In an effort to reclaim the acid soils of southern Guam, CALS has initiated a study at Ija Agriculture Experimental Station, which represents the southern soils of Guam. The purpose of this study is to identify and assess problems involving erosion. In addition, the Soil Conservation Service has developed a plan on how to terrace the land in Ija which CALS will implement, improve and make available to the farmers. Another project of CALS is the Germ Plasm Collection program initiated at the Ija Agricultural Experimental Station, which includes 25 acres of orchard for propagating hybrid fruit crops of Guam.

In an attempt to fulfill water resources needs, the Bureau of Reclamation, in cooperation with the Public Utility Agency of Guam (PUAG), conducted a water resources development study. This study included improvements on the potable water system and the development of an irrigation system on Guam. Efforts by the Army Corps of Engineers, the PUAG and the Department of Agriculture to demonstrate the proper methods of irrigation through the proposed construction of a demonstration farm at Dandan, along with the development of a dam on the Ugam River, have been postponed for an indefinite period due to lack of funds.

A major program in the agriculture industry on Guam is the implementation of pest control measures. Through a cooperative agreement with the Guam Department of Agriculture, the Department of Commerce's Customs and Quarantine Division conducts inspections of all commodities that come into Guam and turns over confiscated goods to the Department of Agriculture's Plant Protection officers who have the responsibility of destroying these goods by incineration at the Department of Agriculture. However, the incinerator currently being used is very small, ineffective and inefficient.

Furthermore, transporting these confiscated items from the airport or Commercial Port to the Department of Agriculture exposes the entire route travelled to the very pests for which extra precautions are being taken to prevent their introduction or spread. Addressing this need is the Post-entry Inspection/Quarantine facility proposed by the Department of Agriculture.

Additional pest control measures include the formation of the Plan Action Against New Insect Committee (PAANIC) which is composed of the U.S. Department of Agriculture, the Guam Department of Agriculture, the Guam Environmental Protection Agency, and CALS. The purpose of this committee is to coordinate actions to eradicate new insects on the island.



The Public Market, which provides a marketing outlet for local farmers, will soon be housed in a new, modern complex that will serve as both a commercial and cultural center for island residents.

In an effort to enhance the market for the local agricultural, fisheries and aquaculture production, the Nineteenth Guam Legislature has introduced a bill which establishes the "Operation Self-Reliance" program. The purpose of "Operation Self-Reliance" is to identify the possibilities, problems and benefits associated with the changeover from Guam's current U.S.D.A. food stamp program to a block grant Nutrition Assistance Program which will enable Guam to modify eligibility rules, benefit levels, benefit delivery methods and administrative procedures to more efficiently target assistance to those in need. While the changeover from the current USDA food stamp program to the block grant nutrition assistance program may enhance the market for farmers, the proposed requirement (a percentage to purchase

local produce) will undoubtedly increase hardship to the recipients for whom the program is intended to help. A preliminary study submitted by the Department of Public Health and Social Services have indicated that the constraints have outweighed the opportunities in regards to the changeover, which resulted in the dissolution of the proposed bill.

In support of developing a competitive agricultural base to provide a foundation for sound economic growth in the region, the USDA approved \$600,000 to Land-Grant Institutions in the areas of Guam, CNMI, Hawaii, American Samoa and FSM. The initiative for orderly development of Pacific island agriculture has five components:

- Develop a communications and computer system to enhance delivery of information to clientele;
- Develop a comprehensive plan to accelerate and complement existing agricultural research and extension programs in the American Pacific;
- Facilitate and foster faculty-staff development and exchange among institutions in the region to strengthen institutional ability to contribute to agricultural development;
- Initiate a crop protection program focusing on coordinated programs of pesticide efficiency and registration and development of integrated pest management protocols;
- Initiate development of comprehensive and accessible information resources based on the physical and human resources in the region.

The University of Guam is coordinating the Communications and Data Bases components; the College of Micronesia is coordinating the Crop Protection Plan; and the American Samoa Community College is coordinating the Regional Staff Development Plan.

Until the passage of the Omnibus Territories Act of 1980, many federal agricultural services were not available on Guam. Subsequently, programs such as the USDA Soil Conservation Service (SCS), Farmers Home Administration (FmHA), and Animal and Plant Health Inspection Service (APHIS) were established on Guam. The Agricultural Marketing and Federal Crop Insurance Corporation is also expected to provide assistance to Guam's farmers soon.

B. OPPORTUNITIES AND CONSTRAINTS

Constraints

There are several constraints which prevent the realization of opportunities in the agricultural industry. These constraints must be addressed before any significant agricultural goals can be realized.

Land

One of the institutional constraints is land tenure. Because land ownership on Guam is basically considered as a heritage and a source of pride for the people of Guam, it is often held in multiple ownership or subdivided among family members who may be reluctant to sell or lease their land. This has led to the decreasing size of individually owned private lands, consequently hindering the chances of large scale farm operations. Efforts to solve this problem has led to the Agricultural Land Lease programs for bonafide farming operations. The land lease program has had limited success in that much of the lands that were being leased were only utilized either for weekend getaways or for permanent dwellings, leaving the land undeveloped for the intended agriculture use. Since the inception of the land lease

Table 37

ARABLE LAND AVAILABLE FOR AGRICULTURE USE IN SOUTHERN GUAM (ACRES) 1977				
DISTRICT	RIVER BOTTOMS	COASTAL UPLANDS	INLAND PLATEAUS AND HILLS	TOTAL
Yona	200	-0-	1,042	1,242
Talofoto	360	225	1,185	1,770
Inarajan	410	345	810	1,565
Merizo	150	-0-	170	320
Umatac	62	-0-	192	254
TOTAL	1,182	570	3,399	5,154

Source: Bureau of Planning Agriculture Growth Policy, Preliminary, 1977.

program, administered by the Guam Department of Agriculture, 557 acres of land were leased to 51 farmers. In addition, 29 farmers were given provisional usage of 275 acres pending the processing of their respective lease applications; and 65 farmers were given authorization to use a total of 666 acres of land for farming operations (Guam Department of Agriculture, 1988). Most of the government land available for lease under this program is located in the northern region of Guam. In regards to the availability of farm land, prime agriculture lands have been identified and designated as agricultural zone districts. However, of the 9,920 acres designated by the Bureau of Planning as agriculture zone districts, 5,151 acres (Table 37) is located in the southern region of Guam and of which a relatively large amount are inaccessible areas (Lucas, 1981 Unpublished). Moreover, under the present land use management system, the enforcement of land use and building regulations has not been effective. This may result in accessible agricultural zoned land not being preserved for agriculture in the future. It is estimated that of the total 135,525 acres of land that comprises the island, 35 percent is owned by the Federal Government; 45 percent is privately owned and 20 percent is owned by the Government of Guam. Significantly, however, most of the idle land owned by the Federal Government are rich agricultural land (Agricultural Development Plan, 1978).

☐ **Recommendation: (Land)**

- 1) Support infrastructure, such as access roads and water irrigation systems, together with an effective enforcement of zoning regulations, should be implemented to make land useable for agriculture.
- 2) An effective long-term leasing program, gradually shifting from subsistence to commercialized farming operations, should be implemented.
- 3) Areas suited for farming that are not actively used by the military should be opened for short-term lease with rates comparable to those offered by the local government (Office of Technology Assessment, 1987).

Water

While the urgent need of developing an irrigation system is recognized, the Government of Guam presently does not have the required capital resources to construct an irrigation system. On the other hand, developing an irrigation system which would largely benefit a few land owners is very difficult to justify. Temporarily addressing this constraint is the Agriculture Water Rate Program (P.L. 9-42) in which farmers utilize the potable water system at a subsidized rate. Agriculture rate per 1,000 gallons is twenty five cents

harbor at Agat. Phase I, which included the breakwater, rip rap, dredging, shore side work and the boat launching ramp, was completed in November, 1988. The design and construction of the boat launching ramp is administered by the Department of Commerce with a grant from the National Marine Fisheries Service. Phase II is scheduled to be completed in late 1989 and will include the parking, boat slips and electrical work. With the completion of Phase II the Agat small-boat harbor will become operative. Phase III, which includes facilities such as cold storage, offices, and a restaurant will depend on the successful privatization of that component.

Another significant development in the small boat fisheries industry occurred with the completion of Mobil International Petroleum Corporation's installation of underground storage tanks and diesel and gas pumps at the Agana Boat Basin, a major port for the domestic fisheries. This will significantly reduce the difficulties and hazards in fueling experienced by local fishermen by providing a dockside facility for fuel.

Guam is a participant in the Western Pacific Fisheries Information Network (WPFIN). This is a program operated through the National Marine Fisheries Service and coordinated with the Fisheries Data Coordinating Committee of the Western Pacific Regional Fisheries Management Council (WPRFMC). The purpose of the Network is to collect and compile data from offshore and inshore fisheries to assist in monitoring and managing the fisheries. On Guam, the data are supplied through the creel census conducted by the Aquatic and Wildlife Resources Division of Department of Agriculture and the sale data from Guam Fishermen's Cooperative. These data assist in monitoring Guam's domestic fishery industry; however, they fail to address data collection for the large scale fishery consisting mainly of tuna transshipment. The Guam Department of Commerce, through a grant from the Western Pacific Regional Fisheries Management Council and assistance from the South Pacific Commission and the National Marine Fisheries Service, is in the process of establishing the Large-Scale Fisheries Data Collection System to address this portion of Guam's fisheries.

The Pacific Tuna Development Foundation (PTDF) was created in 1974. On September 7, 1983, PTDF became the Pacific Fisheries Development Foundation (PFDF) in order to more accurately reflect its expanded role in the development of the Pacific Fishing Industry. Membership is limited to representatives of the governments of the State of Hawaii, Guam, American Samoa, Federated States of Micronesia, Republic of Palau, Republic of the Marshall Islands, and representatives of tuna-boat owners, tuna processing companies, fishermen unions and other persons involved in harvesting, processing and marketing tuna. Guam became a member of PTDF the same

year it was created. The heads of each of the governments and representatives of the organizations above make up the Board of Directors of PFDF. The Governor of Guam is a voting member of the PFDF Board of Directors with full rights in the decision making for all matters coming before the board. The role of PFDF is to aid, encourage, promote and support the discovery, conservation, management, development and harvest of tuna resources of the Central, South and Western Pacific areas. This is primarily done through a grant assistance program. PFDF provides assistance and grants not only for Guam and the other member country tuna industries, but also to the domestic fishery industries on the islands as a whole. Funding for research, training and infrastructure grants come from Saltonstall-Kennedy funding through the National Marine Fisheries Service.

Guam is a member and represented on the Council (by the Director of Department of Commerce) of the Western Pacific Regional Fishery Management Council (WPRFMC). This Council created by the Magnuson Fishery Conservation and Management Act (FCMA) of 1976, the law which established exclusive U.S. jurisdiction over all fish (except highly migratory species) in the federal waters of the Fishery Conservation Zone (FCZ). The EEZ consists of the waters from the seaward edge of the territorial sea to a distance of 200 nautical miles from shore.

The Council governs the FCZ around the islands of American Samoa, Guam, Hawaii, and U.S. possessions in the Pacific, all of which became members of WPRFMC at its inception. WPREMC consists of 14 members drawn from the fishery community, governmental bodies, and the scientific community of the three island areas. Half of the Council members are appointed by the U.S. Secretary of Commerce from lists submitted by the island governors. The other members of WPRFMC are designated because their local and federal government positions give them fisheries responsibilities. The main task of WPRFMC is to manage the fisheries within the FCZ, to prevent overfishing while encouraging economic development. To accomplish this, the Council identifies fish species and species groups in need of management, analyzes the biological, economic, social and environmental factors affecting each of the species to be managed, and then prepares regulations to ensure that only the "optimum yield" of each fishing is taken by commercial and recreational fishermen. WPRFMC also prepares a Fishery Management Plan (FMP) with respect to each fishery in need of management and reviews applications by foreign governments for the right to fish in U.S. waters of the Western Pacific. The FMPs and fishing regulations are jointly enforced by the National Marine Fisheries Services (NMFS) and the U.S. Coast Guard. In addition to its statutory functions, the Council takes a strong interest in promoting fisheries development and in encourag-

ing management and development efforts with island governments throughout the Pacific.

In the area of research, the University of Guam Marine Laboratory has completed a study on the traditional and current artisanal fishing methods in Guam. Other Marine Laboratory accomplishments include the development of a program on marine natural products chemistry to identify compounds which may be used in the pharmaceutical industry. In addition, the Marine Laboratory is studying the role of herbivorous fishes in coral reef ecosystems. The Division of Aquatic and Wildlife Resources (Department of Agriculture) initiated a Fishing Enhancement Program which encompasses an infrastructural plan for the inshore and offshore fishing activities on Guam. The initial stage of the program will consist of deploying five Fish Aggregating Devices (FAD's) offshore. Furthermore, a proposed project by the Marine Laboratory would investigate the effectiveness of submerged lights in enhancing the fish aggregating capability of FADS. The Division of Aquatic & Wildlife Resources did a reproductive biological study of Thai Catfish, *Pangasius sutchi*, which included investigations into the female/male sex ratios, spawning activities, and fecundity rates. Also completed was *An Annotated Checklist of the Fishes of the Mariana Islands*.

» Non-Living Marine Resources

The Pacific Island nations and nations surrounding the Pacific Basin have declared Exclusive Economic Zones (EEZs) extending 200 nautical miles from shore and encompassing much of the Pacific Basin. Within these EEZs, the nations have exclusive jurisdiction over the living and non-living resources. Offshore mineral resources in these zones may include placer deposits (gold, tin, platinum, titanium and chromite), ferromanganese nodules, cobalt-rich ferromanganese crusts, polymetallic sulphides, metal-liferous muds, and marine phosphorites. Although only placer deposits are presently potentially commercially viable in Micronesia, it is likely that in the decades ahead, commercial development will expand to include other types of mineral resources.

Addressing the needs in the development of offshore mineral resources, the Government of Guam, represented by the Department of Commerce, became a member of the Committee for Coordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas (CCOP/SOPAC) in 1982. This organization was established to develop and promote the investigation of the mineral resources potential including petroleum on the shelves, platforms and floor, of the South Pacific Ocean. In addition, the Committee provides assistance to promote, coordinate, plan and implement

geological and geophysical energy studies and other related natural resource prospecting projects and basic investigation of the onshore, coastal and adjoining offshore areas of the member countries as well as ocean areas of the Pacific region.

Guam has a seven project Work Plan with CCOP/SOPAC which was developed by the Department of Commerce. These projects address the exploration and evaluation of potential non-living marine resources, and are enumerated as follows:

- Compilation of Basic Geological/Geophysical Data Prerequisite to Evaluation of Resource Potential;
- Cobalt/Manganese Crust and Nodule Studies;
- Evaluation of Metalliferous Enrichment related to Island Arc Volcanism;
- Baseline Environmental Surveys of Beach, Inshore, and Nearshore Areas for Coastal Erosion and Coastal Engineering Studies;
- Study of the Seamount Ecosystems Near the Mariana Islands;
- Bathymetric and Seabed Mapping of Guam's Exclusive Economic Zone;
- Assessment of Geologic Hazards.

In the summer of 1987 the Woods Hole Oceanographic Institute's research submersible, the ALVIN, conducted studies within Guam's EEZ. These preliminary studies of the Mariana and Bonin Back-Arc Basins provided some promising results. Multibeam bathymetry and near-bottom surveys showed exceptional along-axis variation in the structure of the rifted spreading center in the Mariana Trough back-arc basin. Metallic sulfide deposits were found associated with the volcanic activity in the back-arc.

A planning meeting was held in Saipan in July 1988, to discuss the intended cruise of the University of Hawaii's research vessel and submersible which is scheduled for 1989. The seamounts off Guam will be investigated from both a geological and biological aspect.

Guam is a member of the Western Governor's Association which is addressing concerns of coastal states regarding the allocation and management of non-living marine resources within the EEZ's associated with the individual states. An effort to address the concerns of the States and Territories through Congress is being made. For example, pending legislation entitled the National Seabed Hard Minerals Act of 1988 is being addressed through this organization.

Under current Federal Law, the U.S. Federal Government controls the management of marine geological resources beyond Guam's three mile territorial waters. As such, Guam would not fully benefit from the development of this resource. However, this may change as a result of the Commonwealth Act or some other Federal-State arrangements for joint management of these resources.

B. OPPORTUNITIES AND CONSTRAINTS

Constraints

Constraints in the fishing industry have a significant impact on the development of the large-scale as well as the small-scale fisheries. These constraints are identified below.

» Living Marine Resources (Small-Boat Domestic Fisheries)

Limited Resources

The National Marine Fisheries Service (NMFS) conducted a resource assessment of the bottom fisheries within Guam's and the CNMI's waters (NMFS, unpublished). The findings of this survey are summarized in Table 43. The survey indicates that Guam's bottomfish resource has nearly reached its maximum sustainable yield potential.

As indicated in Tables 44 and 45, the southern islands of the Mariana chain have a lower sustainable yield and require a greater effort per unit of catch. This can be partially attributed to the greater fishing pressure in the southern islands. Studies on the mesopelagic fishes along the Mariana chain showed a pattern of increasing numbers and biomass of fishes towards the northern islands (Amesbury, 1984). Unless new fishing grounds are identified within Guam's waters, there is little potential for further growth of domestic small-scale commercial fisheries. Proposed baseline studies of seamounts will provide information that could be applied to the proper management and development of this resource.

☐ **Recommendations** (*Limited Resources*):

- 1) Identification of sea mounts within Guam's EEZ which could provide additional fishing grounds.
- 2) Increased vessel size to expand the range of the commercial fishing fleet.

Table 43

SURVEY OF THE BOTTOM FISH RESOURCES WITHIN THE MARIANA ISLANDS

Area	Potential Sustainable Levels (MT)	Current Levels (MT)	Potential Additional (MT)
Guam	17	10-30	0
Saipan, Tinian	40	5-10	30-35
Farallon de Medinilla			
All Southern Islands and Banks	76	15-30	46-61
All Northern Islands and Banks	29	5-10	19-24
Seamounts	4	0	4
Total for Mariana Archipelago	109	20-40	69-89
Value of Potential Annual Catches for Mariana Archipelago (\$5/kg)			\$545,000
Value of Current Catches			\$100,000-200,000
Value of Potential Additional Catches			\$345,000-445,000

Source: NMFS RV/Cromwell survey unpublished

- 3) Stock enhancement and aggregation.
- 4) Better understanding of year-to-year variations in stock abundance and availability with the goal of being able to predict variations.
- 5) Investigation of deep slope fish and invertebrate resources.
- 6) Development of appropriate data gathering and fishery management regimes for limited resources.

Capital Financing

Another constraint is the financial and economic dilemma faced by the small-scale fishermen who wish to expand. In the absence of a local boat-building industry, fishermen are faced with difficulty in securing loans for the purchase of fishing vessels. The National Marine Fishery Service Loan Program provides one possible source of funding; however, because of

stringent requirements, fishermen have hesitated to seek loans through NMFS. Only one NMFS loan has been made on Guam.

The Guam Economic Development Administration can provide loans to fishermen through their Guam Development Fund program; however, the program does not provide the benefits of an artificially low interest rate as does GEDA's Agricultural Development Fund Program (fishery activities do

Table 44

**BOTTOM FISH CATCHES PER UNIT EFFORT (CPUE)
WITHIN THE MARIANA ARCHIPELAGO
1985**

Location	Mean Drift CPUE*
Northern Islands	
Maug	5.03
Asuncion	2.16
Agrihan	4.20
Pagan	4.57
Alamagan	2.37
Guguan	3.01
Sarigan	2.82
Anatahan	2.31
38-Fathom	3.12
Esmeralda	2.29
Southern Islands and Banks	
Farallon de Medinilla	3.29
Saipan	1.72
Tinian	1.96
Aguijan	3.84
Rota	1.91
Guam	1.53
Galvez and Santa Rota	2.95

Source: Polovina, Moffitt, Ralston and Shiota, 1985

* Number of fish caught per line hour. Drift CPUE is the number of fish caught during an uninterrupted drift of the vessel while fishing in the 125-275 m depth range divided by the hours spent drifting.

Table 45

CATCH PER UNIT EFFORT (CPUE) BY FISHING METHODS ON GUAM (Kilogram Per Boat Hour) 1983-1987					
Gear Type	1983	1984	1985	1986	1987
Trotling	6.36	6.5	5.8	4.6	4.4
Bottom	2.74	4.0	2.7	2.6	2.4
Atulai	2.07	N.A	4.3	7.6	1.6
Spearfishing Snorkel	3.41	4.6	6.3	6.3	5.2
Spearfishing SCUBA	3.08	3.4	5.6	9.6	N.A
Long -Line	9.71	N.A	N.A	N.A	N.A
Ika-shibi	1.95	N.A	N.A	N.A	N.A
Other	3.40	N.A	N.A	N.A	N.A

Source: Aquatic and Wildlife Division Annual Reports, 1983 thru 1987

not qualify). The Small Business Administration is another possible source of capital; however, their program is not tailored to meet the needs of the fishermen.

The improved availability of capital financing should be limited to larger size vessels that would result in substantially increased vessel range. This would increase accessibility to fishing grounds and the potential economic viability of the operation.

☐ **Recommendations (Capital Financing):**

- 1) Low interest capital funding should be made available and targeted to fund larger vessels with improved operational cost efficiency and range to fish the whole Mariana chain.
- 2) Change the agriculture loan program of GEDA to include fisheries and then refund this redesigned agriculture loan program of GEDA.
- 3) Pursue joint ventures with U.S. and foreign investors.

Marketing (Domestic Fishery)

A major constraint to growth of the small-scale domestic fishery is the marketing competition between the domestic catches and the "incidental catches" and low quality fish from the purse seine and longline vessels. The "incidental catch" and low quality fish are not suitable for transshipment, and frequently find their way into the local market at a relatively low price. At the same time domestic fishermen have invested in boats and equipment to provide fresh, high-quality fish for the local market. Unfortunately, consumer awareness of and preference for fresh as opposed to frozen fish, has not reached a degree of awareness sufficient to support a large price differential based upon fish quality.

Another constraint faced by the fishing industry is the lack of information relayed to fishermen, regarding the distribution, abundance, and seasonal patterns of target species.

The prospects for increased exportation of the domestic fisheries catch does not seem likely. As mentioned previously, the small scale fisheries industry has difficulty competing with imports in the Guam market. The domestic market demand exceeds the supply during most seasons of the year. There are periodic gluts of mahimahi, tuna, and atulai in the markets as seasonal runs occur; however, these are infrequent and not sufficient to warrant a major export effort.



A customer looks over the selection of fresh deep sea and reef fish sold at the Fisherman's Coop Market in Agana.

The Guam Fishermen's Cooperative Association was established in 1978 to provide a market outlet for the domestic small boat fishery catch. The purpose of the Coop was to relieve fishermen of the double duty of catching the fish and then trying to locate a market for their catch. However, the Cooperative over the years has had varying degrees of success in fulfilling its goals. An evaluation by a technical expert from the South Pacific Commission of the Coop's operations pointed out a number of long-term pervasive and fundamental problems that need to be resolved for the Coop to function properly and support the marketing aspect of the domestic fishery. Key issues that were identified as critical to the continued operation of the Coop are listed:

Organization

There is an urgent need to reorganize the Cooperative's structure. Present organization structure results in a lack of financial responsibility of individual members for the well being of the Coop as an entity. The aim must be to involve fishermen in the full enterprise and not just the part that directly concern them (price for their fish at landing). Member's interest would be best served by a dynamic fish marketing business in which they share the profits of the full enterprise instead of taking their full "guaranteed" income at the landing point.

The Coop should be run as a business on sound economic principles, with the aim of making a profit. Fishermen should be full members of this enterprise and take a share of the overall profit, and, in theory, share the risk.

Membership should be considered as investing into a business, and thereby contributing to the financing of the cooperative enterprise. This could be done on a shareholding basis. Profits (and losses) are equally distributed amongst share holders. The \$50 membership fee is not sufficient to commit members seriously to the Coop.

Facilities

The retail portion of the Coop is of adequate size and adequately equipped. The Coop's present processing facilities do not meet structural hygiene standards for food handling establishments. It is important that this is upgraded and routine daily and weekly cleaning regimes are implemented.

The refrigeration unit (chiller, freezer and blast freezer) is not efficiently designed which results in inefficient use of the unit. The refrigeration unit was not properly utilized with improper segregating fish of different ages, improper storing of fish which

blocked access to the blast freezer, and improper freezing procedures of fish to preserve quality.

• **Marketing**

There is a need to develop an overall fish marketing strategy for the cooperative based on the recommendations that may come out of the organization review. Management should be further encouraged to purchase fishery produce from external sources (e.g., tuna from the longliners based in Guam, prawns, imported reef fish from the region) with the purpose of supplementing local supplies. This would help diversify the range of products on retail sale, help smooth out periods of poor supplies from local fishermen, and therefore maintain adequate stock coverage for consumers. Having good stocks of fish coupled with improved quality would encourage customers to return for future purchases. The probable additional profits made from this expansion can be utilized by the cooperative for the benefit of the business and consequently its members. This would require further input by a fisheries technologist to advise on the alternative strategies available, upgrading of present facilities, alternative processing procedures, etc.

Instead of Coop members receiving guaranteed prices for their fish, prices should be influenced by the market. The guaranteed price for fish at landing should be reduced to approximately 2/3 of the predicted final market price per pound. Members could receive a dividend based on a proportion of the profits the cooperative makes and distributed on a basis of the weight of fish caught by individual members.

• **Handling and Processing**

Procedures on how to best package fish (e.g., vacuum packs, vacuum skin packs, etc.) for retail sale at the Coop or for a supermarket outlet should be initiated. This would improve marketability of products. Technical assistance can be provided.

• **Training in Quality of Fish Landed and Management of the Coop**

Training will play a key part to improving the technical operations of running the Coop. In addition, fishermen need to be trained on the proper on-board handling of fish destined for commercial fish processing operations. Staff running the processing operation need training on general fish handling and processing, particularly on using refrigerated storage.

☐ **Recommendations (Marketing)**

- 1) Minimize the negative impact of incidental catch entering the local market by encouraging its export and channelling local sales through the Fishermen's Coop.
- 2) Promote consumer awareness of the different grades of fish.
- 3) Establish a labeling law which allows only fish which have never been frozen to display the label "Fresh Fish". If a fish has been frozen it must then be labeled "Frozen Fish". The law should include a provision for identifying the country of origin in the label.
- 4) Develop alternative market channels (e.g., military, Hawaii, U.S. Mainland and Japan).
- 5) Provide technical assistance in the restructuring and management of the Guam Fishermen's Cooperative Association.
- 6) Develop a regional network marketing system based in Guam for fishery products that are targeted for Asian and U.S. markets.
- 7) Provide training courses for the fishermen in handling of fish on-board the vessel prior to delivery to the market.
- 8) Provide training courses for the management in the business and marketing operations needed at the Guam Fishermen's Cooperative.
- 9) Contact the military food procurement inspectors at the military bases on Guam and attempt to gain access to this potentially lucrative market for GFC's fishery products.
- 10) Evaluate the installation of an ice making machine at the Coop. A small machine producing about 500 to 1000 lbs per day should suffice with a store to hold three days' production of ice.

Vessel

The small-scale domestic fishery is functionally limited to the resources within an approximate 50 mile radius of Guam due to limitation in vessel size and equipment. The domestic motorized boating fleet (Table 46) is dominated by vessels of smaller size. This restricts the range and duration of fishing activity per trip. Subsequently, the resources within this 50 mile radius receive the greatest harvest pressure. The predominate use of gasoline outboard motors as opposed to diesel inboard propulsion raises the

Table 46

DOMESTIC FISHING FLEET SPECIFICATIONS¹

1981

Vessel Size	Number of Vessels	Engine Type	Range ² km	Type Of Fishing
18' - 21'	8	Gas Outboard	30	Troll, Bottom
18' - 21'	4	Gas Inboard	30	Troll, Bottom
21' - 24'	5	Gas Inboard	50	Troll, Bottom
24' - 26'	3	Gas Inboard	50	Troll, Bottom
20' - 25'	5	Diesel Inboard	100	Troll, Longline, Bottom
30' - 42'	5	Diesel Inboard	100	Troll, Longline, Bottom

Notes ¹ Includes Charter Vessels and vessels involved in commercial fishing on a full-time or part-time basis. Additional 54 part-time fishing (non-commercial) vessels (ACOE, 1983)

² Range refers to distance safely navigated out from Guam's shores.

Source: Grosenbau, unpublished

operating costs of vessels while increasing speed. The sacrifice of cost and efficiency for speed and small size is characteristic of a part-time commercial fishery where participants have alternate employment and fish only on weekends, holidays, and after working hours.

☐ Recommendation (Vessels)

- 1) Encourage the use of larger vessels with improved operational cost efficiency and range.

Insurance

The high cost and difficulty in obtaining marine vessel insurance on Guam has also restricted investments in vessels. However, with the completion in 1987 of the Harbor of Refuge in Apra Harbor, lower insurance premiums should be forthcoming.

☐ Recommendations (Insurance)

- 1) Efforts should be made to obtain more favorable rates, since high insurance premiums deter capital investment in the fisheries as well as other boating activities (e.g., tourism related).

- 2) Group coverage should be pursued through the Guam Fishermen's Cooperative Association or other representative organizations of the boating community.

Infrastructure (Small-Boat Domestic Fisheries)

Infrastructure is critical to the progressive development of the marine resource sector, as it is with the other sectors of the economy. The addition of support infrastructure will facilitate access and the use of the resources. In support of the domestic fisheries and recreational use of the marine environment, improved access along key coastal areas around the island will enhance the utilization of the resource. Boat ramps and ancillary facilities such as parking, restrooms, wash down areas, and lighting will improve boating access. Support facilities and services are also needed, such as those associated with a dry dock facility. These would provide a mechanism and areas for hauling out, storing and working on boats, and would stimulate growth in the number of specialty shops for vessel repairs (e.g., marine carpentry, metal work and machine shop, fiberglass shop, electronics shop, sailmaker, engine mechanics shop and chandler).



The Agana Boat Basin, the island's primary public facility for small boating activities, falls under the administrative purview of the Port Authority of Guam. PAG is currently pursuing a program to privatize, upgrade and expand the facility.

Installation of Fish Aggregating Devices and navigational structures are some other areas of infrastructure improvements to enhance the use and safety of the marine resources. Additional boat slips for both commercial

and recreational vessels will also be needed with the growth of boating activities.

Proper maintenance of the infrastructure is as important as the addition of new facilities. Maintenance of all harbors and associated facilities are the responsibility of the Port Authority of Guam. The Port is pursuing a policy of privatization of many services provided to the public boating community. Maintenance of boating infrastructure associated with parks is the responsibility of the Department of Parks and Recreation.

» **Living Marine Resource (Large-Scale Fisheries)**

Federal Law

Development of Guam's tuna transshipment industry via ocean freight will remain restricted as long as the Jones Act, which prohibits the use of non-U.S. hulls between U.S. ports applies to Guam but not to the CNMI. This unequal application of the law results in an unfair and artificially imposed advantage for the CNMI. However, because of its advanced infrastructure, Guam receives most of the economic benefits (reprovisioning, fueling, etc.) from transshipment irrespective of the fact that physical transfer occurs in the CNMI. There is always the danger of losing this benefit transshipment activity if Guam does not maintain a competitive advantage. This calls for close monitoring of the industry's cost structure on Guam and in the CNMI.

☐ **Recommendation (Federal Law)**

- 1) Pursue relief from restrictive federal laws and regulations as part of the negotiations for Commonwealth Status.

Support Services

The main economic impact of the purse-seine fleet on Guam is revenue generated from reprovisioning, fuel purchases, repairs and crew leave expenditures. This has been estimated to amount to \$70,875 for U.S. vessels and \$23,825 for Foreign vessel per port call exclusive of fuel purchases. Reprovisioning and associated expenditures have been projected to result in first round economic impacts of approximately \$16.3 million per annum (1985) on Guam.

☐ **Recommendation (Support Services)**

- 1) Improve dockage and support services available at the Commercial Port.

Infrastructure (Large-Scale Fisheries)

Infrastructure requirements of the large-scale fisheries consist mainly of support services at the Port Authority in Apra Harbor. Limited wharfage area at the Port to quickly service fishing vessels and facilitate the offloading process represents an increasing constraint for the expansion of off-loading and home-porting of vessels in Guam.

☐ **Recommendation (Infrastructure)**

- 1) Develop additional wharfage area at the Commercial Port.

Market (Large-Scale Fisheries)

The tuna industry worldwide has been depressed, especially during 1982-1985. This has resulted in significant shifts in the structure of the industry with regard to the U.S. The industry can be very volatile which is exemplified by the four canneries in California and Hawaii that were closed during this period. This had a direct impact on Guam's tuna transshipment, since these canneries were the main destination for shipments from Guam. During this time period, the U.S. tuna harvesting capacity and tuna fleet were significantly reduced (NMFS, 1986). In addition, there were decreased cannery deliveries of domestically caught tuna, a decline in U.S. cannery production, and increased imports of canned tuna. The shift is towards foreign canneries with tuna resources purchased on international markets rather than tied to contracted or company-owned fleets as had been the practice of U.S. canneries in the past.

Guam's geographic location and developed infrastructure have resulted in continued economic benefits from port calls and provisioning despite the worldwide slump in the tuna industry. The major deciding factors in the future development of the large scale tuna industry on Guam are determined by forces which are not under the island's control. This relatively mobile industry is influenced by world markets, exchange fluctuations, international law and resource abundance in the harvest of a migratory species.

☐ **Recommendation (Market)**

- 1) Continually monitor and evaluate the market potentials that may influence transshipping and support services to keep Guam competitive within the region.

» **Non-Living Marine Resources**

Pollution

Mining, mineral processing, and petroleum production are "dirty" industries that produce many pollutants. Heavy metals, for example, are known to be extremely toxic to the larvae of most fishes and marine invertebrates and are subject to bioaccumulation in marine food webs. It may well turn out that Guam, which depends upon the beauty of its marine and terrestrial environment to attract tourists, would be economically better served by not encouraging the development of marine mineral production and processing industries.

☐ **Recommendation** (*Pollution*)

- 1) Thoroughly evaluate the potential negative impact of off-shore mining and processing.

Unknown Resources and High Cost of Exploration

Exploratory research is very costly and there are no guarantees that resources of recoverable value will be discovered in Guam's EEZ. Development of potential resources will be lengthy and costly. It is highly unlikely that cost effective technology will be developed within the next 20 years that will allow for the ability to mine potential resources.

☐ **Recommendation** (*Unknown Resource and High Cost of Exploration*)

- 1) Pursue federal assistance in assessing the potential resources.

Opportunities

» **Living Marine Resources**

Added value processing and enhancement of fishery products for high priced market sectors offer an area of potential development for the domestic commercial fishery. The prospect of diversifying the market for Guam's domestic tuna fishery to the upscale sashimi market has potential. However, the upgrading of handling, processing and shipping of high quality fresh yellowfin or bigeye tuna to major markets will require a significant increase in the sophistication of the current marketing and production system of Guam's fishery products.

Seamount fishery stocks are very important to the development of local fisheries. Research is being carried out by the Marine Laboratory (UOG) on seamounts in Guam's waters which may lead to the enhancement of the domestic fisheries. In addition, a proposed remote sensing study to locate potentially unidentified seamounts could help expand domestic fishing grounds.

Access to fishing grounds is another important factor in efficient utilization of the resource. The major port for domestic fishing activity is Agana, with Merizo of secondary importance. Expansion of infrastructure such as four additional boat launching ramp sites and a small boat harbor in Agat which is scheduled to be completed in late 1989 should improve the frequency of fishing and accessibility to fishing grounds near these locations. In addition, the Fishermen's Coop dockside market, storage and fueling facility enhances the servicing of the small-scale domestic fishery.

Improved fishing methods can also increase domestic fisheries production. Research by the Marine Laboratory (UOG) and the Division of Aquatic and Wildlife Resources (Department of Agriculture) has helped investigate various methods for improving the catch per unit effort (CUPE) of existing fisheries and establishing new fisheries.

An increase in the size of vessels that are utilized in Guam's domestic commercial fisheries would increase the range and duration of fishing trips, thereby opening up new fishing grounds and lowering operational costs through economies of scale. The recent change in the Jones Act allows foreign built vessels up to 200 gross tons to be used in the Guam fishery. This change would seem to encourage an increase in the average vessel size used in the domestic commercial fisheries. However, there still remains the difficulty of financing the purchase of the lower cost foreign vessel. NMFS loan programs are restricted to the purchase of vessels constructed in the U.S. Thus, the difficulty and cost of financing reduces potential benefit from economies of scale and cheaper foreign vessel prices.

Development of the charter boat fishing industry targeted towards serving Guam's large tourism sector is another area that has potential if properly promoted and marketed. The potential of promoting the interest of sport fishing clubs in Japan and tying in with the tour packages from Japan should be explored.

With the rapid development of the longline fishery on Guam there are opportunities for domestic fishermen to expand their operations into this fishery and take advantage of the transshipping support services at the

Commercial Port to obtain high market prices for quality sashimi grade tuna airfreighted to Japan. Furthermore, with this fishery there continues to be interest from foreign investors in participating in the fishery both in the catching and transshipping/marketing components.

The prospects of a tuna cannery on Guam would appear dim due to the current depressed state of the world-wide tuna industry. Other major hurdles to establishing a tuna cannery on Guam include the adverse environmental impact, high cost of meeting environmental protection regulations, and relatively high labor costs. Some of the advantages of locating a cannery on Guam include access to the U.S. market without import duty (35% tuna in oil, 6% tuna in water), sufficient water and power, proximity to fishing grounds, excellent port and support facilities, and a stable political environment. Duty-free access to the U.S. market, which represents the market for 50% of all canned tuna world wide (NMFS, 1986), is a major consideration. As the world trade and economic environment change, it may in the future become more attractive to establish a cannery on Guam.

To attract the home porting of vessels, Guam must be competitive with alternative sites. A careful periodic review and evaluation of the critical deciding factors for vessel location and Guam's competitive attributes as a transshipment port could be well justified. Care should be exercised, however, not to become over committed to this highly mobile multinational industry without assurance of long term benefits to Guam's economy.

There is a possibility that Guam would be able to receive fees obtained through permits issued to foreign vessels fishing within the 200-mile Exclusive Economic Zone (EEZ) of Guam. Such a provision is incorporated into the draft Guam Commonwealth Act. Under this provision, Guam would potentially benefit mainly from the fees charged to foreign (non-U.S.) tuna vessels fishing within Guam's waters. However, this may amount to an insignificant benefit for a number of reasons. First of all, the U.S. still considers tuna a migratory species and has a policy of not issuing permits for tuna fishing activity. Guam's EEZ is restricted in size by the CNMI in the north and by the FSM in the south. This reduces the total size of the fishing grounds. Furthermore, Guam is usually not considered a prime fishing area for purse seiners. These permit fees could be a source of revenue to the Government of Guam in the future if the permit issuing provisions and receipt of the fees collected are changed. An estimate of the potential fees collectable is difficult to project, since adequate information is not available on the number of vessels, origin of the vessels and catch size within Guam's waters.

Guam's marine resources provide numerous opportunities for a wide variety of recreational and sport activities. Some of those include swimming, snorkeling, SCUBA diving, windsurfing, jet skiing, boating and fishing. Certain activities have increased in recent years, including windsurfing, jetskiing, SCUBA diving, and boating activities involving fishing, sailing and dinner cruises. The newest marine activity in Guam's waters is the operation of a submarine tour in Apra Harbor. Plans have also been discussed in the past for an underwater observatory, a marine life park and an aquarium; all representing opportunities related to Guam's marine resources.

There is a potential for Guam to be a base for Japanese recreational boating activities with sail and motor boats docked at the various small-boat harbors. This could bring in revenue from dockage and services to maintain and crew the vessels.

Sporting activities associated with the marine environment can likewise benefit the economy. International sailing and windsurfing events are annual occurrences on Guam. This draws contestants from around the world. Events such as international sport fishing, jet-skiing and motorboat races are examples of possible new activities to broaden international and regional sporting events. In addition, the rising interest in marine sports has encouraged the construction of man-made freshwater and seawater recreation parks.



Apra Harbor represents the heart of Guam's shipping industry. In FY 1988, a total of 819,981 incoming revenue tons were handled at the Port Authority of Guam.

Marine recreation activities not only provide positive social benefits to Guam's residents, but they also generate considerable economic benefits. For example, many new shops have opened on Guam offering SCUBA equipment, SCUBA tours and SCUBA instruction classes. Also, at least two companies have added or are adding new boats to their charter/dinner cruise operations to accommodate the growth in tourists on Guam.

Secondary economic benefits are also realized through increased recreational activities as they require a variety of support services. Examples of businesses which provide support to the recreation industry include equipment and provisions for charter operations, maintenance services for equipment and boats, insurance coverage, fuel purchases, infrastructure services, and engineering and construction services for dredging and providing other access-related support facilities. Four examples of the latter are construction of the new Agat marina currently in progress, planned micro-dredging of Tumon Bay, construction of new boat launching ramps around the island and master planning of Commercial Port to provide more locations to accommodate the growth in recreational activity based in Apra Harbor.

Properly planned and developed, marine recreation activities can be a continuous source of social and economic benefits to Guam in the future.

» **Non-Living Marine Resources**

The potential opportunities in the development of the non-living marine resources should be thoroughly evaluated as to their interaction with the living marine resources prior to development. Potential negative impacts should be minimized if not totally avoided.

Ocean Thermal Energy Conversion (OTEC) offers the potential of a non-polluting renewable energy source. Pilot electrical generation through OTEC has been carried out in Hawaii, Nauru and Tahiti. Hawaii is currently utilizing OTEC technology in aquaculture at the Natural Energy Park on the island of Hawaii. Guam offers the most ideal physical conditions for the application of OTEC. Guam's warm surface waters and access to deep cold water within a relatively short distance from shore presents ideal physical siting on Guam.

Previous studies (Corey, 1975; Craig, et.al. 1977; Lassuy, 1979; Rowley, 1980) provide an assessment of environmental factors and an evaluation of OTEC technology to Guam. However, at this stage in the development of the technology, OTEC remains too costly and is not competitive with non-renewable energy sources (fossil fuel generated electricity). As the technol-

ogy develops and costs of operation decrease along with the likelihood of increased fossil fuel costs in the future, OTEC does offer Guam a potential opportunity. Use of OTEC would substantially reduce Guam's trade deficit as well as a non-polluting renewable energy source with many secondary applications (aquaculture, air-conditioning, refrigeration, etc.).

Utilization of potential marine mineral resources remain to be evaluated. Guam is only in the early phase of exploration into assessing the potential mineral resources.

C. PROJECTED GROWTH

Improved infrastructure will help the fisheries industry to grow and play a greater role in Guam's economy. The four boat launching ramps, the Agat small boat harbor and the installation of underground storage tanks, and diesel and gas pumps at the Agana Boat Basin will all contribute to the industry's base of growth. The rise in both transshipment tonnage and the number of fishing vessel port calls indicate active expansion in the fisheries sector. As infrastructure improvements are realized, the industry's growth will move ahead towards Guam's goal of self-sufficiency.

The key factor in the growth of both the domestic small vessel and large-scale fisheries will revolve around marketing. The development of improved and new market channels, new products and improved management of existing and new opportunities are fundamental to the growth and success of the fisheries industry.

D. POLICIES

» Living Marine Resources

Reef Fishery:

1. Provide for the protection of critical habitats against environmental damage.
2. Determine which species are in need of stock management.
3. Establishment of appropriate regulations to prevent over-harvesting of those species in need of stock management.

4. Develop appropriate commercial harvesting regulations to ensure long-term stock productivity.
5. Maximization of reef resource harvesting for home consumption and domestic marketing.
6. Develop marine reserves at strategic locations around the island.

Domestic Small-Vessel Fishery:

1. Provide investment opportunities for the small-vessel commercial fishery through encouraging multipurpose activity which includes part-time charter boat activity, etc.
2. Enhance recreational opportunities for sport fishermen.
3. Enhance Guam's development of charterboat fishing opportunities through marketing and promoting to the tourism industry.
4. Improve safety of small-boat fishermen.

Large-Scale Fisheries:

1. Provide for local investment opportunities in the large-scale fishery.
2. Expansion of infrastructure to meet the needs of large-scale fishery in those situations where it can clearly be demonstrated that expansion will result in net economic and social benefits for Guam.
3. Preservation of the productive potential of resources harvested by the large-scale fisheries.
4. Exploration and development of new potential resources in areas accessible to large-scale harvesters.

Recreation Use of Resource:

1. Maintain the quality of marine resources by preservation of natural habitats for marine life.
2. Insure the compatibility of activities within a given area for safety reasons

3. Identify and maintain acceptable carrying capacities for different marine use activities in each area. This is necessary for planning purposes to ensure the safe use of the area and to ensure the areas do not receive negative impacts endangering the quality of the environment and the presence of marine life.
4. Provide more support infrastructure to access the marine resources.
5. Improve harbor areas to accommodate more berths for boats.
6. Restock marine life in areas which have been depleted or damaged in the past.
7. Provide financial incentives to marine recreation businesses if determined necessary.

» **Non-Living Marine Resources**

Mineral Resources:

1. Promote cooperative efforts with other nations in the Pacific for the development, assessment, and use of marine mineral resources.
2. Promote the assessment of the geological, geophysical and energy resources as well as geophysical hazards in the coastal and adjoining offshore areas of Guam.

E. GOALS

1. Optimize the social and economic benefits accruing to Guam from harvesting aquatic resources in the EEZ.
2. Insure the conservation and management of aquatic resources for the benefit of succeeding generations.
3. Encourage import replacement and substitution by increasing the availability of locally produced fishery products.
4. Create balanced fishery development in the sense that large-scale harvesting, transshipment, and processing interface with and complement

traditional subsistence, artisanal, recreational, charterboat, and small-to medium-scale commercial activities.

5. Expand activities and pursue opportunities in the recreational and sport utilization of the marine resources.
6. Assess the potential offshore mineral and other non-living marine resources within Guam's EEZ.

F. OBJECTIVES

- To increase the domestic small-vessel fishery production by an average of 5% per year over the next five years.
- To improve the marketing channels for the domestic small-vessel fishery to facilitate increases in sales at an average rate of 10% per year over the next five years.
- To develop opportunities for value added processing of fishery products.
- To develop potential export markets for fishery products of Guam and the region.
- To develop Guam as a focal point for the processing and marketing of fishery products from the region.
- To improve monitoring and assessment of the domestic fisheries and associated activities.
- To increase opportunities for involvement of domestic fishermen in the large scale fisheries by 1991.
- To increase charter boat fishing activities with the main emphasis on capturing benefits of the tourism industry by 20% per year over the next five years.
- To increase fish transshipment activity through Guam by an average of 15% per year over the next five years.
- To minimize the negative impact of federal laws and regulations on the fisheries of Guam.
- To improve support facilities for the domestic sport and commercial fisheries to result in an increase of 10% of the annual commercial catch for each year over the next five years.
- To improve the support facilities for the large-scale fisheries by 10% of the annual revenue derived from the large-scale fisheries to Guam over the next five years.

- To enhance subsistence/recreational fisheries production by 10% per year over the next five years.
- To improve the availability of low-cost capital for commercial fishing activities.
- To minimize the possible negative impacts of the large-scale fishery on the domestic small-boat fishery.
- To assess and promote the investigation of mineral and other non-living marine resources potential within Guam's EEZ.
- To enhance the marine environment and access to it for recreational and sport purposes.

G. PROGRAM STRATEGIES

Strategy I (Enhancement, Management and Development of Reef Fisheries)

Implement the following projects:

- Development of Sea Cucumber Fisheries in Guam and the Micronesian Islands.
- Recolonization of Coral Reefs Following Natural and Man-Induced Damage.
- Preliminary Evaluation of Marine Mollusk Resources of Guam.
- Identify and Establish Marine Reserve Sanctuaries.

The above projects provide a basis for the growth, management and development of reef fisheries on Guam. In addition, they provide for the diversification of fisheries products on Guam.

Objectives Addressed:

- To enhance subsistence/recreational fisheries production by 10% per year over the next five years.

Strategy II (Increase Opportunities in Commercial Fisheries)

Implement the following projects:

- Charter Boat Fishery Targeted at the Tourism Industry: Analysis and Promotion.

The above project would provide additional opportunities to commercial fishermen and those interested in entering the industry. Diversification

of the activities in the industry will help to capture a fuller utilization of the marine resources and the benefits from Guam's tourism industry.

Objective Addressed:

- To increase charter boat fishing activities with the main emphasis on capturing benefits of the tourism industry by 20% per year over the next five year.
- To improve the marketing channels for the domestic small-vessel fishery to facilitate increases in sales at an average rate of 10% per year over the next five years.

Strategy III (Enhancement and Development of Off-Shore Fisheries)

Implement the following projects:

- Enhancement of the Effectiveness of Fish Aggregating Devices with Submerged Lights.
- Identification of Uncharted Seamounts (to Increase Fishing Grounds) and Study of Seamount Ecosystems.
- Restocking of Reef and Shallow Water Species Suitable to Production by Aquaculture Methods.
- Development of Slope-Dwelling Marine Fish and Crustacean Resources.
- Development of Techniques for Predicting Unusual Fluctuations in Resource Availability.

The above projects would improve and expand the catch per unit effort especially in the fisheries that are near to their maximum sustainable yield. They would also help manage the resource. It would also help assess and quantify fish that aggregate around FAD's, detect and describe diurnal and nocturnal differences in species assemblages, detect and describe vertical and horizontal migration diurnal and lunar patterns, extend the use of FAD's, and possibly new species of commercial value.

Objective Addressed:

- To increase the domestic small-vessel fishery production by an average of 5% per year over the next five years.
- To enhance subsistence/recreational fisheries and increase production by 10% per year over the next five years.
- To improve support facilities for the domestic sport and commercial fisheries to result in an increase of 10% of the annual commercial catch for each year over the next five years.

Strategy IV (Improve Capital Availability)

Implement the following projects:

- Expand the GEDA Agriculture Loan Program to Commercial Fisheries.
- Promotion of Joint-Venture Fishery Projects.

The above projects would provide the opportunity to local commercial fishermen to upgrade their vessels and equipment. It would also provide the opportunity to enter the large-scale fisheries.

Objectives Addressed:

- To improve the availability of low-cost capital for commercial fishing activities.

Strategy V (Improve Marketing Channels and Processing)

Implement the following projects:

- Aquaculture and Fisheries Products Processing Plant.
- Fish Handling and Marketing Assistance to the Guam Fishermen's Cooperative.
- Open Marketing Channels to the Military Market on Guam.
- Explore Market Opportunities and Identify Procedures for Entering Markets in Japan, Hawaii and the U.S. Mainland.

The above projects would improve the marketing ability and the options to market catches. An efficient and reliable marketing mechanism is critical to the development of both the domestic fisheries and aquaculture industries.

Objectives Addressed:

- To improve the marketing channels for the domestic small-vessel fishery to facilitate increases in sales at an average rate of 10% per year over the next five years.
- To develop opportunities for value added processing of fishery products.
- To develop potential export markets for fishery products of Guam and the region.
- To develop Guam as a focal point for the processing and marketing of fishery products from the region.

- To improve support facilities for the domestic sport and commercial fisheries to result in an increase of 10% of the annual commercial catch for each year over the next five years.
- To minimize the possible negative impacts of the large-scale fishery on the domestic small-boat fishery.

Strategy VI (Improve Information Base on the Domestic Fisheries)

Implement the following project:

- Establish a Data Base on the Vessel License Documents Issued by the Department of Public Safety.

This project would provide needed information on the fisheries and assist in developing management and assessment of the economic impact of the fisheries. It would also provide needed information in planning for infrastructure improvement and expansion.

Objectives Addressed:

- To improve monitoring and assessment of the domestic fisheries.

Strategy VII (Improve Information Base on the Long-Scale Fisheries)

Implement the following projects:

- Analysis of the Impact of Tuna Purse Seiner and Longline Fishing Pressure on the Domestic Small-Scale Fisheries.
- Study of the Longline Fishery in Guam: Assessment of the Socio-Economic Impact.
- Data Collection on the Off-loading/Transshipment and Fishing Activities of the Large-Scale Fisheries.

These projects would provide data and an assessment of the large-scale fisheries which could be used to analyze the economic impact of the industry. It would also provide critical information for the proper management and planning for the fisheries not only on Guam, but throughout the region.

Objectives Addressed:

- To improve the support facilitated for the large-scale fisheries by 10% of the annual revenue derived from the large-scale fisheries to Guam over the next five years.

- To increase opportunities for involvement of domestic fisheries in the large-scale fisheries by 1991.
- To minimize the possible negative impacts of the large-scale fishery on the domestic small boat fishery.
- To minimize the negative impact of federal laws and regulations on the fisheries of Guam.
- To increase fish transshipment activity through Guam by an average 15% per year over the next five years.
- To improve monitoring and assessment of the domestic fisheries and associated activities.

Strategy VIII (Improve Support Infrastructure to the Fisheries Industry)

Implement the following projects:

- Dry Dock and Support Facility Feasibility Study.
- Expansion and Improvement of the Merizo Boat Launching Ramp and Pier Complex.
- Construction of a Boat Launching Ramp on the Windward Side of the Island.
- Expansion of docking and support facilities at the major small-boat harbors.
- Expansion of Docking Area and Support Services for the Large-Scale Fisheries at the Commercial Port of Guam.

Infrastructure improvements are necessary to facilitate the development of all sectors of the fisheries industry.

Objectives Addressed:

- To improve support facilities for the domestic sport and commercial fisheries by 10% of the annual commercial catch for each year over the next five years.
- To improve the support facilities for the large-scale fisheries to result in an increase of 10% of the annual revenue derived from the large-scale fisheries to Guam over the next five years.
- To enhance the marine environment and access to it for recreational and sport purposes.

Strategy IX (Facilitate the Expansion of Marine Recreational Activities)

Implement the following projects:

- Analysis of Potential Sites and the Impact of Establishing Marine Reserves and/or Santuraries.
- Establishment of a Marine Reserve/Sanctuary.
- Establish Underwater trails.

The above projects would help facilitate preservation of the marine environment and access to scenic natural marine life and habitats. This would also enhance the resource by providing a stable population for replenishment of the natural stocks. Certain characteristics determine whether or not a particular site offers opportunities for various marine recreation activities. Some of these characteristics are wave and current conditions, undersea landscape, availability of onshore facilities, depth of the water, visibility in the water, accessibility to the water, abundance of marine life, and presence of competing, compatible or incompatible users in the water. The government does not have control of all of the above conditions, but it does have the ability to influence some of them.

Objectives Addressed:

- To enhance the marine environment and access to it for recreational and sport purposes.
- To enhance subsistence/recreational fisheries production by 10% per year over the next five years.
- To improve support facilities for the domestic sport and commercial fisheries to result in an increase of 10% of the annual commercial catch for each year over the next five years.

Strategy X (Assess Opportunities for the Development of Non-Living Marine Resources)

Implement the following projects:

- Baseline Environmental Surveys of Beach, Inshore, and Nearshore Areas for Coastal Erosion and Coastal Engineering Studies.
- USGS Proposed Geological Studies in Guam's EEZ.
- Compilation of Basic Geological/Geophysical Data Prerequisite to Evaluation of Resource Potential.
- Cobalt/Manganese Crust and Nodule Studies.
- Evaluation of Metalliferous Enrichment Related to Island Arc Volcanism.
- Evaluation of Geophysical Hazards and Their Potential Impact.
- Bathymetric and Seabed Mapping of Guam's EEZ.

The implementation of the above projects will provide an assessment of the marine mineral resources within Guam's EEZ and the information on the possible options for developing this resource.

Objective Addressed:

- Assess and promote the investigation of the mineral potential within Guam's EEZ.

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A. HISTORY AND CURRENT STATUS

Aquaculture has great untapped potential for development as a sector within Guam's economy. The first experimental and demonstration farm was established in 1973 by the Division of Aquatic and Wildlife Resources, followed by the first commercial operation in 1975 (FitzGerald and Nelson, 1979). Since that time the industry has grown significantly despite numerous obstacles. Today there are approximately 100 acres of private ponds constructed. The species currently under cultivation include tilapia, milkfish, freshwater prawn, Chinese carp, and Asian catfish.

The *Aquaculture Development Plan for the Territory of Guam* (FitzGerald, 1982) provides a thorough analysis of Guam's potential aquaculture industry along with the identification of constraints that have hampered its development. In addition, numerous feasibility studies, market analysis studies, and research projects have been carried out to document further the potentials for development on Guam.

Eleven private aquaculture farms have been established on Guam with a total of over 100 acres in ponds. However, most of these farms are not currently in production and approximately 40 acres of existing ponds lay idle due to the fact that the seed of suitable commercial species is economically unavailable. The solution to the seed supply problem is the establishment of a local hatchery serving the region. Several studies have addressed this issue (FitzGerald, 1977; Aquatic Farms, Inc., 1978 and 1979; FitzGerald and Nelson, 1979; FitzGerald, 1982; Nelson, 1986), but previous attempts by various government agencies to establish a hatchery have failed for lack of facilities and funding.

The lack of a local hatchery facility to supply the commercial farms with the fry and postlarvae presents the major constraint to the industry. This constraint will be relieved when the Guam Aquaculture Development and Training Center (GADTC) facility, recently acquired by the Government of Guam, becomes fully operational. The Guam Aquaculture Development and Training Center is a state-of-the-art facility built by a private firm in 1981 for research. The 5-acre facility consists of an indoor hatchery, a broodstock maturation room, a phytoplankton laboratory, a feed preparation room, living quarters, and an office. The outdoor facilities include 7 concrete raceways, 6 cement ponds, and 30 1-metric ton tanks. The Department of

Commerce, which administers GADTC, has completed the first phase in renovations at the facility. Operation of the facility has been initiated with the production of the freshwater prawn (*Macrobrachium rosenbergii*) postlarvae.



The Guam Aquaculture Development and Training Center, recently acquired by the Government of Guam, and administered by the Department of Commerce, features state of the art facilities. Shown in the above photographs are the larval rearing area of the hatchery, phytoplankton culture laboratory, raceways (foreground) and Swedish ponds (background).

Guam imports over \$7 million of fishery products annually resulting from an average growth rate in costs of 5% over the past 5 years (1982 thru 1987), despite increases in aquaculture and domestic fisheries production. Production from the aquaculture industry can replace a significant portion of these imports. Thus, import substitution on a competitive basis will be a major objective in the aquaculture program.

Commercial production totals by species from aquaculture over the past eight years is presented in Table 47 and Figure 25. Guam's aquaculture production amounted to 181,416 kgs in 1987, an increase of 27% over the 1986 production figure. This increase is mainly attributed to tilapia production which is not dependent upon a hatchery for the supply of fry. However, this species is generally not suited for export due to its low value. Furthermore, the domestic market demand for tilapia does not allow for further



In 1987, the total aquaculture production from private ponds on Guam was over 300 thousand pounds. Production species included tilapia, carp, catfish and milkfish.

significant increases in production of this species. It should also be noted that production values of freshwater prawn have gone from \$57,960 in 1980 to zero in 1986 and 1987. This is due to the lack of available postlarvae. The potential market value on Guam for prawns and shrimp alone is in excess of \$1.0 million per year (Aquatic Farms, 1978; FitzGerald, 1981). A rapidly growing tourism market on Guam (483,954 visitors in 1987) and throughout the region provides a ready market for these high-value quality products. The tourist-supported food industry could serve as the initial market for most of the islands in the region for higher priced aquaculture products. The relatively large military population (approximately 20% of Guam's total population) additionally represents a significant untapped market on Guam. A recent study entitled "Comparative Economics of Four Aquaculture Species Under Monoculture and Polyculture Production in Guam" (FitzGerald, In Press) evaluates the economics and cost structure of the grow-out phase in aquaculture production on Guam. It also provides the basis for

Table 47

**Annual Volume of Aquaculture Production on Guam
(Kilograms)
1980 thru 1987**

SPECIES	1980	1981	1982	1983	1984	1985	1986	1987
Freshwater Prawns	3,864	1,405	2,764	1,184	2,352	315	0	0
Marine Shrimp	0	0	1,236	0	0	0	713	0
Eel	35,000	60,000	0	0	0	0	0	0
Tilapia	2,818	10,364	39,330	31,168	30,310	66,064	102,273	125,418
Carp	0	0	2,300	1,080	1,079	412	0	239
Catfish	0	0	138	1,543	0	3,825	6,180	8,484
Milkfish	0	0	0	2,362	13,710	13,788	33,876	47,275
Mangrove Crab	0	0	0	0	182	0	0	0
TOTAL	41,682	71,769	45,768	37,337	47,633	84,404	143,042	181,416

Source: College of Agriculture and Life Sciences, University of Guam

evaluating different species and production levels in relation to changing production costs and markets. The study demonstrates the economic viability of aquaculture and identifies areas for improving the return on investment.

Guam's aquaculture industry currently exports approximately 10,000 kgs of milkfish annually to Nauru. Milkfish exports should increase over the next year, since the acreage used for milkfish production has more than doubled during 1986. In addition, the export of tilapia to Saipan was initiated in 1986 and reached approximately 2,000 kgs in 1987. Previously, eels were exported to Japan with annual exports reaching approximately 56,000 kgs valued at \$336,000.

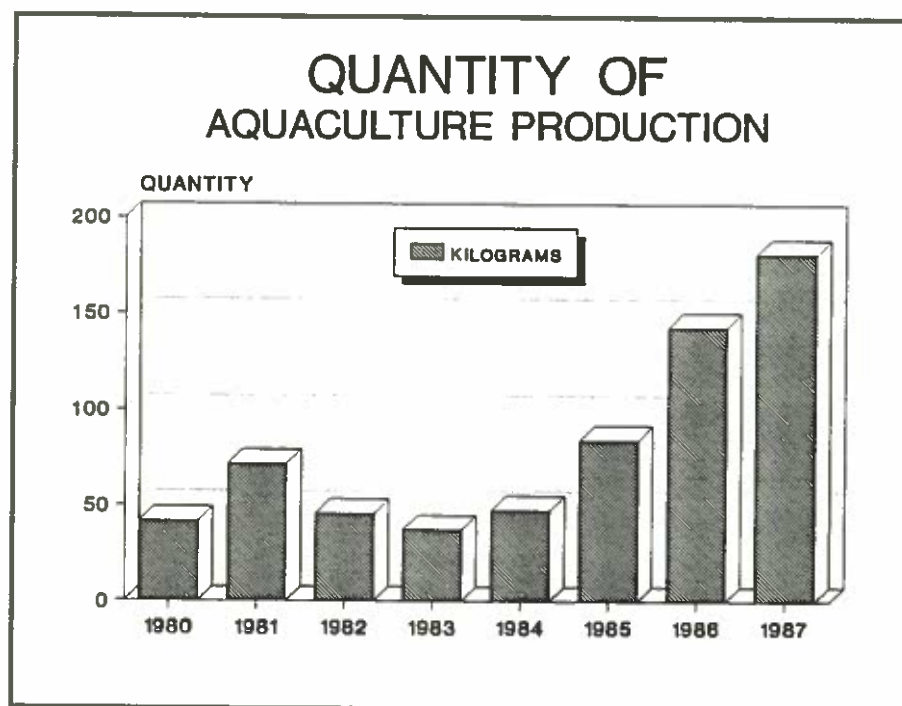
Table 48 and Figure 26 shows aquaculture production in terms of value). Nearly 100% of this production enters the commercial market either locally or as an export; this is in contrast to the domestic fishery with only 40% of the catch entering the commercial market. With the operation of the GADTC hatchery facility as a support base to the industry, the value of production from the commercial aquaculture farms on Guam is expected to exceed the value of the total domestic fishery within a 3-4 year period,

further emphasizing the potential role and importance of aquaculture in Guam's economy.

Assistance to the industry by the Government of Guam is provided through various agencies. The Department of Commerce coordinates the commercial development of the industry, and administers the Guam Aquaculture Development and Training Center (GADTC) facility in support of the commercial sector's need for seed stock. CALS's aquaculture extension program provides technical assistance to existing and potential farmers. This program helps coordinate the delivery of GADTC products to meet the farmers' demand. The University of Guam Marine Laboratory conducts research in aquaculture. The Marine Lab's program emphasizes research that will lead to diversification or improved production of commercial aquaculture. Ongoing aquaculture research projects on Guam include the following:

- Isolation and Growth Dynamics of Phytoplankton for Use at GADTC.
- Bioenergetics of Larval Signanids

Figure 25



Source: College of Agriculture and Life Sciences, University of Guam.

Table 48

Value of Aquaculture Production on Guam
(Dollars)

1980 thru 1987

Species	\$/kg	1980	1981	1982	1983	1984	1985	1986	1987
Freshwater Prawns	\$15	\$57,960	\$21,075	\$41,460	\$17,760	\$35,280	\$4,725	0	0
Marine Shrimp	\$12	0	0	14,832	0	0	0	\$8,556	0
Eel	\$6	210,000	360,000	0	0	0	0	0	0
Tilapia	\$4	11,272	41,456	157,320	124,672	121,240	264,256	409,092	\$501,672
Carp	\$5	0	0	11,500	5,400	5,395	2,060	0	1,195
Catfish	\$6	0	0	828	9,258	0	22,950	37,080	50,904
Milkfish	\$5	0	0	0	11,810	68,550	68,940	169,380	236,375
Mangrove Crab	\$10	0	0	0	0	1,820	0	0	0
TOTAL		\$279,232	\$422,531	\$225,940	\$168,900	\$232,285	\$362,931	\$624,108	\$790,146

Source: College of Agriculture and Life Sciences, University of Guam

- Growth and Energetics of Larval *Siganus lineatus*.
- Development of a Sea Cucumber Industry for the Pacific Islands.
- Sea Cucumber Fishery Development in Micronesia.

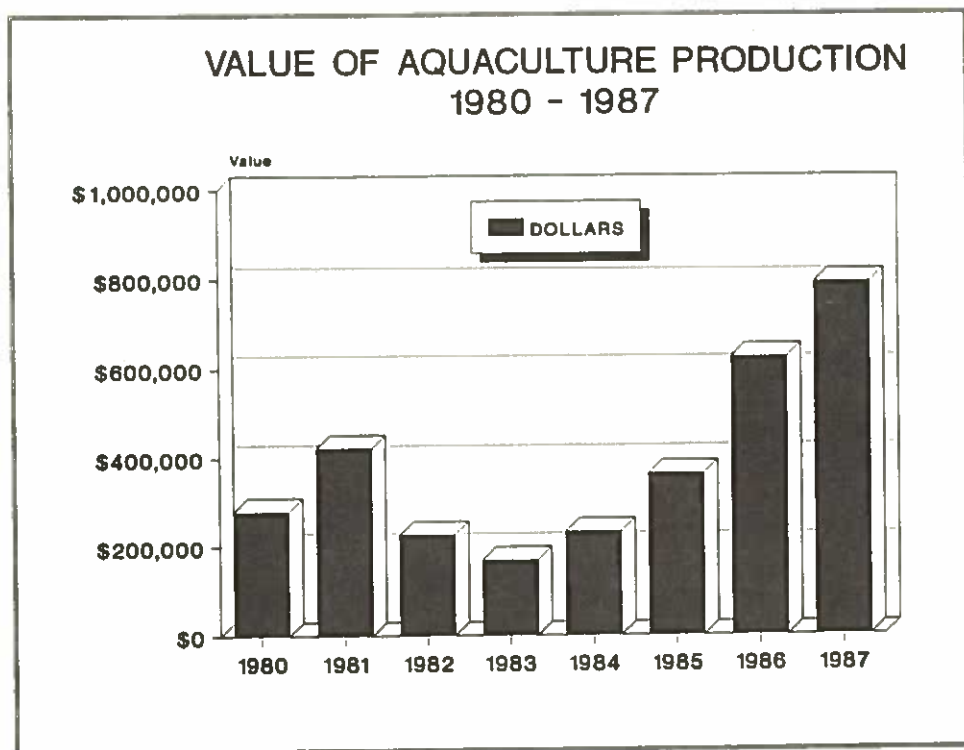
The Department of Agriculture terminated its federally funded aquaculture program in 1988 as a result of its elimination.

In other areas, however, the federal government is increasing its funding for aquaculture development, and has consolidated its programs under the U.S. Department of Agriculture as reauthorized by the National Aquaculture Plan in 1985. The U.S. Congress, through Title XIV of the Agriculture and Food Act of 1980 (U.S.C. PL-99-98) and the Food Security Act of 1985 (U.S.C. PL-99-198), designated five regional aquaculture centers throughout the country. In 1987 the Center for Tropical and Subtropical Aquaculture (CTSA) was established in Hawaii to serve Hawaii, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, the Republic of Palau, the Federated States of Micronesia and the Republic of the Marshall Islands. Guam has representation on the Board of Directors,

the Technical Advisory Committee and the Industry Advisory Council. The Center was appropriated \$750,000 per year for FY'87 and FY'88.

As a result of the center's establishment, Guam has developed a three year program entitled "Production of Aquaculture Seed for Commercial Farms in Guam and the Western Pacific Region" for funding from CTSA. Funding for Phase I has been awarded in the amount of \$120,000. The program will concentrate on the development of commercial aquaculture.

Figure 26



Source: College of Agriculture and Life Sciences, University of Guam

The Department of Commerce initiated an Affiliation Agreement with the Oceanic Institute of Hawaii. The Oceanic Institute is a scientific organization that is a leading center for applied research in aquaculture development. The Affiliation Agreement was signed in June 1988 by the Department of Commerce, University of Guam and the Oceanic Institute for the purpose

of assisting commercial aquaculture development on Guam through the transfer of technology from the Oceanic Institute to GADTC.

The Department of Commerce, along with UOG's Marine Laboratory and College of Agriculture and Life Sciences, will be carrying out the first cooperative project with the Oceanic Institute in early 1989. This program is entitled "Development of Commercial Mullet Aquaculture on Guam". The unique design of this program incorporates the establishment of commercial mullet culture by phases, concurrent with the transfer of the supportive technology. This project seeks to link the step-by-step development of the mullet culture on Guam with a feedback mechanism designed to monitor and interact with the private commercial farmers, the market place, and the production capability of GADTC in order to assure the maximum likelihood of reaching economic viability. This program should prove to be a model for implementing similar programs in the future.

B. OPPORTUNITIES AND CONSTRAINTS

Constraints

There are a number of key constraints to the further development of the aquaculture industry on Guam.

Hatchery

Commercial aquaculture development in Guam and the U.S. Affiliated Islands of the Pacific has been hampered by the lack of postlarvae and fry of cultured species on a reliable basis and at a reasonable cost. This major block to the commercial development of aquaculture in the region was cited in the U.S. Congress Office of Technology Assessment's study, *Integrated Renewable Resource Management for U.S. Insular Areas*, (1986) and previously in the *Aquaculture Development Plan for the Territory of Guam* (FitzGerald, 1982). The Government of Guam has recently acquired a hatchery facility which can eliminate this block to commercial aquaculture development. The Guam Department of Commerce has taken the lead in eliminating this constraint by obtaining funding for the renovation and operation of the Guam Aquaculture Development and Training Center.

☐ Recommendation (Hatchery)

- 1) Operate the GADTC hatchery facility to meet the needs of the commercial aquaculture farms following the operational plan that has been established for GADTC by the Department of Commerce.

Market

The limited size of the domestic market will constrain the ultimate level of production, since it will be very difficult for Guam to compete in the world market. Small pocket markets within the region and possibly outside the region for high quality products will most likely present the only opportunities for export. However, these markets need to be identified and actively developed.

The military market on Guam remains untapped for domestic aquaculture as well as fishery products. The constraint for entering the military market has been the restrictive and often unreceptive attitude of the military to attempts to market these products. This market offers significant potential for domestic aquaculture producers and should be actively pursued cooperatively with the government and the military.

☐ Recommendations (Market)

- 1) Concentrate on stabilizing production of a consistent high quality products to fill the local market demands. Gain access to the military market. Evaluate export markets for high-value products after addressing the local markets.
- 2) Development of a fish processing facility in conjunction with the fishery industry to aid in the development of local markets and potential export markets. Publicize the availability of aquaculture products along with disseminating information on their nutritional value and preparation as part of the Cooperative Extension Service.
- 3) Identify and develop potential export market niches in which Guam may competively participate.

Land

Suitable land for aquaculture development on a relatively small island will naturally be a constraint. In addition to the limited quantity of suitable land, there are relatively few large sites that would facilitate reaching economies of scale in production for an individual farm. Aquisition of land is further constrained by the multiple ownership of most suitable sites. Inasmuch as smaller farm sites may be viable for family operations, such limited operations ultimately add to a higher production cost on Guam.

☐ **Recommendations (Land)**

- 1) Identify and develop high-intensity grow-out methods to maximize the use of the available land.
- 2) Identify suitable federal lands for aquaculture and pursue their long term lease to the private sector.
- 3) Develop access roads to open up interior land-locked potential aquaculture sites.

Water

Freshwater sources for aquaculture are generally limited to the southern half of the island since the geology of the northern portion is constituted of porous limestone. The limitation on pond development utilizing the water from Guam's rivers has been identified (FitzGerald, 1976). Wide fluctuations in water flow occurs in the rivers between the dry and wet seasons; therefore, pond development is restricted by the minimum flow rate of the rivers. Development of water reservoirs would allow for the greater utilization of the water resource through expanding the acreage in ponds and subsequently the production capacity.

☐ **Recommendations (Water)**

- 1) Develop a water use plan in agriculture development which would address appropriate scale and type of infrastructure needs such as reservoirs, water catchments, and dams to more effectively utilize the water resources on a year-round basis.
- 2) Develop pond water management schemes which would improve the water use efficiency.

Cost of Production

The high cost of production resulting from high individual costs of input factors such as labor, land, fuel, and electricity will constrain Guam from entering the world market competitively. As previously mentioned, this will limit Guam's aquaculture industry to mainly serving the domestic market. However, efforts should be made to develop high valued export products for specialized markets.

☐ **Recommendation** (*Cost of Production*)

- 1) Pursue development of cost-efficient culture methods and high value products that can compete favorably in replacing imported products as well as in specialized export markets.

Opportunities

The potential importance of the Guam Aquaculture Development and Training Center (GADTC) as a regional hatchery was emphasized by all participants at the Pacific Aquaculture Planning Conference (Guam, May 11-13, 1988), and those in attendance at the Micronesian Mariculture Conference (Palau, March 24-27, 1987) sponsored by the U.S. Department of Interior. The importance of the facility as a hatchery and a training center was also noted at the Federated States of Micronesia's Aquaculture Workshop held in Kosrae in April, 1986. The operation of the GADTC hatchery will allow for the diversification of species raised, encourage expansion of the existing private farms, and provide new opportunities for investors.

The Guam Aquaculture Development and Training Center represents the state-of-the-art in hatchery design and technology. It is the only tropical aquaculture hatchery facility of its kind located in the U.S. The facility was built in 1981 at a cost of over \$2 million by a private firm, Guam Aqua Research, Incorporated (GARI). GARI operated the hatchery with the main objective of developing postlarval production technology for various penaeid shrimp species. The hatchery techniques and technology appropriate for the cultured species were transferred to grow-out farms in the Peoples Republic of China. Operation of the facility was discontinued when GARI's Hong Kong based parent company, Trafalgar, encountered financial difficulties which resulted in a decision to close the facility in 1983.

Guam Aqua Research, Inc.'s two-year effort in finding a private investor interested in purchasing the facility were unsuccessful. Subsequently, the Government of Guam took over the facility on back taxes. Since its closure in June of 1983, the facility suffered from neglect and signs of deterioration and vandalism. The basic structure of this facility, including the tanks, water pipe system, laboratory, and concrete buildings, is in relatively good condition. However, the butler-type building and electrical system are in need of repair, and the seawater and freshwater pumps need to be replaced. General renovations and redesigning portions of the facility are required to operate the facility efficiently as a production-oriented hatchery. To prevent further deterioration of this valuable asset, a \$125,000 special appropriation was

made to initiate renovations. In addition, a U.S. Department of Interior grant was received (October, 1987) to complete the major renovations and re-equip the facility. Initiation of hatchery operations will occur in the latter part of 1988.

Intensive culture techniques for penaeid shrimp have been developed by the Oceanic Institute (O.I.). Production of 45,000 kgs per hectare per year has been obtained by O.I. The application of this or similar technology could improve the economic viability of shrimp production on Guam and also make fuller use of the limited land resource. However, further research is required.



Nearly 100 percent of Guam's aquaculture products enter the commercial market either locally or as an export.

Of the \$7 million worth of fish and shellfish mentioned previously which are imported, most are from the Philippines with a smaller portion, primarily reef fish, coming from Palau and other islands within the region (Myers, Callaghan and FitzGerald, 1983). The shrimp/prawn market on Guam is estimated to be 100-135 metric tons per year (FitzGerald, 1981; Aquatic Farms Ltd., 1978). The major goal of the aquaculture industry on Guam is to replace a significant portion of these imports. Shrimp command a high price in Guam markets and current supplies are imported primarily from the Philippines. The development of Guam's aquaculture industry will be targeted to replace a significant portion of the 100 to 135 metric tons of shrimp imported per year to Guam. Guam has over 483,000 (1987) visitors per year

APPENDIX G

INFRASTRUCTURAL PROJECTS SCHEDULED FOR 1988

PROJECT DESCRIPTION	COST	TENTATIVE COMPLETION DATE
Reconstruction of Route 8 Phase I	\$ 3,012,715	Mar. 1987 (Extended)
Reconstruction of Marine Drive (Route 1) (Y-Sengsong Rd to Gayinero Rd)	6,200,000	Mar. 1987 (Extended)
Highway Hazard Elimination Project	405,000	Nov. 1986 (Extended)
Upgrading of Mobil Pier	1,811,637	Jan. 1988
Playground for All Children	159,856	Aug. 1986 (Extended)
Construction of Veteran's Cemetery (Increment I)	2,500,000	Jan. 1987 (Extended)
Reconstruction of Route 1 Marine Drive (Rt 1 to Camp Watkins Rd)	4,106,310	Mar. 1987 (Extended)
Construction of the Office of the Governor	1,032,382	1987 (Extended)
Construction of Pago Bay Beach Park Facilities	180,000	1987
Construction of the GIAT Access Road	2,976,412	May 1987 (est)(Extended)
Additional Classrooms for Inarajan Middle School	350,000	1987
Renovation and Repair of Guam Memorial Hospital Apartments and Guam Election Commission	100,000	Unknown
Upgrading and Expansion of the Guam Memorial Hospital	5,600,000	Unknown
Agat Solid Waste Transfer Station	120,000	Unknown
Airport Industrial Park	2,000,000	Unknown
TOTAL	30,554,312	

INFRASTRUCTURAL PROJECTS SCHEDULED FOR 1988

PROJECT DESCRIPTION	COST	TENTATIVE COMPLETION DATE
Boat Launching Ramps for Various Sites	\$ 63,000 (design)	Design Phase Completed
Reconstruction of Route 1 from Route 11 to Route 2A, Route 2A from Route 1 to Namo River Bridge and Route 2 from Route 2A to Pagachao Nimitz to Agat	\$ 3,800,000	Design Phase Completed
Reconstruction of Route 1 (Route 4 to Route 11)	\$ 6,200,000	Design Phase Completed
Reconstruction of Route 2 (Agat to Umatac)	\$ 4,500,000	Design and Bid Phase Completed
Renovation of the Inarajan Pool	\$ 60,000	Design Phase Completed
Tamuning Multi-Purpose Field	\$ 200,000	Design Phase Completed
Proposed Correctional Facility Complex	\$ 1,200,000	Drawing, specification, a and estimate complete.
Reconstruction of Route 1 from Route 4 to Route 8 Intersection and East Saylor Street from Route 4 to Route 8	\$ 4,500,000	Design previously approved.
Upgrading and Expansion of the Guam Memorial Hospital	\$ 5,600,000	Design and Bid Phase Completed
Reconstruction of Route 3	\$ 515,160	Design Phase Completed
New Restroom Facilities at Paseo De Susana	\$ 69,406	
Micro-dredging of Tumon Bay	\$ 2,427,000	Design Phase Completed
Simon Sanchez High School Gymnasium Expansion	\$ 250,000	Design Phase Complete. Bid Phase Open
Construction of Merizo Pier Extension	\$ 56,900	Design and Bid Phase completed

INFRASTRUCTURAL PROJECTS SCHEDULED FOR 1988

PROJECT DESCRIPTION	COST	TENTATIVE COMPLETION DATE
Sewer Installation of Dededo Staff Housing	\$ 30,000	Design and Bid Phase
Repair of Baseball Fields Lighting Susters (Chalan Pago, Mangilao, and Agana Heights)	\$ 88,000	Bid Phase Completed
New Canopies for Brodie Memorial School	\$ 45,000	Bid Phase Completed
New Building and Renovation of Guam Police Department Crime Lab	\$ 130,000	Bid Phase Completed
Guam Mental Health and Substance Abuse Facility	\$ 2,200,000	
Reconstruction of Route 1 (Dededo to Yigo)	\$ 2,500,000	Design Phase Completed
Upgrading of the Mobil Pier	\$ 1,811,637	Construction Phase 76% Completed eff. Jan 88 Tentative Completion date, Feb. 1988
Clearing and Maintenance of Tumon Beach	\$ 283,000	Construction Phase 55% completed. Tentative completion date Feb. 1988
Airport Road Beautification	\$ 40,000	Tentative completion date Oct. 1988
Construction of Storm Drainage and Parking Lot at J.P. Torres Elementary School	\$ 90,000	Tentative completion date May 1988
Pago Bay Togcha Water Transmission Line	\$ 1,446,090	Tentative completion date December 1988
Agana Spring Water Service	\$ 951,360	Tentative completion date September 1988

INFRASTRUCTURAL PROJECTS SCHEDULED FOR 1988

PROJECT DESCRIPTION	COST	TENTATIVE COMPLETION DATE
Macheche Water Transmission	\$ 556,550	Design stage in process
Mangilao-Maimai-Chalan Pago Water Transmission Line	\$ 3,500,000	Design stage in process
Barrigada Reservoir	\$ 873,000	Tentative completion June 1988
Water Replacement Wusstig Road-Dededo	\$ 150,493	Bid stage in process
Tumon Relief Waterline	\$ 100,000	Design stage scheduled for completion June 1988
Pressure Reducing Valves (PVR) and Flowmeter	\$ 94,480	Tentative completion date March 1988
Sewer Reversion of Mamajanao Pump Station to Northern District Sewage System	\$ 4,400,000	Design stage in process
Agat/Santa Rita Sewer System (Phase I)	\$ 2,262,329	Design phase begins June 1988
Liguan Terrace/Barrigada Heights Pump Station and Forcemain	\$ 1,562,700	Design stage in process
Chaot/Marine Drive Relief Sewer	\$ 2,763,813	Design stage in process
Yigo Collectors	\$ 2,079,344	Tentative completion date June 1988
Talofofo Wastewater System	\$ 2,291,253	Design stage in process
Route 16 Barrigada Sewer Collector	Unknown	Design and bid phase in process