GUAM COMPENSATORY MITIGATION POLICY

Guam Coastal Management Program
Bureau of Statistics and Plans
Government of Guam

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Acknowledgment

This policy was developed using the standards and criteria provided for by federal rules found at 33 USC Chapter II Part 332 *Compensatory Mitigation for Losses of Aquatic Resources*. Members of the Civilian Military Task Force (CMTF) Natural Resources Committee, which is composed of community, Government of Guam, Federal resource agency, and military representatives, generously provided other policy guidance. Policy language was also drawn from the State of Washington Alternative Mitigation Policy Guidance for Aquatic Permitting (February 2000), and habitat descriptions were drawn from the Guam Comprehensive Wildlife Conservation Strategy (2005).

Cover: Agana Shopping Center Mitigation Site

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TABLE OF CONTENTS

Section Page

APPENDICES

ACRONYMS

CFR	Code of Federal Regulations
CLTC	Chamorro Land Trust Commission
EO	Executive Order
GAR	Guam Administrative Rules
GCA	Guam Code Annotated
GLAC	Guam Ancestral Lands Commission
GLUC/GSPC	Guam Land Use Commission/Guam Seashore Protection Commission
GovGuam	Government of Guam
HEA	Habitat Equivalency Analysis
HGM	Hydrogeomorphic Method
MOA	Memorandum of Agreement
OAH	Outer Apra Harbor
PA	Permitting Authority
TSP	Territorial Seashore Park
USC	United States Code

Guam Compensatory Mitigation Policy

1.0 INTRODUCTION

The Guam Compensatory Mitigation Policy provides guidance for developing and evaluating aquatic and terrestrial compensatory mitigation proposals. This policy covers aspects of permit evaluation, mitigation planning, design, implementation, management, and compliance monitoring, including on-site and off-site permittee-responsible mitigation, mitigation banks, and in-lieu fee mitigation. This policy will offset unavoidable impacts to waters of Guam and the United States authorized through the issuance of Department of the Army permits pursuant to Guam law and regulations, Section 404 of the Clean Water Act (33 USC 1344), and/or Sections 9 or 10 of the Rivers and Harbors Act of 1899 (33 USC 401 and 403) and is intended to complement, not conflict, with Federal mitigation requirements. Certain provisions of this policy may reach beyond existing Federal guidance or may offer additional guidance.

This policy provides a sound framework from which to evaluate and guide compensatory mitigation proposals. The policy includes specific recommendations to implement new regulations or amend existing law in Section 11. It is envisioned that the very first policy implementation action would be an executive order to direct key government of Guam (GovGuam) agencies to amend existing rules, develop procedures, and coordinate activities. A key objective is to promulgate rules to make certain policy provisions fully enforceable requirements. At a minimum, this policy presents a body of guidance that developers can use to plan development in the context of existing local and Federal permit systems.

This policy guidance will assist the GovGuam regulatory and resource agencies, primarily the Guam Environmental Protection Agency, Department of Agriculture, Bureau of Statistics and Plans, and Guam Land Use and Seashore Protection Commissions, when issuing or commenting on permits, documents, appeals, or agreements that adversely affect resources. A permitting authority (PA), which includes but is not limited to the above agencies, may require a specific type of mitigation, if the PA determines that the situation warrants it. Regulatory agencies may consider alternative mitigation proposed by a developer using criteria provided in this policy document; however, the developer must demonstrate to the PA that there will be a net gain to the resources under alternative mitigation proposals for impacts to critical areas.

2.0 POLICY GUIDANCE

2.1 Statement of Policy

It is the policy of the GovGuam, through its regulatory and natural resource programs, to provide a united, integrated, and comprehensive island-wide program to guide compensatory mitigation planning, design, implementation, and monitoring and to provide a framework to fulfill that task.

2.2 Goal of Compensatory Mitigation

The basic goal of mitigation is to achieve no net loss of habitat functions by offsetting losses at the impact site through gains of mitigation. The goal of this interagency mitigation policy is to maintain, protect, and enhance the functions of fish, wildlife, habitat, wetlands, coral reefs, other waters of Guam, limestone forests, ravine forest, and coastal features, and to seek a net gain in those functions through restoration, creation, and enhancement.

"Mitigation" means actions that are required or recommended to avoid or compensate for impacts to natural resources from a proposed project.

Mitigation shall be considered and implemented, where feasible, comprehensively where all three parts of the following sequence are considered. Complete mitigation is achieved when these mitigation elements ensure no net loss of ecological functions, wildlife, fish, and aquatic and other resources. All practicable considerations must be made to achieve impact mitigation. Practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. Mitigation may include the following:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Compensating for the impact by replacing and providing substitute resources or environments through creation, restoration, enhancement, or preservation of similar or appropriate resource areas.

Compensatory mitigation for unavoidable impacts may be required to ensure that an activity requiring a local or Federal permit complies with the requirements of Clean Water Act Section 404(b)(1) Guidelines. During the 404(b)(1) Guidelines compliance analysis, the PA may determine that a permit for the proposed activity cannot be issued because of the lack of appropriate and practicable compensatory mitigation options.

Compensatory mitigation must achieve stated objectives to replace or regain lost resource services and function in perpetuity. If objectives are not ultimately met as planned, the PA will require remedial actions or modifications to the mitigation, including additional monitoring.

2.3 Public Interest

Compensatory mitigation may also be required to ensure that an activity requiring local and Federal authorization is not contrary to the public interest and to the extent practicable tangible public use benefits should be provided. Where appropriate, authorities shall account for local and then regional characteristics of resource types, functions, and services when determining performance standards and monitoring requirements for compensatory mitigation projects.

This policy guidance will assist the Guam natural resource agencies in issuing permits or reviewing actions under Section 401 of the Clean Water Act (22 GAR Div. 2, Ch. 5), the Guam Coastal Management Program Federal Consistency review, Seashore Protection Act of 1974 (21 GCA Ch. 63), Water Pollution Control Act, Fish, Game, Forestry & Conservation (5 GCA Ch. 63), and Wetland Areas (18 GAR Ch. 3 Art. 5).

This policy is not intended to supersede any existing authority or responsibility for regulatory and resource decisions of PA as they relate to site-specific conditions. Because this policy guidance is intended to address many media, the government seeks to use standardized language, which departs from traditional syntax adopted within these disciplines. For example, water quality managers use the term “beneficial uses,” where wetlands or fish and wildlife managers use “functions and values” or “ecological services.” To standardize, the use of neutral terms such as “functions” will be substituted.

Governmental programs designed to protect, enhance, and restore natural resources are increasingly required to coordinate policy and implementation. Watersheds function as ecological units, so actions in one part of a watershed have an effect on the remaining parts, potentially affecting its ability to function as a self-sustaining ecosystem. In order to ensure functional sustainability, regulators and applicants need to manage watershed ecosystems as a whole when considering impacts and the use of preservation, mitigation banking, and off-site or out-of-kind mitigation as tools for watershed recovery.

Authority for Guam agencies to recommend or require compensatory mitigation is granted by the following:

- Federal Coastal Zone Management Act
- Federal Clean Water Act
- Federal Endangered Species Act
- National Environmental Policy Act
- Guam Environmental Impact Assessment Guidelines
- Guam Water Quality Standards

2.4 Relationship to Federal Guidelines

This policy shall be used to satisfy requirements for compensatory mitigation planning, design, and implementation under all Federal permit systems, which allow for Guam agencies to comment,

recommend, or direct compensatory projects. To this end, the policy should be consistent with Federal guidelines and, where appropriate and necessary, more stringent or specific in guiding mitigation efforts.

Comments submitted to the Guam Land Use and Seashore Protection Commissions (GLUC/GSPC) by GovGuam agencies on requests for development within wetlands, the Seashore Reserve, and other natural resource uses, including for licenses, leases, and other use permits from the Chamorro Land Trust Commission (CLTC) and Guam Ancestral Lands Commission (GLAC), shall constitute the GovGuam's position on such projects for the purpose of providing comment to federal permitting programs under the respective permit process for natural resource (i.e., wetland, coral reef, habitat) development.

3.0 DEFINITIONS

To further understand how resource agencies will determine the appropriate mitigation for an impact, the following definitions will be used in making decisions:

- *Adaptive management* means the development of a management strategy that anticipates likely challenges associated with compensatory mitigation projects and provides for the implementation of actions to address those challenges, as well as unforeseen changes to those projects. It requires consideration of the risk, uncertainty, and dynamic nature of compensatory mitigation projects and guides modification of those projects to optimize performance. It includes the selection of appropriate measures that will ensure that the resource functions are provided and involves analysis of monitoring results to identify potential problems of a compensatory mitigation project and the identification and implementation of measures to rectify those problems.

- *Advance credits* means any credits of an approved in-lieu fee program that are available for sale prior to being fulfilled in accordance with an approved mitigation project plan. Advance credit sales require an approved in-lieu fee program instrument that meets all applicable requirements, including a specific allocation of advance credits by service area, where applicable. The instrument must also contain a schedule for fulfillment of advance credit sales.

- *Alternative mitigation* means any mitigation that falls outside the scope of typical consideration such as indirect but ultimately tangible resource gains from contributions to programs, management or technical assistance, consolidating mitigation outside of banks and fee programs and similar approaches.

- *Buffer* means an upland, wetland, and/or riparian area that protects and/or enhances resource functions associated with upland habitat, wetlands, rivers, streams, lakes, marine, and estuarine systems from disturbances associated with adjacent land uses.

- *Compensatory mitigation* means the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of

natural resources for the purposes of offsetting unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.

- *Compensatory mitigation project* means compensatory mitigation implemented by the permittee as a requirement of a Federal or Guam permit (i.e., permittee-responsible mitigation), or by a mitigation bank or an in-lieu fee program.

- *Condition* means the relative ability of a resource to support and maintain a community of organisms having a species composition, diversity, and functional organization comparable to reference resources in the region.

- *Conservation Areas* are those land areas that are protected and managed for natural resource conservation purposes under GovGuam ownership. Guam's conservation areas include but are not limited to the Anao Conservation Reserve, Cotal Conservation Reserve, Guam Territorial Seashore Park, Bolanos Conservation Reserve, Y-Piga Conservation Area, those parks authorized by Title 21 GCA, Ch. 77, §§77108 and 77110, and those parks list in Title 23 GARR, Div. 1, Ch. 3.

- *Coral Reef* means limestone structures composed in whole or in part of living corals, as described in paragraph (3) used by the pending Coral Reef Conservation Amendments Act of 2009, their skeletal remains, or both, and including other corals, associated sessile invertebrates and plants, and associated seagrasses.

- *Credit* means a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the accrual or attainment of resource functions at a compensatory mitigation site. The measure of resource functions is based on the resources restored, established, enhanced, or preserved.

- *Days* mean calendar days.

- *Debit* means a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the loss of resource functions at an impact or project site. The measure of resource functions is based on the resources impacted by the authorized activity.

- *Ecological Reserves Areas* means the Haputo Ecological Reserve Area and the Orote Ecological Reserve Area, which are managed by the US Navy and were established through a compensatory mitigation project for marine resource impacts resulting from the construction of Kilo Wharf in Outer Apra Harbor.

- *Enhancement* means the manipulation of the physical, chemical, or biological characteristics of a resource to heighten, intensify, or improve a specific resource function(s). Enhancement results in the gain of selected resource function(s), but may also lead to a decline in other resource function(s). Enhancement does not result in a gain in resource area.

- *Establishment* (creation) means the manipulation of the physical, chemical, or biological characteristics present to develop a resource that did not previously exist at an upland site. Establishment results in a gain in resource area and functions.

- *Functional capacity* means the degree to which an area of resource performs a specific function.

- *Functions* are the physical, chemical, and biological processes that occur in ecosystems.

- *Impact* means adverse effect.

- *In-kind* means a resource of a similar structural and functional type to the impacted resource.

- *In-lieu fee program* means a program involving the restoration, establishment, enhancement, and/or preservation of resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for applicable local and Federal permits. Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor. However, the rules governing the operation and use of in-lieu fee programs are somewhat different from the rules governing operation and use of mitigation banks. An in-lieu fee program instrument governs the operation and use of an in-lieu fee program.

- *In-lieu fee program instrument* means the legal document for the establishment, operation, and use of an in-lieu fee program.

- *Instrument* means mitigation banking instrument or in-lieu fee program instrument.

- *Interagency Review Team* means an interagency group of Federal, tribal, state, and/or local regulatory and resource agency representatives that reviews documentation for and advises the US Army Corps of Engineers PA on the establishment and management of a mitigation bank or an in-lieu fee program.

- *Marine Preserves* means a delineated area in which certain activities or uses are permanently restricted or prohibited. The five marine preserves around Guam are the Pati Point, Tumon Bay, Piti Bomb Holes, Sasa Bay, and Achang Reef Flat.

- *Mitigation bank* means a site, or suite of sites, where resources (e.g., wetlands, streams, riparian areas, limestone forest) are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation for impacts authorized by local and Federal permits. In general, a mitigation bank sells compensatory mitigation credits to permittees, whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor. The operation and use of a mitigation bank are governed by a mitigation banking instrument.

- *Mitigation banking instrument* means the legal document for the establishment, operation, and use of a mitigation bank.

- *Off-site* means an area that is neither located on the same parcel of land as the impact site, nor on a parcel of land contiguous to the parcel containing the impact site.

- *On-site* means an area located on the same parcel of land as the impact site, or on a parcel of land contiguous to the impact site.

- *Out-of-kind* means a resource of a different structural and functional type from the impacted resource.
- *Performance standards* are observable or measurable physical (including hydrological), chemical, and/or biological attributes that are used to determine if a compensatory mitigation project meets its objectives.

- *Permitting authority* is any government of Guam natural resource permitting authority. For the purpose of initial policy implementation the primary permitting authority entities are the Guam Land Use and Seashore Protection Commissions, Chamorro Land Trust Commission, Guam Environmental Protection Agency, the Department of Agriculture, and Bureau of Statistics and Plans.

- *Permittee-responsible mitigation* means a resource restoration, establishment, enhancement, and/or preservation activity undertaken by the permittee (or an authorized agent or contractor) to provide compensatory mitigation for which the permittee retains full responsibility.

- *Preservation* means the removal of a threat to, or preventing the decline of, resources by an action in or near those resources. This term includes activities commonly associated with the protection and maintenance of resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of resource area or functions.

- *Re-establishment* means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former resource. Re-establishment results in rebuilding a former resource and results in a gain in resource area and functions.

- *Reference resources* are a set of resources that represent the full range of variability exhibited by a regional class of resources as a result of natural processes and anthropogenic disturbances.

- *Rehabilitation* means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded resource. Rehabilitation results in a gain in resource function, but does not result in a gain in resource area.

- *Resource* means both aquatic and upland resources.

- *Restoration* means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded resource.

For the purpose of tracking net gains in resource area, restoration is divided into two categories: re-establishment and rehabilitation.

- *Riparian areas* are lands adjacent to streams, rivers, lakes, and estuarine-marine shorelines. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality.

- *Service area* means the geographic area within which impacts can be mitigated at a specific mitigation bank or an in-lieu fee program, as designated in its instrument.

- *Services* mean the benefits that human populations receive from functions that occur in ecosystems.

- *Sponsor* means any public or private entity responsible for establishing, and in most circumstances, operating a mitigation bank or in-lieu fee program.

- *Standard permit* means a standard permit issued under the authority of Guam Water Pollution Control Act, Guam Seashore Protection Act of 1974, Wetland Area regulations, Fish, Game, Forestry & Conservation Act, Section 404 of the Clean Water Act, and/or Sections 9 or 10 of the Rivers and Harbors Act of 1899.

- *Temporal loss* is the time lag between the loss of resource functions caused by the permitted impacts and the replacement of resource functions at the compensatory mitigation site. Higher compensation ratios may be required to compensate for temporal loss. When the compensatory mitigation project is initiated prior to, or concurrent with, the permitted impacts, the responsible agency may determine that compensation for temporal loss is not necessary, unless the resource has a long development time.

- *Watershed* means a land area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean.

- *Watershed approach* means an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of resources in a watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of resource functions and services caused by activities authorized by local and Federal permits. The watershed approach may involve consideration of landscape scale, historic and potential resource conditions, past and projected resource impacts in the watershed, and terrestrial connections between resources when determining compensatory mitigation requirements for local and Federal permits.

- *Watershed plan* means a plan developed by Federal, tribal, state, and/or local government agencies or appropriate non-governmental organizations, in consultation with relevant stakeholders, for the specific goal of resource restoration, establishment, enhancement, and preservation. A watershed plan addresses resource conditions in the watershed, multiple stakeholder interests, and land uses. Watershed plans may also identify priority sites for

resource restoration and protection. Examples of watershed plans include special area management plans, advance identification programs, and wetland management plans.

4.0 SPECIAL NOTES

Special notes are provided to guide permitting and regulatory agencies on issues that may be controversial, encountered only rarely, or unique to Guam concerning management perspectives, resource limitations, or other special topics.

4.1 Special Note on Artificial Reefs

Any proposal to use artificial reefs to replace the lost ecological function of a natural reef is not supported by existing scientific data or reasonable extrapolation of existing data and is not supported by the Natural Resources Subcommittee.

4.2 Special Note on Stormwater Impact Mitigation

Stormwater management is a critical issue in implementing coral reef protection, recovery and groundwater recharge, and watershed improvement efforts throughout Guam. The emphasis for stormwater management should be on prevention of impacts to aquatic and aquifer resources through appropriate development regulations and on best management practice applications for erosion control, water quantity, and water quality treatment. The guiding principal should be to do no further harm to resources and groundwater and to build into projects and plans the incremental improvements necessary to protect, restore, and enhance the beneficial uses and functions of Guam's water bodies.

It is widely held by Guam resource agencies, as expressed in the Guam Natural Resources Strategy 2012, that the best way to set priorities, create effective and cohesive management strategies, and obtain the greatest gain is to use watersheds as fundamental planning/management units for applying stormwater management strategies. The Guam agencies also recognized the need to take an adaptive-management and continuous-improvement approach to stormwater issues.

4.3 Special Note on Preservation

In some cases, protecting high-functioning, irreplaceable areas at substantially higher ratios may be the best ecological choice and acceptable for compensatory mitigation, as long as there is no overall loss of habitat functions. There is value gained in protecting sites that are already providing high quality functions necessary for watershed health and coral recovery efforts. For example, protecting aquatic habitat high in the watershed serves to protect downstream resources such as coral reefs from erosion and degradation.

Preservation may be beneficial in some circumstances because 1) larger mitigation areas can be set aside due to the higher preservation mitigation ratios, 2) it can ensure protection for high quality, highly functioning aquatic systems that are critical for the health of the watershed and resources that may otherwise be adversely affected; and 3) preservation of an existing system removes the uncertainty of success inherent in a creation or restoration project.

4.4 Special Note on Resource Evaluation Methods

There are a number of resource and habitat evaluation models and procedures available to quantitatively and qualitatively characterize the lost functions and services of various natural resources. For example, the Hydrogeomorphic Method (HGM) functional models are used to assess wetland function capacity for a wetland at any point in time. Wetland functional capacity is in turn used to assess the relative condition of a wetland to perform a suite of functions (e.g., hydrology, biochemistry, native plant, and habitat). Another example is the Habitat Equivalency Analysis (HEA). HEA provides a framework for determining the area required for compensatory restoration. Habitat equivalency analysis is specifically designed to determine the compensation the public is due to reconcile injuries to the ecosystem, and the lost services the ecosystem provides to the biotic component.

The policy on evaluation and assessment tools for scaling mitigation should be broad and inclusive to ensure that Guam managers are afforded the best possible science to construct compensatory mitigation. Methods such as HGM and HEA should remain a major approach to scaling compensatory mitigation, but it should also be recognized that the methods are still evolving to some extent. Resource agencies need to know how to conduct various methods, fully understand how they work, and what the objectives are for using a particular tool. As a case study, the Kilo Wharf HEA project is the latest effort to apply analytical methods to scale mitigation, but while there are lessons learned, resource managers consider the effort a "trial" project and that the overriding goal when applying models is to err on the side of caution.

In evaluating wetland mitigation projects, existing files provided by the Army Corps of Engineers (ACOE) were used. The projects evaluated were planned and constructed in compliance with ACOE (federal) mitigation plan requirements/criteria. There were three parts to the evaluation: 1) planning and design document review; 2) identifying regulatory requirements; and 3) field observations. The ACOE was consulted in the individual project design plans, permit application information as well as actual compliance inspection reports. Aside from the ACOE, the Department of Agriculture's, Division of Aquatic and Wildlife Resources (DAWR) and the Guam Environmental Protection Agency were also consulted indirectly as they had access to the policy document through draft stages of development.

4.5 Special Note on Limestone Forests

Limestone forest is composed principally of a mature growth of native trees and plants, with a moderately dense canopy 10 to 30 meters high. There are few or no openings, and understory vegetation varies from open to dense. Limestone forests are found on the northern limestone plateau and on large limestone outcroppings in southern Guam in the vicinity of the Naval Ordinance Annex. Of the remaining limestone forests on Guam, more than 80 percent are located on military property, and most of the non-Federal forest is located on CLTC lands along the northeastern coast of the island from the Anao Conservation Reserve to small remnant areas near the University of Guam in Mangilao. The structure of limestone forests is slowly changing due to the presence of Philippine deer (*Cervus mariannus*) and feral pigs (*Sus scrofra*) as they browse on seeds and seedlings, retarding any regeneration of forest plants. Typhoons, loss of pollinators, loss of habitat due to development, and introduction of aggressive invasive plant species exacerbate this condition. Without intervention and restoration, this habitat type will be altered so severely that it will not sustain

reintroduction of species of greatest conservation need (SOGCN). This habitat is vital for almost all of Guam's native forest birds, snails, insects, lizards, and two fruit bat species.

4.6 Special Note on Guam Seashore Reserve Park

The southern Territorial Seashore Park (TSP), similar to other northern conservation and CLTC lands, is not under comprehensive conservation management mostly for lack of working agreements, funding, and technical expertise. To this extent, the TSP likely does not fulfill its original management objectives. Because this public resource is very large and it encompasses the Bolanos Conservation Areas, there may be opportunities for local compensatory mitigation within TSP boundaries or to conduct mitigation projects contiguous to the park. It should also be noted that the Fena Watershed and Navy Ordinance Annex are bounded to the east and south by the TSP. Much of the land area is difficult to access and includes steep terrain, highly erodible soils, and large areas of ravine forest and may contain endangered species habitat and cultural resources. These factors suggest that viable long-term conservation arrangements may be possible and should be explored.

One ideal mitigation approach would be to use mitigation funding to purchase park in-holdings and transfer the land into the park. There may also be opportunities for restoration projects; however, they would likely have to be outside the scope of existing mandated management to be considered.

4.7 Special Note on Highway Development Impacts

The Department of Public Works will continue to undertake numerous highway improvement and new construction projects using federal highway funds. A number of projects will involve impacts to streams, riparian areas, wetlands, and other stormwater resources. The impacts will likely be small and will occur over a large geographic area on central and southern Guam transportation routes, including within coastal areas. Mitigation for numerous small and disconnected impacts could be aggregated in a few key watershed areas to improve functional efficiencies and have a greater positive effect. Because funding for these numerous projects is from one federal source, it may be beneficial to develop a mitigation program that is directed toward a bank or in-lieu fee program.

4.8 Special Note on Mitigation in Outer Apra Harbor

Outer Apra Harbor (OAH) is a rich and diversified ecological area, which is not common for industrial harbors. Water quality and circulation is generally very good, rich coral, fishery, and benthic resources exist on shoals, mounds, mudflats, mangrove, and other saltwater marsh areas and along the southern Navy coastline within the Sasa Marine Preserve. To the extent practicable, OAH should be afforded special protection from development impacts. OAH will be under intense industrial development and use pressure for the foreseeable future, which could reduce the long-term viability of compensatory mitigation, especially near active operational areas. However, if impacts are necessary to maintain and expand commerce and national defense activities, the preferred approach to compensatory mitigation should be to locate it off-site.

4.9 Special Note on Mitigation Monitoring

Mitigation monitoring is the responsibility of the PA and the permittee. Mitigation project plans must include provisions for periodic performance monitoring by the permittee, responsible sponsor, or

bank organization. Studies clearly show that Federal permitting authorities have not historically provided adequate monitoring of compensatory mitigation for a variety of reasons. Local PAs cannot claim to have a better a track record, and because there are not reliable policies or procedures to track project mitigation beyond plan approval, mitigation projects are not tracked for more than a few months to a couple of years. Some projects do not commence for months or years due to contractual difficulties, funding shortfalls, loss of technical personnel, or shifting priorities. Funding is inadequate to sustain long-term monitoring oversight.

Solutions should include funding through permit review fees or by integrating monitoring into established monitoring programs at the Guam Environmental Protection Agency or the Guam Division of Aquatic and Wildlife Resources. Charging mitigation fees would be justified because mitigation is a user-specific/special use resource transaction. Fee revenues should fund a clearinghouse established by permitting authorities to record, track, report, and evaluate compensatory mitigation projects.

Sponsors or permittees are primarily responsible for long-term tracking and monitoring of mitigation, as this is a major cost consideration in mitigation planning.

4.10 Special Note on Guam Resource Management Guidance

Compensatory mitigation should be developed consistent with the following resource management guidance and all other appropriate plans:

- A Comprehensive Historic Preservation Plan for Guam 2007-2011
- Guam's Strategy to Control Nonpoint Sources of Pollution and Regulations
- Guam Comprehensive Wildlife Conservation Strategy
- Guam Natural Resources Strategy 2012

5.0 GUIDING PRINCIPALS FOR COMPENSATORY MITIGATION

The fundamental objective of compensatory mitigation is to offset environmental losses resulting from unavoidable impacts to waters of Guam and the United States authorized by permits. The PA must determine the compensatory mitigation to be required in a permit, based on what is practicable and capable of compensating for the resource functions that will be lost as a result of the permitted activity. When evaluating compensatory mitigation options, the PA will consider what would be environmentally preferable. In making this determination, the PA must assess the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and its significance within the watershed, and the costs of the compensatory mitigation project. In some cases, the environmentally preferable compensatory mitigation may be provided through mitigation banks or in-lieu fee programs, because they usually involve consolidating compensatory mitigation projects where ecologically appropriate, providing financial planning and scientific expertise (which often is not practical for permittee-responsible compensatory mitigation projects), reducing temporal losses of functions, and reducing uncertainty over project success.

Compensatory mitigation requirements must be commensurate with the level and type of impact that is associated with a particular permit. Permit applicants are responsible for proposing an appropriate compensatory mitigation option to offset unavoidable impacts.

5.1 Methods

Compensatory mitigation may be performed using the methods of *restoration*, *enhancement*, *establishment*, and, in certain circumstances, *preservation*. Restoration should generally be the first option considered, because the likelihood of success is greater. Under restoration, the impacts to ecologically important areas are reduced compared to establishment, and the potential gains in terms of resource functions are greater compared to enhancement and preservation.

5.2 Public and Private Lands

Compensatory mitigation projects may be sited on public or private lands. Credits for compensatory mitigation projects on public land must be based solely on resource functions provided by the compensatory mitigation project, over and above those functions and services provided by public programs already planned or in place. Compensatory mitigation cannot be used to accomplish conservation efforts or management objectives of public programs and mandates that may be underperforming, unimplemented, or lacking. All compensatory mitigation projects must comply with the standards in this policy if they are to be used to provide compensatory mitigation for activities authorized by local or Federal permits, regardless of whether they are sited on public or private lands and whether the sponsor is a governmental or private entity.

5.3 Type and Location of Compensatory Mitigation

When considering options for successfully providing the required compensatory mitigation, the PA shall consider the type and location options in the order presented in paragraphs 5.3.1 through 5.3.5 of this section. In general, the required compensatory mitigation should be located within the same watershed as the impact site and should be located where it is most likely to successfully replace lost functions and services, taking into account such watershed-scale features as habitat diversity, habitat connectivity, relationships to hydrologic sources (including the availability of water rights), trends in land use, ecological benefits, and compatibility with adjacent land uses.

When compensating for impacts to marine resources, the location of the compensatory mitigation site should be chosen to replace lost functions and services within the same marine ecological system (e.g., reef complex, estuary, sea grass beds). Compensation for impacts to resources in coastal watersheds (watersheds that include a tidal water body) should also be located in a coastal watershed, where practicable.

Compensatory mitigation projects should not be located where they will increase risks to aviation by attracting wildlife to areas where aircraft-wildlife strikes may occur (e.g., near airports).

5.3.1 Mitigation Bank Credits

When permitted impacts are located within the service area of an approved mitigation bank, and the bank has the appropriate number and type of resource credits available, the permittee's

compensatory mitigation requirements may be met by securing those credits from the sponsor. Since an approved instrument, mitigation plan, and appropriate real estate and financial assurances for a mitigation bank are required to be in place before its credits can begin to be used to compensate authorized impacts, use of a mitigation bank can help reduce risk, uncertainty, and temporal loss of resource functions and services. Mitigation bank credits are not released for debiting until specific milestones associated with the mitigation bank site's protection and development are achieved, thus use of mitigation bank credits can also help reduce risk that mitigation will not be fully successful. Mitigation banks typically involve larger, more ecologically valuable parcels and more rigorous scientific and technical analysis, planning, and implementation than permittee-responsible mitigation. In addition, development of a mitigation bank requires site identification in advance, project-specific planning, and significant investment of financial resources that is often not practicable for many in-lieu fee programs. For these reasons, the PA should give preference to the use of mitigation bank credits when these credits are available and applicable. However, these same considerations may also be used to override this preference, where appropriate, as, for example, where an in-lieu fee program has released credits available from a specific approved in-lieu fee project, or a permittee-responsible project will restore an outstanding resource based on rigorous scientific and technical analysis.

5.3.2 In-lieu Fee Program Credits

Where permitted impacts are located within the service area of an approved in-lieu fee program, and the sponsor has the appropriate number and type of resource credits available, the permittee's compensatory mitigation requirements may be met by securing those credits from the sponsor. Where permitted impacts are not located in the service area of an approved in-lieu fee program, or the approved in-lieu fee program does not have the appropriate number and type of resource credits available to offset those impacts, in-lieu fee mitigation, if available, is generally preferable to permittee-responsible mitigation. In-lieu fee projects typically involve larger, more ecologically valuable parcels and more rigorous scientific and technical analysis, planning, and implementation than permittee-responsible mitigation. They also devote significant resources to identifying and addressing high-priority resource needs on a watershed scale, as reflected in their compensation planning framework. For these reasons, the PA should give preference to in-lieu fee program credits over permittee-responsible mitigation, where these considerations are available and applicable. However, as with the preference for mitigation bank credits, these same considerations may be used to override this preference, where appropriate.

Additionally, in cases where permittee-responsible mitigation is likely to successfully meet performance standards before advance credits secured from an in-lieu fee program are fulfilled, the PA should also give consideration to this factor in deciding between in-lieu fee mitigation and permittee-responsible mitigation.

5.3.3 Permittee-Responsible Mitigation Under a Watershed Approach

Where permitted impacts are not in the service area of an approved mitigation bank or in-lieu fee program that has the appropriate number and type of resource credits available, permittee-responsible mitigation is the only option. Where practicable and likely to be successful and sustainable, the resource type and location for the required permittee-responsible compensatory

mitigation should be determined using the principles of a watershed approach as outlined in section 5.4.

5.3.4 Permittee-Responsible Mitigation Through On-Site and In-Kind Mitigation

In cases where a watershed approach is not practicable, the PA should consider opportunities to offset anticipated resource impacts by requiring on-site and in-kind compensatory mitigation. The PA must also consider the practicability of on-site compensatory mitigation and its compatibility with the proposed project.

5.3.5 Permittee-Responsible Mitigation Through Off-Site and/or Out-of-Kind Mitigation

If, after considering opportunities for on-site, in-kind compensatory mitigation as provided in section 5.3.4, the PA determines that these compensatory mitigation opportunities are not practicable, are unlikely to compensate for the permitted impacts, or will be incompatible with the proposed project, and an alternative, practicable off-site and/or out-of-kind mitigation opportunity is identified that has a greater likelihood of offsetting the permitted impacts or is environmentally preferable to on-site or in-kind mitigation, the PA should require that this alternative compensatory mitigation be provided.

5.4 Watershed Approach to Compensatory Mitigation

The PA must use a watershed approach to establish compensatory mitigation requirements in local and Federal permits to the extent appropriate and practicable. Where a watershed plan is available, the PA will determine whether the plan is appropriate for use in the watershed approach for compensatory mitigation. In cases where the PA determines that an appropriate watershed plan is available, the watershed approach should be based on that plan. Where no such plan is available, the watershed approach should be based on information provided by the project sponsor or available from other sources. The ultimate goal of a watershed approach is to maintain and improve the quality and quantity of resources within watersheds through strategic selection of compensatory mitigation sites.

5.4.1 Considerations

A watershed approach to compensatory mitigation considers the importance of landscape position and resource type of compensatory mitigation projects for the sustainability of resource functions within the watershed. Such an approach considers how the types and locations of compensatory mitigation projects will provide the desired resource functions and will continue to function over time in a changing landscape. It also considers the habitat requirements of important species, habitat loss or conversion trends, sources of watershed impairment, and current development trends, as well as the requirements of other regulatory and non-regulatory programs that affect the watershed, such as stormwater management or habitat conservation programs. It includes the protection and maintenance of terrestrial resources, such as non-wetland riparian areas and uplands, when those resources contribute to or improve the overall ecological functioning of resources in the watershed. Compensatory mitigation requirements determined through the watershed approach should not focus exclusively on specific functions (e.g., water quality or habitat for certain species), but should provide, where practicable, the suite of functions typically provided by the affected resource.

Location Factors

Location-dependent factors (e.g., hydrology, surrounding land use) are important to the success of compensatory mitigation for impacted habitat functions and may lead to siting of such mitigation away from the project area. However, consideration should also be given to functions and services (e.g., water quality, flood control, shoreline protection) that will likely need to be addressed at or near the areas impacted by the permitted impacts.

Types

A watershed approach may include on-site compensatory mitigation, off-site compensatory mitigation (including mitigation banks or in-lieu fee programs), or a combination of on-site and off-site compensatory mitigation.

Resource Inventories

A watershed approach to compensatory mitigation should include, to the extent practicable, inventories of historic and existing natural resources, including identification of degraded resources and identification of immediate and long-term resource needs within watersheds that can be met through permittee-responsible mitigation projects, mitigation banks, or in-lieu fee programs. Planning efforts should identify and prioritize resource restoration, establishment, and enhancement activities, and preservation of existing resources that are important for maintaining or improving ecological functions of the watershed. The identification and prioritization of resource needs should be as specific as possible to enhance the usefulness of the approach in determining compensatory mitigation requirements.

Other Areas

A watershed approach is not appropriate in areas where watershed boundaries do not exist, such as marine areas. In such cases, an appropriate spatial scale should be used to replace lost functions and services within the same ecological system (e.g., reef complex, forest area).

5.4.2 Information Needs

If a watershed approach is appropriate but no watershed plan exists, the PA will base its watershed approach on an analysis of information available on watershed conditions and needs, including potential sites for resource restoration activities and priorities for resource restoration and preservation. Such information includes current trends in habitat loss or conversion; cumulative impacts of past development activities, current development trends, the presence and needs of sensitive species; site conditions that favor or hinder the success of compensatory mitigation projects; and chronic environmental problems such as flooding, poor water quality, or degraded fisheries.

Technical Documents

Sources of information may include wetland maps, soil survey, US Geological Survey topographic and hydrologic maps, aerial photographs, information on rare, endangered, and threatened species

and critical habitat, local ecological reports or studies, and other information sources that could be used to identify locations for suitable compensatory mitigation projects in the watershed.

Level of Information and Analysis

The level of information and analysis needed to support a watershed approach must be commensurate with the scope and scale of the proposed impacts requiring local or Federal permits, as well as the functions lost as a result of those impacts.

Watershed Scale

The size of the watershed addressed using a watershed approach should not be larger than is appropriate to ensure that the resources provided through compensation activities will effectively compensate for adverse environmental impacts resulting from activities authorized by local and Federal permits. The PA should consider relevant environmental factors and appropriate locally developed standards and criteria when determining the appropriate watershed scale in guiding compensation activities.

5.5 Site Selection

5.5.1 Ecological Suitability

The compensatory mitigation project site must be ecologically suitable for providing the desired resource functions. In determining the ecological suitability of the compensatory mitigation project site, the PA must consider, to the extent practicable, the following factors:

- Hydrological conditions, soil characteristics, and other physical and chemical characteristics;
- Watershed-scale features, such as habitat diversity, habitat connectivity, and other landscape-scale functions;
- The size and location of the compensatory mitigation site relative to hydrologic sources (including the availability of water rights) and other ecological features;
- Compatibility with adjacent land uses, watershed management plans, and existing resources or where resources previously existed;
- Reasonably foreseeable effects the compensatory mitigation project will have on ecologically important aquatic or terrestrial resources (e.g., shallow sub-tidal habitat, mature forests), cultural sites, or habitat for federally or state-listed threatened and endangered species; and
- Other relevant factors including, but not limited to, development trends, anticipated land use changes, habitat status and trends, the relative locations of the impact and mitigation sites in the stream network, local or regional goals for the restoration or protection of particular habitat types or functions (e.g., re-establishment of habitat corridors or habitat for species of

concern), water quality goals, floodplain management goals, and the relative potential for chemical contamination of the resources.

5.5.2 Mitigation Flexibility

Permitting authorities reserve the option to use flexible approaches and may require on-site, off-site, or a combination of on-site and off-site compensatory mitigation to replace permitted losses of resource functions and services.

5.6 Mitigation Type

In general, in-kind mitigation is preferable to out-of-kind mitigation because it is most likely to compensate for the functions and services lost at the impact site. For example, tidal wetland compensatory mitigation projects are most likely to compensate for unavoidable impacts to tidal wetlands, while perennial stream compensatory mitigation projects are most likely to compensate for unavoidable impacts to perennial streams. Thus, except as provided in section 5.3, the required compensatory mitigation shall be of a similar type to the affected resource.

5.6.1 Document Out-Of-Kind

If the PA determines, using the watershed approach in accordance with this section, that out-of-kind compensatory mitigation will serve the resource needs of the watershed, the PA may authorize the use of such out-of-kind compensatory mitigation. The basis for authorization of out-of-kind compensatory mitigation must be documented in the administrative record for the permit action.

5.6.2 Difficult-to-Replace Resources

If avoidance and minimization is not practicable for difficult-to-replace resources (e.g., coral reefs, springs, streams, forested swamps), the required compensation should be provided, if practicable, through in-kind rehabilitation, enhancement, or preservation since there is greater certainty that these methods of compensation will successfully offset permitted impacts.

5.7 Amount of Compensatory Mitigation

If the PA determines that compensatory mitigation is necessary to offset unavoidable impacts to resources, the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost resource functions. In cases where appropriate functional or condition assessment methods or other suitable metrics are available (Special Note 3.5), these methods should be used, where practicable, to determine how much compensatory mitigation is required. If a functional or condition assessment or other suitable metric is not used, a minimum one-to-one acreage or linear-foot compensation ratio must be used.

5.7.1 Mitigation Ratio

The PA must require a mitigation ratio greater than one-to-one where necessary to account for the method of compensatory mitigation (e.g., preservation), the likelihood of success, differences between the functions lost at the impact site and the functions expected to be produced by the

compensatory mitigation project, temporal losses of resource functions, the difficulty of restoring or establishing the desired resource type and functions, and/or the distance between the affected resource and the compensation site. The rationale for the required replacement ratio must be documented in the administrative record for the permit action.

5.7.2 In-Lieu Fee Programs

If an in-lieu fee program will be used to provide the required compensatory mitigation, and the appropriate number and resource type of released credits are not available, the PA must require sufficient compensation to account for the risk and uncertainty associated with in-lieu fee projects that have not been implemented before the permitted impacts have occurred.

5.8 Mitigation Banks

Mitigation banks and in-lieu fee programs may be used to compensate for impacts to resources authorized by any permit, including after-the-fact permits, in accordance with the preference hierarchy of section 5.3.

5.9 Preservation

Preservation may be used to provide compensatory mitigation for activities authorized by local and Federal permits when all of the following criteria are met:

- The resources to be preserved provide important physical, chemical, or biological functions for the watershed;

- The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the PA must use appropriate quantitative assessment tools, where available;

- Preservation is determined by the PA to be appropriate and practicable;

- The resources are under threat of destruction or adverse modifications; and

- The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to a Guam resource agency or land trust).

5.10 Preservation and Other Mitigation

Where preservation is used to provide compensatory mitigation, to the extent appropriate and practicable the preservation shall be done in conjunction with resource restoration, establishment, and/or enhancement activities. The PA may waive this requirement where preservation has been identified as a high priority using a watershed approach described in section 5.4, but compensation ratios shall be higher.

5.11 Buffers

Permitting authorities may require the restoration, establishment, enhancement, and preservation, as well as the maintenance, of riparian areas and/or buffers around resources where necessary to ensure the long-term viability of those resources. Buffers may also provide habitat or corridors necessary for the ecological functioning of resources. If the PA, as part of the compensatory mitigation project, requires buffers, compensatory mitigation credit will be provided for those buffers.

5.12 Aquatic Resource Mitigation and Other Federal Laws

Compensatory mitigation projects may also be used to provide compensatory mitigation under the Endangered Species Act or for Habitat Conservation Plans and for mitigation arising from National Environmental Policy Act analysis and associated decision documents.

5.13 Permit Conditions

The compensatory mitigation requirements for a permit, including the amount and type of compensatory mitigation, must be clearly stated in the conditions of the permit. The conditions must be enforceable. For any permit that requires permittee-responsible mitigation, the conditions must:

- Identify the party responsible for providing the compensatory mitigation;
- Incorporate, by reference, the final mitigation plan approved by the PA;
- State the objectives, performance standards, and monitoring required for the compensatory mitigation project, unless they are provided in the approved final mitigation plan; and
- Describe any required financial assurances or long-term management provisions for the compensatory mitigation project, unless they are specified in the approved final mitigation plan.

5.13.1 Form of the Mitigation Proposal

For a permit activity that requires permittee-responsible compensatory mitigation, the conditions must describe the compensatory mitigation proposal, which may be either conceptual or detailed. The permit must also include a condition that states that the permittee cannot commence work in waters of Guam and the United States until the PA approves the final mitigation plan, unless the PA determines that such a condition is not practicable and not necessary to ensure timely completion of the required compensatory mitigation. To the extent appropriate and practicable, conditions of the permit should also address the requirements of section 5.13.

5.13.2 Credit Specifications

If a mitigation bank or in-lieu fee program is used to provide the required compensatory mitigation, the conditions must indicate whether a mitigation bank or in-lieu fee program will be used and the number and type of resource credits the permittee is required to secure. In the case of a permit, the

special condition must also identify the specific mitigation bank or in-lieu fee program that will be used. Permit conditions may either identify the specific mitigation bank or in-lieu fee program, or state that the specific mitigation bank or in-lieu fee program used to provide the required compensatory mitigation must be approved by the PA before the credits are secured.

5.14 Responsible Party - Permittee

For permittee-responsible mitigation, the conditions of the permit must clearly indicate the party or parties responsible for the implementation, performance, and long-term management of the compensatory mitigation project.

5.14.1 Responsible Party - Banks and Fee Programs

For mitigation banks and in-lieu fee programs, the instrument must clearly indicate the party or parties responsible for the implementation, performance, and long-term management of the compensatory mitigation project(s). The instrument must also contain a provision expressing the sponsor's agreement to assume responsibility for a permittee's compensatory mitigation requirements, once the permittee has secured the appropriate number and resource type of credits from the sponsor and the PA has received the documentation described in section 5.14.2.

5.14.2 Transfer of Responsibility - Transactions

If use of a mitigation bank or in-lieu fee program is approved by the PA to provide part or all of the required compensatory mitigation for a permit, the permittee retains responsibility for providing the compensatory mitigation until the appropriate number and type of resource credits have been secured from a sponsor and the PA has received documentation that confirms that the sponsor has accepted the responsibility for providing the required compensatory mitigation. This documentation may consist of a letter or form signed by the sponsor, with the permit number and a statement indicating the number and resource type of credits that have been secured from the sponsor.

Copies of this documentation will be retained in the records for both the permit and the instrument. If the sponsor fails to provide the required compensatory mitigation, the PA may pursue measures against the sponsor to ensure compliance.

5.15 Timing

Implementation of the compensatory mitigation project shall be, to the maximum extent practicable, in advance of or concurrent with the activity causing the authorized impacts. The PA shall require, to the extent appropriate and practicable, additional compensatory mitigation to offset temporal losses of aquatic functions that will result from the permitted activity.

5.16 Financial Assurances

The PA shall require sufficient financial assurances to ensure a high level of confidence that the compensatory mitigation project will be successfully completed in accordance with applicable performance standards. In cases where an alternate mechanism is available to ensure a high level of confidence that the compensatory mitigation will be provided and maintained (e.g., a formal,

documented commitment from a government agency or public authority) the PA may determine that financial assurances are not necessary for that compensatory mitigation project.

5.16.1 Amount of Financial Assurances

The amount of the required financial assurances must be determined by the PA, in consultation with the project sponsor, and must be based on the size and complexity of the compensatory mitigation project, the degree of completion of the project at the time of project approval, the likelihood of success, the past performance of the project sponsor, and any other factors the PA deems appropriate. Financial assurances may be in the form of performance bonds, escrow accounts, letters of credit, legislative appropriations for government-sponsored projects, or other appropriate instruments, subject to the approval of the PA. The rationale for determining the amount of the required financial assurances must be documented in the permit or instrument record. In determining the assurance amount, the PA shall consider the cost of providing replacement mitigation, including costs for land acquisition, planning and engineering, legal fees, mobilization, construction, and monitoring. If financial assurances are required, the permit must include a special condition requiring the financial assurances to be in place prior to commencing the permitted activity.

5.16.2 Phase Out and Release

Financial assurances shall be phased out once the compensatory mitigation project has been determined by the PA to be successful in accordance with its performance standards. The permit or instrument must clearly specify the conditions under which the financial assurances are to be released to the permittee, sponsor, and/or other financial assurance provider, including, as appropriate, linkage to achievement of performance standards, adaptive management, or compliance with conditions.

5.16.3 Prior Notification of Termination

A financial assurance must be in a form that ensures that the PA will receive notification at least 120 days in advance of any termination or revocation. For third party assurance providers, this may take the form of a contractual requirement for the assurance provider to notify the PA at least 120 days before the assurance is revoked or terminated.

5.16.4 Pay Out

Financial assurances shall be payable at the direction of the PA to his designee or to a standby trust agreement. When a standby trust is used (e.g., with performance bonds or letters of credit), all amounts paid by the financial assurance provider shall be deposited directly into the standby trust fund for distribution by the trustee in accordance with the PA's instructions.

5.17 Compliance with Applicable Law

The compensatory mitigation project must comply with all applicable Federal and Guam laws. The permit, mitigation banking instrument, or in-lieu fee program instrument must not require participation by any local or Federal agency in project management, including receipt or management of financial

assurances or long-term financing mechanisms, except as determined by the PA or other agency to be consistent with its statutory authority, mission, and priorities.

6.0 PLANNING AND DOCUMENTATION

6.1 Pre-Application Consultations

Potential applicants for standard permits are encouraged to participate in pre-application meetings with the PA and appropriate agencies to discuss potential mitigation requirements and information needs.

6.2 Public Review and Comment

For an activity that requires a permit pursuant to local resource protection or management statute or regulation, the public notice for the proposed activity must contain a statement explaining how impacts associated with the proposed activity are to be avoided, minimized, and compensated for. This explanation shall address, to the extent that such information is provided in the mitigation statement, the proposed avoidance and minimization and the amount, type, and location of any proposed compensatory mitigation, including any out-of-kind compensation, or indicate an intention to use an approved mitigation bank or in-lieu fee program. The level of detail provided in the public notice must be commensurate with the scope and scale of the impacts.

The notice shall not include information that the PA and the permittee believe should be kept confidential for business purposes, such as the exact location of a proposed mitigation site that has not yet been secured. The permittee must clearly identify any information being claimed as confidential in the mitigation statement when submitted. In such cases, the notice must still provide enough information to enable the public to provide meaningful comment on the proposed mitigation.

6.2.1 Considering Comments and Recommendations

For all permits, the PA must consider any timely comments and recommendations from other Federal and local agencies and the public. For activities authorized by abbreviated or general permits, the review and approval process for compensatory mitigation proposals and plans must be conducted in accordance with the terms and conditions of those permits and applicable regulations, including the applicable provisions of this policy.

6.3 Mitigation Plan

6.3.1 Preparation and Approval

The permittee must prepare a draft mitigation plan and submit it to the PA for review. After addressing any comments provided by the PA, the permittee must prepare a final mitigation plan,

which must be approved by the PA prior to issuing the permit. The approved final mitigation plan must be incorporated into the permit by reference. The final mitigation plan must include the items described in sections 6.3.2 through 6.3.14, but the level of detail of the mitigation plan should be commensurate with the scale and scope of the impacts. As an alternative, the PA may determine that it would be more appropriate to address any of the items described in sections 6.3.2 through 6.3.14 as permit conditions, rather than as components of a compensatory mitigation plan. For permittees who intend to fulfill their compensatory mitigation obligations by securing credits from approved mitigation banks or in-lieu fee programs, their mitigation plans need include only the items described in Sections 6.3.5 and 6.3.6 and the name of the specific mitigation bank or in-lieu fee program to be used.

Alternative Approval

As an alternative and at the discretion of the PA, a conceptual or detailed compensatory mitigation plan may be approved to meet required permit system timeframes. However, a final mitigation plan incorporating the elements in sections 6.3.2 through 6.3.14 at a level of detail commensurate with the scale and scope of the impacts must be approved by the PA before the permittee commences work in waters of the United States.

Separate Plans

Mitigation banks and in-lieu fee programs must prepare a mitigation plan that includes the items in sections 6.3.2 through 6.3.14 for each separate compensatory mitigation project site. For mitigation banks and in-lieu fee programs, the preparation and approval process for mitigation plans is described in section 10.0.

6.3.2 Objectives

The mitigation plan should include a description of the resource type(s) and amount(s) that will be provided, the method of compensation (i.e., restoration, establishment, enhancement, and/or preservation), and the manner in which the resource functions of the compensatory mitigation project will address the needs of the watershed, ecoregion, or other geographic area of interest.

6.3.3 Site Selection

The mitigation plan should include a description of the factors considered during the site selection process. This should include consideration of watershed needs, on-site alternatives, where applicable, and the practicability of accomplishing ecologically self-sustaining resource restoration, establishment, enhancement, and/or preservation at the compensatory mitigation project site.

6.3.4 Site Protection Instrument

A site protection instrument is a description of the legal arrangements and instrument, including site ownership, which will be used to ensure the long-term protection of the compensatory mitigation project site.

6.3.5 Baseline Information

Baseline information includes a description of the ecological characteristics of the proposed compensatory mitigation project site and, in the case of an application for a permit, the impact site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other site characteristics appropriate to the type of resource proposed as compensation. The baseline information should also include a delineation of waters of the United States on the proposed compensatory mitigation project site. A prospective permittee planning to secure credits from an approved mitigation bank or in-lieu fee program only needs to provide baseline information about the impact site, not the mitigation bank or in-lieu fee project site.

6.3.6 Determination of Credits

A description of the number of credits to be provided, including a brief explanation of the rationale for this determination, is required. For permittee-responsible mitigation, this should include an explanation of how the compensatory mitigation project will provide the required compensation for unavoidable impacts to resources resulting from the permitted activity. For permittees intending to secure credits from an approved mitigation bank or in-lieu fee program, it should include the number and type of resource credits to be secured and how these were determined.

6.3.7 Mitigation Work Plan

The mitigation work plan contains detailed written specifications and work descriptions for the compensatory mitigation project, including, but not limited to, the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water, including connections to existing waters and uplands; methods for establishing the desired plant community; plans to control invasive plant species; the proposed grading plan, including elevations and slopes of the substrate; soil management; and erosion control measures. For stream compensatory mitigation projects, the mitigation work plan may also include other relevant information, such as plan form geometry, channel form (e.g., typical channel cross sections), watershed size, design discharge, and riparian area plantings.

6.3.8 Maintenance Plan

The maintenance plan contains a description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

6.3.9 Performance Standards

Performance standards are ecologically based standards that will be used to determine whether the compensatory mitigation project is achieving its objectives.

6.3.10 Monitoring Requirements

Monitoring requirements include a description of parameters to be monitored in order to determine if the compensatory mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting on monitoring results to the PA must be included.

6.3.11 Long-Term Management Plan

The long-term management plan contains a description of how the compensatory mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.

6.3.12 Adaptive Management Plan

This plan is a management strategy to address unforeseen changes in site conditions or other components of the compensatory mitigation project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan will guide decisions for revising compensatory mitigation plans and implementing measures to address both foreseeable and unforeseen circumstances that adversely affect compensatory mitigation success.

6.3.13 Financial Assurances

The permittee must submit a description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with its performance standards (see section 5.16).

6.3.14 Other Information

The PA may require additional information as necessary to determine the appropriateness, feasibility, and practicability of the compensatory mitigation project.

7.0 ECOLOGICAL PERFORMANCE STANDARDS

Approved mitigation plans must contain performance standards that will be used to assess whether the project is achieving its objectives. Performance standards should relate to the objectives of the compensatory mitigation project, so that the project can be objectively evaluated to determine if it is developing into the desired resource type, providing the expected functions, and attaining any other applicable metrics (e.g., acres, percent coral cover, stem density). Performance standards must be based on attributes that are objective and verifiable. Ecological performance standards must be based on the best available science that can be measured or assessed in a practicable manner. Performance standards may be based on variables or measures of functional capacity described in functional assessment methodologies, measurements of hydrology or other resource characteristics, and/or comparisons to reference resources of similar type and landscape position. The use of reference resources to establish performance standards will help ensure that those performance standards are reasonably achievable by reflecting the range of variability exhibited by the regional

class of resources as a result of natural processes and anthropogenic disturbances. Performance standards based on measurements of hydrology should take into consideration the hydrologic variability exhibited by reference resources, especially wetlands. Similarly, standards for turbidity or total settleable solids should take into consideration seasonal erosion rates from watersheds in reference areas, especially on coral recruitment. Where practicable, performance standards should take into account the expected stages of the resource development process in order to allow early identification of potential problems and appropriate adaptive management.

8.0 MONITORING

8.1 General

Monitoring the compensatory mitigation project site is necessary to determine if the project is meeting its performance standards and to determine if measures are necessary to ensure that the compensatory mitigation project is accomplishing its objectives. The submission of monitoring reports to assess the development and condition of the compensatory mitigation project is required, but the content and level of detail for those monitoring reports must be commensurate with the scale and scope of the compensatory mitigation project, as well as with the compensatory mitigation project type. The mitigation plan must address the monitoring requirements for the compensatory mitigation project, including the parameters to be monitored, the length of the monitoring period, the party responsible for conducting the monitoring, the frequency for submitting monitoring reports to the PA, and the party responsible for submitting those monitoring reports. The PA may conduct site inspections on a regular basis (e.g., annually) during the monitoring period to evaluate mitigation site performance.

8.2 Monitoring Period

The mitigation plan must provide for a monitoring period that is sufficient to demonstrate that the compensatory mitigation project has met performance standards; this monitoring period should not be less than five years. A longer monitoring period must be required for resources with slow development rates (e.g., forested wetlands, coral reefs).

Following project implementation, the PA may reduce or waive the remaining monitoring requirements upon a determination that the compensatory mitigation project has achieved its performance standards. Conversely the PA may extend the original monitoring period upon a determination that performance standards have not been met or the compensatory mitigation project is not on track to meet them. The PA may also revise monitoring requirements when remediation and/or adaptive management are required.

8.3 Monitoring Reports

The PA must determine the information to be included in monitoring reports. This information must be sufficient for the PA to determine how the compensatory mitigation project is progressing towards meeting its performance standards and may include plans (such as as-built plans), maps, and photographs to illustrate site conditions. Monitoring reports may also include the results of functional,

condition, or other assessments used to provide quantitative or qualitative measures of the functions provided by the compensatory mitigation project site.

The permittee or sponsor is responsible for submitting monitoring reports in accordance with the special conditions of the permit or the terms of the instrument. Failure to submit monitoring reports in a timely manner may result in compliance action by the PA.

Monitoring reports must be provided by the PA to interested Federal and Guam resource agencies, and the public, upon request.

9.0 MANAGEMENT

9.1 Site Protection

The habitats, riparian areas, buffers, and uplands that comprise the overall compensatory mitigation project must be provided long-term protection through real estate instruments or other available mechanisms, as appropriate. Long-term protection may be provided through real estate instruments such as conservation easements held by Federal or Guam resource agencies, non-profit conservation organizations, or private land managers; the transfer of title to such entities; or by restrictive covenants. For government property, long-term protection may be provided through designated conservation areas, preserves, Federal facility management plans, or integrated natural resources management plans.

When approving a method for long-term protection of non-governmental property other than transfer of title, the PA shall consider relevant legal constraints on the use of conservation easements and/or restrictive covenants in determining whether such mechanisms provide sufficient site protection. To provide sufficient site protection, a conservation easement or restrictive covenant should, where practicable, establish in an appropriate third party (e.g., governmental or non-profit resource management agency) the right to enforce site protections and provide the third party the resources necessary to monitor and enforce these site protections.

9.1.1 Incompatible Uses and Notification

The real estate instrument, management plan, or other mechanism providing long-term protection of the compensatory mitigation site must, to the extent appropriate and practicable, prohibit incompatible uses (e.g., clear cutting or extractive industries) that might otherwise jeopardize the objectives of the compensatory mitigation project. Where appropriate, multiple instruments recognizing compatible uses (e.g., fishing or traditional gathering rights) may be used.

The real estate instrument, management plan, or other long-term protection mechanism must contain a provision requiring 60-day advance notification to the PA before any action is taken to void or modify the instrument, management plan, or long-term protection mechanism, including transfer of title to, or establishment of any other legal claims over, the compensatory mitigation site.

9.1.2 Management Plans

For compensatory mitigation projects on public lands, where agency management plans or natural resources management plans are used to provide long-term protection, and changes in statute, regulation, or agency needs or mission results in an incompatible use on public lands originally set aside for compensatory mitigation, the public agency authorizing the incompatible use is responsible for providing alternative compensatory mitigation that is acceptable to the PA for any loss in functions resulting from the incompatible use.

A real estate instrument, management plan, or other long-term protection mechanism used for site protection of permittee-responsible mitigation must be approved by the PA in advance of, or concurrent with, the activity causing the authorized impacts.

9.2 Sustainability

Compensatory mitigation projects shall be designed, to the maximum extent practicable, to be self-sustaining once performance standards have been achieved. This includes minimization of active engineering features (e.g., pumps, electric fencing) and appropriate siting to ensure that natural hydrology and landscape context will support long-term sustainability. Where active long-term management and maintenance are necessary to ensure long-term sustainability (e.g., fuel reduction, invasive species control), such management and maintenance should be provided. This includes the provision of long-term financing mechanisms, where necessary. Where needed, the acquisition and protection of water rights must be secured and documented in the permit conditions or instrument.

9.3 Adaptive Management

If the compensatory mitigation project cannot be constructed in accordance with the approved mitigation plans, the permittee or sponsor must notify the PA. A significant modification of the compensatory mitigation project requires approval from the PA.

If monitoring or other information indicates that the compensatory mitigation project is not progressing towards meeting its performance standards as anticipated, the responsible party must notify the PA as soon as possible. The PA will evaluate and pursue measures to address deficiencies in the compensatory mitigation project. The PA will consider whether the compensatory mitigation project is providing ecological benefits comparable to the original objectives of the compensatory mitigation project.

The PA, in consultation with the responsible party (and other Federal and local agencies, as appropriate), will determine the appropriate measures. The measures may include site modifications; design changes, revisions to maintenance requirements, and revised monitoring requirements. The measures must be designed to ensure that the modified compensatory mitigation project provides resource functions comparable to those described in the mitigation plan objectives.

Performance standards may be revised in accordance with adaptive management to account for measures taken to address deficiencies in the compensatory mitigation project. Performance standards may also be revised to reflect changes in management strategies and objectives if the

new standards provide for ecological benefits that are comparable or superior to the approved compensatory mitigation project. No other revisions to performance standards will be allowed except in the case of natural disasters.

9.4 Long-Term Management

The permit conditions or instrument must identify the party responsible for ownership and all long-term management of the compensatory mitigation project. The permit conditions or instrument may contain provisions allowing the permittee or sponsor to transfer the long-term management responsibilities of the compensatory mitigation project site to a land stewardship entity, such as a public agency, non-governmental organization, or private land manager, after review and approval by the PA. The land stewardship entity need not be identified in the original permit or instrument, as long as the future transfer of long-term management responsibility is approved by the PA.

A long-term management plan should include a description of long-term management needs, annual cost estimates for these needs, and the funding mechanism that will be used to meet those needs.

9.4.1 Contingencies

Any provisions necessary for long-term financing must be addressed in the original permit or instrument. The PA may require provisions to address inflationary adjustments and other contingencies, as appropriate. Appropriate long-term financing mechanisms include non-wasting endowments, trusts, contractual arrangements with future responsible parties, and other appropriate financial instruments. In cases where the long-term management entity is a public authority or government agency, that entity must provide a plan for the long-term financing of the site. For permittee-responsible mitigation, any long-term financing mechanisms must be approved in advance of the activity causing the authorized impacts.

10.0 MITIGATION BANKS AND IN-LIEU FEE PROGRAMS

10.1 General Considerations

All mitigation banks and in-lieu fee programs must have an approved instrument signed by the sponsor and the PA prior to being used to provide compensatory mitigation for Guam and Federal permits.

10.1.1 Self Sustaining

To the maximum extent practicable, mitigation banks and in-lieu fee project sites must be planned and designed to be self sustaining over time, but some active management and maintenance may be required to ensure their long-term viability and sustainability. Examples of acceptable management activities include maintaining fire-dependent habitat communities in the absence of natural fire and controlling invasive exotic plant species.

10.2 Requirements for Establishing Mitigation Banks and In-lieu Fee Programs

The GovGuam hereby recognizes and subscribes to the procedures for the development of federally established mitigation banks and in-lieu fee programs as set forth in 33 CFR Chapter II, Part 332.8 (Mitigation banks and in-lieu fee program). Since the GovGuam does not have the requisite regulatory structure or expertise to regulate mitigation banks and in-lieu fee programs, it is advantageous to support the Federal banking and fee programs that are further along in development and use nationally.

10.2.1 Guam Participation on Interagency Review Teams

The GovGuam will participate under appropriate agreements and invitation by Federal mitigation banking authorities. The PA and members of the Interagency Review Teams may enter into a memorandum of agreement with any other Federal, state, or local government agency to perform all or some of the Interagency Review Team review functions described in 33 CFR Chapter II, Part 332.8. Such memoranda of agreement must include provisions for appropriate federal oversight of the review process. The Federal mitigation banking authority retains sole authority for final approval of instruments and other documentation required under federal regulation.

10.2.2 Programs and Banking on GovGuam Lands

Mitigation banks and in-lieu fee programs may be developed on GovGuam lands by non-profit or commercial organizations exclusively for GovGuam mitigation projects. Private mitigation projects shall not be located on Guam public lands unless the project involves the purchase or transfer of land to the GovGuam adjacent to existing mitigation bank or in-lieu fee projects or established conservation lands. Federal government mitigation may occur on GovGuam Lands under specific memoranda of agreement.

10.2.3 Compliance

All mitigation banks and in-lieu fee programs must comply with the standards in this policy if they are to be used to provide compensatory mitigation for activities authorized by Guam and Federal permits, regardless of whether they are sited on public or private lands and whether the sponsor is a governmental or private entity.

11.0 IMPLEMENTATION RECOMMENDED LEGAL AMENDMENTS

This policy should be implemented initially by Executive Order (EO). The EO should direct that critical steps be undertaken to ensure that timely and effective implementation be accomplished, considering the anticipated rapid rate and scale of development in the near future. The EO should first direct that the following five laws be amended to include requirements for compensatory mitigation or to clarify existing mitigation policy.

11.1 Chamorro Land Trust Commission

Title 21 GCA Chapter 75 of the CLTC law should be amended to provide for the reservation of prime habitat types, including limestone forest, ravine forest, strand forest, wetland areas, and submerged lands. These prime lands could be leased or licensed to a public natural resource steward or an eligible non-profit for conservation purposes, but might also be managed to allow for low-impact or limited-intensity eco-tourism activities, outdoor recreation, parks, and similar activities, provided that ecological integrity and function is not significantly impaired. CLTC lands could be managed as conservation and mitigation banks for public projects (e.g. highways, subdivisions, flood control, etc.).

The CLTC should promulgate rules to improve management of its land inventory. Title 18 GAR, Chapter 6 is reserved for these rules. When the Act was initially implemented, rules were drafted that called for conservation as a land use type or category, which included prime resource areas, difficult to develop lands, steep terrain, etc. These rules have not been adopted.

11.2 Guam Seashore Protection Act

Title 21 GCA Chapter 63 of the Guam Seashore Protection Act should be amended to require mitigation as a means of protecting seashore resources to ensure that this conservation mandate is fully realized. Adding mitigation requirements to the "Interim Permit Control" section as a standard condition would be most appropriate. Furthermore, the draft Guam Seashore Reserve Plan should be updated to include better provisions for compensatory mitigation. Mitigation requirements could be further developed and refined when Seashore Reserve rules are developed to administer the plan and under a permanent permit control program.

11.3 Wetland Area Regulations

Title 18 GAR Chapter 3 Article 5 is the Guam version of Section 404 of the Federal Clean Water Act. The rules are not consistently or regularly applied to the development process, and long-standing practice is to defer to the US Army Corps of Engineers regulatory program. As these rules have not been revised since initial adoption in 1978, it is recommended that these rules be substantially revised and brought up-to-date. The rules include a number of concepts that may work well with the Federal permit system; however, mitigation is completely absent for the rules, and an emphasis now needs to be made to protect isolated wetlands, which are now exclusively under local jurisdiction.

11.4 Guam Water Quality Standards

Title 22 GAR GEPA DIV. II Chapter 5, Appendix F of the Guam Water Quality Standards includes nine mitigation policy statements for aquatic resource losses. The policy statements were first included in the standards in 1996. These policy statements require a hierarchy of mitigation, support pre-application consultations, coordination with Federal and local agencies, mitigation plans, monitoring, support "pilot studies" on mitigation methods, support development of mitigation banks, provide site protection through transfer of title to Guam resource management agencies, and that preservation without enhancement is not acceptable as compensatory mitigation.

The policy statements in these rules should be updated to be compatible with both this policy and the Federal mitigation policy. The major requirements for compensatory mitigation should originate from resource permit program requirements under the Guam Seashore Protection Act, from CLTC conservation management, or from a new mandate under the forestry programs at the Guam Department of Agriculture. These policy statements were the first such statements under Guam law and were developed out of a concern for having a basic set of local government guidance.

11.5 Department of Agriculture Tree-Cutting Licensing Program

Title 5 GCA Chapter 63 Article 3 Sections 301 and 302 establish that the Department of Agriculture is responsible for protecting and managing forest resources and authorizes a tree-cutting license program for all public lands. The Department has developed a licensing program and requires that a license application be completed and approved by the Director prior to commencing cutting projects. The statute does not specifically require compensatory mitigation for the destruction of trees on public lands, but it requires that the Director form an opinion as to the level of "injury" to forest resources and allows for conditions of approval, inspection, and monitoring.

If forested CLTC lands are licensed or leased for agricultural, residential, or other uses, land clearing could be limited or prohibited if the Director finds that substantial and adverse injury would result. The recommendation for compensatory mitigation related to forests is therefore twofold: 1) ensure that CLTC land licensing programs and the forest tree-cutting licensing requirements of the Department of Agriculture are largely in agreement, and 2) set remaining high-functioning forest areas aside under conservation rather than managing cutting permits on a case-by-case basis in valuable forest areas. Both efforts should include provisions to require compensatory mitigation for unavoidable forest losses.

11.6 Department of Agriculture Fish and Wildlife Permitting Systems

Title 5 GCA Chapter 63 Articles 1, 2, and 6 include permit systems for various recreational use activities within marine preserves as required by Public Law 27-87, the commercial harvesting of coral (§ 63603) and take or possession of threatened and endangered species (§ 63207). Each permit system should specify that the Director may require compensatory mitigation as condition of permits. It should also be noted that permitted activities under this statute are often subject the permitting requirements under federal law and Guam Land Use and Seashore Protection Commissions.

APPENDIX A

Compensatory Mitigation Historical Overview Report

Compensatory Mitigation Historical Overview Report
Guam Compensatory Mitigation Policy

March 2009

Introduction

The objective of this report is to present basic information about freshwater compensatory mitigation projects on Guam and one project in Saipan, Commonwealth of the Northern Mariana Islands (CNMI). All of the compensatory mitigation projects reviewed is associated with impacts to wetlands and streams in central and southern Guam. The project involve wetland enhancement and creation with a primary goal of providing open water and emergent habitat suitable for the Mariana common moorhen (*Gallinula chlorpus guami*), an endangered species, and other migratory bird species. Guam mitigation projects typically involve the removal dense stands of *Phragmites karka* (karisso), *Hibiscus tiliaceus*, and other woody and invasive species. A desirable feature of waterfowl habitat is the creation of small-vegetated islands to provide nesting and cover adjacent to open water. Other typical features include vegetated buffers to mitigate noise and intrusive human activity, interpretive signage about the project, wildlife, habitat and other educational information if the area is accessible to public.

Guam has significantly more and a wider variety of wetland types than any of the other Mariana Islands. All of the island surface waters including rivers and adjacent all wetlands can be found in southern and central regions of the island. The geology of these central and southern areas is dominated by clay or argillaceous limestone soils, which are of low permeability and facilitate surface water accumulation (Scott 1993). Other than a few marshy areas and ephemeral streams in the vicinity of Mt. Santa Rosa, especially the Gayinero area at the foot of Mt. Santa Rosa, wetlands generally do not occur in the limestone formations of northern Guam.

Significant wetland losses have occurred historically on Guam; however, there is no accurate account of the extent of those losses. The U.S. military likely filled many hectares of mangrove swamp and other coastal wetlands in and around Apra Harbor after World War II when Navy harbor facilities were constructed at Inner Apra Harbor, Sumay and Piti villages from 1945 to 1950. The Navy does estimated that as much as 500 ha of land area was filled during this period and involved the permanent loss of mangrove stands along eastern areas of Inner Apra Harbor and associated freshwater wetlands along the Sasa and Atantano Rivers in Piti and the Namo River in Agat (Scott 1993).

More recently, comparatively smaller and geographically dispersed areas of wetland fills have also occurred throughout central and southern Guam as a result of highway, residential, commercial and resort development from 1986 through 1994. The tourism development boom from this period exerted substantial pressure on conservation and protection programs at various local and federal regulatory agencies such as the U.S. Army Corps of Engineers, Guam Environmental Protection Agency and the Guam Department of Agriculture, Division of Aquatic and wildlife Resources.

Compensatory Mitigation Projects

The U.S. Army Corps of Engineers (Guam) assisted in identifying four compensatory mitigation projects on Guam. One of these, the Southern High School mitigation project, is a Government of Guam (GovGuam) project and the other three are privately owned and managed projects. No attempt was made to gather and report resource "losses" through permitting, which activities that do not require compensatory mitigation. Table 1 is provides a brief summary of the four Guam and one Saipan compensatory mitigation projects.

Table 1. Guam Wetland Compensatory Mitigation Project List

Year	Project Name	Owner	Type	Area (acres)	Project Purpose (fill acres)
1990	Manenggon Hills Development	MDI Guam Corp. dba Leo Palace Resort	Creation of on-slope wetlands adjacent to existing wetlands and detention ponds with littoral shelves	14.30	Golf course playing areas, roads, commercial, house lots, and outdoor athletic areas (7.15)
1993	Talofofo Golf Resort	Onward Talofofo Golf Resort	Creation - open water emergent vegetation and four nesting islands	0.62 (EST)	Golf course fairway area (0.30 EST)
1994	Southern High School (Piti Parcel 1B)	Guam Public School System (GPSS)	Creation and enhancement - open water emergent vegetation and five nesting islands	10.5 to 14 (EST)	Outdoor athletic fields and related facilities (8.91)
1996	Agana Shopping Center	GFPP, Inc. dba Agana Sopping Center	Enhancement - provide open water and emergent vegetation for nesting/cover	5.41	Commercial center (1.67)
			Guam Total	34.33	18.03
1995	Saipan Power Center	Joeten Enterprises, Inc.	Creation and enhancement - open water emergent vegetation and 3 nesting islands	2.17	Commercial center (2.17)

Although it may seem, from the various regulatory program data bases and records that many projects resulted in wetland losses greater than about one acre, and that those losses required compensatory mitigation as part of permitting and authorization. This it is not the case. Guam and federal regulatory program personnel have been effective in identifying potential impacts, assisting with other mitigation efforts to avoid or minimize impact, and providing related technical assistance to developers over the past 20 years. In all of the cases above, particularly those on Guam, two to three years was required to plan, permit and construct the mitigation project. The Managgon Hills project involved a major enforcement action that resulted in a fine of $1.3 million when the resort developer filled wetlands, and perennial and intermittent streams at the approximately 1,500 acre Yona project site.

Two projects, the Agana Shopping Center and Saipan Power Center mitigation projects are profiled below. Profiles of the other three projects is possible but were ultimately beyond the scope of this report mainly due to file accessibility and time.

Agana Shopping Center

The Agana Shopping Center (ASC) wetland compensatory mitigation project was initiated in 1996 in support of a permit to fill 6,784.39 square meters of wetland in the Agana marsh on Lot 82-1-5-R10 to accommodate a commercial development. The project fill and mitigation construction was completed and in 2008, the property owner constructed a paved parking lot complete with drainage system which discharges into the mitigation site, lighting and access controls.

Table 1. ASC Mitigation Project Data

Permit No.	PODCO-O1994-SD
Applicant	Gregorio F. Perez Plaza, Inc. DBA Agana Shopping Center (Lot 82-1-5-R10 Hagatna)
Agent	Daniel S. Wooster
Ownership Status	Agana Shopping Center is currently owned by
Final Mitigation Plan	August 1996
Total Area	23,653 square meters
Wetland Resource Type	PEM1F (palustrine, emergent, persistent, semi-permanently flooded). Dominant vegetation was *Phragmites karka*
Assessment of Services and Functions Lost	Flood control, water quality and endangered species habitat.
Wetland Fill Area	6,784 square meters
Mitigation Area	21,900 square meters
Ratio	3:1
Mitigation Type	Enhancement
Services and Functions replaced/gained	Enhanced habitat for endangered and migratory bird species

Mitigation Project Performance Criteria

Final success criteria were established simply as providing habitat for the endangered Mariana common moorhen, maintenance of a 10-foot wide vegetative buffer around the mitigation area, and control of *Phragmites karka* and other woody vegetation. Hydrological success will occur if the site is intermittently flooded.

Specific and measurable objectives include:

1. Enhancement of 21,900 square meters of Hagatna Marsh.
2. 10 foot (minimum) *Phragmites* buffer separating the mitigation area from the project.
3. 10 foot (minimum) *Phragmites* buffer separating the mitigation area from the power easement to the north.
4. Vegetative cover within the mitigation area shall not include *Phragmites*
5. Perennial sedges such as *Eleocharis* will be planted.

Performance criteria include:

1. Removal of *Phragmites* if it becomes established and cover 20% or more of the mitigation site.
2. Removal of *Hibiscus tiliaceus* if it encroaches into the mitigation area.
3. Bottom contours must be as per specification.
4. Water depth shall be maintained within three inches of the depth at the time the project is accepted by the Corps of Engineers.
5. 20% to 50% of the mitigation site must be vegetated with clusters *Eleocharis spp.* or other acceptable wetland plant.

Table 2. ASC Mitigation Performance Criteria

Performance Criteria	[1]Site Observations	[2]Photo Interpretation	[3]Compliance
Enhance 21,900 sq m	Could not determine.	As measured, the area is within 3% of the design area criteria or 650 sq m, which is negligible and within expected margins of error.	FC
10 foot buffer power easement	Buffer in place.	Buffer in place.	FC
10 foot buffer project site	Buffer in place	Buffer in place	FC
No more than 20% *Phragmites*	Dense stands of *Phragmites* observed from central to southern sectors of the area.	*Phragmites* appears to occupy as much as 50% of the mitigation area.	PC
No *Hibiscus tiliaceus*	*Hibiscus* present in significant coverage in central and southern vegetation patches.	Hibiscus as small trees (woody vegetation) was observed at several locations in the central portion of the mitigation area.	PC
Bottom contours as per specification	Could not determine.	Could not determine.	-
Water depth within three inches of original acceptance depth	Could not determine.	Could not determine.	-

[1] Site observations were made on March 27, 2009 by R. Sablan (Sablan Environmental, Inc.)
[2] Satellite imagery from May 21, 2005 Google Earth version 5.0 (2009) and Digital Globe LLC
[3] Compliance determinations categories are defined as follows based on actual observations relative to the stated standard(s)

NC (non-compliance) – no evidence that the standard is met or that the standard was never implemented
PC (partial compliance) – Evidence that the standard was met or implemented but deficiencies are significant enough to warrant maintenance and or corrective actions
FC (full compliance) – Evidence that the standard is fully met

Current Conditions at ASC Mitigation Site

The most apparent problems with the ASC mitigation site is the greater than 20% coverage of Phragmites karka in the central and southern thirds of the site. Additionally, a large number of Hibiscus tiliaceus is present in the same areas. Considering that the site is designed to attract the endangered Marianas common moorhen there is evidence (foot paths and rubbish) of a regular human presence or use of the project buffer area beyond what might be considered appropriate.

Both of the buffers are more than the minimum 10-feet in width and include a mix of Phragmites and other species. The amount of open water appears to be more than adequate to attract moorhen and other migratory species and the *Eleocharis* and other sedges are well established. Finally, the total acreage of enhanced wetland appears to meet the original plan requirement.

ASC mitigation site north central

ASC mitigation site north

Saipan Power Center

The Saipan Power Center (SPC) wetland compensatory mitigation project was initiated in February 1995 in support of a permit to fill 8,782.53 square meters of wetland in the Lao Lao area of Oleai, Saipan. The mitigation project is located on Lot 1998 and is associated with the commercial park development SPC. All of the project fill and most of the commercial development and mitigation construction have been completed. The mitigation area is bounded on one side by vacant land on the same Lot 1998 and on two sides by wetlands, which are an extension of the project wetland and on the fourth side by the commercial development. The boundary on the commercial side is comprised of a retaining wall, cyclone fence and parking lot. There is a wildlife observation platform and an interpretive sign with information on endangered water and other birds and the mitigation project along the retaining wall. A restaurant that was part of the original development plan has not been developed to date.

Table 3. SPC Mitigation Project Data

Permit/File No.	GIN94-021
Applicant	J.C. Tenorio (Joeten) as Saipan Power Center (Lot 1998, Oleai, Saipan)
Agent	Daniel S. Wooster
Ownership Status	Saipan Power Center is owned by Joeten Enterprises, Inc.
Final Mitigation Plan	September 1995
Total Area	21,318 square meters
Wetland Resource Type	PEMIA (palustrine, emergent, persistent, temporarily flooded) and PF03C (palustrine, forested, broad-leaf evergreen, seasonal). PEMIA area is dominated by *Phragmites* and PF03C is dominated by *Hibiscus tiliaceus*.
Assessment of Services and Functions Lost	Flood control, water quality, catchments, storm water channels and bird habitat.
Wetland Fill Area	8,782.53 sq m (2.17 acres)
Mitigation Area	8,782.53 sq m (2.17 acres)
Ratio	1:1
Mitigation Type	Creation and Enhancement
Services and Functions replaced/gained	Enhanced habitat for endangered and migratory bird species

Mitigation Project Performance Objectives

Final success criteria were established and include replacing wetlands lost at a ratio of 1:1 acres and to enhance existing and created wetlands. Enhancement is intended to provide suitable habitat for the endangered Mariana common moorhen (*Gallinula chlorpus guami*), maintenance of a 6-foot wide vegetative buffer around the mitigation area, control of *Phragmites karka,* and construction of three small islands 2-4 feet above the surrounding wetlands. Hydrological success will occur if the site is nearly permanently flooded.

Specific Performance Criteria (taken from the Final Wetlands Mitigation Plan for the Saipan Power Center):

1. Removal of *Phragmites karka* if it becomes established and covers 20% or more of the shallower areas.
2. Removal of any *Hibiscus tiliaceus* or other woody vegetation growth, which may encroach into any open water or wetland area within the site boundary.
3. Open water areas shall be 25-50% vegetated with submergent obligate species (e.g. *Chara spp.* or Potamogeton *spp*.).
4. The contours of the mitigation wetland shall comply with the as-built drawings and design specifications, as shown in the Final Site and Implementation Plan.
5. Three islands will be created in the open water area. The islands will be planted with or managed for emergent vegetation such as *Cyperaceae*. The islands will be oval in shape with overall dimensions at the "top" of the islands of 10 by 5 feet, and with side slopes of IV: 2H. The elevation of the islands shall be lower than the adjacent area shoreline so that they are seasonally flooded as a natural form of vegetation management. If the elevation of the islands is too high, the islands may support mostly facultative or upland species. Likewise, if they are too low they may not support emergent wetland vegetation. Therefore, the elevation of the islands shall be slightly lower than anticipated depth of the water during the wet season. The existing vegetation on the area to be left, as islands shall be removed to a sufficient depth to prevent its reestablishment. This is particularly important if the islands are created from areas that support *Phragmites karka*. There will be no trees or shrubs on the islands. Any trees or shrubs will be removed."

   The islands, as constructed, are shown. The islands were built from excess wetland soils and no *Phragmites* was present prior to their construction. It is likely to take one wet season cycle to determine the exact water level reached during the peak-wet season. The top elevation of the islands shall be adjusted the following dry season.

Interpretive Sign

View looking southeast at SPC mitigation site

Table 4. SPC Mitigation Performance Criteria

Performance Criteria	[1]Site Observations	[2]Photo Interpretation	[3]Compliance
Create/Enhance 8,782.53 sq m	Could not determine.	The southern wetland boundaries could not be distinguished from available imagery; however, the general configuration and size of the larger mitigation and undisturbed upland areas are essentially as originally designed/identified. There is no evidence of encroachment.	-
6-foot Buffer	Buffer in place.	Buffer in place.	FC
No more than 20% *Phragmites* in shallower areas.	*Phragmites* was observed as pervasive (>20%) throughout the site as observed from ground level along the retaining wall.	*Phragmites* could not be positively identified from available imagery although other possible emergent species appear to dominate as much as 50% of the site. No open water is evident in interior portions of the site.	PC
No *Hibiscus tiliaceus* or other woody vegetation	*Hibiscus* and other woody vegetation were not observed within the wetland area.	*Hibiscus* and other woody vegetation are not evident from available imagery.	FC
Open water areas shall be 25-50% vegetated with submergent obligate species (e.g. *Chara spp.* or Potamogeton *spp*.).	Could not determine.	Could not determine.	-
The contours of the mitigation wetland shall comply with the as-built drawings and design specifications, as shown in the Final Site and Implementation Plan.	Could not determine.	Could not determine.	-
Create and maintain three islands as per permit conditions.	Could not determine.	It appears that at least three islands, one large and two smaller islands, are present.	FC
Note: The target hydrological regime was that the site be nearly permanently flooded except during droughty periods.	No standing or open water was observed.	No open water observed in the interior of the site (around islands, etc.)	-

[1] Site observations were made on March 20, 2009 by M. Sablan (Sablan Environmental, Inc.)
[2] Satellite imagery from May 21, 2005 Google Earth version 5.0 (2009) and Digital Globe LLC
[3] Compliance determinations categories are defined as follows based on actual observations relative to the stated standard(s)

Current Conditions SPC Mitigation Site

The most apparent problems with the SPC mitigation site is the greater than 20% coverage of *Phragmites karka* throughout most of the site. On the positive note, there does not appear to be any *Hibiscus tiliaceus* or other woody vegetation encroachment, at least not from vantage points along the retaining wall. A number of birds were heard and seen in an adjacent to the mitigation site. Considering that the site is designed to attract the endangered Marianas common moorhen and open water it is possible that hydrological conditions are less than ideal for the site to function as moorhen habitat year–round in lost years. Figure 2 is from satellite imagery and provides a snapshot view of the site and some of the more prominent features.

Compliance with 1990 MOA on Mitigation under CWA Section 404(b)(1) Guidelines

At the time the compensatory mitigation project were permitted the U.S. Army Corps of Engineers and other federal resource and regulatory agencies were required to comply with the compensatory mitigation provisions of the 1990 MOA. Table 5 summarizes the compliance effort as obtained from relevant permit files, field observations and other project knowledge.

Table 5. Compliance Summary

POLICY		AGANA SHOPPING CENTER EXPANSION	JOETEN SAIPAN POWER CENTER
1990 MOA on Mitigation under CWA Section 404(b)(1) Guidelines			
II.B.	USACE strived to achieve no net loss of values and functions of wetlands	Yes. Enhancement mitigation designed at 3:1.	Yes. Creation and enhancement designed at greater than 1:1 and functional gains expected for endangered species habitat
II.C.	Mitigation is appropriate in scope and practicable	Initially yes. However, current mitigation requirement may involve significant disturbance to open water and emergent vegetation to access and remove encroaching species	Yes.
II.C.3.	Mitigation adjacent or II.C3. Contiguous to discharge site	Yes, contiguous.	Yes, contiguous.
II.C.3.	Preference for in-kind mitigation and hierarchy of mitigation types applied	No. Filled wetlands were low function compared to mitigation.	No. Filled wetlands were low value/function compared to mitigation.
II.C.3.	Determine likelihood of success	Yes. Component of mitigation plan.	Yes. Component of mitigation plan.
III.B	Functional value assessed using generally recognized scientific assessment techniques or professional judgment or as an alternative, a minimum ratio of 1 to 1 acreage replacement was required.	Yes.	Yes.
III.D.	Monitoring for compliance with permit conditions	Yes.	Yes.
III.E.	Mitigation requirements covered as special conditions to the Corps permit	Yes.	Yes.

References

Dames & Moore 1991. *Non-Federal Wetland Mitigation Plan and Base Map for Manenggon Hill Development*, Nov. 13, 1990, Revised Nov. 27, 1991. 14pp, 2 maps.

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Wooster, D.S 1996. *Final Wetland Mitigation Plan for The Agana Shopping Center Expansion*. Gregorio F. Perez Plaza, Inc. DBA Agana Shopping Center. 12pp.

Wooster, D.S. 1995, *Final Wetland Mitigation Plan for the Saipan Power Center*. Joeten Enterprises, Inc. 12pp, 3 maps.

APPENDIX B

Candidate Compensatory Mitigation Projects Proposals

Candidate Compensatory Mitigation Projects Proposals

Watershed Restoration

Project Type: Restoration/Enhancement
Project Location(s): Apra, Tumon, Tamuning, Piti, Asan, Fonte, Southern, Agat, Togcha, Ylig, Pago, Ugum
Project Objectives: Improve water quality and restore forest habitat
General Description: The Department of Agriculture has identified watersheds that flow into waters that host marine preserves and other valuable marine resource areas. Most of the "restoration" projects would involve the planting of native seedlings in grasslands and badland areas as well as in fertile valley areas of watersheds. Other important elements of a successful watershed restoration project include but are not limited to animal control, monitoring and continuous watershed management.

Watershed Management Plans

Project Type: Alternative
Project Location: Island-wide
Project Objectives: Provide practical and achievable management for water quality and habitat improvement
General Description: Watershed management plans identify land-based sources of pollution, their causes and project or measures that can be implemented to resolve causes and related problems. Management plans assign responsibility, identify financial resources and collaborative approaches to undertake projects over the long-term. Management plans also require that priorities be set with practical steps to achieve objectives. Watershed plans are integral to the "watershed approach" to managing mitigation projects, a major element of federal mitigation policy and guidance.

Conservation Area Management Plans

Project Type: Alternative
Project Location: Anao, Cotal, and Bolanos Conservation areas
Project Objectives: Provide practical and achievable comprehensive resource management
General Description: Conservation management plans identify objectives for the sustainable management of plant, habitat and animal species and a suite of actions or projects that can be implemented to achieve stated objectives. Management plans assign responsibility, identify available or potential financial resources and collaborative approaches to undertake projects over the long-term. Conservation management plans also require that priorities be set and in some cases allow controlled compatible uses to occur with other conservation efforts. A good plan can be the most important impetus to attract and justify sustained funding.

Create/Expand Marine Preserves

Project Type: Preservation and enhancement
Project Location: Guam or federal submerged lands
Project Objectives: Protect Marine Resources
General Description: New or expanded marine preserves could be established to offset the loss of marine resources from public purpose projects such as wharves, piers, and other harbor and shipping infrastructure improvements. Marine preserves could be designated in highly functional and prime coral reef areas on military or other submerged. Any such proposal to establish preserves should include provision for active preserve management.

Coral Transplanting

Project Type: Restoration/enhancement
Project Location: Guam and federal submerged lands
Project Objectives: Accelerate coral recruitment and reef structure
General Description: Areas where coral is lost from temporary construction activities maybe reseeded from cultured coral stock. Other important elements of coral transplanting effort include removal or other mitigation of environmental constraints such as accumulated sediment, debris and other physical limitations and ensuring water quality can be maintained.

Mangrove Restoration

Project Type: Restoration/enhancement
Project Location: Apra Harbor
Project Objectives: Restore or reestablish mangrove areas
General Description: Areas in the Apra Harbor complex that historically had mangrove stands could be restored. Areas of general fill, industrial debris that are not critical to port operations and are adjacent to existing mangrove areas could be restored through planting. Research should reveal where historical mangroves existed and could be used as a baseline to assess the potential for restoration.

Invasive Species Control

Project Type: Restoration/enhancement
Project Location: Island-wide
Project Objectives: Reduce invasive species impacts on native habitat
General Description: Invasive species control can take many forms from the placement of barriers around habitat, trapping, biological control, and related measures. While large scale control is expensive and difficult to accomplish incremental control approaches offer promise.

Legal Assistance

Project Type: Alternative
Project Location: Guam Department of Agriculture, Guam EPA, Bureau of Statistics and Plans
Project Objectives: Improve regulatory programs that protect natural resources
General Description: GovGuam resource and regulatory agencies do not receive consistent/dedicated legal assistance to revise and update rules, draft legislation, write and negotiate agreements or manage compliance and enforcement cases. One-off projects as well as long-term assistance programs are needed and can be scoped by the respective agency.

Stormwater Management

Project Type: Restoration/enhancement
Project Location: East and West Hagatna Bays and Tumon Bay
Project Objectives: Improve water quality
General Description: The most densely urbanized areas along Guam's western coast has long been in need of comprehensive stormwater management. Nonpoint pollution originating from most of Tamuning, especially the areas adjacent to Marine Corps Drive drain into Hagatna Bay. These areas include residential, commercial and industrial land uses. Similarly, Tumon Bay is subject substantial pollutant loading both from localized non-point sources and regional groundwater contributions. Guam EPA's UIC program is a good foundation upon which to build a program that assesses historical pollution sources and the anticipated stormwater manual regulations will regulate future development. A stormwater management in each basin should serve to fill any planning and regulatory program gaps.

Ungulate Control

Project Type: Restoration/enhancement
Project Location: Island-wide all habitat types
Project Objectives: Restore habitat and reduce erosion
General Description: Effective ungulate control projects are time consuming and on a large scale likely require a combination of methods. Control projects may employ fencing and barriers, live trapping, professional shooting with or without bait stations or dogs, public hunting and toxicants [wild pigs (*Sus scrofa*)]. Other methods such as fertility and biological controls are being studied. The Guam National Wildlife Refuge has an active ungulate control effort underway and the Navy is undertaking an Environmental Assessment and Management Plan for the sustained reduction of introduced ungulates on the Overlay Refuge lands of the Naval Ordinance Annex and Naval Communications Station, Guam. Non-native Philippine deer (*Cervus mariannus*), wild pigs, and feral carabao or water buffalo (*Bubalus bubalis*) continue to cause significant erosion, severely degrading endangered species habitat, and damage to facilities and infrastructure. The primary project goal is to devise a practical long-term reduction program for these species.

Park In-holding Acquisition

Project Type: Preservation
Project Location: Territorial Seashore Park
Project Objectives: Expand Park holdings and eliminate potential for incompatible land uses
General Description: This simply a land acquisition project and involves identifying opportunities for acquisition and negotiating the transaction. Any potential permittee could undertaken this project type although private interest have more flexibility in framing the terms of a purchase agreement. Once purchased, in-holdings could be deeded to the government of Guam.

Government Sponsored Mitigation Bank

Project Type: Alternative
Project Location: Government lands
Project Objectives: Establish and operate a government bank, conservation trust or in-lieu fee program (sponsorship program)
General Description: A private or non-profit resource management entity could enter into a agreement with the government of Guam to develop and operate a sponsorship program on behalf of the government. The program would at a minimum sponsor government of Guam projects, could sponsor federal military buildup projects and even certain private projects. The Chamorro Land Trust Commission (CLTC) would have substantial involvement in this proposal considering they are the land owner stakeholder for both terrestrial and submerged lands.

Sasa Bay Ecological Reserve Area (ERA)

Project Type: Preservation
Project Location: Sasa Bay (Apra Harbor)
Project Objectives: Integrate/expand Sasa Bay resource management and protection
General Description: This project would establish Sasa Bay as a new Ecological Reserve Area (ERA) on Navy submerged, tidal and shoreline lands to compliment the government of Guam's Sasa Bay Marine Preserve. The area could be jointly managed.

Archaeological Sites

Project Type: Restoration and Preservation
Project Location: Island-wide
Project Objectives: Preserve important archaeological sites and restore and preserve sites that have been degraded.
Project Description: Projects in this category are located on either public or private lands. Preserving site on public lands should be the easiest to accomplish mainly and private preserves either managed privately, under public-private partnership or transferred to government ownership and management would involve much effort and dedicated funding. Areas that are suggested as priority and or of high value include but are nit limited to Pagat caves in Yigo, Hilaan to Ague areas in Dededo, Mount Chachao, Mount Alutum or Mount Tenjo historic sites outside of the War in the Pacific National Historic Park. Additional information about priority candidate site may be obtained by the Guam Historic Preservation Office.

Other Conservation Actions

Project Types: Creation, Restoration, Enhancement, and Preservation
Project Location: Island-wide
Project Objectives: Support the sustainable management of habitat and species of various status designations
General Description: The Guam Comprehensive Wildlife Conservation Strategy (GCWCS) lists no less than 44 conservation actions some of which could be formulated into mitigation. Permittees are encouraged to discuss potential project ideas with the Department of Agriculture and should be guided, at least initially, by the conservation actions listed in chapter 4 of the GCWCS. The action categories as of 2005 are list below.

Terrestrial
Legal Protection for Habitats and Wildlife
Habitat Assessment and Rehabilitation
Captive Breeding and Translocation
Control of Limiting Factors
Reintroduction and Restoration of SOGCN to Designated Habitats

Aquatic
Freshwater
Coral Reef Fisheries and Habitat
Seas Turtles
Marine Mammals

Public Awareness
Development of a Public Conservation Awareness Program
Recreation Activities within Conservation Areas

APPENDIX C

Checklist for Guam Aquatic Resource Compensatory Mitigation Proposal

Checklist for Guam Aquatic Resource Compensatory Mitigation Proposals

The following information will normally be required for the review and evaluation of compensatory mitigation proposals. The following information requirements relate exclusively to review of mitigation proposals. Other information may be needed as part of the a local or federal permit process (Wetland Development, Seashore Clearance, Nationwide Permit, or the Individual Permit process). Other than requirements to provide compensatory mitigation plans, permit requirements are not addressed by this checklist. Please reference the applicant name, project title, and applicable permit/file number on all submittals. In the following listing a blackened list box means the indicated information is needed to complete the decision making process for your proposal.

Tabulated means that the data is presented in tabular format (i.e., rows and columns).

C*ross tabulated* means that the data is presented in tabular format with the columns representing types (impact or mitigation) and the rows representing the categories of impacted areas.

T*ype of impact* means the dominant effect. For examples: flooded, cleared, drained, excavated, filled, shaded.

C*ategory of impacted area* means the dominant type of aquatic environment affected by the activity. For examples: Emergent marsh, coral reef, mangrove swamp, Hagåtña River.

T*ype of mitigation* means the dominant compensatory mitigation. For example: creation, restoration, enhancement, or preservation.

Basics. The following marked items are required.

- ☐ Applicant or permittee's name, address, and phone number.
- ☐ If an agent has been authorized, the agent's name, address, and phone number.
- ☐ Primary and secondary contact person's name and phone number.
- ☐ Names, addresses, and phone numbers for all parties responsible for mitigation and monitoring.
- ☐ The application or permit number for which the mitigation is proposed.
- ☐ The nearest waterway to the proposed mitigation site.
- ☐ The nearest town or city to the proposed mitigation site.
- ☐ The municipality where proposed mitigation will take place.
- ☐ A brief narrative description of the proposed mitigation, project location and the purpose of the project.

Certifications and Signatures. The following marked items are required.

- ☐ Signature of applicant and the date signed.
- ☐ Signature of authorized agent, if any, and the date signed.
- ☐ Signed statement from the applicant authorizing the agent to act for the applicant.

- ☐ Certification that the applicant possesses the authority to undertake the proposed activities.
- ☐ Certification that the applicant or agent is familiar with the information contained in the mitigation proposal, and believes such information is true, complete, and accurate.

Maps. A map identifying the location of the mitigation site must be provided on an 81/2 x 11" portion (or copy) of a USGS Quadrangle map. The name of the Quadrangle must be shown. A local road map showing the site must also be provided. All maps must have title blocks similar to the other drawing sheets. The location maps must show roads leading to the site and must include the name or number of these roads. The site latitude and longitude must be annotated on the maps. Satellite or high altitude aerial photos are useful but not required.

General Drawing Requirements. The following marked items are required.

- ☐ Drawings must be provided on not less that 8.5 x 11 inch or greater than 11.5 x 17 paper.

Each sheet must include:

- ☐ a title block;
- ☐ a north arrow (not required for cross section views);
- ☐ an unused margin of no less than 0.25 inch and no greater than 2 inches;
- ☐ an appropriate graphic scale (where reasonable or necessary).
- ☐ Plans must be drawn with ink. All drawings and writings must be clear, readable, and reproducible using standard (non-color) office copy machines. Do not duplex drawings.
- ☐ Drawings must be in black and white only. Do not use colored inks or pencils. Instead use shading, hatching, or other annotated graphic symbols.
  A legend must be shown identifying each type of graphic symbols (e.g., cross-hatching, shading) used.

Checklist for Compensatory Mitigation Proposals

- ☐ Drawings must have all relevant dimensions shown for each view. It is desirable that a graphic drawing scale be shown. Do not use ratio scales (e.g., 1" = 80 ') on plans, which will be reduced because ratio scaling will give inaccurate information on the reduced copy. Mark and label all important dimensions.
- ☐ The mitigation site latitude and longitude must be shown on the mitigation plans.
- ☐ If the plan involves dredging in navigable waters, the drawings must include:
- ☐ the method of dredging;
- ☐ the site and plans for disposal of the dredged material;
- ☐ a description of the type, composition and quantity of the material to be dredged.
- ☐ If the plan includes the discharge of dredged or fill material into Waters of Guam or the transportation of dredged material, the drawings must include;
- ☐ the source of the material;
- ☐ a description of the type, composition and quantity of the material; the method of transportation and disposal of the material;
- ☐ the location of the disposal site.

- ☐ A title block is required for each drawing sheet (including maps). The title block must include the applicant's name, project name, project location, drawing date, drawing number (e.g., sheet __ of __), and sufficient unused space for future revision dates and a 12 digit tracking number.

Plan View and Cross-Section View Drawing Requirements. Plan and elevation drawings are required showing the general and specific site location and character of all proposed activities, including the size relationship of the proposed work to the size of the impacted aquatic area and depth of water. The following items are required.

- ☐ All mitigation areas must be shown (enhancements, creations, restorations, etc.).
- ☐ Plan views of the proposed mitigation must be included. The mitigation plan views must show all wetlands/marine resources in the mitigation area, areas proposed to be filled or modified as part of the mitigation activity, the mitigation boundaries, the property and/or lot boundaries, roadways, structure locations, location of pertinent water contours (e.g., MHW, MLW, OHW), and other relevant information.
- ☐ All wetland/marine resource areas within the project boundaries (avoided, impacted, or mitigated) must be shown.
- ☐ In tidal waters, show the direction of tidal ebb and flow.
- ☐ In non-tidal waters, the direction of all nearby river or stream flows must be shown.
- ☐ For non-preservation mitigation areas, cross section views must be shown through each mitigation area.
- ☐ Existing and proposed ground surface contours must be shown on each cross section view relative to an appropriate reference elevation.
- ☐ Contour and datum elevation references must be shown as follows: In tidal waters, show the existing and proposed water depths and land elevations relative to the nearby mean low water (MLW) contour or elevation.
- ☐ In tidal waters, show the MLW and mean high water (MHW) contours on all views.
- ☐ In non-tidal, navigable waters (Federally navigable), existing and proposed water depths and land elevations must be shown relative to mean sea level (MSL).
- ☐ In non-tidal, non-navigable waters (Federally non-navigable), existing and proposed water depths and land elevations may be shown relative to the nearby ordinary high water (OHW) contour, or to MSL.
- ☐ In non-tidal waters, the OHW contour must be shown on all views.
- ☐ Show the mean high tide line of all affected and all adjacent tidal waterbodies.
- ☐ Show the OHW line of all affected and all adjacent non-tidal open surface waterbodies (e.g., streams, lakes).

Mitigation Proposals

- ☐ All proposed or existing retaining structures (e.g. bulkheads) for dredged or fill material must be shown.
- ☐ Each proposed structure, work, fill, or excavation must be clearly shown and located with respect to either a plat line or some fixed immovable object.

☐ For projects, which encroach upon or lie adjacent to a site on which the Federal government has an easement to either deposit dredged material or excavate to improve channel operations, the drawings must clearly show the extent of encroachment or indicate if none is intended.

Quantification of Impacts. The following marked items are required. (applicable definitions are given below)

☐ Total volume of fill tabulated by category of impacted areas. This tabulation must be shown on the drawings.
☐ Total volume of dredging tabulated by category of impacted areas and shown on the drawings.
☐ Total area (acres) adversely affected by the permitted activities, cross tabulated by type of impact and by category of impacted areas. This tabulation must be shown on the drawings. Total area (acres) adversely affected by the proposed mitigation, cross tabulated by type of impact and by category of impacted areas. This tabulation must be shown on the drawings.
☐ Total area (acres) positively affected by the proposed mitigation, cross tabulated by type of mitigation and by category of impacted areas. This tabulation must be shown on the drawings.

Other. The following marked items are required.

☐ Plans and detailed information regarding the work for which the proposal provides compensatory mitigation.
☐ A draft restrictive covenants document.
☐ A mitigation monitoring plan.
☐ A plan for documenting the baseline conditions of the mitigation site.
☐ A narrative description of the existing conditions of all areas to be affected by the proposed mitigation.
☐ A narrative discussion of the key elements of the proposed mitigation plan.
☐ A schedule showing earliest start and latest completion dates for all significant activities.
☐ A listing of measurable success factors with quantifiable criteria for determining success.
☐ Definitions for all success factors and other significant terms used in the plan.
☐ Description of the equipment, materials, and methods required for execution of the plan.
☐ A management plan for any future maintenance of the mitigation site.
☐ A wetland delineation of the proposed mitigation site must be accomplished and the existing wetland boundaries must be shown on the proposed plans. If a delineation has already been verified by this office, you must provide the identification number cited in the verification letter or a copy of the letter.
☐ To evaluate your proposal it has been determined that cost information will be required. All cost estimates must include detailed cost breakdowns for each element in the mitigation plan with quantity take-offs, unit prices, contingency allocations, total costs, etc. All costs must be in current (present value) dollars. See the Project Specific notes given below or in the accompanying letter regarding the required cost information.
☐ To evaluate your proposal a narrative explanation must be submitted explaining the proposed schedule for the mitigation work. In addition, you should prepare and submit a Critical Path Method (CPM) or Program Evaluation and Review Technique (PERT) analysis for the mitigation work and related aspects of the overall project.

- ☐ To evaluate your proposal it has been determined that larger sized plans will be needed for review. Please submit a complete drawing set on paper sized no smaller than 18 x 24 inch and no greater than 30 x 42 inch. Copies of the larger sized plans must also be provided to the indicated agencies marked below.
- ☐ It has been determined that certified topographic maps or drawings will be needed showing the contours and elevations of the mitigation area. The submitted maps or drawings must show relevant information such as the locations of plantings, type of plantings, and other key elements of the mitigation plan. Copies must be provided to the agencies below.

APPENDIX D

Summary of Mitigation Regulations and Guidance

Summary of Mitigation Regulations and Guidance

The following descriptions of laws, regulations, and policies (regulations) cover all aspects of compensatory mitigation under U.S. Federal and Guam law. Most of these regulations address compensatory mitigation for the loss of aquatic resources. Several regulations apply only to federal actions, which may affect aquatic or terrestrial resources. Overall, Guam law offers very little in the way of formal mitigation policy and as a matter of practice local resource agencies have traditionally supported federal permitting efforts and participated in mitigation planning and project development.

Mitigation regulations have developed both from major legislation such as the National Environmental Policy Act of 1969 (NEPA) and from agency policy and guidance where statutory frameworks may have been lacking, memoranda of agreement (MOA) are a good example of the type of guidance that prevailed for many years. Generally speaking there are at least ninety (90) state, regional, and national compensatory guidance documents throughout the United States covering topics from mitigation planning and banking to bond financing and restrictive covenants (Wilkinson and Thompson 2006).

Guam Water Quality Standards

22 GAR GEPA DIV. II Chapter 5, Appendix F of the Guam Water Quality Standards includes nine (9) mitigation policy statements for aquatic resource losses. The policy statements were first included in the standards in 1996. These policy statements require a hierarchy of mitigation, support pre-application consultations, coordination with Federal and local agencies, mitigation plans, monitoring, support "pilot studies" on mitigation methods, support development of mitigation banks, provide site protection through transfer of title to Guam resource management agencies, and that preservation without enhancement is not acceptable as compensatory mitigation.

Executive Order 13089 on Coral Reef Protection

Executive Order 13089 establishes policy for all Federal agencies whose actions may affect U.S. coral reef ecosystems. Federal agencies must identify their actions that may affect U.S. coral reef ecosystems and utilize their programs and authorities to protect and enhance the conditions of such ecosystems. The agencies are also charged, with some exceptions, to ensure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystems.

Section 3 of the EO goes on to outline key Federal agency responsibilities when those agencies' actions would affect U.S. coral reef ecosystems, including "measures needed to research, monitor, manage, and restore affected ecosystems, including, but not limited to, measures reducing impacts from pollution, sedimentation, and fishing".

Section 5 (c) identifies duties of the U.S. Coral Reef Task Force to include *Conservation, Mitigation, and Restoration.* The Task Force is required to develop, recommend, and seek the implementation of measures to reduce and mitigate coral reef ecosystem degradation and to restore damaged coral reefs.

1969 National Environmental Policy Act enacted

The National Environmental Policy Act (NEPA) [42 U.S.C. 4321 et seq.] was signed into law on January 1, 1970. The Act establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment, and it provides a process for implementing these goals within the federal agencies. The Act also establishes the Council on Environmental Quality (CEQ). NEPA requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

To meet NEPA requirements federal agencies prepare a detailed statement known as an Environmental Impact Statement (EIS). EPA reviews and comments on EISs prepared by other federal agencies, maintains a national filing system for all EISs, and assures that its own actions comply with NEPA. The regulations for implementing NEPA include provisions for the mitigation of significant impacts.
U.S. Environmental Protection Agency

1972 Clean Water Act Section 404 enacted

Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the United States. The Rivers and Harbors Act of 1899 defined navigable waters of the United States as “those waters that are subject to the ebb and flow of the tides and/or are presently used, or have been used in the past, or maybe susceptible to use to transport interstate or foreign commerce." The Clean Water Act built on this definition and defined waters of the United States to include tributaries to navigable waters, interstate wetlands, wetlands, which could affect interstate or foreign commerce, and wetlands adjacent to other waters of the United States.

The program is jointly administered by the U.S. Army Corps of Engineers and the Environmental Protection Agency. The Corps is responsible for the day-to-day administration and permit review and EPA provides program oversight. The fundamental rationale of the program is that no discharge of dredged or fill material should be permitted if there is a practicable alternative that would be less damaging to our aquatic resources or if significant degradation would occur to the nation’s waters. Permit review and issuance follows a sequence process that encourages avoidance of impacts, followed by minimizing impacts and, finally, requiring mitigation for unavoidable impacts to the aquatic environment. This sequence is described in the guidelines at Section 404(b)(1) of the Clean Water Act.
US Fish and Wildlife Service

1978 NMFS Habitat Protection Policy

NMFS adopted their Habitat Protection Policy on June 8, 1978, and revised this policy on October 25, 1991. This policy follows a general theme of avoidance, minimization, and compensation. The main emphasis of this policy is that NMFS will not recommend approval or authorization of any

project or activity that will damage any existing or potentially restorable habitat of living marine, estuarine, or anadromous resources. Under circumstances where habitat resource damages can be compensated, exceptions are allowed but certain requirements must be followed. The first is that the project will incorporate all feasible modification and construction techniques to minimize adverse environmental impacts. Where there are unavoidable adverse impacts, an acceptable combination of habitat restoration, enhancement or other suitable mitigation will be adopted in the following order of preference: (a) on-site and in-kind, (b) off-site and in-kind, (c) on-site and out-of-kind, and (d) off-site and out-of-kind. Wherever the mitigation occurs, the post-project habitat value shall be equal to or greater than pre-project habitat value.

The post-project habitat value will be based on the contribution of the habitat to the support of commercial and recreational fisheries, fishery resources, certain marine mammals, and/or endangered species. Finally, the policy specifically identifies examples of off-site, out-of-kind compensatory mitigation for coral reef habitats such as the deployment of artificial reefs, creation of hard substrate for coral colonization, establishment of refuge areas to protect coral reef habitat in perpetuity, and monitoring to determine the success of the mitigation. (Bentivoglio 2003)

1980 Section 404 (b)(1) Guidelines

The purpose of the Guidelines is to restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material. Critical to achieving this goal is the precept that dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact on a given ecosystem.

From a national perspective, the degradation or destruction of special aquatic sites, such as filling operations in wetlands, is considered to be among the most severe environmental impacts covered by these Guidelines. The guiding principle should be that degradation or destruction of special sites may represent an irreversible loss of valuable aquatic resources.

Some of the main components of the Guidelines include requirements that four conditions be met to satisfied to determine that a proposed discharge of dredged or fill material complies with the guidelines. The Guidelines also describe the physical and chemical components of a site and provides guidance as to how proposed discharges of dredged or fill material may affect these components. Other parts of the Guidelines detail the special characteristics of particular aquatic ecosystems in terms of their values, and the possible loss of these values due to discharges of dredged or fill material. Various evaluation and testing procedures are described for making factual determinations. The current Guidelines are regulatory as opposed to advisory.

1986 Water Resources Development Act (PL 99-662) (WRDA)

Section 906 provides guidance on fish and wildlife mitigation. For new civil works projects, necessary mitigation measures shall be undertaken before or concurrently with project construction, as determined appropriate by the Secretary of the Army. Feasibility reports must contain specific plans to mitigate fish and wildlife losses, unless a determination is made that they

would be negligible adverse impacts. Section 906(e) provides that for any project measures recommended to enhance fish and wildlife, the first costs of such enhancement shall be a Federal cost where the benefits are determined to be national. These benefits are specifically extended in a number of cases such as; species of national economic importance, threatened or endangered species, and activities on National Wildlife Refuges. This legislation incorporated the design and cost estimates of mitigation into civil works project planning. (Bentivoglio 2003)

1990 Memorandum Of Agreement (MOA) Between Environmental Protection Agency and the Department of the Army on the Determination of Mitigation under the Clean Water Act Section 404 (b)(1) Guidelines.

Until 2008 this MOA articulated the policy and procedures to be used in the determination of the type and level of mitigation necessary to demonstrate compliance with the Clean Water Act (CWA) Section 404(b)(1) Guidelines ("Guidelines"). Since the final rule on Compensatory Mitigation for Losses of Aquatic Resources (2008) the provision addressing the amount type and location of compensatory mitigation and treatment of “preservation” as mitigation no longer apply. All other provisions of the MOA still apply. The MOA also expresses the explicit intent of the Army and EPA to implement the objective of the CWA to restore and maintain the chemical, physical, and biological integrity of the Nation's waters, including wetlands.

This MOA only applies to the Section 404 Regulatory Program and is written to provide guidance for agency personnel on the type and level of mitigation required to demonstrate compliance with requirements in the Guidelines. (Bentivoglio 2003)

1998 Executive Order 13089 on Coral Reef Protection (EO 13089)

Directs all Federal agencies whose actions may affect U.S. coral reef ecosystems to: identify their actions that may affect U.S. coral reef ecosystems; utilize their programs and authorities to protect and enhance the conditions of such ecosystems; and to the extent permitted by law, ensure that any actions they authorize, fund or carry out will not degrade the conditions of such ecosystems. (Bentivoglio 2003)

1999 Corps and EPA Memorandum to the Field (Memorandum) entitled Special Emphasis Given to Coral Reef Protection under the Clean Water Act, Marine Protection, Research, and Sanctuaries Act, River and Harbors Act, and Federal Project Authorities.

This Memorandum was released in response to EO 13089 and was intended to clarify and reemphasize the protection afforded the Nation’s valuable coral reef ecosystems under the above-mentioned authorities. Regarding Section 404 of the CWA, the Memorandum states that there shall be no discharge permitted if there is a practicable alternative available that would have less adverse environmental impacts, with the presumption that discharge at an alternate site outside of special aquatic sites (including coral reefs) is less damaging to the aquatic ecosystem. Consistent with the Guidelines, it is the permit applicant’s responsibility to demonstrate that there is no practicable alternative to filling a special aquatic site. In relation to denial of permits in areas where

there are coral reefs, the Memorandum states “It is important to recognize that there are circumstances where the impacts of the proposed activity are so significant that even if alternatives are determined not to be available, the permit should be denied regardless of compensatory mitigation that is proposed.” (Bentivoglio 2003)

2000 National Action Plan to Conserve Coral Reefs

This document was produced by the National Oceanic and Atmospheric Administration (NOAA), in cooperation with the U.S. Coral Reef Task Force (Task Force), to fulfill the requirements of the Coral Reef Conservation Act of 2000 (CRCA) (P.L. 106-562; 16 U.S.C. 6401 et seq.) and help track implementation of *The National Action Plan to Conserve Coral Reefs* (U.S. Coral Reef Task Force 2000). The Task Force National Action Plan was the first national blueprint for U.S. action to address the loss and degradation of U.S. and international coral reef ecosystems. Based on extensive input from government and non-government organizations, scientists, resource managers, stakeholders and the public, the National Action Plan: (1) identified key threats and issues driving the loss and degradation of coral reefs, (2) established thirteen major goals to address these threats, and (3) outlined objectives and priority actions needed to achieve each goal. *Executive Summary - 2000 National Action Plan to Conserve Coral Reefs*

APPENDIX E

Department of Parks and Recreation General Guidelines
for
Archaeological Burials

DEPARTMENT OF PARKS AND RECREATION
GENERAL GUIDELINES
FOR
ARCHAEOLOGICAL BURIALS

I. INTRODUCTION

Existing laws and executive orders of the government of Guam have spelled out general obligations with respect to archaeologically discovered burials. These general obligations occasionally need interpretation as to how they apply to specific circumstances of projects and competing obligations. These guidelines are issued for the purpose of assisting in consistent application of these obligations in the many circumstances, which arise.

II. GENERAL REQUIREMENTS

Since several laws and executive orders specifically address human remains in archaeological sites, the following excerpts from those laws state the major general requirements.

"Human Remains shall receive respect and dignity when discovered." (Public Law 20-151)

"Disturbance of Burials shall be avoided whenever possible, but when necessary shall be at the expense of the developer unless otherwise exempted, using procedures and standards acceptable to the Guam Historic Preservation Officer." (Public Laws 20-151 and 21-104)

"That Burials be left in place undisturbed to the extent practical." (Executive Order 89-24)

"…all government agencies…and developers…[shall] make reasonable and good faith efforts in consultation with the Guam Historic Preservation Officer to locate such burials that may be affected by their actions or developments early in the planning process." (Executive Order 89-24)

"If such burials cannot practically be left undisturbed, removal shall be done with proper archaeological methods and documentation." (Executive Order 89-24)

"Anthropological review of human remains shall be at a minimal level and only for the time authorized by the Guam Historic Preservation Officer prior to reburial." (Public Law 20-151)

"Scientific, medical or other study shall be restricted to the minimum necessary to ascertain cultural or ethnic associations, and to address significant research questions. (Executive Order 89-24)

"The public has a right to the knowledge to be derived and gained from a scientific study of these resources, and that therefore it is the purpose of this part to provide that activities for the preservation, excavation, study, and exhibition of the territory's archaeological resources be undertaken in a coordinated and organized manner for the general welfare of the public as a whole." (Public Law 12-126)

"In the absence of expressed preferences otherwise by persons with ascertainable relationships to the specific remains involved or other justifying circumstances, re-interment in an appropriate and respectful manner is to be considered the normal treatment of human remains removed from their original burial locations. " (Executive Order 89-24)

"…any…government agency…shall deliver [human remains which are not held for archaeological, scientific or other valid purposes] to the Guam Historic Preservation Officer, Department of Parks and Recreation all such human remains for proper reburial." (Public Law 21-104)

"Any person who disturbs properties of prehistoric or historic significance *or* removes such properties from their sites without approval or concurrence from the Historic Preservation Office *shall* be guilty of a felony of the third degree." (Public Law 29-147)

"After a Certificate of Approval *or* permitting approval has been issued for a requested action as enumerated in subsection (a), an unauthorized disturbances of prehistoric *or* historic properties *shall* be subject to fines of up to Fifty Thousand Dollars ($50,000.00) and/or imprisonment of up to three (3) years for each violation." (Public Law 29-147)

"….there is hereby created, within the Department of Parks and Recreation, the *"Historic Preservation Archaeological Mitigation Fund",* which *shall* be a fund….Any and all funds generated through fines imposed by the Historic Preservation Office of the Department of Parks and Recreation *shall* be deposited into the Historic Preservation Archaeological Mitigation Fund. ….(b) Expenditures of the Fund *shall* be restricted to the following areas, and for the following purposes: (1) the contracting of archaeological services as determined by the Historic Preservation Office; (2) public education and awareness activities; and (3) the purchase of supplies, materials and equipment to support the activities outlined in Subsections (1) and (2) above." (Public Law 29-147)

III. SPECIFIC POLICY GUIDANCE

A. Reasonable and good faith efforts to locate such burials

In advance of obtaining permits for clearing, grading, building, or for developments and projects of many kinds, an agency or developer is generally required to assess what historic properties, including prehistoric burials, may be within the area of potential effect for the project.

B. Intact Surface Features

Where surface features of prehistoric sites are still relatively intact, potential burial areas consistent with observed mortuary practices can be defined as areas where disturbances are to be avoided to the degree possible, even without direct confirmation of the actual presence of burials in these areas. Such areas would include:

- Areas enclosed within Latte stones; and
- Areas immediately seaward of Coastal Latte sets.

In addition to such areas, burials may occur in prehistoric sites in locations not predictable from surviving surface features and present knowledge. Testing of other areas within known sites for direct confirmation of the presence of burials may be needed if these areas are proposed for potential subsurface disturbance.

C. Disturbed Coastal Sites

Where coastal prehistoric sites have been disturbed, burials may occur but will not be evident based on current surface appearances of the site. In such instances, subsurface testing to determine areas of greatest likelihood of burials, if any, can be considered reasonable and good faith effort to locate burials. The exact methods of testing should be adapted to the circumstances of the site, but comprehensive enough to provide reasonable confidence that clusters of burials have been found if they exist.

D. Disturbed Non-Coastal Sites

At non-coastal archaeological sites with disturbed surface features, a site will be considered as more likely to contain burials if it also contains or contained Latte, or in the absence of Latte an extensive area of midden (larger than 10 meters by 10 meters). At such areas, subsurface tests to locate potential burials will be considered reasonable.

E. Smaller Non-Coastal Areas

Smaller non-coastal midden areas and pottery concentrations will not be considered as likely burial sites unless future research shows a definable pattern of burial inclusions in such areas.

F. For all projects

Prior review at the Historic Resources Division (HRD) of a project proposal and implementation of measures approved by the HRD for the search for historic properties of all kinds, including archaeological burials, shall be considered reasonable and good faith effort on the part of the agency or developer carrying out that search.

G. Avoiding Disturbance Where Possible

While all human remains should receive respect and dignity when discovered, the terms of the law are specific in requiring avoidance of disturbance of burials. In archaeological sites, it is not uncommon to discover isolated fragments of bone or teeth that have apparently been mixed in the general midden, and not part of a specific burial feature or deliberate placement in the past. The Department does not believe the intent of the law is to require users of land to attempt to leave in place these isolated bits of human remains, which may occur in archaeological deposits. For purposes of the burden of avoidance, a burial is any archaeological feature containing human remains in which the circumstances of the feature make it reasonable to infer that the remains were deliberately placed there during the historic or prehistoric past.

Burials may contain only parts of a complete skeleton, fragmented bones, bones or fragments mixed from several individuals, or bones removed from their original place of interment to a secondary one. However, the presumption of deliberate placement within a feature shall determine the treatment of the remains as a burial, the disturbance of which is to be avoided. Isolated remains, disarticulated remains in no discernible pattern or feature shall not be considered as burials, but are still to be accorded respect and dignity.

H. Unprovenienced Human Remains

Human Remains found where they cannot be accurately assigned an archaeological context, or otherwise situated so that they cannot be considered burials, shall receive respect and dignity through:

- Careful retrieval and documentation.
- Subsequent interment with any burials also disturbed by the project in question, if any.

I. Circumstances justifying disturbance or removal of a burial.

1. No Feasible Alternative

Where there is no feasible and prudent alternative to a project design that entails the disturbance of archaeological burials, the project may be approved so long as the project includes the orderly retrieval, documentation, and reburial of the remains necessarily disturbed by it. The burden of showing no feasible or prudent alternative to the disturbance is on the developer or agency proposing the project.

2. Previously Unlocated Burials

Where an agency or developer has received approval for a project design based on reasonable and good faith efforts to locate and avoid disturbance to burials, but during implementation encounters previously unlocated burials, the agency or developer should consult with the Guam Historic Preservation Officer to determine if there are feasible and prudent measures available for avoiding further disturbances but within the general project design. If so, these are to be incorporated into the project implementation. If not, the removal of the burials may proceed with proper archaeological documentation, and provision for re-burial.

3. Uncompleted efforts

Where an agency or developer has not completed reasonable or good faith efforts to locate and avoid burials, the HRD shall request consideration of project redesign if needed to avoid disturbances as the strongly preferred course of action. The HRD will not normally allow advanced state of project design as a justification for removal of burials if reasonable efforts to locate them would have made avoidance of disturbances possible through use of alternate designs.

IV. OVERLAPPING BURIALS

In archaeological sites, it is frequently the case that burial features overlap. It is also a frequent and recurring circumstance that a proposed project will necessarily affect only one (or a few) of a set of overlapping burials, but disturbance of the others would be due solely to efforts to remove the disturbed ones.

In these cases, the requirement to remove the burial that must be disturbed conflicts with the requirement to leave the overlapped burial undisturbed. Respect and dignity should be accorded to the first burial by efforts to make complete recovery and reburial of substantially the complete burial. Respect and dignity for the overlapping burials requires efforts to avoid disturbing them as well, but to also accord them a complete recovery and reburial if the disturbance is unavoidable. These conflicting requirements shall be resolved through application of the following guidelines:

Where all of the first burial can be recovered with only minimal disturbance or intrusion of the overlapped burial, the overlapped burial will be left in place with those parts which are disturbed to be replaced as closely as possible to their original locations, but with a token that indicates the date of the disturbance.

- Where the first burial cannot be recovered without substantial disturbance to an overlapped burial, the overlapped burial shall also be recovered as if it, too, was necessarily disturbed by the project.

- It remains the primary responsibility of the agency or developer whose project necessitated the disturbance of burials to coordinate all matters regarding the implementation of the removal of burials and coordination of this with other project considerations.

V. REBURIAL GUIDELINES

Burials and human remains that have to be removed from original locations should be reburied in a location as close as possible to the original locations. Where project circumstances allow, this area should be within the bounds of the original project.

Reburial should be:

- In sealed containers. Each container should have information regarding the original location of the burial inscribed on it, and included within it. More than one individual may be included within a single container, but remains that were in separate features in original locations must be separated within the container as well.

- In a memorial location that is publicly accessible and includes a plaque or marker.

- There shall be a solemn ceremony when the remains are actually placed within the reburial location, and a dedication ceremony when the area is made available to the public for visitation and commemoration. The second ceremony must be open to the public for attendance.

- There shall be a photographic record made of the remains being placed within the containers, of the placement in the reburial location, and both solemn ceremonies.

- Where respectful and dignified reburial within the project area and near the original location is not possible, the agency or developer responsible for the removal of the burial may make application to the Department of Parks and Recreation for inclusion of the remains within the Naftan Maiñana-ta. The developer or agency will be assessed a fee reflecting the actual costs of accomplishing the reburial within the Naftan' Maiñana-ta, including appropriate public ceremonies.

VI. RESEARCH GUIDELINES

Both statute and executive order require that research on recovered human remains be at a minimal level, specifically mentioning the goals of ascertaining ethnic and cultural affinities “important” research questions. An earlier public law, still in effect, also mentions a public right to the results of scientific research on all classes of archaeological materials.

To adequately address definition of cultural and ethnic affinity throughout the prehistoric period, a reliable set of measures and observations is needed for comparison with those from other potentially affiliated populations. Similarly, many important research questions relating to prehistoric practices and lifestyles require adequate data to be reliably addressed.

VII. Non-destructive research

This is defined as research techniques and methods that can be carried out essentially with no destruction of the materials on which the study is based. Weighing, sorting, and various physical measurements and observations, among others, fall in this category.

Specified measures and observations that constitute a reasonably comprehensive description of a single complete human skeleton have been published by a number of osteological authorities. The sets of measures and observations in the sources following are to be considered as the standard reference set of measurements and observations for recordation of archaeological burials on Guam.

VIII. Fragmented skeletal remains

Archaeologically recovered skeletal remains are frequently incomplete and fragmented. In these cases, some of the reference set of measurements can only be recovered after reconstructing the fragments into a more complete bone. Reconstruction should be carried out only where readily apparent "joins" are available and/or where the measurement recoverable through the reconstruction is especially strategic for comparative purposes.

A. Reference Measurement Sets:

Cranial Metrics: As recommended by the SDC of the Paleopathology Association in 1991 (Attachment 1).

Cranial Non-metrics: As recommended by the SDC of the Paleopathology Association in 1991.

Infra-Cranial Metrics: As recommended by the SDC of the Paleopathology Association in 1991.

Infra-cranial Non-metrics: As described in accompanying manuscript by Dr. Gary Heathcote, Ph.D., University of Guam (Attachment 2).

Due to characteristics that have been found in prior studies to be of specific interest and application to the study of prehistoric Chamorro populations, standard documentation should also include a specific suite of measures and observations related to cranio-facial configuration and corresponding infra-cranial muscle attachments (see Attachment 3). Where the more developed muscle attachments are evident in these special characteristics, specific photographic documentation of these features should be made of them in addition to the standard photographic documentation as listed by the SDC of the Paleopathology Association.

In addition to the measurement and observation sets listed above, the SDC recommendations also include standards for estimating age, sex and other characteristics of the person to whom the skeleton belonged. Observations recorded should be consistent with these standards as well.

B. Destructive research

This is defined as a research technique or method that entails physical or other destruction of all or part of the bone materials used in the technique. Examples include radiocarbon dating, stable isotope ratio analysis, and in some cases, extraction of DNA for replication and comparison. Any destructive research on human remains must be specifically and explicitly requested and approved by the Guam Historic Preservation Officer. Such requests must detail the destructive technique being proposed, the specific importance of the research results that may be obtained, and the potential of alternate methods to supply information regarding the same research topics.

The GHPO may approve such requests when the research questions are important, when there are no alternative means of answering the research questions, and the research has been well framed to minimize the destruction involved in reaching a reliable answer to the research question. The GHPO shall disapprove such requests when there are feasible alternatives for obtaining relevant answers to important research topics, when the proposed research is vague and/or poorly justified, or when the proposed amounts of destruction are higher than necessary for reliably addressing the questions.

Decisions (either approving or disapproving) on any request for destructive analysis will be reported to the Guam Historic Preservation Review Board by the GHPO.

C. Electronic Records Formats

The recommendations of the SDC also include provision for storage of accumulated records regarding skeletal data in electronic format. At the present time, the GHPO will accept electronic data in the form of compact disks compatible with MS-DOS operating systems. Preferred application formats for tables of information are:

- Microsoft Access data base software or equivalent as approved by GHPO
- Microsoft Word document file or equivalent as approved by GHPO
- Microsoft Excel spreadsheet software or equivalent as approved by the GHPO

Since these three file formats are widely used by many applications, data in this format should be relatively easy to disseminate to interested researchers.

IX. RESERVATION OF REMAINS FROM REBURIAL

Public Law 21-104, which establishes the Naftan Maiñana-ta, also mentions in one section that government agencies may on occasion hold human remains for "historical, archaeological, scientific, or other valid purposes," but without further specification of these purposes. The following circumstances would generally fall within the valid purposes exception.

- Human bone that evidences use for non-mortuary purposes in pre-historic context. This would primarily include spear points, needles, and other artifacts made from human bone material.
- Reference type collections. Reservation for type collections will be considered where the existence of the type collection can:
    - Increase the reliability and effectiveness of subsequent studies,
    - Decrease the need for use of destructive research techniques in subsequent studies,
    - Be made with small overall volumes of materials.

When an agency has other potentially valid reasons for holding human remains from archaeological sources, the agency should state those reasons to the Department of Parks and Recreation. The Department will concur, object, or accept with additional conditions.

X. COMPLIANCE

It is the responsibility of the Department of Parks and Recreation to determine the disposition of all prehistoric or historic properties within Guam. Any person who disturbs properties of prehistoric or historic significance *or* removes such properties from their sites on public or private lands without approval or concurrence from the Historic Preservation Office shall be guilty of a felony of the third degree.

When a Certificate of Approval *or* permit has been issued authorizing an action involving prehistoric or historic properties any subsequent unauthorized disturbances of those properties may result in fines of up to Fifty Thousand Dollars ($50,000.00) and/or imprisonment of up to three (3) years for each violation. All Guam law enforcement officers are duty-bound to report suspect disturbances and associated activities to the Department and cooperation among law enforcement agencies is necessary to effectively enforce preservation laws. To the greatest extent practicable, mitigation funding should be directed to educate law enforcement personnel as well as the public about the specific requirements of this policy guidance and the preservation laws that support this policy.

XI. MITIGATION FUND

All funds generated through fines imposed by the Historic Preservation Office of the Department of Parks and Recreation shall be deposited into the Historic Preservation Archaeological Mitigation Fund. The Director of the Department is required by law to administer the funds to contract for archaeological services as determined by the Historic Preservation Office, pay for public education and awareness activities, or to purchase supplies, materials and equipment to support theses activities.

The HPO may secure multiple-year contracts including indefinite quantity/indefinite duration (ID/IQ) contracts with provision for various task order types to include on-call services to provide rapid response assessment services, and various other forms of technical assistance. Archaeological service contracts should include provisions for departmental staff capacity building, enforcement, compliance and other technical training.