

# Protecting and Restoring Guam's Waters



Prepared by:

**Guam Environmental Protection Agency**

Pursuant to Clean Water Act Section 319 Nonpoint Source Program  
Upgrade Requirements

September 15, 1999

# **Protecting and Restoring Guam's Waters**

**“It is hereby declared to be the public policy of this Territory of Guam that a high quality environment be maintained at all times to guarantee an enjoyable life for all people at present and in the future, and that the environmental degradation of the quality of land, water, and air by any pollutants, including all physical, chemical and biological agents, should not be allowed.” Guam Public Law 11-191.**

**To these ends, the mission of the Guam Environmental Protection Agency is to provide a unified, integrated, and comprehensive island-wide program of environmental protection and a framework to fulfil this task.**

## **Preface**

This document addresses Guam Environmental Protection Agency's overall approach for managing water resources on Guam. However, we have chosen to highlight two key federal areas: 1) the Clean Water Act Section 319 non point source program; and 2) the Clean Water Action Plan. Such a demonstration will enable the Guam Environmental Protection Agency to receive full federal funding associated with these programs. Specifically, we seek to achieve compliance with update requirements for Section 319 of the federal Clean Water Act, and its related “Non point Source Program and Grants Guidance for Fiscal Years 1998 and Future Years” (May 1996).

We also recognize that there are closely related 1999 requirements associated with the Coastal Zone Act Reauthorization Amendments Section 6217 non point source management provisions. These requirements must be met by grant fund recipients (states, territories and eligible tribes) by the end of this calendar year. We are taking this opportunity to incorporate in this document several aspects of these required non point source provisions. By so doing, we hope to expedite our anticipated “Section 6217” approval from the approving federal agencies (US EPA and National Oceanographic and Atmospheric Association), when we submit required 6217 documents later this year. Specifically, we seek to utilize this document as a component of our upcoming Section 6217 submittal package, which we intend to deliver to the approving federal agencies by their deadline of December 31, 1999, as part of our commitment to full implementation of the Section 6217 non point source provisions of the Coastal Zone Act.

## **TABLE OF CONTENTS**

**Page**

<b>I.</b>	<b>BACKGROUND</b>	<b>4</b>
	Introduction	
	Key Federal Requirements	
	Water Quality on Guam	
<b>II.</b>	<b>GUAM’S INTEGRATED APPROACH</b>	<b>8</b>
	A Strong Baseline	
	Monitoring, Analysis and Reporting	
	Problem Solving	
	Utilizing and Developing our Local Expertise	
	Creatively Implement our Environmental Priorities	
	Compliance and Enforcement	
<b>IV.</b>	<b>FUNDING</b>	<b>32</b>
<b>V.</b>	<b>SUMMARY AND CONCLUSIONS</b>	<b>32</b>
<b>VI.</b>	<b>APPENDICES</b>	
	A. Glossary of Terms and Acronyms	
	B. “Nine Key Elements”	
	C. Regulatory Authorities	
	D. Guam EPA’s 1999 environmental priorities	
	E. Watershed Executive Order	
	F. Water Planning Committee - Members and Operating Procedures	
	G. Reference documents	

### **Figures and Tables**

Figure 1.	Location map of Guam	6
Figure 2.	1998 Monitoring sites of the Recreational Beach Monitoring Program	12
Figure 3.	A Watershed Map of Guam	15
Table 1.	Number of Wastewater Permits Issued During 1995-98	17
Table 2.	Number of Clearing and Grading Permits Issued in 1995-98	18
Table 3.	Projects	27
Table 4.	Status Report Related to Section 6217 of CZARA	30

## **I. BACKGROUND**

### **Introduction**

There are numerous initiatives and requirements which have emerged recently from the US Environmental Protection Agency (US EPA) and National Oceanic and Atmospheric Association (NOAA). Each has its unique focus and expectations, but all are designed to characterize and establish priorities for the protection of human health and aquatic resources, and several further support on-the-ground protection and restoration activities. For example, Clean Water Act (CWA) Section 305(b) requires states to report on water quality; CWA Section 303 requires states to identify waters that are not meeting their water quality standards and to develop needed control measures for these waters through Total Maximum Daily Loads (TMDLs); the Clean Water Action Plan (CWAP) supports protection and restoration of our aquatic resources through a watershed approach; the Coastal Zone Act Reauthorization Amendment (CZARA) Section 6217 program requires coastal states to develop effective non point source management measures for addressing a variety of non point sources of water pollution; and CWA Section 319 provides funds and guidance for non point source pollution control projects.

The overlap of these programs is considerable and confusing. Guam Environmental Protection Agency's (Guam EPA) challenge is to design a water resources protection and restoration, and pollution prevention approach for the Agency which is realistic, progressive and appropriate, given the island's environmental priorities, economy and resources. This approach can then be modified, as appropriate, to accommodate federal requirements.

The intent of this document is to describe Guam EPA's evolving water resources protection and restoration, and pollution prevention approach, illustrate our commitment to continuing its implementation, and demonstrate that this approach meets relevant federal requirements.

### **Key Federal Requirements**

#### ***Section 319 of the Clean Water Act - Non point Source Program***

In 1996, US EPA issued new guidance related to its federal non point source programs. According to the guidance, states should update and strengthen their non point source management programs so that they are consistent with "nine key elements" that the states and US EPA agreed were key to a dynamic and effective non point source management program (see Appendix B). US EPA has also indicated that, beginning in FY2000, it will award new 319 non point source monies above the baseline only to those states that have successfully demonstrated that their non point programs are consistent with these nine elements; such a demonstration accords the states an "upgraded 319 status". The deadline for achieving this status is October 1, 1999.

### ***Section 6217 of the CZARA - Implementation of Non point Source Management Measures***

Concurrent with the 319 upgrade developments, US EPA and NOAA have been encouraging state implementation of a series of non point source management measures, by offering financial incentives to those that qualify, and, beginning in 2000, reducing CWA Section 319 funds to those that fail to qualify. To qualify, states must be unconditionally “fully approved”, meaning that they have in place all voluntary and regulatory programs designed to address the myriad of required non point source management measures identified in federal guidance, or that they have acceptable 5 and/or 15 year schedules and timelines that illustrate their plan for implementing the necessary programs. The deadline for achieving unconditional approval status under CZARA Section 6217, is December 31, 1999.

In 1996, Guam submitted its 6217 plan to US EPA and NOAA, and received full approval, but the approval was subject to a number of conditions. Bureau of Planning and Guam EPA have been working together to address the federal agencies’ outstanding concerns. We are comitted to developing, by December 31, 1999, a 5-year implementation plan and a 15-year program strategy for achieving full implementation of the 6217(g) management measures for our outstanding conditional approvals. Our plan and strategy will then be incorporated into this 319 program upgrade.

### ***Clean Water Action Plan***

In 1998, President Clinton announced a major new clean water initiative to speed the restoration of our nation's waters. This initiative, called the Clean Water Action Plan (CWAP) aims to achieve clean waters by encouraging federal and non federal agencies, other organizations and interested citizens to work in a collaborative manner to restore our highest priority watersheds. The federal government is committed to contributing its technical and financial resources to the implementation of the plan, but only to those states, territories and tribes that meet the Plan's requirements and time lines.

Participants in this initiative are to create an interagency work group, identify watersheds in their geographic area, complete a water quality assessment and prioritization of these watersheds (the Unified Watershed Assessment), and prepare and implement restoration strategies for those highest priority watersheds identified in the assessment. The interagency coalition is to target federal and local collective resources (brain power, financial, educational, enforcement authority, etc.) to solving problems in the watersheds.

Guam has been actively participating in this initiative. Guam EPA, with full participation of Guam’s inter organizational Water Planning Committee (WPC), has completed its Unified Watershed Assessment, and has completed and is now implementing restoration strategies on our two highest priority watersheds.

## **Water Quality on Guam**

*(Note: This is a summary of a far more extensive document, Water Quality Report to Congress, 1998, Guam's 305(b) report, which will be updated in 2000.*

### ***A Summary***

Guam is a beautiful island, with generally high quality water. (See Figure 1.) Drinking water, water recreation and marine life are particularly important uses of water for Guam's residents.

### **Groundwater quality**

Groundwater use continues to increase. Guam Waterworks Authority wells are continually developed for the public water supply. Guam's northern aquifer is the main source of the island's potable water supply (about 75%). Groundwater quality remains generally high on Guam. However, during the last three years, four chemicals, trichloroethylene (TCE), trichloroethane (TCA), perchloroethylene (PCE) and ethylene dibromide (EDB), have caused production wells to violate Safe Drinking Water standards. One Air Force well, one Navy well and two of 111 Guam Waterworks Authority wells have been closed in recent years due to toxic contamination, while a few wells (12 out of approximately 160) have increasing chloride levels from saltwater intrusion.

### **Surface water quality**

Due to extenuating circumstances, monitoring data was slim at the time Guam's most recent water quality assessment report (1998 305(b) report) was published. Monitoring was essentially restricted to evaluating bacteria, in order to protect and evaluate Guam's primary contact recreational designated use (swimming and wading). Guam EPA's monitoring program has been greatly improved the last few years (see Chapter II), and the results will be analyzed and incorporated into our 2000 305(b) report.

Based on our 1998 305(b) report, many of our surface waters have elevated levels of bacteria and sediment. However, of the 1,647 one-time bacteriological samples analyzed in 1997 for recreational waters, all but 187 met the standards. Overall, all recreational marine beach sites were within the annual standards. Only one Guam beach has been closed to the public, for sea animal and plant harvesting, due to an incident of consumption of toxic seaweeds harvested there in 1991 (Tanguisson Beach).

### **Wetlands**

Due to reduced numbers of development projects over the last few years, wetland losses have been minimized. A limited amount of wetlands continue to be lost due to illegal filling. Other wetland fills have been allowed when mitigated by wetland creation and improvement. We do not, however, have a tracking system, and we are concerned that unpermitted wetland fills and incremental wetland losses may be significant.

**FIGURE 1**

## *Causes of Water Quality Impairments*

Guam's isolation from other population areas precludes water pollution from non-Guam sources. The most significant current threat to our island's water quality is *development without adequate infrastructure support*. This leads to a high density of septic systems over a high permeability substrate, an insufficient and poorly maintained sewage treatment system, erosion problems from poorly managed construction projects, groundwater well over-production, and groundwater impacts from inadequate environmental practices of poorly managed light industries. Development impacts have, however, slowed temporarily, due to the weakened economy in Guam and neighboring Asian countries.

On-island sources of water pollutants include:

- C inadequate domestic waste water treatment (sewage treatment plants and septic tanks/leaching fields) contributing to elevated levels of bacteria and nitrates in our groundwater;
- C urban storm water runoff, particularly in the north, contributing to nutrients in our near shore waters;
- C unconfirmed sources contributing to elevated levels of TCE and TCA (solvents and degreasers), PCE (dry cleaners and degreasers); thallium (insecticides); and EDB (pesticides) in groundwater;
- C aquaculture facilities and golf courses contributing to elevated nutrients and pesticide levels;
- C accidental spills of pollutants and hazardous materials from sites with inadequate spill prevention control countermeasure plans;
- C leaking above and under ground storage tanks and associated pipelines;
- C construction without adequate erosion and sediment control measures;
- C wildfires, and off-road vehicle use, particularly evident in the south, causing excess siltation, turbidity and sedimentation;
- C leachate from landfills and agricultural runoff;
- C past activities on military sites;
- C recreational water craft, including jet-skis, which are damaging marine life; and
- C inadequate enforcement.

## **II. GUAM'S INTEGRATED APPROACH**

Every aspect of our lives is influenced by water: we drink it, we clean with it, we recreate in it, and much of our food grows in it, both agricultural and aquacultural. Our activities, in turn, influence the quality of water: our waste is released into it (from individuals, industries, and agriculture), and our projects affect it (for example, erosion from construction projects). Much of how we affect the quality of our water is from actions that are not regulated, and many of the ways we affect water quality, we do without knowledge or intent, but rather from being unaware of the implications of our actions.

Effective water quality pollution prevention, protection and restoration, then, requires a multi-faceted approach, tapping the expertise, resources, energy and abilities of a variety of players to educate and influence human behavior. Guam EPA has endorsed an approach to water resources management that broadens our focus from individual implementation of the *point* and *non point* programs to implementation of an *integrated* water resources management program. Public participation and coordination among island agencies and organizations is critical to the success of our evolving water approach. Representatives from Guam EPA and other local and federal government agencies, schools, non profit organizations, research institutions, and the public must be involved. Each must have the opportunity to contribute its unique perspective, knowledge and resources if we are to successfully protect and restore our Island's water resources. *Please note that Guam EPA considers that the most effective and economical approach is to protect our waters by cooperatively preventing problems in the first place.*

Guam EPA has been designing a strategy for effective water quality protection and restoration, and pollution prevention which draws on the island's best available tools and expertise. This strategy is described in some detail in the following sections. It includes the following elements:

#### **A Strong Baseline**

- C To establish scientifically credible targets for assessing and refining our environmental work.

#### **Monitoring, Analysis and Reporting**

- C To investigate, assess and evaluate water quality trends and the progress of our implementation measures, both for surface and groundwater (a feedback loop);
- C To provide analytical and technical assistance to environmental programs as they identify the type and level of implementation measures necessary to protect and/or restore the waters (e.g. TMDLs, watershed restoration strategies);
- C To carry out special studies, in response to environmental concerns (e.g.; to assess degree of salt water intrusion and contamination);
- C To present monitoring results in a format that is useful for environmental programs.

#### **Problem Solving**

- C To focus agency resources by identifying priorities;
- C To apply elements of our core programs to prevent and address problems (e.g.; inspecting septic tanks to ensure construction is adequate to protect the groundwater, issuing clearing and grading permits to minimize on-site erosion, and publishing environmental policies, rules and regulations).
- C To tackle a limited number of environmental initiatives (e.g.; watershed protection);

#### **Utilizing and Developing our Local Expertise**

By tapping and sharing the best resources possible island-wide (ideas, energy, human, equipment, financial):

- C To assess and prioritize the island's environmental problems;
- C To collaboratively implement the most efficient and cost effective solutions to environmental problems;
- C To improve our collective expertise and understanding;
- C To ensure long term success by promoting executive and legislative support, and public involvement and environmental education.

### **Creatively Implement our Environmental Priorities**

C To seize opportunities to be effective;

### **Compliance and Enforcement**

C To ensure that appropriate compliance with environmental laws occurs;

C To enforce, as necessary, against those few “bad players” that do not comply.

## **A Strong Baseline**

Guam’s water quality standards (WQS) are the cornerstone of Guam’s surface and groundwater protection programs. They form the baseline for our monitoring programs, guide the determination of beneficial use support status, provide targets for deriving point source (NPDES) limits, goals for 319 projects, TMDLs and watershed restoration strategies, and play a critical role in our compliance and enforcement work.

USEPA fairly regularly updates its mandated or recommended water quality criteria, to reflect national and local scientific or technical advances, and policy changes. Guam EPA is currently revising its WQS to ensure that they are based on the latest information regulatory requirements. (This revision is known as the “triennial review”.) Our draft WQS have been extensively reviewed within the agency and by experts in US EPA. We anticipate that the WQS will be finalized during 1999, and submitted shortly thereafter to US EPA for required federal approval.

## **Monitoring, Analysis and Reporting**

Monitoring is a critical component of resource focusing, and for assessing progress and success over time, of management measures intended to reduce pollution loads and improve water quality. Monitoring information is used in a myriad of water resource management programs and initiatives.

Guam EPA is striving to attain a comprehensive and effective monitoring program. Our overall monitoring strategy for making progress in achieving this objective is to utilize scientifically credible water quality targets, or standards, described above, and implement an enhanced comprehensive monitoring strategy and using a user friendly data base. This allows us to produce clear, accurate and useful data analysis and monitoring reports which can be used by others, internal and external to Guam EPA, to assess our environmental work. Guam EPA continues to make considerable progress implementing our strategy, by creatively utilizing funds and resources obtained through collaborative work with both GovGuam and federal agencies. The elements of this strategy are described in more detail, below.

### ***Implement an enhanced comprehensive monitoring strategy***

Guam EPA’s comprehensive monitoring strategy is being implemented in stages, as resources become available:

- C Enhanced groundwater monitoring to protect our drinking water;
- C Continued implementation of Guam's surface water monitoring program (based upon a comprehensive rotating watershed approach, where monitoring efforts are concentrated in one watershed over a specific amount of time);
- C Development of a biological monitoring program including percent cover of substrate, species composition, and fish counts;
- C Development of a toxicity monitoring program including sediments and fish/shellfish tissue analysis; and
- C Periodic updating of our water monitoring strategy to reflect advances in our understanding and experience.

A sound monitoring program, however, requires more than in-house monitoring programs. It must also include adequate record keeping and data analysis tools. Guam EPA will soon be purchasing and implementing a computerized Laboratory Information Management System (LIMS), which will allow record keeping, statistical analysis and electronic exportation (into reports and into a GIS system) of sample data in a variety of formats. Guam EPA also recently acquired the revised version of STORET, and will soon be inputting data into that national data management system.

### **Groundwater**

We are establishing an ambient groundwater monitoring system to ensure that we do not over utilize the island's groundwater aquifer (creating salt water intrusion problems), and/or contaminate our aquifer. Pumpage rates and chloride concentrations of all production wells, groundwater levels at select wells, and various parameters at special monitoring well sites are monitored on Guam. We also utilize monthly and quarterly data collected by island drinking water suppliers (e.g.; Guam Waterworks Authority, US Air Force, US Navy, Foremost).

One aspect of groundwater monitoring is salinity profiling. Salinity profiling uses sophisticated measuring and data collection instruments to gather information on aquifer salinity, rainfall and groundwater production. This is then used to determine the impact of salt water contamination or "intrusion" on the fresh water lens as a result of over pumping of groundwater from specific portions of the aquifer. Due to funding problems, Guam has had to discontinue its salinity profile program. In June 1999, WERI and United States Geological Survey obtained well drilling permits from Guam EPA for the rehabilitation of eight monitoring wells. Salinity profiling is rescheduled to resume in FY2000.

Guam EPA's salinity monitoring will consist of monthly salinity profiling in selected monitoring wells which will also be profiled by the United States Geological Survey on a quarterly basis. Guam EPA's program includes the operations of two remote stations which will collect salinity data from two monitoring wells on a continuous basis.

Guam's salinity profiling is designed to operate on a real-time basis where data from the field can be sent electronically, via modem, to computers in Guam EPA. Groundwater and water-supply

experts will interpret the data and make decisions on whether or not to adjust pumping rates to protect the water quality of our aquifer.

Guam EPA's groundwater monitoring program also utilizes data collected by Guam's golf courses, under Guam's Integrated Management Plan (IMP). This plan, which is designed to minimize runoff from golf courses, requires golf courses to collect pesticide and nutrient data from their monitoring wells on a monthly basis, and to submit this information to Guam EPA.

### **Surface water**

Surface waters of Guam are monitored by Guam EPA using a network of five groupings of sampling sites: river, reef, marine, recreational and biological. Physical and chemical monitoring is carried out for rivers, reefs and marine waters, while biological monitoring is limited to reef and marine networks of monitoring stations. Microbiological monitoring is carried out for the recreational waters monitoring network. A Quality Assurance and Quality Control Program is utilized at the Guam EPA Laboratory.

Guam EPA's surface water monitoring program was revised in 1997 to provide a more comprehensive coverage by adding 41 new stations to the previously established 83 stations for a total of 124. (See Figure 2.) We are enhancing this program by expanding our biological and toxicity monitoring, and expect to complete this task by early 2000.

### **Special studies**

The monitoring program also periodically conducts special studies in response to program requests. For example, our Solid Waste program occasionally requests leachate studies, to evaluate potential environmental impacts from landfills, or dumps. Also, our agency must ensure that monitoring is conducted before and during implementation of our CWAP watershed restoration projects so that we can assess, and revise as necessary our restoration measures. And, our agency must carry out monitoring associated with completing TMDLs required for our three water bodies identified on our 1998 303(d) list as exceeding water quality standards (Tumon Bay, Pago River and Bay, and Agana River and Bay).

The following studies are planned by Guam EPA during FY99-2000. They illustrate the types of special studies supported by our monitoring program:

#### 1) CB Landfill dye trace study:

Dye will be injected in several monitoring wells near the former Construction Battalion (CB) Landfill in Finegayan to determine whether monitoring wells around the landfill are adequately monitoring the aquifer in the vicinity of the landfill. Also, springs along the coast near Lost Pond and Sharks Hole will be monitored to determine whether potential leachate from the landfill is reaching the marine environment. The CB Landfill was capped (closed) several years ago as part of the Navy Installation Restoration Program in an attempt to isolate buried waste from surface exposure and from the aquifer through potential leaching by infiltrating rainfall. This information will be utilized by the Agency's Solid Waste program.

**FIGURE 2**

2) Harmon Sink dye trace study:

Guam EPA's Territorial Hydro geologist and environmental engineers in the Agency's water resource management program will co-lead a project with US EPA in a Harmon Sink dye trace special study. Dye-trace tests are used to identify connections between points of groundwater recharge, where water flows into an aquifer, and discharge points, or areas where water flows out of a system through springs and wells. They are also used to find the direction and rate at which water flows. USEPA and Water and Environmental Research Institute (WERI) will provide technical support on the project. The project goal is to determine whether water recharging Harmon Sink reaches Tumon Bay, and/or East Hagåtña Bay, and will be used to determine sources of contamination. Needed restoration actions can then be identified and incorporated into the Northern Watershed Restoration project.

3) Monitoring springs along Tumon Bay

Springs along Tumon Bay will be monitoring by Guam EPA for a full spectrum of chemicals as part of the Northern Watershed Strategy, using funding and support from the US EPA (CWAP), Bureau of Planning (CZARA) and WERI. This monitoring will establish a baseline with which to develop a TMDL for this bay, and to assess the success of the implementation of the Northern Watershed restoration project. Implementation measures will be adjusted as necessary, based on assessment results.

4) Ugum Watershed TMDL, restoration and monitoring

The Ugum River, and its drinking water plant, are impacted by excess levels of sediments and turbidity. The monitoring program has been providing technical support for the development of a TMDL for turbidity in the Ugum River, and for the Ugum watershed restoration strategy.

Monitoring the Ugum River and downstream Talofofu Bay has been initiated to evaluate the effectiveness of CWAP watershed restoration activities. This can be succinctly summarized by quoting a section from the CWAP strategy for the Ugum Watershed:

*Convene an interagency team to plan for and implement watershed monitoring. Members will include Guam EPA (water quality), NRCS (agricultural plans), Division of Forestry (tree planting success), Division of Aquatic Wildlife Resources (fish fauna & density studies), GWA (Treatment Plant monitoring such as river flow, turbidity, precipitation), WERI (climatological data). Due date - July 1999.*

***A commitment to publish monitoring results***

Our Agency's water affiliated programs are committed to sharing information gathered during the course of our work. To do this, we utilize water quality information from all relevant government agencies (local, federal, and from the University of Guam), and local organizations. Examples of our more visible products are included in Table 3 under "Water Quality Reports."

## **Problem Solving**

With a few rare exceptions, there is always more work than resources allow. This is particularly true for Guam, due to our serious regional economic crisis. Our challenge is to focus our resources now so that we can make progress in addressing our priorities. Our strategy is to identify and creatively implement our environmental priorities, support our core programs, promote a limited number of focused and achievable environmental initiatives, and effectively use compliance and enforcement tools.

### ***Identifying our environmental priorities***

In the preparation of FY99 work plans, Guam EPA's Divisions worked with US EPA Region 9 to identify our major agency environmental priorities (see Appendix D). The Divisions then revised their work plans to ensure some progress in meeting these priorities. The Agency will use this procedure in developing our FY 2001 work plans.

Utilizing the active support of our inter organizational Water Planning Committee (WPC), we have also identified, assessed, and prioritized island watersheds. (See Figure 3, Chapter II and *Guam's Unified Watershed Assessment* for more information.) Our top two priorities are the Northern Watershed and the Ugum/Talofofu watershed. We have committed to reevaluating this list every three years so that it remains up to date.

### ***Supporting our Core Programs***

We must support our core environmental programs to protect Guam's environmental resources. These programs establish clear policies, rules and regulations for Guam that, when followed and enforced, *prevent* pollution and protect the island's water resources. Many of these core program activities are required by and receive support from the federal government.

Examples of our most relevant core program activities include:

- C Statutory, regulatory and policy development (Table 3);
- C Project reviews - Environmental Impact Assessments, point source permit proposals (401 water quality certifications);
- C Permit issuance - Individual wastewater systems, clearing and grading, sewer connections, underground injection wells, drinking water wells, industrial and irrigation water wells, construction projects, underground storage tanks, etc.;
- C Project inspections - septic tanks/leaching fields, drinking water systems, monitoring wells, underground and above ground fuel storage tanks inspections; and construction sites;
- C Compliance and enforcement actions.

**FIGURE 3**

A newly adopted core program initiative is I Tano'-ta, Guam's new land use plan. It replaces Guam's 1966 land use plan and zoning law with performance standard based zoning, keyed to environmental constraints and infrastructure availability. It includes standards for storm water management, landscaping, hillside development and for protection of vegetation, flood plains, groundwater and the environment. (Note: Implementation of I Tano'-ta has been suspended pending further revisions. We anticipate that some revised version will be adopted and implemented in the near future. Until that time, current zoning regulations and the Plan's performance standards will continue to be utilized.)

An example of I Tano'-ta is illustrated by its application to the Ugum Watershed:

*"I Tano'-ta designates the majority of the Ugum Watershed as Zoning District 2; a small section in the upper watershed is designated District 1. Land and/or waters within District 1 are to be conserved and preserved for future generations. District 2 accommodates low-density residential neighborhoods and neighborhood-oriented commercial activities, and agriculture and aquaculture activities. Performance Standards are to ensure that the natural functions of environmentally sensitive areas such as very steep slopes, wetlands, flood plains, ravine and limestone forests are maintained and will be enforced."*

To further understand how our core programs help address environmental concerns, our response to two of our most serious non point sources of pollution problems, individual wastewater systems and soil erosion, is described, below.

### 1. Individual Wastewater Systems

Domestic wastewater associated with population increase is the largest potential source of pollution to all waters of Guam. Our most extensive population development is occurring in the northern watershed above our sole source aquifer, the island's most important drinking water supply. Due to our island's current economic difficulties, this development is occurring without an adequate sewage infrastructure. This leads people to depend on septic tanks/leaching fields. Resource agencies on the island are concerned that these septic tanks may be contributing to increased levels of nitrates observed in several groundwater monitoring wells. These agencies are very interested in determining if a more effective septic tank system may be available. Responding to this concern, the northern Watershed Restoration strategy has incorporated an element to pilot an innovative, more efficient, and low cost septic system. This special project has been funded and will be constructed and monitored during FY2000. The results of this pilot will be incorporated, as appropriate, when we update our Individual Wastewater Treatment regulations (target adoption date is 2002).

Our core programs also develop rules and regulations to clearly establish methods to be used to prevent problems. Guam law (10 GCA, Section 48102, Chapter 48) requires that no building shall be occupied or used as a dwelling, school, public building, commercial building, industrial

building or place of assembly without toilet or sewage facilities of a type inspected and approved for the disposition of domestic wastes.

Guam EPA addresses this requirement by requiring permits for new and remodeled buildings to ensure they have proper sewage disposal systems. The program includes an on-site inspection, plan review, permit issuance and final inspection of the completed disposal system. In 1995-97 a total of 2,610 permits were issued (Table 1). Of these, 876 were for sewer connections, 954 were for septic tank/leaching field systems, and 780 were for miscellaneous permits (eg. replacing roofs, interior renovations, and extentions and additions to existing buildings).

Table 1. Number of Wastewater Permits Issued During 1995-98

<b>Total Number of Wastewater Permits Issued During 1995-98</b>				
<b>Permits Issued</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
Sewer connections	273	289	314	378
Septic tank/leaching fields	231	369	354	427
Miscellaneous permits	427	173	180	225
<b>Totals</b>	<b>931</b>	<b>831</b>	<b>848</b>	<b>1030</b>

## 2. Soil Erosion

In order to reduce and control the problem of soil erosion from improperly implemented and executed clearing and grading activities, Guam EPA's staff enforces, and updates as necessary, the Guam Soil Erosion and Sediment Control Rules and Regulations.

An active inspection program was initiated when the regulations were last strengthened and revised in 1985. Compliance with the regulations continues to be positive. Applications for clearing and grading permits are reviewed by program staff to determine the adequacy of erosion control plans submitted as required by the regulations and to ensure that the proposed activity will not cause environmental problems in the community (Table 2). The Department of Public Works issues the permits with conditions attached by Guam EPA.

Table 2. Number of Clearing and Grading Permits Issued in 1995-98

<b>Number of Clearing and Grading Permits Issued in 1995-98</b>				
<b>Activity</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
Clearing	96	49	77	89
Grading	50	39	45	38
Clearing and Grading	58	35	30	27
Erosion Control Plan	204	66	43	27
<b>Totals</b>	<b>408</b>	<b>189</b>	<b>195</b>	<b>181</b>

Guam EPA is currently updating our Soil Erosion and Sediment Control Regulations to reflect both the experience gained over the years by our staff while implementing the program, and new implementation measures provided by experts associated with other programs (e.g.; as detailed in CZARA's Section 6217, *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, 1993). These revisions are well underway and are expected to become final early in 2000.

***Working on a limited number of initiatives***

Initiatives which clearly support the Agency's mission can be valuable and should be supported, as resources allow. The Agency's current initiative is the Clean Water Action Plan (CWAP) and its watershed approach. Guam EPA has actively supported this initiative and Guam has produced excellent and timely CWAP products. These products are being used to better understand and protect the northern aquifer, and to control the sediment that continues to drive up costs of delivering water to southern Guam.

In a nutshell, our CWAP and watershed approach are designed to:

1. Assess the functions and conditions of watersheds;
2. Recognize waters of exceptional value;
3. Enhance pollution prevention;
4. Select priority watersheds and identify desired restoration goals/objectives;
5. Take steps to restore our watersheds;
6. Improve our monitoring program to assess and recognize restoration progress;
7. Incorporate watershed strategy elements in agency planning and programs;
8. Expand collaboration among agencies, organizations, and interested individuals;
9. Periodically assess restoration progress and, as priority watersheds are restored, select new watersheds for restoration work.

Guam EPA, with the support of the Water Planning Committee, is incorporating this watershed approach into our Agency's work. We have assessed our watersheds and have selected priority watersheds (see our Unified Watershed Assessment), developed and are implementing restoration strategies for our two highest priority watersheds, as our CWAP initiative. We are utilizing the TMDL process to clarify restoration targets for these watersheds, and will be selecting additional watersheds for restoration work in 2001. (The WPC is also drafting a public education proposal to support watershed protection and restoration.) A brief summary (objectives, and a problem statement followed by related restoration strategy actions) of restoration strategies for our current priority watersheds is presented, below:

#### Northern Watershed

OBJECTIVE - To protect the island's most important source of drinking water, the northern lens, a formally designated sole source aquifer.

(Problem -> actions)

- C Inadequate sewage infrastructure -> conduct a pilot innovative septic tank project.
- C Probable contamination of aquifer from Harmon Industrial Area, but little information about types of activities in area -> complete a GIS compatible inventory; carry out investigation and enforcement, as necessary.
- C Contamination of the Tumon-Maui drinking water well -> serve as a catalyst and local supporter to prompt clean up actions.
- C Possibility of excessive use of fertilizers/pesticides/herbicides in Tumon Bay area -> conduct a survey in the area, and verification sampling, as necessary.
- C Need for baseline monitoring -> conduct baseline monitoring of Tumon Bay springs, which are located at the most downstream point of the watershed.
- C Lack of restoration targets -> Guam EPA is scheduled to complete a TMDL for nutrients in Tumon Bay during 2002. This TMDL will establish nutrient targets and implementation timelines.

#### Ugum Watershed

OBJECTIVES - 1) To reduce in stream turbidity in the Ugum watershed; this will improve the quality of drinking water supplied to residents of southern Guam by increasing the effectiveness of microbial treatment at the Ugum treatment plant. 2) Improve ecosystem function (in stream and downstream marine, including coral reefs) by lessening the level of non point source problems in the watershed, and associated deterioration of fish and wildlife habitat.

(Problem -> actions)

- C Watershed erosion -> minimize fires; reforest 35 acres during 1999 and 35 acres during 2000; utilize compliance and enforcement; monitor and evaluate. Plan
- C Lack of restoration targets -> Guam EPA has drafted a TMDL for turbidity which it will complete early in 2000. This TMDL will establish turbidity targets and implementation timelines.

## Utilizing and Developing our Local Expertise

Guam EPA is expanding its recognition of the importance of engaging and coordinating with others on this island in an effort to better protect and manage our water resources. The information and collaborative partnerships established by working with others will help our island identify our resource problems and priorities, and collectively develop and implement effective resource protection and restoration activities.

Key components of our approach include:

- C Interacting with other agencies and organizations so that we tap the best resources possible;
- C Establishing executive and legislative support so that we have necessary support and visibility to maintain the long term commitment necessary for environmental work;
- C Working closely with the military, a major island landowner, particularly during its land transfer activities;
- C Capacity building through providing technical assistance, workshops, and training; and,
- C Promoting public involvement and environmental education.

### *Interacting with other agencies and organizations*

#### Taking the lead on forming and maintaining a WPC.

The mission of this recently formed committee is to:

*“provide timely counsel to the Governor of Guam, government agencies, Guam Legislature, and private groups and citizens, on matters relevant to the management of Island resources. It serves the community by providing a forum to encourage representatives of all entities involved in water resources to meet on a monthly basis to exchange ideas, and to review and encourage the implementation of local and federal initiatives, policies and agendas that are relevant to Guam’s water needs.”*

The committee meetings, and all documents prepared by the WPC, are open to the public. (The WPC Operating Procedures are attached. Please note that the WPC anticipates revising the procedures shortly based on experience gained over its past year of existence. One area of discussion will be broadening our membership.) The WPC is currently made up of representatives from the following 14 organizations and agencies:

Bureau of Planning - Coastal Zone Management Program (CZMP)  
Commander US Naval Forces, Marianas  
Department of Agriculture - Divisions of Forestry and Aquatic and Wildlife Resources  
Department of the Air Force  
Department of Commerce  
Guam Environmental Protection Agency (Guam EPA)

Guam Waterworks Authority  
National Resources Conservation Service (NRCS)  
Department of the Navy - Public Works Center  
Soil and Water Conservation Districts - Northern and Southern  
University of Guam - College of Agriculture and Life Sciences (CALC)  
University of Guam - Water and Environment Research Institute (WERI)

Projects accomplished over the past year with a high level of WPC involvement, and which illustrate the types of projects of interest to the WPC, include:

- C Publication of Guam's Unified Watershed Assessment, which included the delineation, categorization and prioritization of watersheds on Guam;
- C Development of restoration strategies for the two highest priority watersheds identified in the Unified Watershed Assessment.
- C Initiation of implementation of restoration strategies in our priority watersheds;
- C An interagency monitoring strategy for the Uguum Watershed restoration project, and the beginnings of discussions between agencies about collaborative water quality and biomonitoring work;
- C Completion of a Watershed Executive Order to promote the watershed approach.
- C Review and comment on this and other similar documents and work products.

#### Participating in external forums to improve water resources coordination

One of our priorities is to improve coordination between the highly overlapping areas of freshwater and coral reef protection activities, coastal zone and watershed programs, and water quality regulatory actions. This requires working with our partner agencies (e.g.; GWA, Division of Aquatic Wildlife Resources, Division of Forestry, University of Guam Marine Lab, WERI, and Bureau of Planning's CZMP). Our interactions are increasing and improving, simply as a direct result of our collaborative work. This is providing frequent opportunities for sharing expertise, ideas and perspectives, and is laying the groundwork for positive long term collaboration.

Specific examples of our collaborative work include:

- C Holding weekly meetings between Guam EPA and Guam Waterworks Authority to discuss drinking water and waste management efforts;
- C Participating in WERI's environment advisory board. We are also expanding involvement, as resources allow, in Natural Resource Conservation Service councils, environmental organizations and environmental arms of the hotel and tourist associations;
- C Actively participating in the Coastal Reef Initiative, to identify and implement projects to protect the health of coral reef ecosystems.
- C Vision 2001/2005. Guam EPA is working with other GovGuam and non governmental organizations to develop and implement this multi-year strategy led by the Governor's office. Guam EPA is promoting and helping to carry out its environmental priorities through this vehicle.

### *Establishing Executive and/or Legislative support*

All inter-organizational projects need external acknowledgment and support to be effective on a long-term basis. Executive and legislative support are particularly valuable. Guam EPA, with WPC support, has developed a Watershed Executive Order which was signed by the Governor in August 1999. This order affirms the WPC's work on watersheds, provides emphasis and direction for agency heads to participate in this important endeavor, emphasizes that watershed protection should be approached from a multiple ownership and use perspective, directs Guam EPA to review the statutory fit and applicability of the watershed approach locally, and directs appropriate data management.

The legislative branch has also expressed interest in supporting this approach and is developing legislation to support the Executive level's interest in the WPC and the watershed approach.

### *Working closely with the Military during its land transfer activities*

For most of this century Guam was under the jurisdiction of the U.S. Navy. Guam was invaded by Japan and recaptured by the United States during World War II. Guam became an important military base for both ships and planes for the remainder of WWII. During the Korean and Vietnam wars, Guam was a major repair, maintenance and transshipment point for the military. The U.S. Government retains approximately one third of the island of Guam for military activities.

Under the Defense Environmental Restoration Program the Department of Defense has been conducting environmental restoration activities at its Navy and Air Force facilities on Guam. These activities focus on reducing the impact of present and past contamination from military operations. Additionally, the Navy through the Base Realignment and Closure Program (BRAC), has been actively investigating and mitigating the impact of past contamination looking toward the return of U.S. Government lands to the people of Guam.

The BRAC process involves Guam EPA and numerous other agencies and members of the public. Meetings are held monthly, during which technical updates, work progress and relevant issues and concerns are addressed. Environmental concerns, and requirements for military work to proceed in accordance with local laws and regulations, are frequent topics.

Air Force facilities on Guam (i.e. Andersen Air Force Base) are on the Superfund list of sites requiring cleanup under federal CERCLA regulations. Guam EPA was an equal player in the negotiation and implementation of the Federal Facilities Compliance Agreement (FFCA). The FFCA set out enforceable schedules and actions that the Air Force must undertake on Guam under the watchful eye of Guam EPA and federal regulators.

Guam and US EPA's environmental regulations and statutes govern Navy clean up operations on island. The funding that the Navy receives for cleanup activities are incumbent upon continued

compliance with local laws. Guam EPA provides the necessary oversight to ensure compliance. Additionally, any lands that the Navy plans to return to the people of Guam must go through a rigorous environmental baseline survey to ensure that the property being transferred is not contaminated. If contamination is found, appropriate cleanup work is scheduled and implemented under Guam EPA oversight.

Guam EPA has overseen the design, and installation and operation of two groundwater remediation systems at military facilities to date. The Navy has installed an Activated Carbon filtration system to help remediate a TCE plum identified beneath the former Naval Air Station in Agana. Similarly, the Air Force installed an air stripper used to remediate groundwater contaminated with TCE, PCE and TCA. Both remediation systems are used to restore contaminated groundwater to within Safe Drinking Water standards, which is subsequently used as a drinking water supply.

### ***Capacity building through technical assistance, workshops and training***

Given our small local population, limited expertise, and geographical isolation, capacity building (building our expertise) is critical. Our approach to improving our expertise is evolving. We utilize various forums for capacity building, including the WPC, on-the-ground assistance, training, and workshops.

On-the-ground technical assistance is an important component of capacity building. It is one of the areas that occupies the majority of our time. Our assistance is intended to promote water management objectives consistent with both coastal zone and non point source management measures. Examples include inspections of drinking water systems, septic tank/leaching field systems, and erosion and sediment control projects. All involve extensive interaction with and training and education of our “customers” as to the environmental or public health aspects of the particular situation, and the regulatory/programmatic considerations.

We also provide technical assistance to architects, engineers, the public and Government of Guam agencies during the design stage and plan review process of projects. During these phases, we recommend and/or require the best management practices and management measures suitable for the sites under evaluation.

Non-regulatory groups, such as Bureau of Planning, NRCS, Conservation Districts, Extension Services, Division of Aquatic Wildlife Resources (DAWR), Division of Forestry, and WERI, are also engaged in capacity building, by promoting activities consistent with CZM and 319 objectives in their work. Examples of a few of their relevant activities include:

- C Environmental Quality Incentive Program (NRCS)
- C Hosting the Pacific Basin Association of Conservation Districts workshop which this year focused on conservation partnerships (NRCS & Conservation Districts)
- C Forest Stewardship programs (Division of Forestry)

- C Publications of “Man, Land and Sea” (Bureau of Planning environmental newsletter)
- C Production of “Man, Land and Sea” television show (Bureau of Planning)
- C Publication of the “Northern Guam Resource Report” (NRCS)
- C Education on appropriate use of fertilizers and pesticides through meetings with landscapers, 4-H programs, newspaper articles, and other forums (UofG - CALS)
- C Educational presentations focusing on watersheds and marine conservation (DAWR, Guam EPA, WERI, and many others)

Workshops are also vitally important to our island staff. They provide an option for receiving training and for sharing expertise and ideas. With the shrinking economy, we have increasingly looked to on island workshops as fulfilling this need.

During 1998/1999, with the assistance of US EPA Region 9, selected Guam EPA staff sponsored the following workshops:

- C Clean Water Action Plan
- C Total Maximum Daily Loads

Selected Guam EPA staff attended the following workshops and/or training opportunities:

- C Pacific Island Regional Workshop
- C Environmental Enforcement training
- C STORET training
- C US Coast Guard oil spills and incident response training
- C Laboratory technique, data system and safety training
- C University of Guam Coral Cultivation Workshop
- C Bio Hazard dry suit training exercise
- C Inorganic Chemistry
- C TMDL development for the Ugum Watershed

During 2000/2001, again with a great deal of assistance of US EPA Region 9, selected Guam EPA staff hope to take advantage of more training and/or workshops.

### ***Public Involvement and Environmental Education***

We are collectively responsible for the current and future state of water resources on Guam. Perhaps the most significant long term impact we can make in protecting and restoring these resources is to involve the public in this objective, and to support environmental education. Guam EPA is actively involved in this area:

- Seeks review and comment in the development of all plans and regulations from our Board of Directors and from the public at large;
- Leads the highly successful quarterly hazardous waste collection day, Hasso Guam;

- Supports the WPC;
- Leads annual EarthWeek activities. This year's theme was *Watersheds, Guam's Precious Resources*. Typical Guam EPA EarthWeek activities include public tours of its facility for Guam's school children, mall displays, contests, and educational newspaper inserts;
- Actively participates in numerous Island clean-up activities; and
- Provides environmental presentations to numerous public schools throughout the year.

### **Creatively Implement our Environmental Priorities**

As is evident from the previous sections, we are continually looking for creative ways to focus our collective resources (financial, regulatory, technical, etc.), so that we can support our core programs, carry out our CWAP initiative, and generally protect our water resources in a methodical and integrated manner. This is a critical exercise, particularly if we hope to make environmental progress during this current fiscal crisis. Some current examples of our many creative focusing activities include:

- C Utilizing the expertise and resources of island organizations in a collaborative manner by leading and supporting the WPC. This helps us to more effectively monitor our waters, identify priorities, collectively tap our financial resources and implement needed prevention and restoration measures.
- C Targeting some of our core program activities to implement the restoration strategies for our watershed priorities identified in the CWAP. For example, we have scheduled the Ugum TMDL so that its results can be incorporated into the Ugum Watershed project.
- C Funding activities identified during the preparation of our CWAP supported Northern Watershed project to address concerns identified by our groundwater monitoring.
- C Utilizing CWAP funding to complete a pilot innovative septic tank project. Results for the pilot study will address concerns identified by our groundwater program and will be considered in the revisions to our Individual Wastewater Treatment regulations.
- C Incorporating required management measures associated with the CZARA Section 6217 program into our upcoming revised Pesticide Statute and Erosion and Sediment Control regulations.
- C Drafting Underground Storage Tank (UST) regulations (anticipated adoption is 2000) comparable to US EPA UST standards, and in some cases, more stringent in order to protect Guam's aquifer and watersheds.
- C Creating and staffing a "one-stop" building permit processing center which provides one place for owners, contractors and applicants to apply for all permits necessary for construction projects.
- C Completing an Environmental Permit Guide Book (draft complete; on hold pending availability of publication money). This handbook was developed to assist contractors, developers, investors and the general public to identify permits that may be necessary to minimize environmental impacts from development projects. All of the Agency's permits, and select federal and local permits which require concurrent Guam EPA reviews or certification, are listed and described.

## **Compliance and Enforcement**

Guam EPA supports and encourages voluntary compliance for all management measures where possible, but at the same time we have a large role and an obligation in taking action where voluntary compliance fails.

### ***Compliance***

Permittees are routinely monitored by Guam EPA staff to verify compliance with applicable permit requirements and compliance schedules. This activity is carried out through site inspections and surveillance activities. For Guam's point sources, the Water Pollution Control Program provides oversight for the implementation and compliance of the conditions imposed by Guam EPA Water Quality Certification (Section 401) and the NPDES permits issued to industrial and non-industrial facilities.

Although the NPDES permit system is administered by US EPA, Region IX, Guam EPA staff are responsible for certifying that all permit applications meet Guam's WQS, and recommending the conditions and abatement schedules for each permit. Presently there are 18 active NPDES permits on Guam. The permitted facilities include discharges from wastewater treatment plants, thermal effluent from power plants and numbers of discharges which contain minor amounts of oil and other toxic materials.

Compliance with soil erosion control permits, such as for clearing and grading, is resource intensive. Typically, compliance is established following site inspections or as a result of complaints made by other agencies or members of the public.

### ***Enforcement***

Under the Water Pollution Control Act and Guam WQS, Guam EPA has the authority to take legal action to prevent water pollution and to impose sanctions against those who do pollute Guam's waters. Enforcement activity is carried out through site and sampling inspections. Required *Discharge Monitoring Reports*, submitted by the NPDES permittees to Guam EPA are evaluated on a quarterly basis and then forwarded on USEPA, Region IX for any appropriate enforcement action. Other enforcement activity typically involves issuing notices of violation, compliance orders and/or stop work orders and compliance orders.

## **III. SCHEDULES FOR PROGRAM DEVELOPMENT**

A number of discrete statutory and regulatory revisions and projects, recently completed or targeted for completion in the near term, have been identified as necessary to support programs designed to assist in water resources pollution prevention, protection and restoration (see Table 3).

Table 3. Projects

Project	Objective	Completion Date Target	Completion Date Actual
<b>MONITORING TO ASSESS WATER QUALITY TRENDS AND THE PROGRESS OF OUR IMPLEMENTATION MEASURES</b>			
Assess water monitoring strategy	To ensure our monitoring strategy produces high quality data which is necessary for environmental work.	12/99	
Develop biological monitoring program	To develop appropriate indicators for assessing environmental health	4/2000	
Develop toxicity monitoring program	To develop appropriate indicators for assessing environmental health	4/2000	
Finalize water monitoring strategy	To ensure our monitoring strategy produces high quality data which is necessary for environmental work.	7/2000	
<b>ESTABLISH RESTORATION TARGETS (TOTAL MAXIMUM DAILY LOADS - TMDLS) FOR IMPAIRED WATERS (303(d))</b>			
Ugum Watershed TMDL	A pollution loading exercise used for developing restoration strategies	2000	
Tumon Bay TMDL	A pollution loading exercise used for developing restoration strategies	2002	
Pago River and Bay TMDL	A pollution loading exercise used for developing restoration strategies	2006	
Agana River and Bay TMDL	A pollution loading exercise used for developing restoration strategies	2010	
<b>WATERSHED PROTECTION AND RESTORATION</b>			
Identify top 2 watershed priorities	To focus agency efforts	9/98	9/98
Identify next watersheds for restoration work (biennial basis)	To continue the watershed restoration work so that eventually, all watersheds on the island will have effective restoration plans in place and implemented.	2001	
Design and begin to implement Northern Watershed Restoration Strategy	To develop/implement concise, practical plan for improving watershed	7/99	7/99

<b>Project</b>	<b>Objective</b>	<b>Completion Date Target</b>	<b>Completion Date Actual</b>
Design and begin to implement Ugum Watershed Restoration Strategy	To develop/implement concise, practical plan for improving watershed	7/99	7/99
Establish Watershed Executive Order	To provide Executive level (and long term) support for watershed approach	8/99	8/99
Establish Watershed legislation	To provide legislative support to Governor's watershed approach	11/99	
<b>WETLAND PROTECTION</b>			
Complete Wetlands Conservation Plan for Guam	To provide comprehensive set of resource management alternatives, select a work plan, and develop a strategy for implementing a conservation plan for Guam's wetlands	2000	
Begin implementation	To begin the work	2000	
Monitor and evaluate	To evaluate and make necessary adjustments	Annual	
<b>RULES AND REGULATIONS - TO ADDRESS KEY ENVIRONMENTAL PROBLEMS AND CONCERNS</b>			
Water Quality Standards revisions	To maintain scientifically credible targets for attaining and protecting beneficial uses	1999	
Pesticides Act and Regulations revisions	To minimize pollution from pesticides	2000	
Erosion and Sediment Control regulations revisions	To minimize erosion and stormwater runoff from construction activities	2000	
Underground Storage Tank regulations revisions	To reduce pollution impacts, particularly to our aquifer	2000	
Individual Wastewater regulations revisions	To reduce constamination from septic tanks	2002	
<b>WATER QUALITY REPORTS</b>			

<b>Project</b>	<b>Objective</b>	<b>Completion Date Target</b>	<b>Completion Date Actual</b>
Guam's Water Resources Protection and Management Plan	To provide comprehensive protection for the waters of Guam (both surface and ground water)	1997	1997
Wellhead Protection Plan	To promote and support comprehensive protection of ground water resources, particularly the drinking water wells	1999	1999
Section 319 Program Upgrade (this document)	To present our Agency's strategy for working internally and with other agencies and interested public to protect and restore our waters	9/99	9/99
CZARA Section 6217(g) - 5 / 15 year plans	To formulate an effective plan for addressing land use practices causing non point source problems	12/99	
Publish year 2000 303(d) List	Update Guam's list of waters not meeting WQS	10/2000	
Publish 305(b) water quality assessment report, including updated list of watershed priorities (biennial basis)	A water quality assessment for Guam for evaluating program progress and necessary program adjustments.	4/2000	

## Compliance with Section 6217 of CZARA

As noted in Section 1-Background, Section 6217 of CZARA requires that states, tribes and territories demonstrate that they have in place voluntary and regulatory programs designed to address the myriad of non point source management measures identified in federal guidance, or that they have acceptable 5 and/or 15 year schedules that illustrate the time line for implementing such programs.

Guam has achieved full approval under Section 6217, but with a number of conditions. Guam EPA and Bureau of Planning have been working closely together to achieve full and unconditional approval with this section by its federal deadline of December 31, 1999. Table 5 illustrates Guam's progress to date in achieving our objective.

Table 4. Status Report Related to Section 6217 of CZARA

Section 6217 Status Report		
Goal: Protect Surface water Quality through Development of Rules Five Year Schedule Required under Section 6217 of CZARA		
Chapter MM #	Management Measure	Status
1	BOUNDARY	
		Management measures for this chapter have been fully approved
2	AGRICULTURE	
		Management measures for this chapter have been fully approved
3	FORESTRY	
		Have achieved an exemption for this chapter.
4	URBAN AREAS	
4.II.A	New development	Still developing approach for meeting this requirement.
4.II.B	Watershed protection & mgmt.	Have submitted documents justifying and requesting full federal approval
4.II.C	Site development	Still developing approach for meeting this requirement.
4.III.A	Site erosion and sediment control	Approved
4.III.B	Construction chemical control	Still developing approach for meeting this requirement.
4.IV.A	Existing development	Still developing approach for meeting this requirement.
4.V	Onsite disposal systems	Approved
4.VI	Pollution prevention	Approved
4.VII.A	Roads/Hwy Planning, siting, developing	Have submitted documents justifying and requesting full federal approval
4.VII.B	Bridges	Have submitted documents justifying and requesting full federal approval

Section 6217 Status Report		
Goal: Protect Surface water Quality through Development of Rules Five Year Schedule Required under Section 6217 of CZARA		
4.VII.C	Construction projects	Approved
4.VII.D	Site chemical control	Still developing approach for meeting this requirement.
4.VII.E	O&M	Still developing approach for meeting this requirement.
4.VIIF	Road/Hwy/Bridges Runoff system	Still developing approach for meeting this requirement.
5	<b>MARINAS AND RECREATIONAL BOATING</b>	
5.II.A	Marina flushing	Have submitted documents justifying and requesting full federal approval
5.II.B	Water quality assessment	Have submitted documents justifying and requesting full federal approval
5.II.C	Habitat assessment	Have submitted documents justifying and requesting full federal approval
5.II.D	Shoreline stabilization	Have submitted documents justifying and requesting full federal approval
5.II.E	Storm water runoff	Still developing approach for meeting this requirement.
5.II.F	Fueling station design	Still developing approach for meeting this requirement.
5.II.G	Sewage facility	Have submitted documents justifying and requesting full federal approval
5.III.A	Solid waste	Have submitted documents justifying and requesting full federal approval
5.III.B	Fish waste	Have submitted documents justifying and requesting full federal approval
5.III.C	Liquid material	Still developing approach for meeting this requirement.
5.III.D	Petroleum control	Still developing approach for meeting this requirement.
5.III.E	Boat cleaning	Have submitted documents justifying and requesting full federal approval
5.III.F	Public education	Have submitted documents justifying and requesting full federal approval
5.III.G	Maintaining sewage facility	Have submitted documents justifying and requesting full federal approval
5.III.H	Boat operation	Have submitted documents justifying and requesting full federal approval
6.	<b>HYDRO MODIFICATION</b>	
6.II.A	Physical & chemical characteristics of water	Have submitted documents justifying and requesting full federal approval
6.II.B	In stream & riparian habitat	Have submitted documents justifying and requesting full federal approval
6.III.A	Erosion & sediment control	Have submitted documents justifying and requesting full federal approval
6.III.B	Chemical & pollution control	Still developing approach for meeting this requirement.
6.III.C	Water quality & habitat	Have submitted documents justifying and requesting full federal approval
6.IV.A	Stream bank & shoreline erosion	Have submitted documents justifying and requesting full federal approval
7	<b>WETLANDS, RIPARIAN AREAS AND VEGETATED TREATMENT SYSTEMS</b>	
7.II.A	Protection of wetlands & riparian areas	Have submitted documents justifying and requesting full federal approval
7.II.B	Restoration of wetlands & riparian areas	Have submitted documents justifying and requesting full federal approval

Section 6217 Status Report		
Goal: Protect Surface water Quality through Development of Rules Five Year Schedule Required under Section 6217 of CZARA		
7.II.C	Vegetated treatment systems	Have submitted documents justifying and requesting full federal approval
8.	MONITORING AND TRACKING TECHNIQUES TO ACCOMPANY MANAGEMENT MEASURES	
	Delivery reduction	Currently evaluating management measure
	Source reduction	Currently evaluating management measure
	Monitoring	Currently evaluating management measure
	OTHERS	
	Critical coastal areas	Have submitted documents justifying and requesting full federal approval
	Technical assistance	Have submitted documents justifying and requesting full federal approval
	Administration coordination	Have submitted documents justifying and requesting full federal approval
	Public participation	Approved
	Complete Strategies	Plan to utilize this 319 update document to satisfy this condition.
	Development of CZM 6217 5/15 year schedules	On track

#### IV. FUNDING

All federal grants are provided to Guam EPA in a consolidated grant format. This provides our agency maximum flexibility to integrate and target resources to priorities. Our inter organizational initiatives are taking full advantage of opportunities to pool our resources. For example, we have targeted CWA 319, CZARA, Division of Forestry, WERI, and NRCS resources to support CWAP priorities and our watershed approach, including implementation of the restoration strategy for our highest priority watersheds.

#### V. SUMMARY AND CONCLUSIONS

This document describes Guam EPA's updated approach for protecting and restoring the island's water resources. It is designed also to demonstrate that Guam EPA is moving in a direction which is consistent with the required nine key elements of acceptable non point source programs. This document should be sufficient to accord Guam an "Upgraded Status" for the purpose of receiving full 319 federal funding. When this document is submitted in December 1999 with its companion 5 and 15 year schedules required by the CZARA 6217 plan for Guam, it should be sufficient to accord Guam an "acceptable progress" status for the purposes of receiving full CZARA funding.

## VI. APPENDICES

### Appendix A. Glossary of Terms and Acronyms

- < CWA - Clean Water Act.
- < CWA Section 305(b) report - Clean Water Act section which requires states to provide water quality reports to Congress every two years.
- < CWA section 303(d) list - Clean Water Act section which requires states to provide a list of water bodies that are not attaining their water quality standards, despite implementing required (regulated) point source and non point source controls.
- < CWA section 319 - Clean Water Act section which provides guidance and funds for implementing non point source programs and projects.
- < CWAP - Clean Water Action Plan. A federal initiative to support protection and restoration of aquatic resources through a watershed approach.
- < CZMA - Coastal Zone Management Act
- < CZARA 6217 program - A Section of the Coastal Zone Act Reauthorization Amendments which requires coastal states to develop effective non point source management measures for addressing a variety of sources of non point source pollution.
- < GEPA - Guam Environmental Protection Agency
- < LUST - Leaking Underground Storage Tank
- < NOAA - National Oceanographic and Atmospheric Association
- < Priority watershed - Watersheds selected for the focusing of budgetary and other resources, for the purpose of accelerating improvements in water quality and watershed conditions.
- < TMDLs - Total Maximum Daily Loads. Estimates of the total quantity of pollutants (from all sources, point, non point and natural), that may be allowed into waters without exceeding applicable water quality criteria. These are control measures for 303(d) waters, necessary to bring these waters back into attainment of their WQS.
- < UST - Underground Storage Tank
- < US EPA - United States Environmental Protection Agency
- < Watersheds - A geographic area of land, water and biota within the confines of a drainage divide. The total area above a given point of a water body that contributes flow to that point.
- < Watershed approach - A framework that focuses public and private sector efforts to address the highest priority problems in a hydrologically-defined geographic area, taking into consideration both ground and surface water.
- < WQS - Water quality standards adopted by states which designate uses, criteria to protect the designated uses and various implementation policies, for waters of the U.S.

## **Appendix B. Nine Key Elements**

### **1. The state program contains explicit short and long term goals, objectives, and strategies to protect surface and groundwater**

Guam EPA has a vision statement, which describes our commitment to integrated, island wide environmental protection. We are making progress in our commitment by defining and implementing an integrated approach. We have established a schedule for completing numerous products that we have defined as being necessary for success. We are also committed to developing, by December 31, 1999, a 5-year implementation plan and a 15-year program strategy for achieving full implementation of the 6217(g) management measures for our outstanding conditional approvals. (See Sections I, II and III, Tables 2 and 3.)

Guam EPA, with the support of the Water Planning Committee, is also incorporating the watershed approach into our Agency's work. We have assessed our watersheds and have selected priority watersheds (see our Unified Watershed Assessment), developed and are implementing restoration strategies for our two highest priority watersheds, as our CWAP initiative. We are utilizing the TMDL process to clarify restoration targets for these watersheds, and will be selecting additional watersheds for restoration work in 2001.

### **2. The state strengthens its working partnerships and linkages with appropriate State, Tribal, regional, and local entities, private sector groups, citizens groups, and Federal agencies.** (See Section II, Appendix F)

Guam EPA works closely with numerous agencies and organizations in virtually all aspects of our work, by virtue of having a significant role as project reviewer, permit issuer and inspector.

Strengthening our partnerships is a cornerstone of Guam's integrated approach. Our work with the WPC, which is made up of representatives from numerous agencies and organizations, and interactions with other key agencies doing work that is closely related to ours is indicative of our commitment to this aspect of our work. The various skills of participants helps ensure that all aspects of issues (technical, process, media) are considered, and that the very best ideas are put forward.

Guam EPA highly values the support of the WPC to help provide input and perspective to agency documents related to watershed protection, and non point source programs, in general. For example, the WPC reviews the CWA 319 CWAP watershed strategies and provides advice to our Administrator on how/what to fund. And, it has commented on this document.

### **3. The State uses a balanced approach that emphasizes both State wide non point source programs and on the ground management of individual watersheds where waters are impaired and/or threatened.**

The watershed approach is focused over a relatively small land area. Guam EPA recognizes that a focused approach is necessary to address problems at a watershed scale. But we cannot ignore

the rest of the island while focusing on our highest priority watersheds. This is why Guam EPA is committed to a balanced approach of maintaining our core programs, which are island wide, cover both point and non point sources of water pollution, while at the same time addressing two of our highest priority watersheds through the Clean Water Action Plan. (Sections II and III)

Our divisional work plans include commitments associated with both our core and our watershed specific projects. We track these in our quarterly reports. And, we have institutionalized this approach in our Watershed Executive Order. (Appendix E)

**4. The State program (a) abates known water quality impairment from non point source pollution and (b) prevents significant threats to water quality from present and future activities.**

Guam EPA's inter organizational and integrated approach of strong support to its core regulatory, permit, inspection and enforcement programs, and limited but focused support to watershed restoration, is key to both avoiding problems and identifying, prioritizing and abating known problems. (Sections II and III)

Guam has characterized its watersheds (Unified Watershed Assessment) and has produced a 1998 303(d) list of impaired waters. The list will be updated each even year, concurrently with the production of our 305(b) water quality report. Our list of priority watersheds will be updated every three years. (Sections II and III)

Guam Executive Order 90-13 identified an official wetland map of Guam that shall be utilized in review of physical development projects. GEPA has issued a grant to complete a wetlands study that will, among other objectives, draft necessary legislation, rules and regulations to protect wetland resources. (Section II)

Guam has identified key areas for protection (priority watersheds, sole-source aquifer designation of our northern watershed). Furthermore, all of Guam's near shore waters, within the reefs, are identified wetlands and are thereby designated as *Areas of Particular Concern* in Public Law and Executive Order. As such, their health is managed through the Wetland Permit process identified in Guam's Zoning Law, and because of their location along the shoreline, coastal water wetlands are further protected through the Territorial Seashore Protection Act, which regulates development in order to preserve the quality of Guam's Seashore Reserve (defined as from the 10 fathom contour to 100 meters inland from the mean high water line).

Guam's Seashore Protection Act declares that the Territorial Seashore Reserve areas will be protected. Bureau of Planning recently issued a grant to Department of Land Management to complete the implementing plan for this act by 2001. (Appendix C)

The Navy established the Orote Peninsula Ecological Reserve Area (ERA) and the Haputo ERA (totaling 415 acres) in 1984. These establishments are two of several mitigation measures undertaken by the Navy in response to comments by GovGuam in connection with the Navy

ammunition wharf project in Apra Harbor. That project resulted in the loss of approximately 14 acres of local reef and limestone forest habitat. An ERA has a management plan. The plan proscribes management actions and use regulations which are intended to provide for a minimum interference by human or human caused activities with the ecological processes occurring in the ERA. (Section II)

GEPA is updating its WQS (triennial review) with a 1999 target date for adoption. These WQS include both surface water (marine and freshwater) and groundwater standards and policies to prevent inputs of pollutants above damage levels into our surface and groundwater environments. Guam EPA is furthermore updating a number of other rules, regulations, policies and plans which are intended to prevent and abate water quality problems. (Section II and III)

**5. The State program identifies waters and their watersheds impaired by non point source pollution and identifies important unimpaired waters that are threatened or otherwise at risk. Further, the State establishes processes to progressively address these identified waters by conducting more detailed watershed assessments and developing watershed implementation plans, and then by implementing the plans.**

Guam's 303(d) list and 305(b) report have, to the extent data are available, identified the island's impaired waters. (The FY 2000 documents are expected to be much improved due to the great enhancement of our monitoring program.) The UWA has identified both impaired and unimpaired watersheds.(Sections I, II and III)

Guam has prioritized its watershed assessment and restoration work (UWA and TMDL schedule), and has completed restoration plans and has begun implementing restoration work for our two highest priority watersheds. (Sections I, II and III)

Guam EPA has committed to updating water quality problems and addressing them through its core programs and the watershed approach. Our commitment to the WPC will help ensure coordination with other island resource agencies so that prevention, protection and restoration activities associated with our waters can be maximized. We have secured Executive commitment, and an indication of Legislative support, for an on-going collaborative, identification and implementation process. (Sections II and III, and Appendix E)

**6. The State reviews, upgrades, and implements all program components required by Section 319 (h) of the Clean Water Act, and establishes flexible, targeted, and iterative approaches to achieve and maintain beneficial uses of water as expeditiously as practicable. The State programs include: (a) A mix of water quality based and/or technology based programs designed to achieve and maintain beneficial uses of water; and (b) A mix of regulatory, non regulatory, financial and technical assistance as needed to achieve and maintain beneficial uses of water as expeditiously as practicable.**

Guam EPA fully endorses this focused and integrated approach, and considers it to be the foundation of our work. To address problems, we must bring all applicable tools to bear, whether these be voluntary agricultural programs like the Environmental Quality Incentives Program (EQIP) offered by the Natural Resources Conservation Service, educational programs offered by many of our resource agencies and by the University, and technical assistance by numerous island agencies including Guam EPA, or regulatory and compliance based such as those offered by GEPA, Department of Agriculture and the Fire Department. This is facilitated by the WPC and other interagency forums. (Sections I, II, III and IV, and Appendices D, E and F)

Guam EPA and Bureau of Planning are working closely together to ensure that the scientifically based and peer reviewed management measures identified in the CZARA guidance for addressing non point source problems continue to be incorporated into our voluntary and our regulatory natural resource programs. We anticipate completing our 5 and 15 year schedules by December 1999, and receiving full approval shortly thereafter. (See Sections II and III)

Through our consolidated grant program here at Guam EPA, we have maintained the ability to target federal and local funds to our highest priorities. Our watershed work has also brought various funding sources together to collaboratively wrestle with problems. (Section II and IV)

**7. The State identifies Federal lands and activities which are not managed consistently with State non point source program objectives. Where appropriate, the State seeks EPA assistance to help resolve issues.**

Federal agencies on Guam that are affected by the element include the Navy, Air Force, Coast Guard, and the Natural Resources Conservation Service. We are in close coordination with each. Where concerns can not be resolved, we do not hesitate to ask for US EPA assistance in reaching a satisfactory solution.

Guam EPA has several employees working closely with the Air Force and Navy as they clean up environmental problems before returning federal lands to Guam. A large portion of their work is to ensure that the clean up and restoration activities are consistent with local and federal environmental laws and that the work is completed with only positive environmental impact. (Section II)

The preparation of Guam's year 2000 303(d) list will include active solicitation of water quality data from all agencies and organizations that have monitoring data, including the federal agencies. Our list will cover the entire island, both federal, local and private lands. This list will help identify which waters are not meeting their beneficial uses, which will lead us to an investigation of those waters watersheds and land management activities taking place there. Furthermore, our inspection capabilities extend to federal lands and/or activities. Where we find federal activities which are not consistent with our non point source program objectives or our regulatory requirements, we work closely with those responsible agencies to resolve the problem. (Section II and III)

**8. The State manages and implements its non point source program efficiently and effectively, including necessary financial management**

This program is being managed as efficiently and effectively as possible, given its financial and personnel resources. The various non point source, regulatory, monitoring and compliance and enforcement programs are becoming more integrated within Guam EPA, as is funding (a consolidated grant system). Guam EPA also utilizes various GovGuam grants to achieve non point source objectives. For example, a recent grant of \$47,000 from the Coastal Zone 6217 program will augment progress in implementing a monitoring strategy that will assess source reduction associated with non point source management measures. (Sections II, III, and IV)

**9. The State periodically reviews and evaluates its non point source management program using environmental and functional measures of success, and revises its non point source assessment and its management program at least every five years.**

Guam EPA periodically reviews and evaluates its programs, but sometimes in more manageable pieces. (Section I, II and III)

- C Section 319 Non point Source Management Plan, 1990;
- C Monitoring strategy updates;
- C Groundwater Management Plan, which updates non point impacts to groundwater;
- C 1998 305(b) report which included a great deal of information on our updated non point source management approach;
- C 1999 Update of our Section 319 Non point Source Management Plan (this document).
- C Updates of our 303(d) and Priority watershed lists;
- C Guam's Annual report portrays Guam EPA's progress in meeting milestones incorporated in our work plans, which include our watershed and core program activities;
- C 6217(g) implementation schedule, which, when final, will be incorporated into this program upgrade.

During the preparation of the year 2000 305(b) report, we will review and assess the improvements in water quality and new impairments and threats. This information, as well as information from this and our CZARA 6217 documents, will be used to reevaluate our agency's environmental priorities and our annual work plans.

## Appendix C. Regulatory Authorities

Guam EPA water programs primarily derive their regulatory authorities from Federal Acts, Title 10 of the Guam Code Annotated (10 GCA), Public Laws, and Executive Orders, as follows:

### FEDERAL ACTS

#### Federal Clean Water Act (CWA)

The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. It established broad and comprehensive rules, regulations and authorities for the protection, maintenance, and improvement of water quality for all waters of the US, and established specific actions to carry out necessary water pollution prevention efforts by federal and state governments.

- §104 - authorizes EPA to establish programs for the prevention, reduction and elimination of pollution;
- §303 - requires states to establish water quality standards and identify those waters which do not comply with standards;
- §304 - requires EPA to issue guidance to states for identifying and evaluating the extent of NPS pollutants and methods to control NPS discharges from agriculture, silviculture, construction and hydro modification;
- §305 - requires states to submit biennial reports describing the quality of all navigable waters within the state, including a description of the nature and extent of NPS source of pollution and recommendations to control such sources;
- §314 - requires federal government entities to comply with local requirements to the same extent as any nongovernmental entity.
- §401 - requires any applicant for a federal license or permit to conduct an activity which may cause a discharge to navigable waters to acquire a water quality certification from the state indicating that such discharges will not violate the state WQS.
- §402 - National Pollution Discharge Elimination System (NPDES) permits - Requires federal permits for point source dischargers.
- §404 - requires individuals/entities conducting construction activities within stream channels to acquire a section 404 permit from the US Army Corp of Engineers and a 401 water quality certifications from the state.

#### Federal Safe Drinking Water Act (SDWA)

- §1428 requires states to create a Wellhead Protection Program (WHPP). This is an effective means for local governments to protect and manage groundwater resources. Preventing groundwater from becoming contaminated protects the public health and the environment, as well as being cost effective.
- §1424 - allows designation of principal, or sole-source aquifers. In 1978, the groundwater lens of northern Guam was defined as a "principal source aquifer" by the USEPA.

Federal Coastal Zone Act - Reauthorization Amendments of 1990.

- §6217 led to the establishment of the Guam Non point Source Pollution Management Plan, which has received conditional federal approval. This plan is a coordinating document with the goal to control non point source pollution through the use of various management measures, to be adopted and implemented with legal authority. Oversight is provided by US EPA and NOAA.

Federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

- This Act regulates investigation and clean up strategies of hazardous materials and groundwater contamination resulting from military activities.

Federal Resource Conservation Recovery Act (RCRA)

- C This Act includes hazardous waste and Underground Storage Tank provisions. (See 40CFR Part 280 for relevant regulations.)

TITLE 10 OF THE GUAM CODE ANNOTATED

10 GCA, Chapter 46. Guam Water Resources Conservation Act (WRCA)

WRCA requires the conservation and beneficial use of all surface and underground water resources, management of such resources to prevent over pumping by maintenance, operation modification, abandonment, and destruction, and avoidance of contamination of water wells as a result of extraction. WRCA established all water resources as the property of the people of Guam.

- controls the drilling and operation of wells;
- authorizes the Groundwater Management Program.

10 GCA, Chapter 47, Water Pollution Control Act

This requires that the Government of Guam conserve, protect, maintain, and improve the quality and potability of public water supplies for the propagation of wildlife, fish and aquatic life, agricultural, industrial, recreational and other beneficial uses through the prevention, abatement and control of new or existing water pollution sources.

- Guam's Soil Erosion and Sediment Control Regulations;
- Guam's Feedlot Waste Management Regulations;
- Guam's Water Quality Standards.

10 GCA, Chapter 48, Toilet Facilities and Sewage Disposal

- Sewer Connection Regulations;
- Individual Wastewater System Regulations.

10 GCA, Chapter 49, Air Pollution Control Act

- Air Pollution Standards and Implementation Plan.

10 GCA, Chapter 50, Guam Pesticide Act

- Guam Pesticide Regulations.

10GCA, Chapter 53, Safe Drinking Water Act

- < Guam's Safe Drinking Water Act;
- §7289(f) - Underground Injection Control Regulations and Program, which protects underground sources of drinking water from contamination;
  - Guam's WHPP, approved in 1993, provides for three levels of protection: 1) the 1,000 foot radius around each drinking water production well; 2) the groundwater protection zone; and 3) the whole Northern Guam lens.

10 GCA, Chapter 51, Solid Waste Management and Litter Control

- Solid Waste and Hazardous Waste Regulations.

OTHER PUBLIC LAWS AND EXECUTIVE ORDERS

Protection of Wetlands - Guam Executive Order 90-13

This declares that the National Wetlands Inventory map produced by the US Fish and Wildlife Service shall serve as the official, interim wetland map for Guam, and that all government agencies shall utilize the map in review of physical development projects. It further directs the appropriate government agencies, including Guam EPA, the Department of Agriculture and the Bureau of Planning to complete a study of wetlands, prepare public information, and draft necessary legislation, rules and regulations, and/or an Executive Order to protect Wetland resources, including water quality and wildlife habitat. During 1999, Guam EPA released a contract to complete this mandate.

Territorial Seashore Protection Act, Public Law 12-108, 1974

This declares that the Territorial Seashore Reserve is a distinct and valuable natural resource, existing as a delicately balanced ecosystem, and that the permanent protection of natural, scenic, and historical resources in the reserve is of paramount importance. This Act specifies four primary actions that must be accomplished: 1) study the seashore reserve to determine ecological planning principals required to ensure conservation; 2) prepare a comprehensive and enforceable plan based on the study for long-range conservation, management, and development of the reserve; 3) ensure interim development will be consistent with this law; and 4) that the Board of Directors of the Territorial Seashore Protection Commission be mandated to implement the provisions of the law.

The Bureau of Planning recently provided funds to Department of Land Management to complete the plan. The plan will mandate guidelines for approving each development permit for our seashore reserve areas, regardless of zoning. (Seashore reserves include all land between the 10 fathom contour seaward, and 100 meters inland from the mean high water mark.) It will include development setbacks for erosion control, and allowable uses that will minimize impacts. The plan should be completed in March 2001.

Watershed Protection Executive Order - Guam Executive Order 99-09

This order (Appendix E) affirms the Water Planning Committee's (WPC) work on watersheds, provides emphasis and direction for agency directors to participate in this important endeavor, emphasizes that watershed protection should be approached from a multiple ownership and use perspective, directs Guam EPA to review the statutory fit and applicability of the watershed approach locally, and directs appropriate data management.

## **Appendix D. Guam EPA's 1999 Environmental Priorities**

Drafted November 16, 1998

### **Air and Land Division**

- C Air - Title V - equivalent regulations and Redesignation of Piti-Cabras area for attainment for sulfur dioxide by January, 1999. (otherwise \$1.5 M will go to the US Treasury)
- C State authorization for solid waste regulations
- C Integrated Solid Waste Management Plan
- C Underground Storage Tanks (UST) regulations to protect Northern Lens
- C Update pesticides statutes and regulations to protect the Northern Lens

### **Administrative Services Division**

- C Cross-training for staff to better understand (and support) programs
- C Automate standard forms, put on main server (position descriptions, travel authorizations). Give in service training
- C Proper planning for longer lead times for staff
- C Paperwork - improve tracking system for documents

### **Environmental Review and Planning**

- C Land Use - I'Tanota Plan (space for new staff)
- C Wetlands
- C Emergency response
- C Hazard mitigation (but effort will go down)
- C Future planning

### **Monitoring Services Division**

- C Diversify analytical services to better provide support to divisions:
  - Screening; Data review & technical support
- C Revise and implement Water Quality Monitoring Strategy
- C Clarify Enforcement and Compliance protocols, roles and responsibilities
- C Enhance technical capabilities and Quality Assurance in the laboratory
- C Laboratory certification program (upgrade)

### **Water Division**

- C Northern Guam Lens protection
- C Revision of Water quality Standards
- C Revision of Safe Drinking Water regulations
- C Clean Water Action Plan (including Unified Watershed Assessment, 319 upgrade, 305(b) report, Coastal Zone Management)
- C Increase enforcement/compliance with government entities.

### **US EPA, Region 9**

- C Ordot dump
- C Clean Water Action Plan implementation
- C Approve & facilitate implementation of Solid Waste Permitting Program
- C Approve & facilitate implementation of Air Title V permitting program.
- C Co-host Annual Pacific Islands Conference with CNMI

**Appendix E. Watershed Executive Order**

**(Insert Executive Order here (3 pages))**

**[Unavailable for on-line version.] \_\_\_\_\_**





## **Appendix F. Water Planning Committee - Members and Operating Procedures**

### **Water Planning Committee Operating Procedures Adopted April 13, 1999**

#### **Purpose**

Guam's Water Planning Committee (WPC) provides timely counsel to the Governor of Guam, Government Agencies, Guam Legislature, and private groups and citizens, on matters relevant to the management of island water resources. The WPC serves the community by providing a forum to encourage representatives of all entities involved in water resources to meet on a regular basis to exchange ideas, and to review and encourage the implementation of local and federal initiatives, policies, and agendas that are relevant to Guam's water needs.

#### **Committee Chair**

The Administrator of Guam Environmental Protection Agency, or his or her designee, serves as the chair of the WPC.

#### **Existing Membership**

- C Anderson Air Force Base
- C Bureau of Planning
- C Department of Agriculture: Divisions of Aquatic & Wildlife Resources, and Forestry
- C Department of Commerce
- C Guam Environmental Protection Agency
- C Guam Waterworks Agency
- C Natural Resources Conservation Service
- C Navy Public Works Center
- C Navy - Comnav Marianas
- C Northern Soil and Water Conservation District
- C Southern Soil and Water Conservation District
- C University of Guam College of Agriculture and Life Sciences
- C Water & Environmental Research Institute

#### **New Members**

Interested organizations not currently represented on the WPC are welcome to join the committee. To do so, their representatives should request membership status at a WPC meeting. The WPC will then vote to formalize their membership status.

#### **Member responsibilities**

- C Membership organizations are expected to send Director-designated representatives to WPC meetings. For consistency purposes, it is preferable to send the same representative to meetings. Representatives are expected to attempt to find an alternate if they cannot attend a meeting.

- C Representatives are expected to serve as their Agencies' contact for WPC matters; they are responsible for transmitting WPC information within their organizations, as appropriate, and for serving as a contact point for their organization on WPC related topics.
- C Organizations which fail to send a representative to more than three consecutive WPC meetings without explanation will be dropped from the WPC.

### **Meetings**

- C Meetings will be held on an as-needed basis, but at least once every quarter.
- C Special meetings may be called by the Chair.
- C Fair notice will be given to all members of any significant upcoming decisions.
- C An agenda will be delivered to members the week before each WPC meeting. Draft minutes of the previous meeting and any other documents for member review will be attached, as is practical.

### **Decision-Making**

The Committee prefers to reach consensus decisions, whenever possible. When not possible, a majority vote prevails. Each member organization has one vote. No quorum is required.

### **Forming and Disbanding Sub-committees**

The WPC may from time to time decide to establish a sub-committee to further frame, define or resolve an issue, or to complete a special project. At such times, the Chair will: 1) call for the formation of the sub-committee, 2) ensure that the objective is clearly defined and understood, and 3) assign a chair to the sub-committee. When the WPC has concluded that the subcommittee has completed its objective, the Chair will disband the sub-committee.

### **Record Keeping**

Guam Environmental Protection Agency assumes responsibilities associated with managing committee documents, including meeting minutes. Minutes will be taken by member organizations on a rotating basis, and submitted to Guam Environmental Protection Agency at least a week before the next WPC meeting. This time line allows the Agency to distribute draft minutes to members for their review in advance of WPC meetings.

## Appendix G. Reference documents

- < *Environmental Permit Guide Book (Draft)*. Guam Environmental Protection Agency.
- < *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, January 1993. Issued under the Authority of Section 6217(g) of the Coastal Zone Act Reauthorization Amendments of 1990. USEPA, Office of Water, Washington, DC 20460. #840-B-92-002.
- < *Guam Water Quality Report to Congress 1998*. Federal Water Pollution Control Act Section 305(b). Guam Environmental Protection Agency.
- < *Guam's Water Resources Protection and Management Plan*. Guam Environmental Protection Agency.
- < *Non-Point Source Management Program November 8, 1990*. Guam Environmental Protection Agency.
- < *Non point Source Program and Grants Guidance for Fiscal Year 1997 and Future Years* May 1996. USEPA Guidance.
- < *Process for Approval of Upgraded State and Territorial Non point Source Management Programs*. May 26, 1998. Memorandum from Robert H. Wayland III, Director Office of Wetlands, Oceans and Watersheds, USEPA to EPA Regional Water Division Directors, State and Interstate Water Quality Program Directors.
- < *Process for Approval of Upgraded State and Territorial Non point Source Management Programs and Formal Recognition of Enhanced Benefits Status*. January 7, 1999. Memorandum from J. Charles Fox, Assistant Administrator USEPA to State and Interstate Water Quality Program Directors, EPA Regional Water Quality Division Directors.