

PROPOSED PLANNING PROGRAM FOR THE
DEVELOPMENT OF
THE MARIANA ISLANDS

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PROPOSED PLANNING PROGRAM FOR THE
DEVELOPMENT OF
THE MARIANA ISLANDS

INTRODUCTION

To provide for a smooth transition to a new political status for the Marianas, the United States has tentatively agreed that it will agree in principal to fund the initial planning required for a transition program. Such planning will include¹ a land cadastral program,² the preparation of a physical plan for development,³ a government reorganization plan,⁴ an economic and social development plan and⁵ the planning necessary to establish the legal framework necessary for the legislative, executive, and judicial processes of the new government.

The planning effort should be directed to identifying and programming those capital projects required to provide the infrastructure necessary for social and economic growth; the programs and public services which must be provided by a new government; and the economic and social environment which will be necessary to promote continued growth and development. Such planning must not only detail the nature and magnitude of the total financial and other requirements for the

development of the Marianas, but it also must deal with the availability of internal resources to satisfy growth requirements, and the requirements for external support.

The Trust Territory Government has made attempts to identify problems and opportunities, and to guide future development of the Marianas. The area has been studied and restudied, and many capital and programmatic plans have been proposed. These proposals, however, have been made within the context of a Trust Territory mandate and within the funding available for all of Micronesia. They do not reflect the requirements of a self governing territory of the United States. Commonwealth status will involve an acceleration of local initiative, new funding requirements, greater administrative expertise, and, above all, a close coordination of political, social, and economic programs and activities.

This report details the nature of the planning which will be required prior to the establishment of a new government. Certainly, the creation of a new political entity with all its social, financial, and political implications for the people of the Marianas and the United States requires careful and serious planning before irrevocable commitments are made. Even the scope or magnitude of commitments can not be determined until planning has been completed.

Review of Postwar Developments
in the Pacific Region

The entire political, social, and economic structure of 030047

the Central and Western Pacific countries and territories was substantially altered during World War II. The cessation of hostilities found Japan devastated by war, the major populated areas in the Philippines and Indochina politically and economically adrift, and the island groups of the Central Pacific occupied by military forces. The most dramatic change in the postwar period has been the rapid political and economic recovery of Japan to the point where that nation has largely gained and possibly surpassed its prewar influence in the Pacific region. New political status has been achieved by many former dependencies, and a new political awareness exists throughout the area.

The people of the Marianas are aware of the considerable changes occurring in the Pacific. The example of Hawaii, the recent growth experienced in Guam and the impact on its Pacific neighbors of the expanding economy of Japan give them insight into both their problems and their opportunities. They have come to appreciate what it means to have good schools, good roads, good health care, adequate food and shelter, and all of the many things a money economy can provide.

It is apparent that in the Marianas there is a widespread will to adapt to changing conditions, a growing consciousness of the role of the Marianas in the worldwide community of peoples, and a feeling of urgency to achieve basic development goals and objectives. While the people of the Marianas

value their heritage, they recognize the need to move into the modern world of democratic societies, and they seek an acceptable standard of living. They are particularly aware that genuine and enduring improvements in their small society cannot be accomplished without careful planning.

The Elements of Planning

The function of planning, simply stated, is to develop a way of getting from where one is to where one wants to be. A development plan for the people of the Marianas must be based on where they are in terms of their economy, their social and commercial infrastructure, their legal/political structure and the availability of the resources required for growth. The major road blocks to growth, and the apparent strengths/weaknesses also must be determined.

This inventory and evaluation of assets and requirements may be segmented and studied in component units. But the interrelationships and the relative importance of the component units must be thoroughly understood if the potential for development is to be determined. It is imperative to approach the planning task in a manner that integrates all of the necessary ingredients for achieving growth. For example, public utilities improvements must be related to all aspects of economic and social development, and changes in the school

system must be related to the diverse needs of government, commerce and agriculture. Sound planning for the Marianas requires the integration of subunit planning.

The major elements of a planning program in the Marianas will include subunit plans for future land ownership and use, government reorganization, economic and social development and the development of a suitable legal structure for self government.

✓ Land Ownership and Use

✓ Although land ownership and use will be a continuing problem in the Marianas, there are aspects of the land problem which demand immediate attention. As a result of changing forms of government and the ravages of war, there does not exist in the Marianas a well defined pattern of land descriptions, land titles, or land use programs. Public land and military retention lands are reasonably well identified, but conflicting claims to titles for private land still exist. Privately held land is only partially identified and the process of establishing clear titles remains largely unfinished.

Two major tasks are associated with establishing land ownership and future land use. First, there is a requirement for an immediate cadastral survey to establish land boundaries and land titles. Second, a detailed physical plan must be prepared to assure that limited land resources are used in

a rational manner to compliment and contribute to the overall development of the Marianas.

Government Reorganization

The structure of government in the Marianas consists of elected municipal councils and mayors/magistrates, an elected legislature, elected representatives to the Congress of Micronesia and a judiciary and executive arm appointed by the Trust Territory Government.

The concept of a free election to legislative bodies is well established and will need little attention in the transition to commonwealth status. The structure of the legislative body, however, may need amendment to allow it to operate independently of outside aid. There are, for example, certain legislative powers currently reserved for the Congress of Micronesia that will need to be assumed, and the current unicameral body may need to be reorganized to provide a greater scope and depth of representation.

The executive branch of government in the Marianas does not have the level of expertise or staffing to perform many of the functions which it will have under commonwealth status. Some of these functions currently are performed entirely by the Trust Territory Headquarters, and others, though nominally assigned to the District Government, are not performed at all.

A government reorganization plan will be required to identify the full range of government capabilities which must

be developed to serve the new commonwealth, and to specify the programs and processes by which these capabilities can be acquired.

Economic and Social Development

The scope and nature of economic and social development in the Marianas will be the foundation upon which the success of the new commonwealth must depend. The existing industrial and social infrastructure is primarily the result of the efforts of the Trust Territory Government to provide basic utilities, roads, schools, etc. on a group of islands devastated by war and later used as military bases. This infrastructure does not serve even the existing situation in an acceptable manner and will need considerable improvement. There is the need for an immediate "catchup" program, as well as provision for future growth.

✓ The economy has been dominated by government, and nearly half of the labor force is employed by either the District Government or Trust Territory Headquarters. Manpower requirements for both the public and private sectors cannot be met-- even at present--from the available labor pool. The agricultural activities of the area do not provide sufficient output for the existing population, exports are negligible and imports are relied upon for almost all of the modern necessities of life, and commerce depends heavily on the income generated by govern-

ment employment at relatively low wage rates. The nucleus of a tourist industry has been formed and shows signs of great promise but is, and will be, hampered by the lack of infrastructure and availability of local financial and other resources.

Financial requirements for future development cannot be met with available local capital, nor will available local tax revenues provide funds sufficient to maintain government operations at minimum acceptable levels. With very limited resources, and a great many competing demands on these resources, first priority must be given to planning the coordinated use of existing resources and the development of additional resources.

An economy such as the Marianas cannot afford to plan for growth based on but one or two basic sources of employment. Alternative forms of growth, and/or commingled growth patterns, need to be studied and developed. Agriculture and/or forestry on Rota, Tinian, and Saipan show considerable promise. Tourism on Saipan could provide a major cash inflow and a source of employment. The resources of the sea surrounding the islands may provide a source of employment and income. The impact of a major military establishment on Tinian needs to be carefully measured. Finally, all of these prospects for economic growth need to be carefully related to the requirements for the infrastructure which must support growth.

Legal Planning

The present legal system is based on Trust Territory requirements and will need to be changed through a new constitution which will provide a bill of rights and a definition of the roles and responsibilities of the branches of government. A considerable planning effort will be required to establish the schedule of new laws which will need to be passed, to examine the applicability of existing U. S. laws and to create the legislative, executive and judicial institutions which will possess the strength and flexibility to meet the requirements of the new commonwealth.

Organization for Planning

The planning requirements indicated above can be met for the Marianas only if all planning efforts are coordinated and directed toward the achievement of common objectives and goals. The magnitude of the tasks, the complexities of the problems and the need to complete planning tasks within a reasonable period of time give emphasis to the necessity of establishing a planning entity. Such a planning entity would require the broad based political support of the people of the Marianas. It also would require professional expertise which it would have acquired by developing a planning staff or, more likely, by relying on planning contractors. The entity should have the

complete responsibility for all planning efforts to assure that they proceed on a logically sound and systematic basis.

PROPOSED SCOPE OF WORK

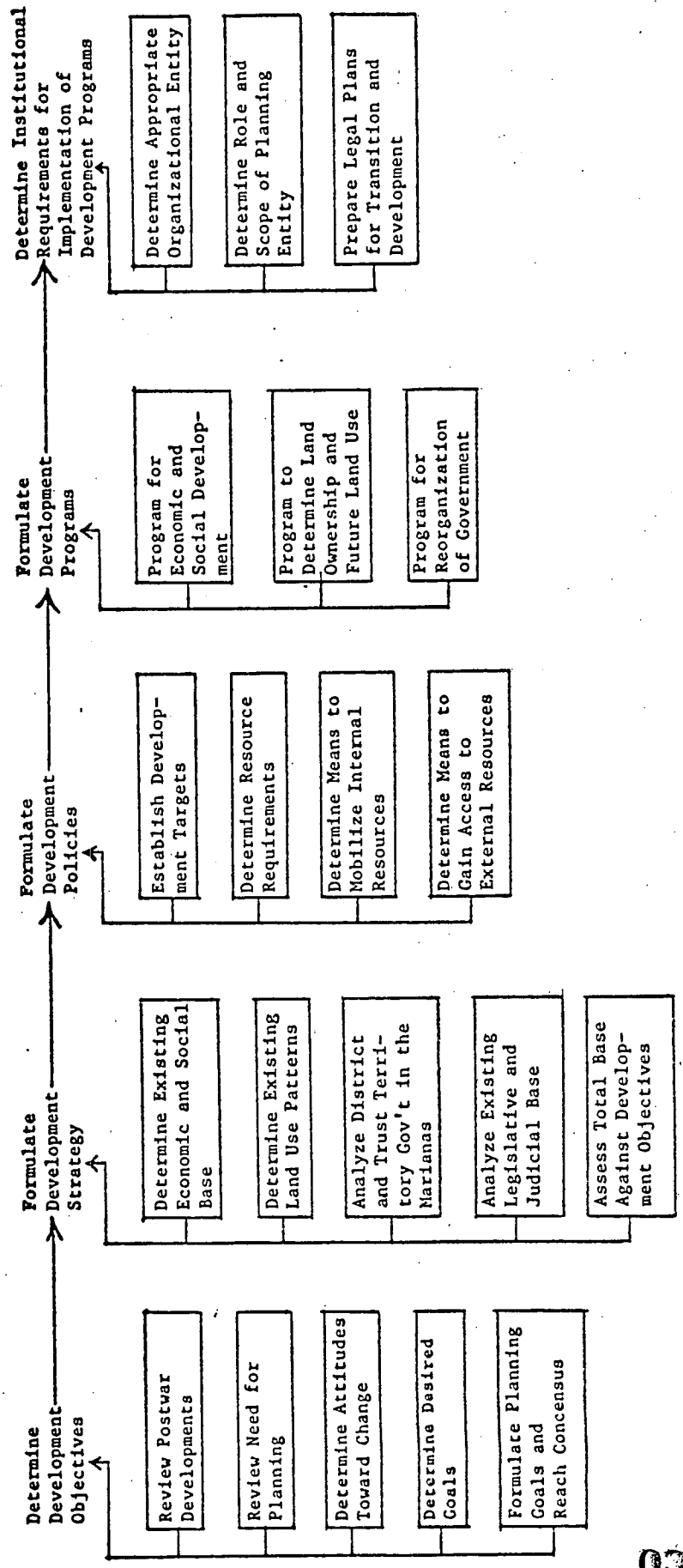
The scope of work for a coordinated planning program for the Marianas should include the determination of development objectives; the formulation of development strategies; the establishment of development policies; the formulation of development programs and the identification of the institutional requirements for development (See Figure 1). The final product of the planning program must be a detailed blueprint for action to facilitate a smooth transition to a new political status, and to accommodate the desires and aspirations of the people of the Marianas. It is particularly important for the physical planning component of the planning program to provide the architectural and engineering detail necessary for the rapid development of public facilities and the guidance of private sector construction.

Determination of Development Objectives

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An obvious and immediate first step in the conduct of the planning program for the development of the Marianas is the determination of firm and specific planning goals and objectives. The objectives should encompass all of the aspirations of the

Figure 1.
MARIANA ISLANDS
SCHEMATIC WORK PROGRAM FOR PREPARING
7-YEAR ECONOMIC AND SOCIAL
DEVELOPMENT PLAN



people of the Marianas Islands which are reasonable and capable of attainment. In the past, such goals have been determined by outside groups with very little input from the people. In planning for the development of the Marianas under a new political status, planning objectives must be self-determined and reflect a broad based concurrence. Although many of these development objectives may appear obvious, and a sense of expediency would indicate that they could be articulated by either the Mariana Political Status Commission or other representative groups, the planning process must validate or reestablish these objectives to ensure that they are in fact goals which are generally acceptable to all the people.

Attitudes Toward Change

While there is considerable evidence that a change in the political, economic and social status of the Marianas is desired, there does not seem to be such a clearcut consensus as to the degree of change desired nor the pace at which this change should occur. In the Marianas, as in all societies, there exists a natural conservatism towards change which may threaten either the economic or social position of groups or individuals who might be adversely affected by change. Those most interested in change are obviously those who have most to gain or least to lose. There is a sufficient difference between the economic and social institutions on Saipan from those existing on Rota,

Tinian and the northern islands that it is likely that the concept of change varies among the people of the Marianas, depending upon their location, form of economic activity, level of education, and current opportunities for self-improvement.

In addition to a lack of agreement as to the type and degree of change desired by the people of the Marianas, it is not likely that there is widespread understanding of the cultural and social impacts of change. For example, economic development which is based on a substantial immigration of foreign labor would alter the current social structure of the islands; a substantial development in the tourist industry would bring about a constant and pervasive influence from different cultures; and substantial change from a subsistence economy on Rota or Tinian to a money economy based on government employment, or on sales to a military base on Tinian, will have a vast impact on all aspects of life.

A survey of attitudes toward change, including the determination of the degree of understanding of the impacts of change, must be conducted. This survey should determine the extent to which segments of Marianas society are dissatisfied with the current political, economic and social situation, and the degree of willingness to accept the impacts of changes. Groups surveyed should include elected officials, public employees, leaders of business enterprises, professional individuals, self-employed entrepreneurs, and others representative of the citizens. It will be necessary to have inputs

from each of the major populated islands, and a reconciliation of differences of opinion to obtain a firm position as to the extent to which change is desired. This inventory of attitudes should not be conducted in such a manner as to promote or discourage change, but rather to assess the desires and concerns of the people of the Marianas.

Desired Goals and Objectives

At the same time as an assessment of attitudes toward change is being conducted, there should be a concurrent survey of the specific development goals and objectives expressly desired by the people of the Marianas. Without reference to practicality, applicability, or appropriateness, the survey should identify as wide a range as possible of specific and measurable goals and objectives.

Certainly, one such goal could be an improved level of income. Thus, the survey might ascertain the economic aspirations of the people, as well as the income levels and kinds of employment opportunities desired.

In a similar manner, the survey might determine specific kinds and levels of public services desired by the people of the Marianas. A major distinction which could appear within the field of public education might be a strong concern for secondary school education of a general curricular nature, in contrast to occupational training.

To the degree they can be determined, alternative goals and subgoals should be arrayed as possible development options.

Planning Goals and Objectives

The survey of possible goals and objectives, as expressed by the various groups interviewed, is likely to result in only very general expressions of desires. It will be necessary, therefore, to refine these general expressions into specific planning goals and objectives. Because the planning goals and objectives must be rational and consistent, they necessarily will require a reconciliation and compromise of the goals and objectives expressed during the course of surveys. Accordingly, they must be approved by the planning entity, or some other agency representative of the people, before they are accepted as a basis for planning.

Formulation of Development Strategy

Strategies for development are the general approaches to attaining development goals and objectives. The determination of the most appropriate strategies requires the identification and assessment of available, or potentially available, resources and the identification and analysis of the strongest and most persistent current development trends. The most successful strategies are likely to be those which enhance and direct

existing resources and trends for development.

In the process of formulating development strategies for the Marianas, it will be necessary to examine the base from which the development process must start. In particular, it will be necessary to inventory development resources, to examine economic and social trends, current land use patterns, the existing institutions of government and the existing legal structure. Finally it will be necessary to assess the base against development objectives and goals.

Resource Inventory

The resources in the Mariana Islands should be carefully inventoried and analyzed with a view to determining the extent to which they will support the type of growth and change envisioned in the adopted goals and objectives. This inventory should reveal both the strengths and weaknesses of the resource base.

Human Resources. The approximately 14,000 current residents of the Mariana Islands will be the primary beneficiaries of future growth and development of the Marianas. This population is also the most valuable resource available for reaching development goals. However, only 38 percent of the current resident population falls within the age groups that would normally constitute a labor force. Of the current labor pool of approximately 5,000, nearly half are females.

Much of the Marianas labor force has had little experience in the occupations which will be created in a rapidly developing economy. Accordingly, it will be necessary to determine the levels of skills available; the extent to which work habits are consistent with the demands of a modern economic society; the willingness and ability of the labor force to accept either formal or on-the-job training; and the extent to which natural population growth will increase the size of the labor pool over time. Of these tasks, probably the most important will be the inventory of skills available to support a developing economy.

Natural Resources. The natural resources available in the Mariana Islands are limited. They are at present, however, largely underutilized. Of the total land area of approximately 117,000 acres in all of the Marianas, nearly half of the land is considered arable, and another third is suitable for either grazing or forestry. Relatively little use of these lands is made for agricultural purposes, and agricultural production, though growing, is very limited. Numerous studies have been conducted as to the fertility of the soil and the capability of the land and its natural vegetation to support agricultural development. These studies should be reviewed and assessed in terms of the ability of the land to serve in meeting established economic and social development objectives.

An important aspect in this review of the geological aspects of the land in the Marianas is the availability of fresh water. Though this is currently not a serious problem on Rota and Tinian, the limited availability of fresh water on Saipan will very soon be a limitation on growth.

In a similar vein, a review should be made of the extent to which mineral resources exist in the Marianas, and an inventory should be made of known or potential marine resources.

Most important, an assessment should be made of the extent to which the geographic location, climate and natural setting of the Marianas are in fact a high quality resource for the development of tourism.

Infrastructure

A considerable amount of information is available which describes the current industrial, social, and institutional infrastructure of the Marianas. A thorough investigation should be conducted to determine the extent to which the existing infrastructure can support development.

Industrial Infrastructure. The existing "Charlie-Dock" on Saipan, the breakwater and small dock on Tinian, and the old existing dock at West Harbor on Rota, as well as the channels leading to these docks, appear to be barely adequate for existing demands. Attention needs to be given to the extent to which

these docks and harbors should be improved incrementally as demands increase or (particularly on Tinian and Rota) whether entirely new facilities will need to be constructed.

There is an abundance of airfields on both Saipan and Tinian, but consideration will need to be given as to the extent to which these airfields need to be improved or consolidated to meet the demands of the developing islands. The Rota airfield is inadequate for even current traffic, and attention should be given to the type of facility required for future air access to the island. The requirements for construction of a new airstrip on Pagan, and possible needs on other islands should be reviewed.

Saipan has approximately forty miles of improved primary roads and approximately thirty-five miles of secondary roads, all of which receive reasonably heavy daily automobile traffic under present conditions. The road structures on both Tinian and Rota are not nearly as extensive as in Saipan and, as in Saipan, consist largely of roads remaining from the period of World War II military occupation. On all three islands, the planning for future road improvements should be reviewed in light of projected requirements.

The water systems on Rota, Tinian, and Saipan are also largely those remaining from the period of World War II. In all cases, a considerable amount of water is lost through leakage (on Saipan approximately 50 percent of water pumped),

and the basic sources of water tend to be severely limited. This shortage of existing fresh water is a current constraint on development, and a thorough study should be given to the magnitude of the problem in light of development goals.

Electrical power output of approximately 10,000 KW on Saipan, 300 KW on Rota, and 600 KW on Tinian are probably adequate for today's power requirements, but will be marginal with even limited growth and development. An investigation should be conducted which will determine the extent to which these power systems will need to be expanded incrementally to meet future requirements.

Storm drainage systems, sewage systems, and provisions for solid waste disposal are generally inadequate under existing conditions, and detailed analysis will be required to determine the extent to which these systems should be improved or replaced. The projection of future needs used for this analysis must be related to development goals.

The inventory of the industrial infrastructure also should include the communications network between islands and within any of the islands. The heavy dependence upon radio for interisland communication requires a well developed and dependable system, and projections should be made of these required improvements. The telephone system on Saipan does not meet even today's needs, and a thorough study should be made to determine the extent of the requirements on all of the islands for telephone service and communication media.

Social Infrastructure. The educational system in the Marianas is reasonably well developed with some eighteen elementary and secondary schools enrolling nearly 5,000 students. The existing physical plant is inadequate although a construction program has been given high priority. A small number of students from the Mariana Islands are enrolled in the secondary schools in Guam or the United States, and a limited but growing number are enrolled in post-secondary educational institutions outside the Marianas. A thorough review should be made of the existing physical plant and programs with a view of determining the extent to which the current educational system will meet the future demands of the Mariana society. The investigation should also include the levels of training required of both indigenous teachers as well as contract personnel

Health care in the Marianas in the postwar period has been provided as a function of government and private health care facilities currently are not available. The hospital in Saipan, supported by dispensaries in Rota and Tinian, provides barely adequate care for today's population. A study should be made of the likely future demands for health care in the Marianas, given development goals and objectives, and of the ability to meet these needs through either existing public or private health care systems.

Although there has been a very considerable expansion in private housing in the Marianas in recent years, the general

quality of the housing remains inadequate. A study should be made of the requirements for improvements to current housing and the requirements for additional housing necessary to meet expected expansion in population of both indigenous and foreign residents of the Marianas.

Institutional Infrastructure. Other aspects of the infrastructure, including all institutional aspects of government, finance, and other areas of public service, should be carefully reviewed, and assessed in terms of their ability to meet the future requirements. Specific attention should be given to development institutions, such as commercial banks, development loan programs, etc., to determine the appropriateness of current institutional practices and operations for future development in the Marianas.

Economic and Social Trends

In addition to an assessment of the existing economic and social base, there is a requirement for the determination of the economic and social forces which appear most likely to change the existing base. This trend analysis should be conducted in the context of determining the adequacies of the economic and social base as it seems most likely to develop over the next several years, and in the context of the demands on this base to meet the desired development goals and objectives.

At the present time, there are no U. S. military installations or activities in the Marianas. However, in assessing the development of the existing economic base it will be necessary to explicitly consider income, employment and other impacts of proposed military operations on Tinian. It is recognized that these impacts could be as significant in planning the future economy as any of the current economic and social trends.

Income and Employment Levels. Specific study should be made of income and employment in the Marianas. At the present time there is no unemployment in the Marianas, though certainly underemployment does exist in many sectors. Income levels, though rising, are not high. The historical trend and projections of the existing economic base will give some insight into the extent to which the economy of the Marianas as it now exists will support the attainment of new income and employment objectives. In addition to private sector income, attention should be given to the extent to which public revenues may be forthcoming to support an increased level of public services. Throughout all of the analyses of income potential in the Marianas there should be a special emphasis on the sources of employment, including military employment, which will generate this income.

Review of Trust Territory Government and Mariana
Islands District Government Economic and Social

Programs. Both the Trust Territory Government and the District Government of the Marianas have plans for capital improvements and program themes for the Mariana Islands. A thorough review of these programs, as they have impacted on the Marianas in the past and as they are currently implemented, should be conducted. Specific attention should be given to past and current levels of funding for capital improvements for roads, water, power, sewer systems, school construction, health facilities, transportation, communication, and public building construction. The financial impact of these construction projects should be determined. In addition to the analyses of past and current capital improvements, attention should be given to the balance of capital improvements and other programs.

A review of operating programs should be conducted with the view to determining emphases and special thrust which have been and are currently evident. Further, this analysis should result in projections of the future needs to provide well balanced programs capable of meeting the development requirements. The proportion of the total operating budget which goes to education, public safety, public health, transportation and communication, economic development, and administration should be noted, and the priorities for future development should be established. The District and Trust Territory governments

provide the major source of employment in the Marianas, and the extent to which governmental program trends affect employment should be ascertained.

Analysis of Private Sector Economic and Commercial

Development. The assessment of the economic and social base on which future development must take place should identify growth forces and project the economic growth of the private sector in an attempt to determine the extent to which such growth will support the attainment of the economic and social goals.

(i) Agriculture

Under the Japanese occupation a major portion of the Marianas were devoted to agricultural production. Since that time little development in the agricultural sector has been evident. In the northern islands a limited amount of coconuts are harvested and marketed as copra. The island of Rota has developed sufficient production of vegetables to justify marketing in Guam and Saipan, and a substantial livestock industry has recently developed on Tinian. The Marianas, however, still depend largely upon imports for food and fiber.

Given agricultural resources, it appears that increased production of beef cattle, pork, dairy herds, and vegetables is possible. Public land can become available to the private sector. The education and training programs of the public

school system can provide the occupational skills and understanding necessary for commercial agriculture as an occupation. The financial institutions of the Marianas can be made responsive to agricultural needs. And, finally, agricultural markets can be developed as military and tourism requirements for agricultural products increase.

A careful review of agricultural trends and of the opportunities for agricultural development should be made. This will necessarily include analyses of the potential income which can be generated through agriculture, the capital and labor requirements for substantial growth, and the availability of existing or future markets for the output of this sector.

(ii) Marine Industry

A careful review needs to be made of existing studies to determine the extent to which the marine resources do in fact constitute an exploitable resource in the Marianas. In addition to the possibilities of large scale fishing and/or processing for international markets, the possibility of the development of a local fish market, and of the development of fish or fish meal as a basic source of animal feed, should be investigated.

(iii) Manufacturing

Manufacturing as an industry in the Marianas does not exist in the usual commercial sense. There has been some

development in the construction industry, including the manufacture of cement block and limited amounts of building materials. A Coca Cola bottling plant, a slaughtering house, and other small enterprises have been established, but these do not constitute significant manufacturing activities. Even though the prospects for manufacturing are not bright, given known local resources, a careful review of manufacturing potentials should be conducted.

(iv) Tourism

Probably the most significant private sector development in the Marianas has been the development of an embryonic tourist industry. The number of visitors to the Marianas has increased substantially in the last few years. In addition to the three hotels on Saipan, modest facilities also are available on Rota and Tinian. The Saipan Continental and the Pacifica Heights hotels, currently under construction, will approximately double the number of hotel rooms available within the next year or two. Further expansion of both of these hotels, along with the construction of additional hotels for which permits have been issued, such as the permits for a hotel on Pagan and the Intercontinental Hotel on Saipan, could easily bring the number of first-class hotel rooms available in the Marianas to 1,500 rooms within the next five to six years.

The capital investment of such a hotel construction program, as well as employment in construction, may have a major impact

on the Marianas. Employment opportunities will be generated directly within the hotel industry, as well as indirectly through secondary and tertiary services to support a major tourist industry. These impacts on the economy must be carefully analyzed in light of new development goals and objectives.

(v) Trade and Services

The level of wholesale/retail trade and personal services currently provided in the Marianas has developed as the population and levels of income have grown. Although they are probably adequate to meet today's needs on Saipan, they are marginal at best on Rota and Tinian. Substantial development will need to take place as the economy and population grow, particularly if there is a requirement to serve a military population as well. An investigation should be made of the existing inadequacies of the trade and personal services industry, and assessments should be developed to determine future requirements. The growth of a tourist industry will have the largest single impact on this commercial sector, although increases in overall income levels for island residents also will immediately be translated into retail and service demands. In addition to projecting trade patterns based on consumer spending in the Marianas, attention should be given to the flow of trade between the Marianas and the rest of the Pacific region, the impact on the economy of continued deficits

in trade balances and the requirements for transportation facilities to support wholesale and retail trade.

(vi) Finance

The private sector of the Marianas currently depends primarily on government agencies for development funds. The Economic Development Loan Fund and various Trust funds administered by the government are supplemented by a very limited development of credit unions. These public agencies lack the resources needed to serve the existing demand. Two United States banks have branches on Saipan which have limited lending authority, but are not prime sources of development funds. Other financial services (such as insurance) are available in limited form but would need to be expanded considerably.

Projections should be made of the magnitude and kinds of financial services necessary to facilitate the growth process. In addition to the analysis of current trends in the development of financial institutions, special attention should be given to the extent to which the pool of savings in the Marianas is developing, and the extent to which it may be adequate to serve the capital development needs of the future.

Existing Land Use Patterns

Although land is the most valuable and basic resource existing in the Marianas, current land use patterns do not

indicate intensive development in any of the islands. The density of the population does not present substantial pressures for intensive use of land, other than in organized villages, and agricultural activities have not resulted in extensive land requirements. To the extent, however, that existing land use patterns will guide future development through precedent or prior development, the current land use base, upon which future development will take place, should be carefully analyzed.

Approximately 80 percent of the land in the Marianas is classified as public land. With the exception of public lands used for commercial purposes on the island of Saipan, and for a substantial agricultural operation on Tinian, these public lands are not used. Provision has been made for acquisition of public lands by private parties through homesteading, but this process has not led to the transfer of any significant proportion of public landholdings to private ownership. In regard to private land holdings, clear title has not been established for a substantial number of private parcels, nor have all private claims against public land been settled.

Master plans now exist for the physical development of Saipan and Rota, and land use mapping is an ongoing activity. This activity should be reviewed and projections should be made of likely future development patterns based on the new assumptions implicit in newly defined development goals and objectives.

The United States military has reserved areas on both Saipan and Tinian for contingency purposes. This land consists largely of undeveloped airfields and dockside facilities which need to be carefully assessed to determine the degree to which continued retention would act as a constraint or handicap on development.

The private land holdings in the Marianas are largely restricted to residential areas and small tracts of land used for agricultural purposes. Under the Homestead Program private landholdings have increased and additional requests for homestead lands have been made.

No land use controls (such as zoning) are exercised over private land or private land transactions. Building codes and construction guidelines are not currently in force and the development of private land is proceeding in a haphazard manner. A thorough study should be made of the likely growth in amounts and types of private land development. Again, this analysis of existing private land use patterns should be conducted in the context of the overall planning goals and objectives established.

Analysis of Government Organization. Important aspects of the existing social and economic base in the Marianas are the operations of the District and Trust Territory Governments. The functions of government will take on an even greater importance under new Commonwealth status. A thorough examination of the

scope and effectiveness of government operations is required to determine the extent to which executive functions can be simply transferred to the new Commonwealth government and the extent to which reorganization will be required.

(i) Trust Territory Government

Although there are close parallels between the general functions performed by the Trust Territory and the District governments, the degree to which the District Government has responsibility for specific functions varies. For example, the Department of Education at the District Government level operates relatively independently of the Trust Territory Government. District Government finance and accounting, procurement and supply, and personnel administration, however, are largely directed by the Trust Territory Government. Similarly, the District Department of Public Works operates relatively independently of the Trust Territory Government, whereas the District Department of Resources and Development depends heavily upon the Trust Territory Government for expertise in technical aspects of agriculture, marine resources, etc.

A close examination should be made of the extent to which each function currently performed at the District level is self-sustaining. Similarly, those District Government functions currently performed wholly or in large part by the Trust Territory Government for the District should also be determined. A

related investigation should be made to determine any completely new functions, not currently performed by either the District or the Trust Territory Governments, which will need to be assumed by the executive arm of the new commonwealth.

Consideration also should be given to problems that will result from the removal of the Trust Territory Government from Saipan. An orderly transition should be planned so that there will be minimum disruption of the activities of either government. Employees wishing to transfer to the new Commonwealth Government should be given an opportunity to find employment in the District Government in areas where the District Government will have expanded to prepare for the transition to commonwealth status. This adjustment will require close cooperation between the Trust Territory and District Governments.

(ii) Organizational Effectiveness
of District Government

The current government organizational structure in the Marianas has developed as a natural extension of the Trust Territory Government. Although this structure may be adequate to meet current needs, the assumption of new government functions by the Commonwealth will almost surely require a modification of government organizational structure. To determine the requirements for government reorganization to accommodate the

needs of the new Commonwealth, a detailed analysis of the existing District Government's operations, strengths and deficiencies should be made.

(iii) District Government Staffing Patterns

In excess of 1,000 persons are employed by the District Government in the Marianas. The bulk of these employees are in the District Department of Public Works and the District Department of Education. Limitations on funding have greatly restricted the growth in the numbers of employees and the levels of expertise in the District. The majority of the teachers in the public school system do not have the college or university training required for certification. Most of the employees in the Department of Public Works do not possess formal training or education for the jobs they are performing. Several key positions in both departments are vacant due to the lack of availability of qualified personnel.

An investigation of each of the major departments within the District Government should be conducted to determine the extent to which current staffing levels are adequate and the extent to which employee productivity meets acceptable standards.

A key aspect in the staffing of government will be the adequacy of government pay scales to attract competent personnel. With private sector economic growth in the Marianas, and with increased access to high wage employment in the U. S. for

Marianas citizens, the government will be required to compete vigorously to attract and hold capable employees.

(iv) Education and Training Programs for Government Personnel

Although most of the key positions in the District Government are filled with individuals with some university education, and although many of them have been able to take advantage of special training programs offered locally, a study should be made to determine how new education and training programs can increase the ability of all government personnel to function more effectively. Existing education and training programs should be analyzed and determinations should be made of additional training requirements.

Analysis of the Existing Legal Base. The existing legislative and judicial functions of the District Government have been created under specific statutes and regulatory directives of the Trust Territory Government. The Department of Legal Affairs at the District level, encompassing Public Safety activities of the Police and Fire Departments and the District Attorney's office, has a specific function in dealing with local civic affairs. In all cases, the Department operates with a clearly limited authority and shares jurisdiction with the Attorney General's office in the Trust Territory Government.

The District legislative functions exist through elected municipal councils, and the District Legislature. The role and scope of the legislative arm, however, is strictly limited by the authority of the Trust Territory Government and the Congress of Micronesia.

All aspects of the legislative and judicial functions should be examined with a view to determining the extent to which the existing District legislative and judicial base could be self-sufficient under commonwealth status. In addition, specific attention should be given to those aspects of the legislative and judicial base which exist in the Trust Territory Government, and which would need to be assumed by the Marianas under commonwealth status. The existing statutes and codes of the Marianas, and of the Trust Territory as they apply to the Marianas, should be examined with a view to determining required modifications and additional laws and regulations which will need to be established.

Formulation of Development Policies

The assessment of the current and projected base for development will allow determination of deficiencies or shortcomings in the ability of the Marianas to achieve desired goals and objectives. Overcoming the deficiencies and shortcomings

will require policies to set in motion forces or programs necessary to bridge the gap between needs and means. To determine appropriate policies, development targets must be established, and the resource requirements to meet the targets must be specified. The targets should be articulated in the specific language of the goals and objectives and should include, for example, the specific income gap which must be bridged, the specific rate of required labor force growth, the specific gains in health care which must be made, the specific improvements in the educational system which must be accomplished, the specific social, industrial, and economic infrastructure which must be provided, and the specific level of effectiveness in government which must be established.

Determination of Resource Requirements

Given specific development targets and target dates, it will be necessary to determine the resource requirements to meet the targets. These resource requirements should be detailed in terms of land requirements, labor requirements, capital goods requirements, financial requirements, infrastructure requirements and legal requirements.

Available Internal Resources. An inventory of available internal resources should include both private and public sector resources, and strict care should be given to approaching these realistically and pragmatically. To the extent possible,

development goals and objectives should be met from available internal resources and external resources should be depended upon only to make up deficit requirements.

Required External Resources. With the total resources required to meet development targets established, and the availability of internal resources determined, the requirements for external resources to meet development goals can be determined. These external resources should be articulated in terms of labor resources, financial resources, etc.

Determination of Means to Mobilize
Internal Resources

A primary emphasis in the development program should be placed on the mobilization of internal resources to allow the people of the Marianas to participate to the greatest degree possible in their own development. With a limited resource base in the Mariana Islands, both the public and private sectors must be aware of, and guided into programs and activities which will support overall development. This means, for example, that methods will need to be devised to assure the optimum use of both public and private land resources. The labor force, although currently fully employed, will need to be upgraded in terms of skills and directed into the kinds of employment which will support the attainment of development goals and objectives.

Similarly, local savings and investment funds must be directed into channels which will facilitate their use. Even management skills need to be developed and directed in a manner consistent with the overall development strategy. The mobilization of internal resources will also need to be programmed so that as the development process accelerates there is an effort to decrease the reliance on external resources.

Determination of Means to Gain Access to External Resources

At least in the early years of the development process, it will be necessary to depend considerably on external resources in meeting development goals and objectives. An investigation of the means of obtaining access to sources of funding external to the Marianas should be conducted. This investigation should identify sources of funding which will exist because of the direct tie between the United States and the new Commonwealth. It also should include an identification of private capital sources in the United States as well as other areas of the Western Pacific.

Formulation of Development Programs

Within the framework of development strategies and policies to attain objectives and goals, specific programs are required for social and economic development, physical development, government reorganization and the establishment of the

legislative and legal basis for self government and development. These programs should be coordinated and scheduled in accordance with development priorities, the changing availability of resources for their implementation and the requirements to attain planned development targets within an established time frame.

Programs for Economic and Social Development

The range of economic and social programs should cover all economic sectors and social services (both public and private). Agriculture, tourism, trade and other economic sector programs should aim to generate the employment and income required for the Marianasto assume the financial responsibilities of self government. Health, education and other social service programs should aim to provide the greatest possible support for economic development, and a standard of life acceptable for a member of the U.S. political family.

In formulating development programs, it is important to identify specific projects and to establish project priorities in terms of project contributions to overall program objectives. It is equally important to assess the interrelationships of programs (and projects) to assure that each economic and social development activity provides maximum support to all other development activities.

Programs to Determine Land Ownership
and Future Land Use

A key development program which must be instituted as part of the planning process itself is the land cadastral program. Other programs to promote the economic and social development of the Marianas cannot proceed in a coordinated and well directed manner until the land issue is resolved. Similarly, settlement of land issues is fundamental for physical development planning, especially in view of the limited land resources in the Marianas.

Cadastral Survey. Although boundaries to public lands are generally known, there is widespread private usage of public lands and considerable controversy concerning the manner in which these lands were transferred at an earlier date from private to public use. A restatement of the exact boundaries of public lands is needed. Also, the specific boundaries of military retention lands on Saipan, and more importantly, on Tinian must be determined exactly for planning purposes.

Equally important are the surveys required for all privately held parcels of land. These private holdings include 381 parcels, totaling 1,225 hectares. In addition, there are miscellaneous homesteads without precisely defined boundaries. On Rota alone, some 335 parcels, totaling 940 hectares of pre-war properties, remain unsurveyed and the boundaries of homesteads which have been awarded since the war need clarification. The

completion of all surveying should be accomplished during the preparation of the overall development plans.

With the completion of the survey of boundaries of public and military retention lands and existing privately held parcels of land a program should be implemented immediately to establish title to all privately held parcels of land. This program should consist of at least the following:

- a) The reestablishment of boundaries of all land parcels as delineated by Japanese land surveys,
- b) The recording of all United States military actions regarding land matters,
- c) The translation and indexing of pre-war land records that have been recovered,
- d) The establishment of a system to determine the legal heirs of deceased land owners,
- e) The resolution of problems relating to public highways, pipelines, electric lines, and related utilities which have crossed private lands without legal easements or compensation to property owners,
- f) The closing out of the filing of claims outstanding with respect to land ownership disputes,
- g) The establishment of a comprehensive deed registration system for the entire Marianas,
- h) The recording of legal ownership of all land parcels.

Physical Planning. The preparation of a plan for the future physical development of the Marianas should be concurrent with the determination of land ownership. This plan should include the designation of major land use areas as residential, commercial, industrial, agricultural, public, recreational, transportation and open space. Specific site locations should be selected and systems should be designed for water, power, sewage, solid waste disposal, storm drainage, communications, road systems, harbor and dock facilities, and air transportation facilities. Sites should be selected and general schematic designs should be developed for public buildings, educational facilities, medical facilities, and recreational facilities. Regulatory and administrative mechanisms should be devised for land use controls, building codes, and for the general administration and monitoring of land use.

Programs for Management Improvement in Government

The transition to a new political status will require programs for the reorganization of government. These programs should facilitate a rapid transfer of functions and authority from the Trust Territory Government to the new Marianas Government. In addition, they should delineate the means by which levels of government efficiency and productivity can be improved.

The programs will be required to accommodate changes in the basic organizational structure of government and to specify the appropriate line and staff organizations to all existing Marianas Government functions, as well as those currently performed by the Trust Territory Government. The administrative structure of the Marianas Government need not be complicated, but it must provide for management control and adequate staff support for the legislature and the chief executive.

Because of the large number of Marianas residents employed by the Trust Territory Headquarters Government, specific attention must be given to integrating these government workers into the new Marianas Government and to providing other opportunities for those who cannot be integrated.

Determination of Institutional Requirements
for the Implementation of
Development Programs

All programs for the development of the Marianas will need careful direction and guidance in their implementation. It is not likely that coordinated growth will occur if funding and development effort are devoted to specific capital projects or programmatic themes in a piecemeal fashion.

Determination of an Appropriate Organizational Entity

An organizational entity will need to be charged with the authority and responsibility for guiding the development process in the Marianas. A review should be made of the advantages and disadvantages of direction and coordination through the executive branch of government, through existing legislative commissions, or through a specific development authority created by legislative action. In order to determine the appropriate organizational entity, it will be necessary to review the experience of planning units in local government elsewhere that have faced situations analagous to those found in the Marianas.

Determination of the Role and Scope of Implementang Agencies

In addition to ascertaining the form of the particular entity which will be responsible for the planning and development process, it will be necessary to formulate a careful definition of the role and structure of all public and private implementing agencies and institutions. This definition should include the role of each development agency and institution vis a vis the executive and the legislative branches of government, and groups or individuals in the private sector.

The scope of activities of all development agencies and institutions should be carefully specified.

A number of different development institutions, or implementing agencies, may be necessary in order to avoid undue concentration of economic power. A development corporation could be utilized as the principal source of capital, both equity and borrowed capital, for new or expanding private businesses. A separate land corporation might be desirable to handle disposition or use of public lands. Whatever agencies which might be established, their basic authority, mission and structure should be specified.

Preparation of Legal Plans for Transition and Development

Political status change will necessarily require the drafting and approval of a constitution, the reorganization of

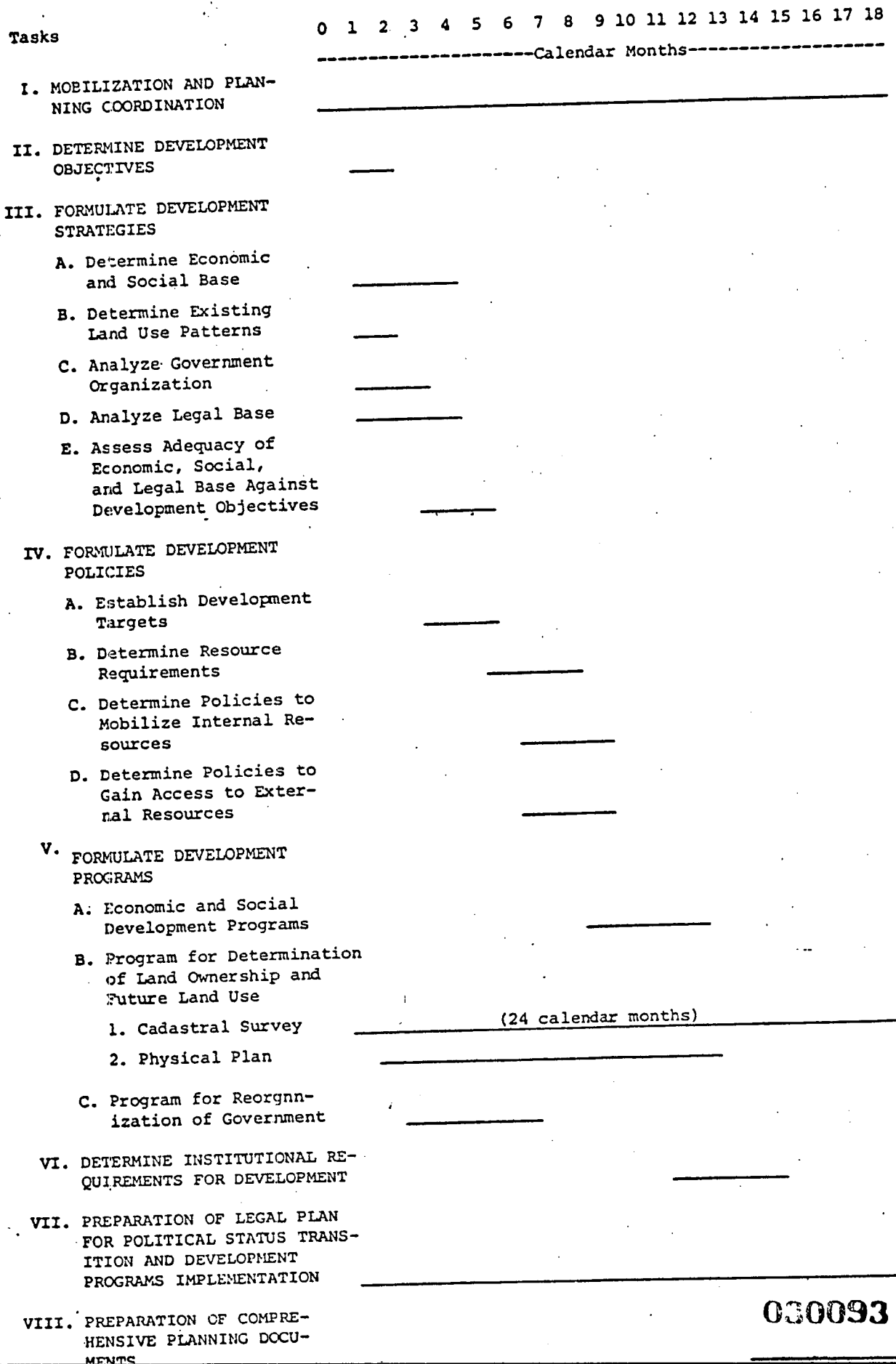
the judiciary, a possible reorganization of the legislative branch, and the development of a body of laws which must be enacted to establish the new executive branch of government. In addition to these actions that must be taken prior to the formation of a new government, legislation must be prepared to create regulatory agencies, to establish development agencies and institutions, to provide sources of public revenue, to provide for public safety, and to assume all those executive, legislative and judicial functions currently performed for the Marianas by the Trust Territory Government. Therefore, legal planning is an essential element of the proposed planning program.

PROPOSED WORK PROGRAM
AND COST ESTIMATES

With the exception of the proposed cadastral survey, it is judged that all planning work can be accomplished in 18 months. The cadastral survey would require two years for the physical survey, and perhaps an additional five years for the resolution of legal disputes and claims. A possible schedule for major planning tasks is presented in Figure 2.

In the past, planning efforts in the Marianas, as well as the Trust Territory as a whole, have not been effective. This is attributable to the lack of policy direction for planners;

Figure 2. PROPOSED SCHEDULE OF WORK



to the lack of formal communication between planners and the people for whom they were planning; and to the lack of coordination of planning efforts. In addition, planning has never been conducted within an institutional, organizational or financial context which would allow the orderly implementation of plans.

The work program for development planning as part of a political status transition program should aim at overcoming as many as possible of the deficiencies of past planning efforts. It should indicate specifically the various components of overall development planning and provide for their integration by careful scheduling and coordination.

Allocation of Planning Resources

Detailed assessments of professional requirements for legal and physical development planning, including the cadastral survey are presented in the appendixes to this work paper. The requirements for planning coordination, economic and social planning and government reorganization are shown in Table 1.

Planning Coordination

For the 18 month planning program, it is judged that a full time project coordinator will be required (72 manweeks). This coordinator should serve as the liaison between a planning entity created to supervise planning and the various teams of

Table 1.
ALLOCATION OF PLANNING EFFORTS
MARIANA ISLANDS (PHASE I)
TRANSITION PLANNING

Project Coordinator	Economic and Social Planning	Government Reorganization Planning	Physical Planning	Legal Planning	Cadastral Survey
72	8	2	a/	b/	a/
---	8	---	---	---	---
---	12	---	---	---	---
---	---	---	a/	---	---
---	---	6	---	---	---
---	---	---	---	b/	---
---	8	---	---	b/	---
---	4	---	---	---	---
---	14	---	---	---	---
---	9	---	---	---	---

-----Manweeks-----

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Project Coordinator	Economic and Social Planning	Government Reorganization Planning	Physical Planning	Legal Planning	Cadastral Survey
-----Manweeks-----					
D. Determine Means to Gain Access to External Resources	9	---	---	---	---
V. FORMULATE DEVELOPMENT PROGRAMS					
A. Economic and Social Development Programs	38	---	---	---	---
B. Program for Determination of Land Ownership and Future Land Use	---	---	---	---	a/
1. Cadastral Survey	---	---	---	---	a/
2. Physical Development Plan	---	---	a/	---	---
C. Program for Reorganization of Government	---	48	---	---	---
VI. DETERMINE INSTITUTIONAL REQUIREMENTS FOR DEVELOPMENT					
---	20	---	---	---	---
VII. PREPARE LEGAL PLAN FOR POLITICAL STATUS TRANSITION AND DEVELOPMENT PROGRAMS IMPLEMENTATION					
---	---	---	---	b/	---
PREPARATION OF COMPREHENSIVE PLANNING DOCUMENTS					
---	14	---	---	---	---
TOTAL	72	56	a/	b/	a/

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a/ See Appendix A b/ See Appendix B

planners. Further, the coordinator should have responsibility for assuring that all planning teams adhere to accepted planning goals and objectives, and that all teams base their work on a common set of planning assumptions.

Economic and Social Planning

The economic and social objectives and projections required as the basis for all other planning should be established by economic and social planners. In addition, these planners should have the responsibility for programming the implementation of other plans in accordance with their determination of priorities and available internal and external resources.

It is judged that the services of a senior development planner would be required for the entire 18 month period (72 manweeks), and that the services of an intermediate level development planner would be required for the first 14 months (56 manweeks) of the planning period. In addition, these planners should be supported by various short term specialists with expertise in specific economic and social sectors. Including specialist time (16 manweeks), the total economic and social planning effort is estimated to consist of 144 professional manweeks.

Government Reorganization Planning

A public administration specialist should carefully review executive branch reorganization requirements and develop reorganization and other government administration programs. He should be supported by short term specialists in a variety of technical areas. It is estimated that government reorganization planning would require 56 professional manweeks, including 24 manweeks for the public administration specialist and a total of 32 manweeks for the various short term specialists.

Cost Estimates

In preparing cost estimates, assumptions were made as to the salaries which would have to be paid to individuals with the appropriate professional qualifications for the various planning tasks. For economic, social and public administration planners, salaries should range between \$25,000 and \$30,000 per year. Salaries for short term specialists are estimated at an average daily rate of \$150 (see Table 2). Salary details for legal and physical planners (including cadastral survey personnel) are presented in the appendixes.

To determine total professional staff costs, estimated professional salaries were multiplied by administrative overhead factors experienced by planning consultants in conducting field operations. These administrative overhead costs reflect

Table 2.
 PROFESSIONAL PERSONNEL REQUIREMENTS
 MARIANA ISLANDS (PHASE I)
 TRANSITION PLANNING

	<u>Manweeks</u>	<u>Estimated Annual Salary</u>	<u>Estimated Salary/ Week</u>	<u>Estimated Total Salary</u>
1. PLANNING COORDINATION: Project Coordinator	72	\$32,500	\$625	\$45,000
2. ECONOMIC AND SOCIAL PLANNING: Senior Development Economist	72	30,000	580	41,760
Intermediate Development Economist	56	25,000	485	11,640
Consultants (@ \$150 p.d. av) ^{1/}	16	(daily rated)	750	12,000
3. GOVERNMENT REORGANIZATION: Public Administration Specialist	24	25,000	485	11,640
Consultants (@\$150 p.d. av) ^{2/}	32	(daily rated)	750	24,000
4. PHYSICAL PLANNING: (See Appendix A)	--	--	--	--
5. LEGAL PLANNING: (See Appendix B)	--	--	--	--
6. CADASTRAL SURVEY (See Appendix A)	--	--	--	--

1/ Includes Specialists for:
 a) Tourism Promotion
 b) Agriculture & Fisheries
 c) Finance (Investment,
 Commercial and Development
 Banking)

2/ Includes Specialists for:
 a) Government Accounting and Records
 b) Tax Administration
 c) Education
 d) Health
 e) Public Safety
 f) Communications
 g) Personnel Training

indirect professional salary costs and the costs of establishing and maintaining offices, secretaries and other support facilities and personnel for professionals. Total professional staff cost estimates, including salaries and overhead, are presented in Table 3 for each component of the planning program.

Also included in Table 3 are estimates of travel, per diem and miscellaneous costs. In general, it is assumed that professional staff will be contract personnel recruited in the continental United States. Thus, cost estimates include the cost of moving professionals and their dependents from the mainland to the Marianas.

As indicated in Table 3, the total cost of comprehensive planning for the Marianas is estimated to be \$4,561,470.

Table 3.
BUDGET ESTIMATES
MARIANA ISLANDS (PHASE I)
TRANSITION PLANNING

1. Planning Coordination

Staff	\$ 90,000	
Travel	5,000	
Per Diem	14,000	
Miscellaneous	<u>2,500</u>	
		\$ 111,500

2. Economic and Social Planning

Staff	137,840	
Consultants	18,000	
Travel	15,000	
Per Diem	25,200	
Miscellaneous	<u>5,000</u>	
		201,040

3. Government Reorganization Planning

Staff	23,280	
Consultants	36,000	
Travel	10,000	
Per Diem	5,600	
Miscellaneous	<u>1,000</u>	
		75,880

4. Physical Planning

Staff:			
1. Land Use	255,000		
2. Access and Circulation	230,000		
3. Public Facilities	185,500		
4. Public Utilities	340,000		
5. Regulatory and Ad- ministrative	<u>67,500</u>		
		1,078,000	
Travel		61,950	
Per Diem		32,625	
Communications		12,825	
Photography and Printing		<u>21,650</u>	
			1,207,050

5. <u>Legal Planning</u>			\$ 500,000
6. <u>Cadastral Survey</u>			
Field Surveys:			
1. Saipan	\$397,000		
2. Rota	278,000		
3. Tinian	<u>16,000</u>		
		\$673,000	
Aerial Mapping		50,000	
Recording and Registration		500,000	
Disposition of Land Disputes		560,000	
Land Commission Management		350,000	
Travel and Per Diem for Expatriates		<u>333,000</u>	
			<u>2,466,000</u>
			\$4,561,470

Notes:

1. Staff and consultant cost estimates include salaries and administrative overhead. Administrative overhead is computed at 100 percent of estimated staff salaries and 50 percent of estimated consultant fees.
2. Per Diem estimates include overseas allowances for long term expatriate staff.
3. Estimates of miscellaneous expenses include relocation allowances (movement and storage of household effects, etc.) for long term expatriate staff.

APPENDIX A

COMPREHENSIVE PHYSICAL DEVELOPMENT PLANNING
FOR THE
MARIANA ISLANDS

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COMPREHENSIVE PHYSICAL DEVELOPMENT PLANNING

1. INTRODUCTION: ESTABLISH OBJECTIVES AND ASSUMPTIONS

It has been largely the United States who has introduced the residents of the Mariana Islands to the rising expectations of a better economic future and a higher standard of living. The United States has pledged to the United Nations and to the people of the Marianas that it would promote their economic and physical development as well as political and social advancement. Economic improvement, and with it the required physical planning and construction, carries risks to the residents of losing control both of their own economy as well as the quality of the physical development. The pace of development in the Marianas is rapidly accelerating due largely to the increase in population fostered by a growing tourist industry. The citizens of the Marianas are eager to accept growth and development providing it does not mean that they must surrender their lands and control of their own destiny. They do not want to be like Guam where a tasteless urban sprawl down one side of the Island has been allowed to develop due largely to economic speculation. They do not want to be like Hawaii, where in Honolulu real estate speculation and overdevelopment has created conditions which suggest to the Islanders that they have been invaded and overwhelmed. What the citizens of the Marianas want is to escape from conditions of blight and poverty, adequate housing of which they can be proud and reside in with the assurance that it will not be blown away by the next typhoon, an adequate diet and an end to disease and annual epidemics, better access to modern conveniences, and an opportunity to share in a standard of living which more nearly approximates that of the United States. The challenge, therefore, of this planning study, will be to structure an implementation plan whereby these objectives may be met in an orderly manner over a ten year development program.

Of paramount importance is the need to structure such a plan in a way as to provide the citizens of the Marianas with firm control not only of the implementation and construction of improvements, but of their planning and development as well.

A. OBJECTIVES

1. To achieve a physical standard of living more comparable to that of the continental United States within ten years.
2. To maintain the quality of the natural environment indigenous to the Marianas.
3. To implement a physical improvements plan based on a growth economy through a comprehensive, phased program.
4. To establish local regulatory control of the planning design and construction of physical improvements.

B. ASSUMPTIONS

1. That tourism as an industry can be expected to flourish, particularly on the Island of Saipan.
2. That the population of Saipan will not exceed 50,000 people by the end of the 10 year development period.
3. That there will be local acceptance on the Islands of a non-resident population directly related to industry.
4. That the Island of Rota will maintain its present agrarian economy with a limited increase in tourism.
5. That the Island of Tinian will be developed primarily as a military installation with a limited local civilian population.

II. OUTLINE AND DISCUSS THE GENERAL SCOPE OF REQUIREMENTS IN TERMS OF PRESENT CONDITIONS VS. PROJECTED NEEDS REQUIRED TO ACHIEVE THE STATED OBJECTIVES

This project provides an opportunity to integrate the development of physical planning with a comprehensive effort aimed at restructuring the political, administrative, social, economic and physical systems of the Marianas. As a consequence, all aspects of the development process must incorporate a flexibility to respond to change and growth. New investments and residents will be drawn to the Marianas by the opportunities created through a comprehensive planning and development effort.

A. LAND USE

Proper land use planning is a means of assuring that the natural resources of the Marianas will be used to the greatest advantage of the citizens of these islands and that an orderly framework exists for the physical growth and change of their communities. If the existing land resources of the Marianas are properly and efficiently utilized they should prove to be adequate to support the long range development needs of the economy. If not, the limited amount of land available on these islands will prove to be a serious impediment to the anticipated economic expansion.

There has been substantial effort directed to a better understanding of the land and land use patterns on the islands. There also exists a critical need to understand in more detail the natural resource potential on each of the islands for possible utilization of future development.

Because of the relatively low population densities in the Marianas since

World War II, the need for comprehensive land use planning has only recently become evident. Master Plans for Saipan and Rota were prepared in 1968 and 1972 respectively. No land use plan presently exists for Tinian, though background work was begun by the Marianas District Planner. The uncertainty of future Military requirements has halted this planning effort.

Recent trends indicate that the population of Saipan alone will exceed the previous Master Plan's 1987 population projection within the next five years. In addition, forty-five percent of the present population of Saipan is government employed and a significant change in the political status of the Marianas will alter this earlier planning premise.

One of the most serious impediments to a successful economic future for the islands of Saipan and Rota, however, is the lack of clear title to land held by the private sector. It is critical to the development of a land use plan and implementation program. Disruption during the war destroyed much of the survey and mapping work begun by the Japanese in 1939. Following World War II the U.S. Navy established a monument on Managaha Island and began a new survey on the islands of Saipan and Tinian from this monument. A new survey was also begun on Rota. Military retention areas have now been surveyed and mapped, as have some new homesteads in the public land, but private parcels (with the exception of land in the villages) remain unsurveyed and unmapped. Hundreds of parcels of land are presently in question, and when surveying and mapping have been completed it is expected that many more will be contested.

While land speculation has increased with the growth of tourism, virtually no stable economic activity is possible on private lands on Saipan and Rota until clean title has been established. The Trust Territory government has put a "freeze" on all homestead and lease arrangements on the island of Tinian pending negotiation on the future political status of the Marianas.

Approximately sixty percent of Saipan, two-thirds of Tinian, and seventy-five percent of Rota are held in Military retention or public trust. Significant changes in the land tenure will be required to meet projected economic expansion in the Marianas.

The quality and supply of housing will become increasingly important as the economic objectives for improved standard of living are approached.

Typhoon Jean, which struck the Marianas in April 1968, seriously damaged or destroyed a major portion of the housing stock of the Islands. Relief funds provided by the U.S. government made possible the replacement of about 500 housing units but as temporary replacement houses, they are subject to damage or destruction by the next major typhoon.

During earlier and more primitive periods in the Islands, housing was easily and quickly erected from indigenous materials. With the present mode and standard of living existing in the Marianas today, typhoon damage often means the loss of household goods and appliances of considerable value. Islanders can no longer afford, nor is it consistent with overall objectives, for them to live in dwellings that must be rebuilt every few years and repaired after every major storm.

Of the approximately 2,800 housing units now on Saipan, Tinian and Rota, generally 90% are substandard by U.S. measure and subject to typhoon damage. The remaining 10% of the housing units are of concrete construction and are considered to be permanent. Most of these have flush toilets connected to septic tanks or sewers; others continue to use "benjos" or "outhouses". A housing survey and inventory is presently being conducted by the Marianas District Administration Planning Office on the islands of Saipan, Tinian and Rota.

An extensive amount of background information on Existing Land Use, Topography, Geological Conditions, Water Resources and Climate is available for each of the Islands. The previous Master Plans and numerous studies done for roads and utilities also provide valuable information for this planning and programming effort.

The following elements describe briefly the major work program areas by general land use classification. Item 1, the Cadastral Program although not a land use classification, is a critical element to effective land use planning and implementation. Within the five general land use designations - residential, commercial, industrial, public and agriculture and open space - the following sequence of work steps would be undertaken:

- Data collection, existing studies and surveys
- Analysis of Data
- Goal and Criteria Definition
- Preparation of Concepts and Strategies
- Preparation of Cost Estimates for Implementation Programs
- Preparation of Reports

These land use categories and work steps would be applied to each island and would reflect their individual characteristics.

The Master Plans prepared for Saipan and Rota in 1968 and 1972 should be revised and updated to reflect the marked increase in tourism and population and the employment implications of a major change in political status. In addition their scope must be expanded to include a better framework for implementation. When military land requirements on Tinian have been resolved a Comprehensive Development Plan for lands in the public (non-military) and private sectors can be prepared. A complete and comprehensive survey and mapping of lands on Saipan and Rota could be completed within two years. When the military requirements on Tinian are resolved clear title to exchanged lands must be given to the Tinianese within the same period of time.

1. Cadastral Program

The planning work concerned with land ownership includes the Islands of Saipan, Rota and Tinian. All lands on Tinian have been surveyed and with the possible exception of some checking requirements, the primary land ownership work for the Island of Tinian will be the coordination of deed registration into a more comprehensive program for all the Marianas. The situation on Saipan and Rota, however, is quite different with a substantial amount of property on each Island remaining to be surveyed and many legal disputes still existing. Consequently this proposal in discussing the Cadastral Program requirements will primarily be addressing itself to the common problems of Saipan and Rota.

It is quite apparent that on Saipan and Rota land problems are growing more complex with the passage of time. More and more people are dying who are the only sources of reliable information as to the historical pre-War boundaries of property, and in addition, there is occurring a rapid acceleration in population growth, particularly on Saipan. With this increased growth and rapidly developing interest in the industry of tourism has come great economic pressure exerted on the value of land. A great deal of foreign capital is flowing into the area for the purpose of land and development speculation and this fact is constantly frustrating the desire of local residents to retain control over their own planning and economic destiny. In addition to these factors, it is clear that any substantive land use planning for these Islands must include as an integral part of this planning effort a thorough and comprehensive cadastral land ownership program. The immediate need for such a program is best understood from the following summary of factors:

- 100
- a. The need to re-establish the boundaries of all land parcels as delineated by the Japanese land surveys.
 - b. The need to make determinations of ownership of all land parcels on the Islands.
 - c. The need for complete records with respect to the United States military actions regarding land matters.
 - d. The need to close the filing of claims outstanding with respect to land ownership disputes.
 - e. The need to survey and record legal ownership of all land parcels.
 - f. The need to establish a comprehensive deed registration system for the Marianas District.

- g. The need to translate and index pre-War land records that have been recovered.
- h. The need to establish and administer a system of determining legal heirs of deceased land owners shortly after the death of a land owner.
- i. The need to resolve the problems relating to public highways, pipelines, electric lines, and related utilities which have crossed private lands and in most instances have neither established legal easements or compensated the property owners.

More specifically the physical surveying work which needs to be accomplished is as follows:

Saipan:

- a. North District - 53 parcels totaling 165 hectares
- b. South District - 39 parcels totaling 143 hectares
- c. Chalan Kanoa District - 60 parcels totaling 227 hectares
- d. East District - 27 parcels totaling 115 hectares
- e. Garapan District - 202 parcels totaling 575 hectares

In addition to these, 381 parcels comprising 1,225 hectares of pre-War private properties which remain unsurveyed, there are additional miscellaneous homesteads whose boundaries will need clarification. All villages on Saipan have been surveyed and land title for each village property is clear. Very little mapping of the work previously surveyed has been accomplished.

Rota

- a. Pre-War properties unsurveyed - 333 parcels totaling 940 hectares.
- b. Miscellaneous homestead boundaries which will need clarification.
- c. As with Saipan, very little mapping of the survey work has been accomplished.

These statistics represent 100% of the land on ^{Tinian} ~~Taiian~~ as having been surveyed, 50% of the land on ^{Managaha} ~~Saipan~~ has been surveyed, and approximately 60% of the land on Rota has been surveyed. Managaha Island off the northwest coast of Saipan has been used to relate the area into the U.S. Coast and Geodetic Survey network. From this island triangulation to Saipan has been accomplished. About 1,000 Japanese monuments have now been discovered that fit perfectly into the survey grid being used on Saipan and Rota.

Based upon past progress and circumstances, including the availability of local labor, it is recommended that the planning for a future cadastral survey program be based upon the following general assumptions:

- a. For field survey work the necessary land survey teams would be accompanied by land title investigation teams. These "auxiliary land commission teams" would be headed by local residents, knowledgeable in the history of land disputes in a particular area and they would have authority to attempt to adjudicate disputes in the field between landowners. These land claim teams would hopefully be able, through a form of arbitration, to convince the property owners of the necessity to settle their boundary disputes promptly and without charge, rather than face costly and time consuming claims in the courts.

- b. Recognition that it will be necessary to utilize better trained survey and technical personnel to do the work, rather than embarking on a training of Micronesians for surveying portions of the work. Local labor can be utilized for non-technical survey assistance. Expatriot survey leaders must be well paid and given authority to hire and fire Micronesian helpers. All personnel should be paid on a work-performed basis, with consideration given to a system of bonuses for either meeting time schedules or exceeding them.
- c. Utilize aerial photogrammetry to denote municipal boundaries as well as significant land parcels. This technique can be helpful in adjudicating localized boundary disputes in the field and can be accomplished with a high degree of precision with the results being transferred later to physical monuments set in the field.

The cadastral survey program for Saipan and Rota must be considered as an integral part of the land use planning for these islands. With a contemplated physical planning study period of one year, it is assumed that the Cadastral Program and the physical planning program could begin at the same time and continue simultaneously for the first year period, with the Cadastral Program then continuing for another year to completion of the physical survey work, required mapping, deed registration, and issuance of title. Beyond this two-year physical survey program, it seems prudent to budget for an additional five years during which time legal disputes and claims will have to be worked, either by the land management division, or in the

courts. By utilizing these procedures, it should be possible to effectively accomplish the Cadastral Program for these islands within a seven-year time frame, thereby integrating the land ownership question within the ten-year development program for which this planning is concerned.

2. Residential/Housing

Residential areas to accommodate a growth of approximately 40,000 persons must be planned. These areas will consume the greatest land area of all used and require significant capital improvements in Streets, Utilities and Public Facilities such as schools and recreation. Within the context of a controlled economic development program it is important that residential construction parallel economic development efforts to insure that the type of housing needed by the persons filling the jobs generated is available when required. The residential planning must also allow for a normalization of demographic patterns as the economy and population stabilize over time.

The developing residential neighborhoods will establish the basic structure for the communities. This structure must complement the tourist oriented economy and also provide a life style for the resident separate from the tourist activity. Within this neighborhood structure the proper relationship and integration of housing types, styles and prices must be maintained to overcome many of the social, economic, planning and design problems prevalent in rapidly expanding urban communities around the world.

3. Commercial/Tourism

The impact of the economic development program will be reflected in two ways in the commercial land use development: first, to accommodate the projected tourism and secondly, to provide for a substantially increased standard of living for the residents. Development of facilities for tourism will be most evident on Saipan.

The relationship of significant tourist development to the infrastructure - power, water, sewer, etc. - is critical. Tourism will be a major generator of traffic at airport facilities and to points of historical interest. Improvements must be convenient and yet not disruptive to the residential neighborhoods.

As the standard of living increases, additional demand will occur for more and varied commercial facilities related better to the resident population.

The location, size, quality and character of the commercial facilities is critical to maintaining the overall desirability of the Marianas as a major tourist area. Special emphasis should be given to insure that special design consideration be given to commercial development. It is equally important that the phasing of the commercial development related to tourism coincide with the economic projections to insure adequate visitors to utilize hotels, etc.

Each phase of the physical development should be coordinated to work as a unit so new development under construction is not disruptive.

4. Industrial

Industrial development as a result of the economic program is directly related to the circulation systems: airport and major roads. The location of harbors, must be compatible with the overall objectives of tourism and maintenance of the quality of the environment.

It is anticipated that the initial thrust of industrial development will be that due to activity in the construction industry.

5. Public

The allocation of land for public use will be directly related to the population (permanent and tourist) demands. It is important that adequate space for schools, roads, airports, recreation facilities, museums and parks and open space, civic buildings, hospitals and administration be provided. As population and economic pressures increase it will become difficult to obtain the land needed at the appropriate location and at a reasonable cost.

The schools, parks and recreation facilities should complement and reinforce the neighborhood structure. Public rights of way for streets and utilities must be established to insure the continuity of these systems as they develop and allow for the quality and type of development needed.

It is particularly important that an awareness of tourism and the role of the various public buildings and spaces be incorporated into the plan.

6. Agriculture and Open Space

The provision of adequate land for agricultural purposes is of prime importance to support the increased population and tourist oriented economy. A careful analysis of the intrinsic quality of the land itself to support agriculture, and maintain critical natural systems needs to be made. From this analysis the designation of prime lands for these purposes can occur. We can ill afford to use land best suited for agricultural purposes for a more urban use if land less intrinsically suited can function as well. Consideration of this basic resource is prime in the land use planning process.

B. ACCESS AND CIRCULATION

There is a need to determine the adequacy of those existing facilities providing access to the islands and circulation within. Planning is required for improvements needed today, as well as those necessary to accommodate projected growth requirements.

1. Harbor and Dock Facilities

Saipan: Surface transportation service, whether for freight or passengers in the Mariana Islands District is handled at Saipan at "Charlie Dock". This piling-supported concrete dock may have been adequate years ago for modest shipping traffic to Saipan, but is now in varying degrees of disrepair and particularly inadequate for the handling and warehousing of an expanding maritime business. The dock itself is of such limited size that the warehousing operations must be accomplished by utilizing buildings in the general area. This necessitates inefficient handling of the freight during loading and unloading operations. In addition to basic stevedoring and cargo handling operations, dockside activities must involve immigration inspections, agricultural quarantine, tax and customs inspections, medical quarantine inspections, and other related regulatory services.

With the projected increase in population on Saipan will come a corresponding increase in freight shipping by sea, which together with the demand of a growing tourism industry constitute a requirement for the planning of enlarged docking facilities, larger and improved dredging of the harbor to accommodate larger turning radius movements of

ships, new dockside facilities for the warehousing of goods and administrative functions, and permanent cargo handling equipment.

Rota: The present harbor-dock facilities for Rota are located at the extreme southwesterly portion of the Island, just south of Song Song Village. Both these facilities are in a state of disrepair and require not only immediate improvement, but long-range planning to accommodate future freight and passenger activities. The West Harbor can now accommodate an LCU 115 foot vessel at an old existing dock which was originally 200 feet long, but due to storm action has been eroded to approximately 140 feet in length. This dock is in a direct line with the sea entrance and although the channel to the sea has been blasted to accommodate vessels of this size, dredging action was not pursued with the result that the channel has gradually filled back up to a depth which will now allow only shallow draft lighters to transport cargo from seagoing vessels to the dockside warehousing or administrative functions. The East Harbor is used primarily by small craft with very little opportunity for a vessel to maneuver before piling into the reef.

Future planning for harbor and dock facilities at Rota should begin with an understanding that both East and West Harbors need to be improved to a point where either are operational. This is necessary due to alternating

storm directions and varying tidal action. The harbor area should be dredged and enlarged to permit adequate maneuvering and access channels to the open sea should be reopened through dredging. Planning must consider the need for dockside warehousing and the storage facilities required by the normal transit of freight.

Tinian: The existing harbor facilities were constructed many years ago by sheet steel piling driven into the reef to form the bulkhead for concrete dock construction as well as a break-water creating a small harbor. These improvements still retain the potential for continued use, but are lacking in dockside warehousing and administrative facilities.

Because of the possible military aspect of Tinian's future, it should be pointed out that the use of this existing dock for the loading and unloading of munitions would mean that the non-military residents of Tinian would be denied sea access to the Island when the harbor was restricted for military purposes. Planning should consider the development of a second harbor and dock facility on Tinian which would provide the Island with at least one harbor operational for public use at all times.

2. Air Transportation Facilities

Saipan: Kobler air field is the major airport of the Marianas District and the heaviest utilized throughout the Trust Territory. It is constructed of compacted coral with a thin

coating of asphalt of nearly 7,000 feet in runway length. The field is not lighted, has no "tower type" approach control, with a minimal terminal facility for the handling of passengers and baggage. Adjacent to this air field is Isley Field, an 8,500 foot long runway of better construction of compacted coral with asphaltic topping. Isley air field was heavily utilized during World War II for B-29 bombers and with minimal runway improvement could accept modern jet aircraft. Work is presently underway to accomplish modest, though significant, improvements, both to Isley Field and related terminal facilities in order that the commercial air traffic at Saipan can be moved from Kobler Field to Isley Field in the near future.

Future planning for air transportation facilities on Saipan should include a long-range program of improvements to continually upgrade the new Isley Field complex, together with attention directed to the Kobler Field as well as an abandoned Japanese fighter airstrip at the northern end of the Island for possible development and use by private non-commercial air traffic.

Rota: The Rota air field is constructed of compacted coral, but only 2,800 feet long. Although served daily by 727 jet aircraft, this air field is not adequate for this type of traffic and the runway sustains serious rut damage by the landing gear of heavy aircraft. Within the last month, the United States FAA inspector has visited this airstrip

and indicated that unless immediate improvements are made to the landing strip, jet traffic will not be allowed to use the field. Terminal facilities at Rota include a modest wood and tin building for cargo and passenger processing, together with a farmer's market building, primarily used to sell vegetable and produce to transiting air passengers bound for Saipan or Guam.

Future planning must immediately address itself to the future of air access to Rota. The runway must be planned to accommodate larger jet aircraft, better terminal facilities will be needed to accommodate increasing cargo traffic in vegetable and produce, and drainage techniques need to be developed to better handle the storm water resulting at the air field during heavy rain storms.

Tinian: The Island of Tinian was a major air base for the United States during World War II, and as a result the Island is covered and criss-crossed by many airstrips, both for fighters and bombers. The present commercial field is a hardtop coral compacted air field known as "West Field" and is utilized daily by jet aircraft. This runway is 8,000 feet in length and is in fairly good condition. Terminal facilities at Tinian consist of one Butler tin building used for all airport activities.

Future planning for air access to Tinian should include the development of new terminal facilities for the temporary

storage of meat and produce in transit to other islands of the Marianas. There is a great deal of processed meat and vegetables which are shipped regularly from Tinian to Saipan and Guam without adequate storage or mechanical handling facilities at the airport.

Future planning should also consider the improvements which could easily be made to this better than average commercial air field. The 8,000 foot runway could be extended to approximately 14,000 feet in length and be capable of handling all types of modern jet aircraft. Should future development on Tinian include a major military base, as well as a civilian community, it will be necessary to develop methods of fast economical air transport service from Tinian to Saipan and perhaps Guam. Planning should consider not only conventional aircraft for this purpose, but the possibility of utilizing vertical take-off and landing equipment.

3. Road Systems

Saipan: The Island of Saipan has approximately 40 miles of improved primary roads, nearly all of which receive heavy daily automobile traffic, and as a result are in a continual state of disrepair. There are in addition approximately 35 miles of secondary roads which are unpaved and although less frequently traveled, provide needed access to various residential and agricultural areas of the Island. These unpaved secondary roads are badly rutted and eroded due to the heavy downfall of rain during the storm season. The third category of

roads are those which provide access to residential housing in the village and community centers. These unpaved streets are surfaced with a finely graded mixture of limestone and coral, which produce a dust condition unacceptable to either the local residents or present U.S. Environment Protection Agency Air Contamination Standards. Immediately after a rainfall, these village roads assume the consistency and characteristic of "plaster of Paris".

Future planning for road systems on Saipan must include at least the following:

- 15 500
- a. Repair and upgrading programs for the primary road network on the Island.
 - b. Paving of all remaining primary and secondary roads.
 - c. Realignment and regrading of village and community center roads to eliminate the dust and storm drainage problems.
 - d. Establishment of new right-of-ways for future road construction which will be needed by an increasing population of the Island.
 - e. Development of a total road system plan which would record all existing access routes (no such documents presently exist).
 - f. Completion of the surveying of all major road systems on the Island (only 25% of Saipan's roads have ever been surveyed).

Rota: During World War II the Japanese developed an unimproved road system on Rota that was intended to serve the entire Island for phosphate mining and agriculture programs. Presently there are approximately 20 miles of island roads under some form of maintenance, however, many of the routes that provide access to agricultural areas have been left untouched for many years. The main road connecting the air field and Song Song Village is approximately 11 miles in length and is the most heavily traveled road on the Island. This route sustains constant erosion from torrential rainfall and is consequently being regraded continuously. Certain dangerous curves and steeper grades along this airport road have been surfaced with asphaltic treatment to reduce the dangerous slipping related to the coral dust surfacing.

Future planning on Rota should recognize that this Island has great agricultural and cattle raising potential and its economy and population is geared for this activity. However, in order to achieve this goal it is necessary to plan an improvement program which will continually upgrade and develop new road systems to a level equal to that which existed during the Japanese occupation. The primary airport-village road should be paved, as should all village streets and roads. It is particularly important that surface access routes leading to villages, schools, community facilities, and recreational areas be paved in order to reduce the health hazard caused by coral dust.

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Tinian: The Island of Tinian has approximately 25 miles of improved primary roads, including a 5½ mile paved divided highway running down the center of the Island. As a result of better construction during the U.S. occupation of this Island, road beds are generally in better condition than found on adjacent islands in the District. There are many secondary roads which lead to cattle raising areas which are not paved, and which require continuing regrading and maintenance to accommodate the increasing ranch operations traffic. Many sections of roads which receive light traffic have been essentially closed and allowed to be overgrown with tropical foliage.

Future planning of roadways on Tinian will depend to a large extent on the future military potential for this Island.

In the event a military installation is established here, the present resident village located adjacent to the harbor dock area will have to be relocated probably to the hilltop at the northern end of Tinian. Such a relocation would require development and planning for a new road system leading to this area as well as a new village street system. As in the case of Salpan and Rota, all heavily used primary and secondary roads together with all village streets and roads must be paved.

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C. PUBLIC FACILITIES

With greater political independence will come the need for improvements in civic and cultural community facilities. This new civic infrastructure will require planning for those facilities required immediately and as phased development in the future.

1. Public Buildings

At present, facilities falling under this category are those housing governmental and public safety functions only. (We are distinguishing here between Public Buildings and Education and Medical Facilities.) Saipan's New Civic Center houses the offices of the District Administrator, U.S. Customs and Immigrations, Police and Fire Departments, and will be enlarged to house the District Legislature in a \$250,000 planned addition.

Smaller components of these basic governmental and administrative functions are located in governmental buildings on Rota and Tinian. There are no spaces of any significance set aside for cultural events, public gatherings and certain other administrative functions. The present Civic Center is already suffering the process of one function "bumping" a lower priority function out of its space.

The anticipated five fold population increase in Saipan will result in a significant rise in need for public administrative space. Newly created agencies related to tourism and public improvements will require large staffs, file space, meeting rooms and support facilities. In addition, the demands of an increased and more affluent population will support needs for theaters, galleries and public

halls much the same as for recreational facilities.

Increases in the overall economy of the District will also enable construction and public safety facilities on other islands. Provisions for fire fighting equipment are badly needed. Also, intensified governmental activity in agricultural and industrial planning will have to be allowed for in planning the administrative space network.

The following is a more specific outline of public building needs which are apparent now in light of historic growth trends with indicated modifiers as impacted by the projected development of Saipan.

Administration - As mentioned above - the present District Center at Saipan is barely sufficient for present needs. The history of bureaucracy indicates that space given over to record-keeping and administrative services breeds more and more space. In addition, the level of sophistication of administrative delivery systems continually increases with sound management.

Consequently, a population increase coupled with economic opportunities will put pressure on the government to engage in complementary expansion including agency offices, staff areas for legislators, research libraries, automatic data processing facilities, motor pools, and amenities capable of expressing the new aggressive planned posture of the Marianas. There may also be a need to provide some housing for new staff members and visiting representatives of other governments in the event that such facilities may be in short supply during the growth period.

Public Safety - With population growth will come the need for increased public safety services and facilities. The tourism development will likely cause the necessity for a geographically distributed fire-fighting system. The main station at the Civic Center will likely need to be supplemented with satellites in strategic locations. Other emergency facilities related to typhoon catastrophes will likewise need to be decentralized.

The police department is suffering growing pains and needs training facilities, better correctional facilities for men, women and juveniles and more administrative space. Methods in effect now will be vastly augmented to control special crowd-handling needs, building security maintenance and immigration-instituted crime prevention problems inherent when a new internationally-oriented worker population arrives from areas with different cultural traditions. Laboratory space and treatment centers for drug abuse and alcoholism are also to be considered both today and in expanded planning.

Justice - The courts, already severely back-logged with cases, must be facilitated for both federal and local levels of criminal justice delivery systems. Expansion of these with respect to growth in police and crime prevention problems, land tenure cases, development litigation actions - all the off shoots of growth will need serious site-needs studies to ensure good location with respect to government record centers, correctional facilities, and attorneys' offices.

Communications - An entity such as the Marianas is intrinsically linked to the world through communication networks. This then

becomes a major governmental interest. Public buildings for communications will consist primarily of postal facilities and spaces to serve the inter-island administrative radio network. While these facilities might be expansions of existing areas it may be necessary to provide satellite facilities especially for vastly increased postal needs due to tourism and imports.

Cultural - The government will have to take the lead in providing for protection of historic and cultural features of the Marianas which will be a must for tourism on the one hand and will be threatened by the expanded economy on the other. A museum or cultural center will be an obvious necessity.

2. Educational Facilities

Educational facilities planning as discussed in this section refers to site selection, the planning of individual sites, and the conceptual planning of specific educational facilities. Educational planning in the areas of program, personnel, and administration are covered elsewhere.

In a developing nation faced with the prospect of rapid economic growth and population increase through in-migration, careful planning is needed to assure the availability of school sites in appropriate locations at reasonable costs when they are needed. Further, conceptual planning of schools at specific sites can assure future expansion capability, and provide a basis for cost estimates for use in capital improvement planning and budgeting.

The Islands of Saipan, Rota and Tinian presently serve 4526 primary and secondary students in eight elementary and two secondary schools. While much of the classroom space is relatively new it is in short supply, and support facilities such as libraries or learning resource centers, multi-purpose rooms, performing art areas, cafeterias, gymnasias, office-counseling areas, and clinics or nurses areas, all common to schools in Hawaii and on the mainland, are virtually non-existent. All of the larger elementary schools in Saipan are on double sessions and will continue to be until a minimum of twenty-eight additional classrooms are constructed. None of the schools are air-conditioned, a practice now common in schools throughout the U.S. and several have exceedingly bad ventilation making learning in this area of extreme heat and humidity very difficult.

No additional school sites have been acquired by the Mariana Island District, and no long-range facilities plans presently exist. Students from Tinian, Rota and the Northern Islands presently attend high school in Saipan. No residential quarters exist for these students and none are planned.

Other than the limited occupational education courses offered at Marianas High School, no facilities presently exist or have been planned to provide the vocational-occupational courses required to train and re-train Micronesians who wish to participate in the Islands' emerging tourism industry, or in the areas of agriculture and fishing now being more actively pursued.

Future planning should consider population growth and changing techniques in education which need to be reflected in a physical improvements program better able to adapt to change. Whether through rehabilitation of existing facilities or new development, the quality and scope of the educational environment must be continually planned for improvement. In anticipating the impact of the tourist industry alone an additional 1,500 hotel rooms could produce 5,500 direct and indirect jobs which could only be filled through in-migration. Assuming only 2,000 of these jobs were filled by individuals with families averaging only two children of school age per family, there would be an immediate need for an additional 140 class rooms.

It is important that the location of new schools reinforce the system of residential neighborhoods which will develop in the land use planning process.

The following items illustrate the general steps which must be taken:

- a. Inventory existing school facilities to establish their adequacy in terms of standards currently accepted in Hawaii and on the U.S. mainland.
- b. Re-assess enrollment projections in terms of an expanded economy, demographic characteristics and residential neighborhood structure to identify the best locations for additional school sites.

- c. Prepare Development Plans for each school site to assure orderly growth and to preclude costly errors in short-range decision making.
- d. Establish building programs and prepare conceptual plans for facilities required for occupancy by September 1975.

3. Medical Facilities

Health care services are provided by the District Health Services system administered from the Dr. Torres Hospital on Saipan. Preventive medical services, dental care, non-specialized acute medical care, mental health counseling, health education and some paraprofessional training are currently provided through the hospital on Saipan and through a field hospital on Rota and dispensaries on Tinian. Specialized medical and surgical care needs are referred. Dental care is provided by three dental officers, a prosthetic technician and five staff aides.

Saipan: Existing medical services on Saipan are centered at the Dr. Torres Hospital, an 84 bed facility, staffed by one physician, one Registered Nurse and 60 other nursing personnel. The hospital provided 20,000 inpatient days of care in 1973 in all categories of care. In addition to inpatient care, the hospital provides outpatient care for the island. There were over 37,000 clinic visits exclusive of the Public Health Clinic in 1970. Dental services are provided at the Saipan Dental Clinic which accommodated over 7400 patient visits in 1970. An

additional 4400 visits were accommodated outside the clinic. The major shortcoming of the current system is the lack of outpatient care facilities in the areas of the island away from the hospital.

The Dr. Torres Hospital was completed in 1962 at a cost of approximately \$1,000,000. The design of the unit is a series of wings connected by a covered outdoor walkway similar to many U.S. military hospitals constructed in the 1940's and 1950's. The operating and delivery room and newborn nursery are air conditioned. An emergency generator and a 42,000 water storage facility provide emergency back-up for the hospital. The layout of the facility causes an undesirable mix of traffic in several areas, notably the combination of emergency and admitting entrance location of isolation rooms at the end of wards, and the common circulation between the operating and delivery rooms. The latter creates a great potential for cross contamination. The relationship between the delivery area and the nursery causes newborns to be transported through the major walkway. The wing layout, necessary in part because of the lack of air conditioning or mechanical ventilation makes efficient utilization of nursing personnel difficult. Total travel distance along the main corridor approaches 400 feet. The records area lacks adequate control and security.

The air conditioning system is in a state of disrepair and has caused flooding of the labor area in the delivery suite. Equipment in other areas (sterilizers, washers, kitchen equipment) have been corroded to the point of inoperability in some cases. Air conditioning of the entire facility would alleviate these problems to a great extent.

Planning for the future on Saipan should develop a flexible facility system which recognizes the role of a Saipan hospital in serving the other islands. A new hospital of optimized design configuration should be developed which ensures correct care delivery techniques, maximizes the effectiveness of personnel work stations, creates an appropriate and reassuring environment for the patient and which provides maximum flexibility for growth and change in the future. Distribution of facilities should be analyzed and additional outpatient facilities considered.

Rota: A ten bed field hospital staffed by a physician, a public health nurse and thirteen other personnel serves Rota. -- This facility also has a dental operatory. 1170 inpatient days of care were provided in 1970 as well as over 5700 outpatient visits. Dental care is provided on a visitation basis by dentists from Saipan.

This facility has equipment problems similar to those at the Dr. Torres Hospital on Saipan. Future planning **030137** should consider expansion and upgrading of this facility.

Tinian: A two bed dispensary with dental office provides minimal inpatient care (42 patient days in 1970) and outpatient services. These were 3827 clinic visits to this facility in 1970. The facility is staffed by four nurses.

Equipment problems are similar to those on Saipan and Rota.

Future Planning in General:

One of the most important aspects of future planning will be the effort to forecast future needs as they may occur as the commonwealth develops. The range of future potentials must be well understood in order to assure the flexibility of the health care system to meet these needs.

Maximum utilization of the Islands human resources should be assured by thorough consideration of training programs. New facilities must incorporate flexibility to assure the ability to accommodate growing and possibly unforeseen health needs.

This type of planning effort requires the assignment of a multidisciplinary team of health facility planners, health care professionals, management consultants, architects, estimators and planners to this task. The existing system must be thoroughly analyzed, health care needs, both met and unmet, should be designed and evaluated. Operational and facility programs should be developed. Conceptual facility plans should be developed and both capital and operating costs forecast. Priorities should be carefully evaluated and a detailed implementation plan and

schedule developed.

Nutritional Study:

For the past several weeks there has been a diet study initiated by UCLA to ascertain the nutritional standard presently found in native population of the Marianas. These investigations need to be expanded to determine if prevalent lower metabolic rates among certain segments of the resident population can be attributed to diet deficiencies.

4. Recreational Facilities

Opportunities for organized leisure time activities are relatively minimal. Although the sea, the beaches and the mountains may provide lavish backdrops for individual play, there are few facilities and programs available to sustain the need for organized and quasi-educational recreation demanded by an urbanizing population.

The present small staff of the Community Development Office charged with coordinating and facilitating recreation has very limited resources. Essentially, three persons are responsible for coordinating a very basic program of sports and crafts-type recreation with some assistance from Girl and Boy Scouts, Peace Corps Volunteers, churches and schools. The total budget for the Community Development Division (of which recreation is only a small part) amounts to \$46,000 for operations and programs and \$25,000 for capital expenditure in 1974.

An adjunct to these public facilities are those facilities which are available to portions of the population through private organiza-

tions. These must be considered in studying the overall inventory.

The other major component of the recreation spectrum today is that primarily devoted to tourism, resorts, historical and geological phenomena, as well as sharing of beach areas constitute this element. This is still at a fairly modest level.

Given the assumed growth projections and increased standard of living we can assume that recreation needs will expand greatly. In fact, the need will probably increase by a greater proportion than the population growth. The people will become increasingly more sophisticated and will demand a wider range of opportunities. Aside from new tourist and commercial facilities, we must consider a network of facilities directly related to housing types and residential neighborhoods so that island residents with families and newly arriving workers will have recreation places and programs designed for their individualized needs.

Finally an area system of large public open spaces and recreation facilities must be planned and set aside to ensure that space of adequate proportions will be available for future generations to use for play and rest.

D. PUBLIC UTILITIES

There is an urgent need to properly assess and plan for the demands imposed on public utilities by an expanding population with its rising standard of living. Within the ten year time frame of this implementation program, the population of Saipan can be expected to increase generally from 10,000 to 50,000 persons; on Rota the magnitude of this increase could be from the present population of 1400 to 3500, with further increases projected to 1990; with the development of a United States military installation of Tinian will come an increase in non-military population substantially greater than the 700 present residents. Accompanying the rise in population will be a demand for adequate potable water, more electrical conveniences, better systems for access and circulation, and systems of sewage and solid waste disposal which will be non-polluting to either health or the environment. The public utilities infrastructure must be capable not only of supporting present requirements, but capable of accepting the projected growth demands of the future.

1. Water Systems

Saipan: The existing water system consists of approximately 250,000 lineal feet of main and secondary water lines. Of this total only about 80,000 lineal feet represent a modern installation, with much of the balance dating back to 1944-1949 (military installation). Water is pumped from 19 sources -- 14 deep-wells, two Maui type wells, and three developed springs. There is limited water storage with only six major tanks. The four old above-ground tanks have a holding capacity of 1,600,000 gallons. The 3 underground tanks have a total capacity of 1,200,000 gallons. In addition, recent construction has provided storage capacity for 2,530,000

gallons in old underground storage tanks constructed by the Japanese. Also there is a 1.5 million gallon capacity open water catchment at Isley Field recently constructed.

The water system includes two treatment plants utilizing hydrated lime and soda ash to soften the water, together with automatic chlorinators. Approximately two million gallons of water is being pumped daily, although the population demand requires approximately one million gallons. It is estimated that one million gallons of water is lost daily through pipe leakage, which at present water rates is an annual revenue loss of approximately \$100,000.

The future planning for the Saipan water system must include:

- a. The immediate replacement of deteriorated pipes.
- b. Replacement of distribution lines in all existing villages.
- c. Placement of new distribution lines to serve future planned development.
- d. Development of new supplemental sources of water to augment the approximately 2,500,000 gallons per day percent maximum supply.
- e. Renovation of two below ground 9,000,000 gallon Japanese storage reservoirs.

Rota: The water system for Rota consists of a "water cave" fed by surface drainage and springs from which a maximum of approximately 700,000 gallons of water per day flow by gravity through a distribution network largely constructed during

the Japanese pipe of a gauge incompatible with present U.S. standards and difficult to repair. The village distribution system is haphazard and is the result of little planning or direction. This network is constantly plagued with leaks, but current work is attempting to repair this deficiency.

The future planning for the Rota water system must include:

- a. Immediate replacement of all deteriorated pipes.
- b. New main transmission lines in conformance with U.S. standards.
- c. New distribution lines to provide service to the village as well as for future proposed development.
- d. New storage facilities to accommodate future growth.
- e. Development of additional sources of water for future growth demand.

Tinian: The present water system for Tinian consists of a Japanese developed well about five miles from San Jose Village, from which water is pumped through an 8 inch main line to the Village; a randomly constructed distribution network serves the Village and is continually developing leaks. Some effort is now being made to repair the village distribution lines, but the lack of funding constantly frustrates this effort.

Presently the cattle and agricultural program consume more water than the residents of the Village. The water requirements for cattle and irrigation are growing and there is concern over possible contamination of the supply.

The future planning for the Tinian water system will be affected by the planning requirements and determinations related to the proposed military facility, but in any case, the resident non-military population of the Island will have future water requirements for which planning must include:

- a. Immediate replacement of deteriorated pipes.
- b. Development of an alternative water source.
- c. Extension and replacement of secondary distribution lines.
- d. Location of new distribution lines to provide adequate service for the future resident population.
- e. Development of new storage facilities.

2. Power Systems

Saipan: The power distribution system for Saipan existing today consists of approximately 185,000 lineal feet of primary line and approximately 320,000 lineal feet of secondary distribution line. Power is available in every major village, and over 95% of all people on Saipan have access to power if they want it.

With the unfortunate destruction of the old power plant in Garapan, the primary energy plants are both located in Puerto Rico. The major plant is a new facility with two 2240 KW and two 1500 KW generators. Space is available in the building for two additional 2650 KW units. Supplemented by this is an auxiliary 1500 KW generator station. Supplemental stand-by units on the Island can bring the maximum power output to approximately 10,000 KW today.

Future planning for the Saipan power system must include:

- a. Expectation of an increase in power demand of at least 20% per year to account for normal increases in consumer demand.
- b. Expectation of a further increase in power demand due to rapidly developing tourism enterprises. This factor projects a population in ten years which will require a 500% increase in electrical power generation on Saipan alone.
- c. Additional primary and secondary distribution lines to extend service to areas of future development.
- d. A procedure which will be capable of utilizing private power generation systems as supplemental or stand-by emergency units to the entire Saipan grid.
- e. Study feasibility of dual purpose power-water treatment plants to more efficiently satisfy both utility demands.
- f. Investigation of alternative systems of power generation, including the feasibility of deep-water thermal transfer systems.

Rota: The existing power distribution system for Rota consists of approximately ten miles of distribution lines with a stabilized voltage. A new power plant has been constructed housing two 300 KW generators. The peak demand now is approximately 340 KW. This power supply is considered marginal for Rota until 1975, at which time supplemental generator units will undoubtedly be required.

Future planning for Rota's power distribution system must include:

- a. Extension of existing distribution lines.
- b. Location of future distribution lines to reflect proposed development.
- c. Provision for 600 KW supplemental power generation equipment immediately.
- d. Integration of private power generation units into the public power grid for emergency or stand-by purposes.

Tinian: The existing power plant for Tinian consists of two new 300 KW generators, establishing an assured output of 600 KW.

The existing distribution system, badly damaged by Typhoon Jean has been completely repaired, with continuing maintenance as funds are available.

The future planning requirements for Tinian's power system will undoubtedly be affected by the proposed military facility planning. In addition to those major development factors, planning must consider:

- a. Provision of an additional power generation unit to provide adequate reserve power.
- b. Extension of and replacement of distribution system elements.

3. Sewerage Systems

Saipan: The existing sewerage system for Saipan consists of two new primary treatment plants handling 900,000 gallons per day capacity, discharging to outfalls in Tanapag Harbor and Agingan Point, approximately 130,000 lineal feet of sewer lines, 22 sewer lift stations, with inclusion of all Trust Territory Government facilities into the system. This sewer system serves all major villages except San Roque, Tanapag, and San Vicente and Maipi.

The future planning for the sewerage system for Saipan must include:

- a. Provision of service to San Roque, Tanapag, San Vicente and Maipi.
- b. Extension of the lines in the Garapan area, which is developing rapidly, together with appropriate extensions in the San Antonio and San Jose districts.
- c. Careful coordination of land-use planning with projected requirements for sewer utility service for future development.
- d. Consideration of long-range feasibility of the development of secondary and tertiary treatment facilities to further minimize pollution.

Rota: The existing sewerage disposal system on the Island of Rota consists of individual cesspools and some isolated leaching fields. Because of the nature of the system, sampling of sewage flows to obtain data on waste characteristics is not

possible. Approximately 80% of the water consumed daily by the community finds its way into the sewerage system.

Future sewerage system planning for Rota should include:

- a. Development of a complete sewerage system for each of the areas of growth to include facilities for collection, treatment, and disposal.
- b. Preparation of a phased development program which will allow an orderly transition from individual cesspools to a complete community collection network.

4. Solid Waste Disposal

Saipan: With the increasing population of Saipan is a growing problem of disposal for solid waste, trash, and garbage of the residents of the Island. Presently there are two areas on Saipan devoted to the dumping of solid waste. One is a land-fill project located in the Puerto Rico area, which allows residents to dispose of their trash directly into the harbor area inside the reef. This land-fill dump is immediately adjacent to the main north/south primary road, and is in the general vicinity of the best bathing beach on the Island. The local government has been advised that its trash disposal operation must cease at the Puerto Rico site because of increasing pollution to the lagoon waters. The other disposal site on Saipan is a high cliff at Agingan Point at the southern end of the Island. This is a large dump area at the top of a cliff which permits residents to throw their trash over the cliff into the ocean channel below. Although the tidal action at this end of the

Island is rapid, the volumes of solid trash are such that pollution, both chemically and visually, occurs in the water. Further, the unpleasant odor of this garbage dump area is so bad that local residents begin throwing the trash out of their cars along the access road leading out to the bluff. This condition has resulted in the entire general area being used for a deposit area for trash and garbage. From a tourist's point of view, this trash disposal operation is the first impression a visitor receives of the Island as he approaches the landing strip at the airport.

An important aspect of future planning for Saipan must consider the adverse implications to land use planning by solid waste disposal areas such as exist now.

Future planning should address itself to more modern techniques of handling the increasing volume of trash in a manner less visually obtrusive to visitors and local residents.

Rota &
Tinian:

There really is no solid waste disposal procedure employed on either of these islands today. Presumably the techniques for collection and disposal of trash on Tinian could be integrated with the planning requirements for the military facility. In the case of Rota, the Island has a shoreline of picturesque beauty with a unique coral reef immediately adjacent to the Island edge. Trash disposal procedures for Rota should be planned in a way that will preserve the environmental qualities of this Island. Planning consideration should be

given for solid waste disposal systems on all three Islands to techniques which are multipurpose in function such as destruction of trash and generation of power.

5. Storm Drainage

Saipan: During the rainy season Saipan will receive occasional downpours of rain of sufficient intensity to place many roads on the Island under several inches of water. These downpours produce storm water conditions in the villages which generally create a flooding of all residential yards abutting streets. It is not uncommon to see residents wading through one foot of water to get to their front door. In addition to the general inconvenience caused by this localized temporary flooding, there is a continual hazard to health and a problem of mosquito breeding control. With the exception of the Trust Territory Government Area on Capitol Hill, no storm drainage systems of any kind exist on the Island. In the hilltop governmental areas, roadside gutters up to three feet deep have been constructed of concrete to carry the surface storm water downhill. Storm water drainage is a serious problem to the increasing standard of living developing on Saipan and is a subject which must receive prompt attention.

Future planning for Saipan must consider the problems of erosion, environmental health and inconvenience caused by storm water drainage problems. This planning should further investigate the development of a pattern of dikes and causeways throughout the residential and community center areas

which would collect and distribute storm water back to the sea.

Rota &
Tinian:

No storm drainage systems exist for either of these two Islands but the characteristics of this problem caused by torrential rainfall is quite similar to the situation on Saipan. Island villages which do not have connected sewer systems possess a continual unpleasant odor due to the effect torrential rains have on the sewage leaching areas. With the necessity of more paved areas within these villages, together with newer sanitary sewer systems, will come the necessity for planning for the collection and distribution of storm water from these areas back to the sea. Paved road construction on any of the Islands should be accompanied with storm water gutter construction which will collect and distribute the water on the surface to points where erosion will not occur.

6. Communications.

The Marianas District does not have an independent District Communication Division as do the other districts of the Trust Territory. The basic communication system for this District is operated and programmed through the present Trust Territory Headquarters Communication Division, located at Capitol Hill. There is a local connection between the Marianas District Headquarters and the Trust Territory Communication Division by means of teletype and side-band voice radios, intra-district voice radios, and other similar facilities. In addition there exists excellent commercial telegram and overseas telephone services through a local RCA office on Saipan.

030151

The local Saipan telephone system is completely inadequate. The problem briefly stated consists of 800 existing telephone lines today with a current demand requirement for 2,000 lines. By September, 1973, the existing system will be increased to 1,400 lines with the construction of a third central telephone office. Outside telephone service lines include both aerial and direct buried cables, approximately 6 miles of direct buried trunk cable, and approximately 40 miles of aerial transmission lines. The two existing central offices at Susupe and Old Capitol Hill are both badly overloaded with telephone traffic and held service orders. Although not yet in operation, the new Capitol Hill Office will contribute 600 new lines in 1973, but even with this increase there will be no substantial change in the quality of service provided by the Saipan system. Without exception the current outside facilities cannot handle any additional service load. All distribution is totally filled now and areas which do not presently enjoy plant distribution cannot be served until relief is provided for the primary feeder cables.

Future planning for Saipan, Rota and Tinian telephone service must recognize that these Islands, and particularly Saipan, are experiencing a population explosion primarily due to the increase in tourism. Populations are expected to increase by 1983 from Saipan's present population of 10,000 to 50,000; Tinian's present 700 to 3,000; and Rota's present 1,400 population to 3,500 or more residents. Lack of adequate on-island communications will vitally affect the economy and the activity of business within the community. No present telephone service exists on Rota or Tinian.

030152

Planning for future telephone system expansion should anticipate the following system growth projections:

Saipan:

- a. 1974 - 2,000 lines and establishment of 3 position switchboard.
- b. 1976 - 3,000 lines.
- c. 1978 - 6,000 lines plus an increase of two additional switchboard positions.
- d. 1982 - 8,000 lines.

Rota:

- a. 1974 - 400 lines plus linkage to Saipan.
- b. 1975 - no change.
- c. 1976 - 500 lines.
- d. 1977 - no change.
- e. 1982 - 600 lines.

Tinian:

- a. 1974 - 100 lines plus microwave link to Saipan.
- b. 1975 - no change.
- c. 1976 - 200 lines.
- d. 1977 - 300 lines.
- e. 1982 - 400 lines.

Of fundamental importance to inter-island communication, should be the planning concern should that Trust Territory Government be removed from the Island of Saipan. This action would necessitate the development of a Marianas District Communications Division.

E. REGULATORY AND ADMINISTRATIVE

A unique opportunity exists to develop land use regulations and administrative and monitoring systems in conjunction with and tailored directly to the implementation of a Comprehensive Plan. Such a system would be an integral part of the overall administrative structure.

1. LAND USE CONTROLS

No land use control such as zoning is exercised over private lands or private land transactions. Some regulation of land use is exercised over public lands through clauses in the leases, designation of homestead areas and placement of public facilities.

A series of land use regulations - not necessarily the traditional zoning or subdivision - should be developed to implement the provisions of the Comprehensive Plan. They would reflect the unique land use and administrative structure of the Marianas Islands. A specialist in innovative land use controls would assist the planning effort.

2. BUILDING CODES

No building codes or construction guidelines are currently in force. Standard U.S. Uniform Building codes are used as guidelines for government buildings. The U.S. Uniform Building Code is related to a specific geographic and technological situation. However, it does provide a starting point. Research into building codes used in similar climate conditions should be done. It is anticipated that specialists in developing building regulations will supplement the basic team. The legal, administrative mechanism would be established separately.

3. ADMINISTRATION AND MONITORING

The Comprehensive Plan provides the physical framework for development. Programs, design concepts, and cost estimates provide input to the plan initially and as defined become the basis for the Capital Improvement Program. The Development Program relates the development schedule on a broad basis as a unifying bridge from the Comprehensive Plan to the Capital Improvement Program. The Capital Improvement Program established a very definitive, year by year, program of construction. All of these are based on economic and demographic projections, and are subject to change over time. This change could be dramatic through an economic reversal or simply slight shifts over time.

Technological changes may provide new ways of solving certain problems. The number or size of families may change. Due to this dynamic nature of our society it is important that an ability to monitor and adjust be an integral part of this process.

This requires a system which has the continual, accurate input of data required to measure the multiple variables: economic development; tourism; employment; population; housing; etc. It also requires a baseline against which the change can be measured and the resultant impact anticipated. From an administrative point of view it then requires a process which can adjust either to alter the trend desired or to accommodate the change.

An opportunity exists here to establish such a system due to the intensive and comprehensive amount of data compiled. Limited computer capability presently exists, however, a system need not have highly sophisticated capabilities to provide qualified answers.

030155

Recommendations should be developed for such a system during this study. A specialist in evaluating data needs, and quantifying the goals in meaningful terms would assist the team.

III DETAILED MANPOWER - FEE COST TABULATION

The development of estimated fees for the professional planning services are included in this section. These estimates are all in terms of 1973 U.S. dollars, and are itemized in the following categories:

- a. Information Gathering
- b. Information Analysis
- c. Programming Goals and Criteria
- d. Concept Development
- e. Preparation of Cost Estimates
- f. Preparation of Planning Reports
- g. Special Study Requirements

Other non-professional direct costs are introduced to category totals in Section V following.

This fee estimate is based upon the following:

- a. Development of an implementation plan for physical improvements of one year duration, after
- b. A pre-planning phase devoted to organization of the management and administrative requirements for such a study. Costs for this pre-planning phase are not included in these fee estimates.
- c. Development of the cadastral survey work over a two-year period to be followed by a maximum of five years legal negotiation period. These fee estimates include budgets for a total of seven years involvement with the cadastral program.
- d. The fee calculation, with the exception of the cadastral survey portion, is generally based on estimated time to accomplish, priced at an average derived hourly cost rate, plus identification of other direct costs, as follows:

030157

- (1) Per diem for the estimated number of days priced at the U.S. standard rate of \$25.00 per day.
- (2) Travel for the estimated travel required priced at prevailing tourist class air tariffs.
- (3) Communications, printing, and photography costs are derived from prior project experience adjusted to allow for the special requirements anticipated.

The hourly average cost rate used is \$25.00 per hour and is derived from the actual 1973 payrates of the categories of personnel likely to be assigned to the project, using the following formula:

- (1) Base hourly pay - Weighted by estimated hours per skill level.
- (2) Adjusted to provided:
 - (a) 1973/74 wage rate escalation
 - (b) Overseas incentive allowance - weighted by estimated overseas hours.
 - (c) Living cost differential allowance - weighted by estimated overseas hours.
- (3) Addition of payroll, general and administrative overhead at rates previously approved for U.S. government contracts.
- (4) Addition of profit at the rate of 15%.
- (5) The rate derived as expressed in (1) through (4) above weighted by the estimated hours per each professional discipline.

The calculation of the derived cost rate is illustrated on Scheule I attached.

The fee calculation for the cadastral survey is self-contained as illustrated in Paragraph II-A.1.

030158

A. LAND USE

1. Cadastral Programs

a. Land Commission Mangement.

Director, Assistant Director,

Administrative Staff, Operations Overhead

\$350,000.

b. Field Survey - Saipan.

5 Survey parties

\$167,000.

Equipment

5 Jeeps (incl. fuel, maint. & repair)

16,000.

Theodolites, chains, monument markers

14,000.

3 Land Title Investigation Teams

72,000.

Office - Mapping and Computations

110,000.

\$379,000.

c. Field Survey - Rota.

4 Survey parties

134,000.

Equipment

4 Jeeps (incl. fuel, maint. repair &
transp.)

13,000.

Theodolites, chains, monument markers

11,000.

2 Land Title Investigation Teams

48,000.

Office - Mapping and Computations

72,000.

\$278,000.

d. Field Survey - Tinian.

Survey complete

-0-

Office - Coordination and checking

16,000.

\$16,000.

- e. Survey Recording & Deed Registration.
Coordinated phase for recording survey work, establishing deed registration system, issuance of Certificates of Title, resolution of some legal disputes - 3 Islands. \$500,000.
 - f. Land Management Control for Disposition of Legal Disputes.
Staff requirements for 5 years.
2 Stateside and 17 Micronesian Employees (incl. benefits, transportation, supplies)
\$112,000 per year x 5 = \$560,000.
 - ~~g.~~ Aerial Mapping. \$ 50,000.
 - h. Travel and Per Diem for Expatriate Survey Employees. \$333,000.
- Total Estimated Cost for 2-year Program \$2,466,000.

IN MARIANAS?

2. Residential/Housing

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	50	200	10,000
b. Information Analysis	55	200	11,000
c. Programming Goals and Criteria	20	200	4,000
d. Concept Development	200	200	40,000
e. Preparation of Cost Estimates	30	200	6,000
f. Preparation of Planning Report	20	200	4,000
SUB-TOTAL COST OF PLANNING SERVICES	375		75,000

6. Agricultural and Open Space

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	17	200	3,400
b. Information Analysis	28	200	5,600
c. Programming Goals and Criteria	10	200	2,000
d. Concept Development	87	200	17,400
e. Preparation of Cost Estimates	24	200	4,800
f. Preparation of Planning Report	9	200	1,800
SUB-TOTAL COST OF PLANNING SERVICES			175 35,000

B. ACCESS AND CIRCULATION

1. Harbor and Dock Facilities

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	70	200	14,000
b. Information Analysis	90	200	18,000
c. Programming Goals and Criteria	60	200	12,000
d. Concept Development	40	200	8,000
e. Preparation of Cost Estimates	40	200	8,000
f. Preparation of Planning Report	70	200	14,000
g. Special Study Requirements - Hydrographics	5	200	1,000
SUB-TOTAL COST OF PLANNING SERVICES			375 75,000

2. Air Transportation Facilities

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	50	200	10,000
b. Information Analysis	70	200	14,000
c. Programming Goals and Criteria	50	200	10,000
d. Concept Development	30	200	6,000

60.

e.	Preparation of Cost Estimates	30	200	6,600
f.	Preparation of Planning Report	60	200	12,000
g.	Special Study Requirements - Soils	10	200	2,000

	SUB-TOTAL COST OF PLANNING SERVICES	300		60,000
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3. Road Systems

		Man Days	Unit Rate	Dollar Amount
a.	Information Gathering	95	200	19,000
b.	Information Analysis	120	200	24,000
c.	Programming Goals and Criteria	70	200	14,000
d.	Concept Development	50	200	10,000
e.	Preparation of Cost Estimates	50	200	10,000
f.	Preparation of Planning Report	90	200	18,000

	SUB-TOTAL COST OF PLANNING SERVICES	475		95,000
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C. PUBLIC FACILITIES

1. Public Buildings

		Man Days	Unit Rate	Dollar Amount
a.	Information Gathering	11	200	2,200
b.	Information Analysis	12	200	2,400
c.	Programming Goals and Criteria	15	200	3,000
d.	Concept Development	25	200	5,000
e.	Preparation of Cost Estimates	7	200	1,400
f.	Preparation of Planning Report	25	200	500

	SUB-TOTAL COST OF PLANNING SERVICES	72.5		14,500
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030163

2. Power Systems

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	44	200	8,800
b. Information Analysis	44	200	8,800
c. Programming Goals and Criteria	88	200	17,600
d. Concept Development	44	200	8,800
e. Preparation of Cost Estimates	132	200	26,400
f. Preparation of Planning Report	44	200	8,800
g. Special Study Requirements	44	200	8,800
SUB-TOTAL COST OF PLANNING SERVICES	440		88,000

3. Sewerage Systems

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	95	200	19,000
b. Information Analysis	120	200	24,000
c. Programming Goals and Criteria	70	200	14,000
d. Concept Development	45	200	9,000
e. Preparation of Cost Estimates	50	200	10,000
f. Preparation of Planning Report	95	200	19,000
SUB-TOTAL COST OF PLANNING SERVICES	475		95,000

4. Solid Waste Disposal

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	22	200	4,400
b. Information Analysis	44	200	8,800
c. Programming Goals and Criteria	22	200	4,400
d. Concept Development	22	200	4,400
e. Preparation of Cost Estimates	22	200	4,400
f. Preparation of Planning Report	44	200	8,800
g. Special Study Requirements	22	200	4,400
SUB-TOTAL COST OF PLANNING SERVICES			198 39,600

5. Storm Drainage

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	25	200	5,000
b. Information Analysis	20	200	4,000
c. Programming Goals and Criteria	35	200	7,000
d. Concept Development	10	200	2,000
e. Preparation of Cost Estimates	10	200	2,000
f. Preparation of Planning Report	25	200	5,000
SUB-TOTAL COST OF PLANNING SERVICES			125 25,000

6. Communications

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	11	200	2,200
b. Information Analysis	22	200	4,400
c. Programming Goals and Criteria	11	200	2,200
d. Concept Development	22	200	4,400
e. Preparation of Cost Estimates	11	200	2,200
f. Preparation of Planning Report	11	200	2,200
g. Special Study Requirements	22	200	4,400
SUB-TOTAL COST OF PLANNING SERVICES.			110 22,000

E. REGULATORY AND ADMINISTRATIVE

1. Land Use Controls

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	10	200	2,000
b. Information Analysis	20	200	4,000
c. Programming Goals and Criteria	10	200	2,000
d. Concept Development	50	200	10,000
e. Preparation of Planning Report	10	200	2,000
f. Special Study Requirements - Zoning		LS	5,000
SUB-TOTAL COST OF PLANNING SERVICES			100 25,000

2. Building Codes

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	10	200	2,000
b. Information Analysis	10	200	2,000
c. Programming Goals and Criteria	25	200	5,000
d. Preparation of Planning Report	5	200	1,000
e. Special Study Requirements		LS	10,000
SUB-TOTAL COST OF PLANNING SERVICES		50	20,000

3. Administration and Monitoring

	Man Days	Unit Rate	Dollar Amount
a. Information Gathering	10	200	2,000
b. Information Analysis	20	200	2,000
c. Concept Development	25	200	5,000
d. Preparation of Planning Report	5	200	1,000
e. Special Study Requirements		LS	12,500
SUB-TOTAL COST OF PLANNING SERVICES		50	22,500

IV TOTAL PLANNING FEE ESTIMATE SUMMARY

In this Section are the summary totals for professional planning services together with a total of estimated additional direct costs for each work category including Travel, Per Diem, Communications, Printing, and Photography. Schedule I attached describes the wage analysis establishing the \$25 per hour estimate rate.

A. LAND USE

1. Cadastral Program		\$2,466,000
2. Residential/Housing		75,000
3. Commercial/Tourism		80,000
4. Industrial		30,000
5. Public		35,000
6. Agriculture and Open Space		35,000
7. Other Direct Costs (Not incl. Cadastral Survey)		
a. Per Diem	\$ 7,875	
b. Travel	15,800	
c. Communications	2,765	
d. Printing	<u>7,550</u>	
Sub-Total Land-Use	33,990	<u>2,721,000</u>

B. ACCESS AND CIRCULATION

1. Harbor and Dock Facilities		75,000
2. Air Transportation Facilities		60,000
3. Road Systems		95,000
4. Other Direct Costs		
a. Per Diem	6,750	
b. Travel	8,400	
c. Communications	1,200	

d. Printing	\$ 1,200	
e. Photography	<u>1,200</u>	
Sub-Total Access and Circulation	18,750	\$ 230,000

C. PUBLIC FACILITIES

1. Public Buildings		14,500
2. Educational Facilities		45,000
3. Medical Facilities		112,000
4. Recreational Facilities		14,000
5. Other Direct Costs		
a. Per Diem	3,375	
b. Travel	11,350	
c. Communications	3,110	
d. Printing	5,500	
e. Photography	<u>600</u>	
Sub-Total Public Facilities	23,935	185,500

D. PUBLIC UTILITIES

1. Water Systems		70,400
2. Power Systems		88,000
3. Sewerage Systems		95,000
4. Solid Waste Disposal		39,600
5. Storm Drainage		25,000
6. Communications		22,000
7. Other Direct Costs		
a. Per Diem	13,250	
b. Travel	19,600	
c. Communications	4,700	

d. Printing	\$ 1,500	
e. Photography	<u>2,050</u>	
Sub-Total Public Utilities	41,100	\$ 340,000
E. REGULATORY AND ADMINISTRATIVE		
1. Land Use Controls		25,000
2. Building Codes		20,000
3. Administration and Monitoring		22,500
4. Other Direct Costs		
a. Per Diem	1,375	
b. Travel	6,800	
c. Communications	1,050	
d. Printing	<u>2,050</u>	
Sub-Total Regulatory and Administrative	11,275	67,500
TOTAL PROFESSIONAL FEE		3,544,000
TOTAL OTHER DIRECT COSTS		<u>129,050</u>
TOTAL PROJECT BUDGET FOR PHYSICAL PLANNING		\$3,673,050

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SCHEDULE 1

CALCULATION OF HOURLY BILLING RATE
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	<u>Architecture and Planning</u>	<u>Mechanical and Electrical Engineering</u>	<u>Structural, Civil and Sanitary Engineering</u>	<u>Combine</u>
Average Hourly Pay Rate (See Page 2)	\$ 8.52	\$ 8.60	\$ 8.61	
Adjustments				
1973/74 Wage Rate Escalation	5.5%	5.5%	5.5%	
Overseas Incentive Allowance	12.5	12.5	12.5	
Living Cost Differential Allowance	<u>10.0</u>	<u>10.0</u>	<u>10.0</u>	
	28.0%	28.0%	28.0%	
Payroll, General and Administrative Overhead	135.0%	85.0%	110.0%	
Total Adjustments	<u>163.0%</u>	<u>113.0%</u>	<u>138.0%</u>	
Adjustment Factor	x263.0%	x213.0%	x238.0%	
Adjusted Rate Before Profit	\$24.45	\$18.32	\$20.49	
Profit Factor	<u>x115.0%</u>	<u>x115.0%</u>	<u>x115.0%</u>	
Adjusted Billing Rate	\$28.12	\$21.07	\$23.56	
Weighting Factor/Hours	<u>x19,540/</u>	<u>x8,800/</u>	<u>x14,000/</u>	42,340
Weighted Billing Rate	<u>\$12.98</u>	<u>\$ 4.38</u>	<u>\$ 7.79</u>	\$25.15
Hourly Billing Rate (rounded)				<u>\$25.00</u>

CALCULATION OF HOURLY BILLING RATE
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	Architecture and Planning			Mechanical and Electrical Engineering			Structural, Civil and Sanitary Engineering		
	Pay Rate	Factor	Weighted	Pay Rate	Factor	Weighted	Pay Rate	Factor	Weighted
Principal	\$16.67	960/	\$.82	\$16.67	200/	\$.38	\$16.67	570/	\$.68
Project Director/ Chief Engineer	11.25	960/	.55	12.31	400/	.56	13.22	700	.66
Senior Associate/Planner	9.47	6,800/	3.30	10.14	2,400/	2.77	9.67	4,200	2.90
Associate	7.69	6,800/	2.68	8.62	3,200/	3.13	9.09	3,200	2.08
Architect/Engineer	6.60	2,100/	.71	7.11	1,600/	1.29	7.00	2,800	1.40
Draftsmen	5.00	1,360/	.35	4.16	800/	.38	4.55	1,750	.57
Computer Manager							9.09	240	.16
Computer Programmer							4.62	140	.05
Computer Operator							3.81	80	.02
Keypuncher							3.32	80	.02
Typist	3.75	560/	.11	4.11	200	.09	3.81	240	.07
TOTAL HOURS		19,540		8,800			14,000		
WEIGHTED AVERAGE PAY RATE			\$8.52			\$8.60			\$8.61

APPENDIX B

LEGAL PLANNING