Commonwealth of the Northern Mariana Islands

Standard State Mitigation Plan

October 2014

Commonwealth of the Northern Mariana Islands
Homeland Security and Emergency Management
Office of the Governor
Telephone: (670) 664 - 2216
Fax: (670) 664 - 2218

U.S. Department of Homeland Security
Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

OCT 8 2014

Governor Eloy S. Inos
The Commonwealth of the Northern Mariana Islands
Governor's Office
Caller Box 10007
Saipan, MP 96950

Dear Governor Inos:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA), Region IX, has completed the final review of the *Commonwealth of the Northern Marianas Islands 2014 Standard State Mitigation Plan*, officially adopted by Commonwealth of the Northern Mariana Islands (CNMI) on September 26, 2014, and found the plan to be in conformance with Title 44 Code of Federal Regulations (CFR) Part 201.4, *Standard State Mitigation Plans.*

CNMI can be commended for its commitment to reducing the impacts of future disasters through a comprehensive range of initiatives, from education and outreach to technical and financial assistance in support of local jurisdiction mitigation efforts. CNMI is also commended for identifying new opportunities to increase state level coordination of mitigation activities and programs.

The approval of this plan ensures the continued eligibility of non-emergency Stafford Act funding for the next five years for CNMI. This includes FEMA's hazard mitigation assistance programs: Hazard Mitigation Grant Program, Pre-Disaster Mitigation and Flood Mitigation Assistance grant programs, as well as the Fire Management Assistance Grant Program and Public Assistance grants (Categories C-G). Approval of this plan does not convey eligibility or pre-approval of projects contained in this plan. All requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which applications are submitted.

FEMA's approval of the *Commonwealth of the Northern Marianas Islands 2014 Standard State Mitigation Plan* is for a period of five years, effective starting the date of this letter. Prior to October 9, 2019, CNMI is required to review and revise its plan to reflect changes in development, progress in mitigation efforts, and changes in priorities, and resubmit it for approval in order to continue to be eligible for assistance programs referenced above. The enclosed crosswalk provides specific recommendations to incorporate into the plan when CNMI undertakes its identified plan maintenance process.

www.fema.gov

If you have any questions, please contact Jeffrey D. Lusk, Mitigation Division Director, at (510) 627-7116, or by email at jeffrey.lusk@fema.dhs.gov. An alternate contact is Phillip Wang, Hazard Mitigation Planning Specialist, at (510) 627-7755, or by email at phillip.wang@fema.dhs.gov.

Sincerely,

Farley J. Howell

for Karen E. Armes
Acting Regional Administrator
FEMA Region IX

Enclosure

cc: Marvin K. Seman, Special Assistant for Homeland Security and Emergency Management
Colby Stanton, Director, FEMA Region IX, Pacific Area Office

Table of Contents

1.0 – Executive Summary

The 2014 update of the CNMI Standard State Mitigation Plan (SSMP) was developed in accordance with the regulatory requirements of Public Law 106-390 (Disaster Mitigation Act of 2000), Public Law 93-288, as amended (Robert T. Stafford Disaster Relief and Emergency Assistance Act), and the Interim Final Rule, 44 CFR Parts 201 & 206, and inclusion of appropriate updated information and data available.

As stated in 44 CFR Parts 201 and 206, the purpose of updating this document is to demonstrate the CNMI's goals, priorities, and commitment to reduce risks from natural hazards and to serve as a guide for State and local decision makers when they commit resources to reduce the potential impact of these identified hazards. This plan must be approved by the Federal Emergency Management Agency (FEMA) in order for the CNMI to be eligible to receive Hazard Mitigation Grant Program (HMGP) funding and other types of disaster assistance under the Stafford Act.

As amended through the Final Rule of 44 CFR Part 201, this SSMP is being updated in compliance with the 5 year hazard mitigation planning cycle; previous plans were updated every 3 years. CNMI Homeland Security and Emergency Management (HSEM) acknowledges the critical review and comments provided by the local communities, municipalities and state governmental agencies during the update process. This update for July 2014 builds on the update of June 2010 completed by AMC, June 2007 completed by APEC, and the original SSMP of June 2004 developed by EMO, each islands' HMC, US Army Corps of Engineers Honolulu Engineer District, and its consultant Group 70 International.

The 2014 CNMI SSMP is an update to the Commonwealth's 2010 plan. The 2014 update was performed wholly by staff at CNMI HSEM with technical assistance provided by FEMA Region IX and invaluable support provided by CNMI government and non-government entities. The information and sections contained within the 2010 SSMP remains largely unchanged, reflecting little change in the CNMI's key identified threats and hazards but also highlighting planning deficiencies experienced throughout the update, including limited time and resources common among small government agencies. Participants in the update submitted mitigation actions on behalf of their respective entities, updated any information relating to critical facilities within their responsibility, and validated the CNMI's threats and hazards profiles. Key updates to the 2014 SSMP include:

- Addition of climate change as a new hazard
- Described new planning bodies involved in the 2014 SSMP update
- Inclusion of new Mitigation Actions
- Revision/update of Facilities Assessment Matrix
- Inclusion of recent CNMI demographics and statistical data

The CNMI, through preparedness funding available to HSEM, will perform a more thorough, comprehensive update to the SSMP within the 5 year planning cycle.

2.0 – Legal Authorities, Assurances, and Adoption

2.1 Disaster Mitigation Act of 2000

The Disaster Mitigation Act (DMA) of 2000, Public Law 106-390 was signed into law by President William J. Clinton on October 10, 2000, which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988. The DMA authorizes a program for pre-disaster mitigation to streamline the administration of federal disaster relief and mitigation programs while controlling the Federal costs of disaster assistance. The law stipulates that emphasis needs to be directed on identifying and assessing the risks to States and local government from natural disasters, implementing adequate measures to reduce losses from natural disasters, and ensuring that the critical services and facilities of communities will continue to function after a natural disaster (PL 106-390, Title I, Section 101 (a) (2)).

The Act also establishes new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). The HMGP is an authorized program under section 404 of the Stafford Act, 42 U.S.C. 5170c, which allocates funding for certain mitigation measures identified through the evaluation of natural hazards conducted under Section 322. As stated in Title II, Section 322 of the DMA, a State, local, or tribal government is required to develop and submit for approval to the President of the United States a mitigation plan that outlines the processes for identifying potential natural hazards, risks, and vulnerabilities of the area under U.S. jurisdiction. This mitigation plan must be approved by the President in order for a state, local, or tribal government to receive assistance under the Stafford Act for disasters declared after November 1, 2004.

As required under Section 322(c) (1-4), the state process of developing a mitigation plan shall 1) identify the natural hazards, risks, and vulnerabilities of areas in the State; 2) support development of local mitigation plans; 3) provide for technical assistance to local governments for mitigation planning; and 4) identify and prioritize mitigation actions that the State will support, as resources become available. As such, the DMA authorizes up to 7% of the HMGP funds that are available to a state to be used for the development of a state mitigation plan.

The Act provides for a state to receive an increased percentage from 7.5% to 20 percent of HMGP funds at the time of a declaration of a major disaster, if an approved Enhanced State Mitigation Plan is in place. Under Section 322, there is a two-tiered State mitigation process that must be reviewed, revised, and submitted every three years. The Standard State Mitigation Plan must be approved by FEMA in order for States to be eligible to receive HGMP funding based on 15 percent of the aggregate total of estimated eligible Federal disaster assistance. This plan must demonstrate the state's goals, priorities, and commitments to reduce risks from natural hazards and serves as a guide for local government decision-making in the commitment of resources to reduce the effects of natural hazards. An Enhanced State Mitigation Plan must be approved by FEMA for a State to receive HMGP funds based on 20% of the aggregate total of Federal disaster assistance.

2.2 Final Rule 44 CFR Part 201

Published in the Federal Register in April 2014, the Final Rule (44 CFR Part 201) standardizes the frequency of State and Enhanced Mitigation Plan updates for state, local, and tribal jurisdictions. Previously, tribal and local governments submitted plan updates every 5 years, while states submitted plans – both standard and enhanced – every 3 years. The Final Rule places all jurisdictions on the same update schedule and requires that all plans be resubmitted every 5 years.

The decision to standardize the schedule aims to reduce regulatory burden on states and FEMA, foster collaboration between state, local, tribal, and territorial governments, and free up FEMA resources from the update to increase other planning activities such as technical assistance and training.

2.3 Section 404 and 406, Post-Disaster Response and Recovery

Section 404 mitigation activities are appropriated in amounts proportional to the cost of post-disaster response and recovery efforts authorized by the Stafford Act. It is the largest source of post-disaster funds for mitigation activities, and the one with the greatest potential to reduce future disaster losses. Section 404 provides that 15 percent (and in some cases 20 percent with an enhanced mitigation plan) of the funds spent for Mission Assignment, Public Assistance, and Individual Assistance may be spent for a wide variety of mitigation activities. Since early 1989, FEMA has paid out $2.63 billion under this program (about $211 million per year). Funds are granted to the State as the "grantee" and are spent by qualified "sub grantees" on eligible projects located within the State. Priorities are set by the state and projects can be used to mitigate against losses from any hazard. Projects must be cost-effective and a non-federal match of at least 25 percent is required.

Section 406 allows for a more narrow selection of mitigation activities under FEMA's Public Assistance program, specifically supporting physical projects on damaged facilities. Hazard mitigation is defined as a cost effective action taken to prevent or reduce the threat of future damage to a facility. A maximum non-federal match of 25 percent or less is required. Mitigation funded by Section 406 only applies to buildings and infrastructure damaged within a Presidential-declared disaster and is above and beyond the work required to return the damaged facility to its pre-disaster design. Section 406 mitigation is addressed by 44CFR 206.226 and by Response and Recovery Policy 9526.1 (FEMA 1998b). Section 7(c) of the FEMA policy provides that mitigation measures must be determined to be cost-effective. According to the policy, any of the following means may be used to determine cost-effectiveness:

- Measures may amount up to 15 percent of the total eligible cost of the eligible repair work on a particular project.
- Certain mitigation measures will be determined to be cost effective, as long as the mitigation measure does not exceed the eligible cost of the eligible repair work on the project.
- For measures that exceed the above costs, the Grantee or Sub-grantee must demonstrate through an acceptable benefit/cost analysis that the measure is cost effective.

Appendix A of the policy defines mitigation measures as being cost-effective if they:

- Do not exceed 100 percent of the project cost.
- Are appropriate to the disaster damage.
- Will prevent future similar damage.
- Are directly related to the eligible damaged elements.
- Do not increase risks or cause adverse effects to the property or elsewhere.
- Meet standards of good professional judgment.

2.4 Authority and Adoption of the CNMI Standard State Mitigation Plan

The updated Commonwealth of the Northern Mariana Islands Standard State Mitigation Plan meets the requirements of the Disaster Mitigation Act of 2000, Section 322 (a-d) plan requirements. The updated plan describes the process for identifying hazards, risks, and vulnerabilities, as well as evaluating and prioritizing mitigation actions. The updated CNMI Standard State Mitigation Plan has been adopted by the Governor of the CNMI by signature of Directive no. 2014-04, dated September 26, 2014, which is included in **Appendix B**.

2.5 Assurances

CNMI HSEM, as the responsible entity for the CNMI SSMP, will fulfill the requirements for plan maintenance as outlined in applicable grant guidelines, federal statutes, and regulations, including 44 CFR 13.11(c). HSEM further assures that the SSMP will be revisited as needed to reflect changes in law, statutes, and priorities at the state and federal level as required by 44 CFR 13.11(d). The SSMP will be a living document that accurately reflects the conditions, priorities, and requirements of the CNMI in relation to its identified threats and hazards.

For full disclosure of assurances, please see the CNMI Letter of Adoption.

2.6 Governmental Mitigation Responsibilities

This section outlines the roles and responsibilities for implementing mitigation actions among all levels of government and the private sector. Funding and technical assistance for hazard mitigation may be available from all levels of government and the private sector. It was the responsibility of the mitigation planning team to identify mutual objectives that accomplish mitigation and other community goals that can utilize a variety of technical and funding resources. A succinct review of the responsibilities of each tier of government involvement is provided below.

Federal Government Responsibilities

The primary responsibility of federal government is to provide leadership in mitigation by administering programs that are intended to support and encourage local efforts to mitigate hazard losses. Federal agencies are expected to take the lead on evaluating their own facilities and ensuring that they are designed, constructed, and upgraded to reduce the impact of future hazard events. Further, these agencies create partnerships and support applied research on priority mitigative issues.

State Government Responsibilities

The CNMI government is required to uphold Federal regulations to reduce hazard losses and must seek to provide resources to achieve these goals. The State must emphasize to its own constituents the value of implementing hazard mitigation to reduce the risk of loss of life, injuries, economic costs, and the destruction of natural and cultural resources.

Local Island Government Responsibilities

The principle role of the CNMI Mayoral Offices is to recognize that hazards may exist in their communities and thus must champion the necessity to initiate mitigative action. In protecting their citizens from hazard risks, these local governments must enact and enforce building codes and other regulatory measures to protect life and property. It is also the role of local government to make the public aware of hazards that presents risks to people and property.

2.7 Role of the Governor's Office and CNMI Homeland Security and Emergency Management

Under Article III, Section 10 of the Commonwealth Constitution, the Governor may declare a state of emergency in the case of invasion, civil disturbance, natural disaster, and other calamity. This declaration gives the Governor the authority to mobilize all government resources in preparation for and in response to the incident.

Public Law 18-04 authorized the CNMI HSEM as the primary state agency responsible for response coordination of significant emergencies and major disaster within the CNMI. The CNMI HSEM is designated as the lead coordinating agency in the CNMI Emergency Operations Plan (EOP) responsible to activate the Emergency Operations Center (EOC) and recall all Response Activities Coordinators (RAC) Team members to coordinate interagency response. The RAC Team is comprised of agency heads that serves as technical advisors to the Governor on policy, regulations and technical matters related to the response efforts and for mobilizing resources. They are also responsible for requesting federal disaster assistance and for coordinating with federal agencies.

2.8 Role of the State Hazard Mitigation Officer (SHMO)

The SHMO is responsible for implementing statewide hazard mitigation activities within the Mariana Islands. The SHMO provides expertise, guidance, advice, and assistance to the various components of the community, which include the various governmental agencies as well as representatives from the private sector that include business associations and individual community members. Additionally, the SHMO establishes requirements and determines entitlements for several grant programs. For purposes of this plan, the role of the SHMO is to coordinate with other agencies in implementing mitigation measures. The SHMO will also support implementation activities by helping lead agencies identify, coordinate, and obtain technical and financial resources. The SHMO will prepare progress reports and manage the Hazard Mitigation Grant Program.

The SHMO also chairs the CNMI Hazard Mitigation Planning Committee, which was established to assist in the development of the Standard State Mitigation Plan (SSMP). The committee is a source of ideas and information with approximately 30 members representing State and local agencies and organizations. Additionally, the RAC Team, a designated body of agency representatives that are responsible to implement the CNMI EOP in the event of an emergency continued to provide input and guidance in the development and update of the SSMP.

The CNMI does not currently have a designated SHMO. CNMI HSEM, as the lead coordinating agency of all-hazards activities within the CNMI, will be responsible for the filling of this vacancy. HSEM will determine the qualifications of the SHMO based on the aforementioned responsibilities and select the most qualified candidate based on experience, relevant skills, familiarity with hazard mitigation planning and implementation practices.

3.0 – Hazard Mitigation Planning

3.1 Purpose and Goals of the CNMI Disaster Mitigation Planning Process

The purpose of the CNMI Disaster Mitigation Planning Process (DMPP) is to provide an organized and coordinated consistent set of goals for reducing or minimizing the loss of human life and property, major economic disruption, degradation of ecosystems and critical habitats, and the destruction of cultural and historical resources from natural disasters. The DMPP process is to be the basis for intergovernmental coordination related to natural hazard mitigation at the state and local municipal levels. The identified goals of the planning process for disaster mitigation in the CNMI include the following:

- to promote sustainable development by reducing the vulnerability to natural hazards in existing and planned development;
- to improve public awareness and decision making for land use planning by accurately mapping hazard-prone areas;
- to improve hazard risk management by the insurance industry and to help maintain adequate protection against any catastrophe for the region; and
- to promote community-based disaster preparedness and prevention activities with support from both the public and private sector.

3.2 Mitigation Planning and Grants

The development of the SSMP through the mitigation planning process assists HSEM and other agencies within the CNMI plan for grant funding opportunities provided by FEMA/DHS and other grantors with hazard-specific grant awards. Because it is a requirement for the programs, the CNMI may avail of various hazard mitigation assistance programs, including the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Program (PDM), and the Flood Mitigation Assistance Program (FMA) with an approved SSMP. The plan also establishes a baseline for hazard-specific grant programs received by HSEM such as the National Tsunami Hazard Mitigation Program (NTHMP) administered by the National Oceanic and Atmospheric Administration (NOAA).

The economic difficulties that the CNMI experienced during the development of the 2010 SSMP continued throughout the 2014 update cycle and create challenges for funding mitigation and other preparedness activities in the CNMI with local dollars. Funding continues to be heavily reliant on federal resources in the form of grants. Mitigation projects within the CNMI are primarily funded through the PDM grants for pre-disaster projects and HMGP for long-term, immediate recovery mitigation measures. Additionally, HSEM receives funding under the Homeland Security Grant Program (HSGP) and Emergency Management Grant Program (EMPG) that can support a broad range of activities across the mission areas of Prevention, Protection, Mitigation, Response, and Recovery.

Past mitigation-type activities funded through the previously mentioned sources include:

- Hardening of Commonwealth Utilities Corporation Waterwells – PDM
- Backup Generator at the CNMI Emergency Operations Center – HSGP
- Tsunami Evacuation Route Signage – NTHMP
- Renovation of Rota High School Gym as a Disaster Shelter, including structural repairs and storm shutters – CNMI Capital Improvement Projects (CIP)
- Hardening of Mt. Tapochau Communication Tower – CNMI General Funds

3.3 Mitigation Stakeholders in the CNMI

Mitigation activities are performed by various CNMI government agencies outside the SSMP update process as part of their area of responsibility. These include:

- **CNMI HSEM** – coordinating SSMP planning processes and securing grant funds for hazard mitigation activities
- **Bureau of Environmental and Coastal Quality (BECQ)** – permitting responsilities for mitigating erosion and runoff; enforcement of fuel storage rules and regulations; GIS mapping of hazard-prone areas; and climate change adaptation strategies
- **CNMI Division of Fire, Department of Public Safety** – structural and wildfires firefighting
- **CNMI Public School System (PSS)** – coordinating government agency for emergency sheltering and transportation
- **Department of Community and Cultural Affairs (DCCA)** – coordinating government agency for emergency sheltering and transportation
    - **Division of Historic Preservation** – identify, protect, and educate citizens on significant archaeological, cultural, and historic resources that contribute to social, economic, or cultural growth
- **CNMI Mayor's Offices** – mitigate property and life damage through removal of hazardous debris in villages
- **American Red Cross (ARC)** – coordinating partner for emergency sheltering and feeding
- **Saipan Zoning Office** – enforce land-use policies to preserve natural and cultural resources and to promote economic growth
- **Commonwealth Utilties Corporation (CUC)** – sole utilities corporation for CNMI; protection of critical infrastructure, such as power, water, and waste water
- **Department of Public Works (DPW)** – enforcement of building standards, maintenance of public roadways and drainage system, technical design for public construction activities, including mitigation projects
- **Department of Land and Natural Resources (DLNR)** – responsible for the protection and enhancement of natural and fragile resources in the CNMI through resource and land use management. This includes marine and land ecosystems and their respective wildlife
- **Office of Management and Budget (OMB)** – administer capital improvement funds to various CNMI agencies to construct, improve, or rehabilitate exisiting critical facilities and infrastructure

A full list of CNMI agencies that participated in the 2014 SSMP update is included in **Section 3.5**.

3.4 Method of Development and Update of CNMI SSMP

The methodology developed and applied for the SSMP and its subsequent update was derived from guidelines and protocols that were provided from two distinctive sources: 1) those mandated in existing federal regulations and federal, state, and local agency guidelines; and 2) those mandated from existing procedures outlined in the CNMI Emergency Operations Plan (January 2000), which provides direction and policy for response agencies charged with providing assistance before, during, and after a disaster.

The goal of mitigation is to reduce the future impacts of a hazard to life, property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. As such, covening a diverse group of stakeholders with direct impact or interest in mitigation activities across the CNMI is essential to fulfilling the needs of the hazard mitigation planning process. A deeper discussion of this process and group can be found **under Section 3.5 - State Coordination**.

The next stage for updating the SSMP was to review the existing Risk and Vulnerability Assessment (RVA). The RVA is a systematic process to categorize the effects of hazards and provides a way to identify, compare, and prioritize risks. This allows HSEM and participating stakeholders to review the 2010 Goals and Objectives and to revise them as needed.

Additionally, the SSMP update includes identification and estimation of potential losses linked directly to a hazard event including factors such as potential damages and costs of recovery, deaths and injuries, loss of habitation, shelter demand and employment losses due to the closure of damaged facilities. This analysis included consideration of the physical destruction of buildings and contents, transportation and utility systems, crops, natural resources, and employment losses due directly to the closure of damaged facilities, including the cost of post-disaster cleanup. Indirect costs included evaluating projected economic losses due to dislocations in the industrial or commercial sectors, banking and insurance institutions, issuance of temporary unemployment and business interruption, loss of economic productivity and downtime in tourism, loss of tax revenues from business relocation, and long-term health expenses incurred from permanent injuries. The analysis of recovery from disasters also required identifying resources that could be diverted from other public and private programs, thereby adversely affecting the productivity of the economy. These analyses are based on the completeness and accuracy of the information and data received and compiled from the respective agencies, organizations, and institutions in the CNMI that submitted their Facilities Assessment Matrix (FAM) form and voluntarily provided other information to the planning team.

Risk management is the process by which the results of an assessment are integrated with political, economic, and engineering information to establish programs, projects and policies for reducing future losses and dealing with the damage after it occurs. Managing risks involves selecting various approaches that will reduce the vulnerability when applied to the risk area. In order to effectively evaluate the projected costs associated with natural hazards, the vulnerabilities of the built environment, public health and safety, and business and natural resources must be estimated. The most important criteria is identifying whether the proposed action significantly mitigates the particular hazards or potential loss. The selection of mitigation measures should then be prioritized based on identifying, which areas are subject to the most potential loss, either in economic or social costs. The purpose of loss estimation is to evaluate the tradeoffs that exist in achieving goals that are concerned about the protection of the built and natural environments.

3.5 State Coordination

Hazard mitigation activities within the CNMI are coordinated at the Federal, State, and local government levels. All levels of government need to be working towards a common goal to maximize the benefits of hazard mitigation. The CNMI Standard State Mitigation Plan, and all related documents, will become part of the CNMI's collection of all-hazards and hazard-specific documents that serve as guidance during events. The goal of these plans is to standardize emergency management activities at the state level, ensuring that activities and information are handled in a coordinated and efficient manner and allows for the provision of standardized support for its local island communities.

The 2014 CNMI SSMP update process was coordinated largely in part by staff of HSEM's Grants Management Section. The members of the section are responsible for the management and administration of the grants funds received by HSEM, most of which are preparedness funds granted by FEMA/DHS. In the absence of professional services and in addition to direct grant management activities, the staff is also responsible for the development and maintenance of emergency plans, threat and capability assessments, and other preparedness reports.

Coordination of data collection for the 2014 update began in June 2013. HSEM staff held meetings on the islands of Tinian and Rota to discuss the purpose of the SSMP, its importance to the CNMI, and update process required of states and territories every three years, though has since been amended to five years. During these meetings, agency representatives and the respective Mayors were provided copies of the 2010 SSMP FAM and mitigation actions to review past entries for their agencies and provide input regarding the status of different items such as listed facilities and mitigation actions. Comments and revisions were submitted via email to HSEM Grants Management staff for integration into the plan. For the island of Saipan, meetings were held at the CNMI Emergency Operations Center (EOC) to discuss and collect the same information. Correspondence over email and phone were also performed outside formal meetings.

In April 2014, the Special Assistant for HSEM, through order of the CNMI Governor, formed the Statewide Emergency Response Commission (SERC) to serve as an advisory board to mitigate the effects of hazardous material incidents as enacted under the Emergency Planning and Community Right-To-Know Act (EPCRA). The SERC comprises members of key HSEM partners and includes a designated Chair and Co-Chair:

- HSEM, Chair (State-Coordinating Official)
- BECQ, Co-Chair (Environmental Representative)
- Department of Public Safety (DPS) Fire Division, Fire & EMS Representative
- Department of Public Safety (DPS) Police Division, Law Enforcement Representative
- Commonwealth Health Center Corporation (CHCCC), Health Representative
- DCCA, Community Representative

- PSS
- Municipality of Rota, Rota Representative
- Municipality of Tinian, Tinian Representative
- Municipality of the Northern Islands, Northern Islands Representative

Members of the SERC also serve as Local Emergency Planning Committee (LEPC) representatives and aid in the planning and guidance of all-hazards preparedness activities in the CNMI. Over the course of the update, SERC members served these primary functions:

- Coordinated input to the SSMP for their respective agencies, as SMEs or through submitted data
- Prioritized mitigation actions and organized them into new mitigation categories
- Peer reviewed data from other participating agencies
- Reviewed SSMP updates for comment and final draft for submission
- Serve similar roles in other state emergency planning processes, such as the CNMI EOP

Key support for the 2014 update was also provided by the following agencies:

- American Red Cross – NMI Chapter
- Commonwealth Ports Authority
- CNMI Office of Management and Budget
- Saipan Zoning Office
- Commonwealth Utilities Corporation
- CNMI Judicial Branch
- Department of Public Works –Technical Services Division

In addition to participation from the SERC, the entities listed above also provided information to the SSMP through submission of mitigation actions and through their direct responsibilities in facilitating and implementing mitigiation activities. See **Section 3.3 – Mitigation Stakeholders in the CNMI** for descriptions of agency impacts on hazard mitigation.

The 2014 update also draws input from other completed plans and assessments. These include data from documents such as the CNMI Climate Change Working Group's Saipan Vulnerability Assessment (SVA), a comprehensive look at the island of Saipan's potential impacts from the effects of climate change. The SVA represents a year and a half long process of community vulnerability assessments, workshops, and regular Planning Committee meetings. Other critical preparedness literature used during the update include the 2013 Threats and Hazard Identification Risk Assessment (THIRA), the 2013 State Preparedness Report (SPR), and the 2014 CNMI State Homeland Security Strategy (SHSS).

Please see **Appendix B** for planning process documents, including sample invite letters and meeting sign-in sheets.

3.6 Local Coordination

Hazard mitigation projects have the biggest effect on the community where they occur, making coordination essential between the State and local governments. Under Article VI, Section 3(f) of the Commonwealth Constitution, the Office of the Mayor for each of the island jurisdictions of Rota, Tinian, and the Northern Islands is the principal local authority for coordinating activities with the CNMI HSEM for the purpose of mobilizing resources and addressing emergency conditions that occur within each said jurisdiction.

This plan outlines statewide hazard mitigation goals whereupon each mayoral office shall coordinate within their respective island community to decide which mitigation measures are the most important and appropriate that may require assistance from Federal and other State level agencies. Local circumstances should be the primary determinant in developing mitigation measures for each local island community. By participating in the development of the SSMP, each local island government and community can determine which mitigation goals and the tools will help achieve these goals and incorporate them in developing Capital Improvement Projects (CIP). It is important to note that when projects are being prioritized at the State level, it is imperative that local communities have the opportunity to address any concerns or competing interests. In the CNMI, this is achieved through the CIP committee representing each senatorial district.

3.7 Summary of Data Collection and Community Vulnerability Assessment

As noted earlier, the 2014 SSMP update was narrow in scope, resulting in minimal collection of new data. In June 2013, mayors and department heads were provided copies of the 2010 SSMP FAM data to review facilities that fell under their responsibilities to make any notable changes that have occurred since the 2010 SSMP or to maintain status quo. The limited data pertained primarily to tables in Sections 4, 5 and 6. The CVA completed in the 2010 SSMP, and in previous submissions, was comprehensive and thorough. Therefore, for the 2014 update, review of the FAM was focused only on facilities that required updated information for a number of reasons, including relocation, closure and other valid reasons. Minor updates were also made to loss estimation for various hazards like typhoon, flooding, earthquakes, wildfires, etc. and are listed under **Appendix S through W**.

During the 2010 SSMP update, an effort was made by the planning team consisting of some CNMI agencies, EMO staff, and its contracted consultants (hereby referred to as the planning team) to gather updated data and information from Federal, State, and local agencies relative to the identified threats and hazards. The types of updated data that were compiled included previously conducted environmental studies, socioeconomic reports, and inventory analyses of facilities, financial records, maps, building blueprints, and other types of archived historical material. The purpose of this data review was to evaluate and analyze existing and known geographical and meteorological conditions to determine the extent, pattern, magnitude, and profile of each potential hazard type. It included a review of archival resources of past hazard events that documented the associative damage assessments for response and recovery actions. Digital data sources were then compiled for purposes of integrating available information in a format that could be used with Geographic Information System (GIS) software.

After identifying the risks, subsequent data pertaining to population, property, economic and environmental resources at risk was obtained through the implementation of a Facilities Assessment Matrix (FAM) tool that was administered by the CNMI EMO. Approximately 36 agencies, organizations, and associations participated in the FAM in 2004 which identified the services, structures, infrastructure, and population within their purview. In the 2010 update, new additional facilities are listed, existing ones were updated, and those that have ceased operations were deleted or removed particularly the garment factories and hotels. The completed FAM forms identified the critical facilities for each participating agency or organization. Agency responses to data requests in the FAM provided an overview of structures and infrastructure that could be potentially vulnerable to a particular hazard type given certain geographical or functional features of the facility or utility. The FAM forms were collected by the planning team, whereupon information provided on the completed FAM forms were integrated into a database record that was used in the subsequent phases of asset identification and loss estimation, which are reported under the Community Vulnerability Assessment (CVA) reports for various hazards like typhoons, earthquakes, flooding, wildfire, etc. and are listed under **Appendix S through W**.

3.8 Summary of Mitigation Planning Meetings

The development of the 2014 SSMP began in June 2013 with meetings conducted throughout the CNMI to gain broad participation by as many government agencies and other key partners as possible. Meetings were held on the island of Saipan, Rota, and Tinian and included briefings to mayors, department heads, and/or department representatives. In addition to structured meetings that were coordinated by HSEM staff, subsequent follow ups for data collection or update requirements were conducted via email or phone. It was critical to involve all municipalities in the update process in order to capture the unique challenges and priorities from each island resulting from geographic separation from each other.

The planning approach for the meetings included implementing the following steps:

- Schedule meetings with all 4 municipalities; Northern Islands Mayor's Office participated in meetings held on Saipan
- Briefed local representatives on update process, objectives, and timeline for the SSMP update
- Provided copies of the CVA and FAM to participants to review and make changes as necessary
- Provided copies of Mitigation Action Worksheets for participants to review and submit new actions if appropriate or desired
- Review and addition to CNMI Hazard profile; added *Climate Change* for 2014 update
- Integrate new and imported information into draft for review and approval

A number of challenges contributed to delays in the submission of the CNMI's SSMP update and affected the breadth of changes made during the process. In March 2013, through legislation, the CNMI Office of Homeland Security (OHS) and the CNMI Emergency Management Office (EMO) were merged to create CNMI Homeland Security and Emergency Management (HSEM). The combining of the two offices was performed in order to streamline the CNMI's emergency management capabilities and move towards an all-hazards approach to incident planning and management, as opposed to the previous split between man-made and natural disasters. This presented a few challenges.

First, at the time the SSMP update was initiated, employees of the then recently established HSEM were still familiarizing themselves with a new organizational structure and their specific responsibilities within the new agency. Additionally, staff turnover within a short period of time following the merge contributed greatly to the loss of institutional knowledge and experience. Prior to HSEM, CNMI EMO was responsible for the development and update of the SSMP. By the fall of 2013, the Planning positions occupied by former EMO employees were vacant within HSEM, resulting in the loss of historical knowledge and experience with the SSMP and hazard mitigation planning in general.

Past versions of the CNMI SSMP were completed by contractors with extensive experience in hazard mitigation planning and the development of state mitigation plans. This is the first attempt at completing an in-house update of the SSMP. Furthermore, prior to the merger and continuing today, there is currently no State Hazard Mitigation Officer for the CNMI, making coordination of all hazard mitigation activities (e.g. plan updates, grants management, POC, etc.) more difficult.

Attendance and participation was also a challenge throughout the process. Over 30 different departments and/or divisions of the CNMI Government were invited to participate in meetings for the SSMP update, though attendance was often much lower than expected. This resulted from either scheduling conflicts, time constraints on agencies with limited time and resources, and in some cases non-responsive contacts from invited entities. This greatly reduced productivity during meetings and limited the amount of new or updated information that could have been included in the 2014 update. In order to address this issue, the Statewide Emergency Response Commission (SERC) and Local Emergency Planning Committee (LEPC) were formed to provide direct support to planning efforts at the state level, including HSEM activities such as the SSMP.

Table 3-1
Planned Meetings Held or Periods of Action for the Development and Update of the CNMI Standard State Mitigation Plan (June 2013 – July 2014)

Date	Description
07/31/2014	Initial teleconference call between CNMI HSEM and FEMA Region 9 and Pacific Area Office
07/24/2014	Initial teleconference call between CNMI HSEM and FEMA Region 9 and Pacific Area Office
07/18/2014	SERC Commission meeting to validate hazards to the CNMI; add Climate Change new hazard; Prioritize Mitigation Actions
07/17/2014	Initial teleconference call between CNMI HSEM and FEMA Region 9 and Pacific Area Office
07/10/2014	Initial teleconference call between CNMI HSEM and FEMA Region 9 and Pacific Area Office
07/02/2014	Initial teleconference call between CNMI HSEM and FEMA Region 9 and Pacific

	Area Office
06/12/2014	SERC Chair called a meeting, focus is on the Mitigation Action Strategy worksheet
05/14/2014	SERC Chair met, in his office, with CUC Water Div. & Waste Water Div. MGR's, FEMA TA staff
05/12-13/2014	SERC/LEPC met at CPA conf. room with FEMA Mitigation Div. staff (technical assistance)
05/09/2014	SERC Chair called its first meeting; Agenda is on the CNMI SSMP 2013 Update (lapsed)
04/17/2014	Governor Inos issued Memo creation and designation of CNMI SERC/LEPC-Chair & Co-Chair
11/20/2013	3rd and final meeting coordinated and facilitated by HSEM Planners at the EOC in Capitol Hill
11/15/2013	Notice with attachments to CPG via email of meeting
11/06/2013	2nd CPG meeting coordinated and facilitated by HSEM Planners at the EOC in Capitol Hill
11/01/2013	Notice with attachments to CPG via email of meeting
10/30/2013	1st CPG meeting coordinated and facilitated by HSEM Planners at the EOC in Capitol Hill
10/27/2013	CPG invitational letter emailed to all members with attachments
09/25/2013	1st technical assistance weekly conference call between HSEM & Mitigation Div. staff
08/28/2013	Met Mitigation Div. personnel at the Region 9 office; was agreed to have a week conf. call
07/18/2013	Hand-delivered three (3) CD of the 2013 SSMP to FEMA Region9 Mitigation Division Director
07/12/2013	Emailed a Draft CNMI 2013 SSMP Update to FEMA Region 9 Mitigation Section
06/28/2013	HSEM Planners met with Rota HMC for review of Critical Facilities and submit updates
06/27/2013	HSEM Planners met with Tinian HMC for review of Critical Facilities and submit updates

Table 3-2
Summary of Changes for 2014 SSMP Update

2010 CNMI Plan	Key Changes for 2014 CNMI SSMP
Section 1 – Executive Summary	Revised Executive Summary to highlight key changes made to the 2014 SSMP; reduced overall length compared to 2010
Section 2 – Legal Authorities and Hazard Mitigation Coordination	Addition of sections describing Governmental Mitigation Responsibilities, Role of Governor's Office and CNMI HSEM, and Role of the SHMO
Section 3 – CNMI Disaster Mitigation Planning Process	Renamed "Hazard Mitigation Planning"; addition of "Mitigation Planning and Grants section"; added "Mitigation Stakeholders in the CNMI" to describe agencies/partners participating in hazard mitigation activities; deleted tables for

	2003 – 2010 planning meetings; added table of 2014 planning meetings
Section 4 – Inventory of Assets	Updated information in table for "Official Shelters for the CNMI"; deleted "Garment Industry Facilities" due to closure of industry;
Section 5 – Hazards Profile & Analysis	Added Climate Change as new hazard;
Section 6	No Changes/if changes…then explain what changed
Section 7	No Changes/if changes…then explain what changed
Section 8	No Changes/if changes…then explain what changed
Section 9	No Changes/if changes…then explain what changed
Appendix A	
Appendix B (description)	1. Deleted Appendix B – Description of CNMI State-Level Agency Authorities
	a. Appendix B is currently copies of invitation letters and sign-in sheets for scheduled SSMP planning meetings
Appendix C (description)	2. Deleted Appendix C – Summary of GIS Data Collection for CNMI Standard State Mitigation Plan
	a. Appendix C is currently the Database Summary of Information Provided in Completed CVA Responses
Appendix D (description)	3. Deleted Appendix D – Copy of the Community Vulnerability Assessment (CVA), Administered by the CNMI EMO, April 2003
Appendix Z (description)	4. Deleted Appendix Z – Sample of the CNMI Mitigation Evaluation Criteria Form
Appendix AA (description)	5. Deleted Appendix AA – Identified Sources of Federal Domestic Assistance in the Functional Area of Disaster Prevention and Relief
Appendix BB (description)	6. Deleted Appendix BB – Completed Mitigation Projects/Actions List by Island
Appendix R (description)	7. Added a new Appendix R – Methodology for Sea Level

	Rise Mapping for the Climate Change Profile
Appendix X (description)	8. Added a new Appendix X which presents the results from the ratings of the Mitigation Action which were prioritized by the SERC.
Appendix Y (description)	9. Added a new Appendix Y which presents the actual mitigation action worksheets from each participating agency
	Cross referenced appendices throughout the document

See **Appendix B** for planning meeting documents, including sample meeting invites, agendas, sign-in sheets, and available minutes.

4.0 – Inventory of Assets

A critical component of the risk assessment is identifying areas within an identified jurisdiction that upon an evaluation of prescribed criteria are categorized as vulnerable. The first step in assessing vulnerability is identifying the assets that are contained within each respective jurisdiction. These assets can include structures, their material contents, personnel, and other resources. This section provides an overview of assets identified within the Commonwealth of the Northern Mariana Islands (CNMI).

4.1 Overview of the CNMI

CNMI is located in the northwestern Pacific Ocean (latitude, 15° 12‟N; longitude 145° 45‟E) and is comprised of 14 islands, five of which are inhabited, with a total land area of approximately 176.5 square miles at high tide and 184 square miles during low tide. East of the Philippines and south of Japan, the Northern Marianas Archipelago extends 460 miles in a north to south orientation from Rota in the south to the most northern island of Farallon De Pajaros.

There are no cities in the Northern Marianas as normally considered nor is the term "town" usually applied to the island's congested areas. Rather the urbanized areas are usually referred to as villages or communities and none are incorporated with fixed, surveyed boundaries. Each of the islands of Saipan, Tinian and Rota are separate municipalities.

The island of Saipan is the largest in the chain and is comprised of approximately 46.5 square miles. From axial uplands that rise to a maximum altitude of 1,555 feet at Ogso Tapochau, the slopes of the north-south oriented island level down to sea level in a succession of horizontal limestone terraces that are separated by steep scarps. The 54 miles of coastline is irregular except on the western side where there is an existing fringing reef. Because of the complex geological composition of the island, many short and rugged valleys are formed between the extensive mountain range that extends on a north to south axis. The island consists of primarily limestone that overlies an old volcanic core. Due to the porosity of the limestone overlay, there are relatively few perennial streams that include Sadog Talufofo, Sadog Hasngot, Sadog Denne, which flow near the central sector and drain towards the eastern side of the island while Sadog Dogas and Sadog As Agatan drain towards the west. Several ephemeral streams also contribute to the continuity of the island‟s lotic system.

The second largest island is Tinian, which has a coastline of 38 miles and has a land area that covers approximately 39.2 square miles. Limestone comprises approximately 98% of the surface exposures of the island and dominates lithology above sea level, while volcanic rocks predominate below sea level and form the foundation of the island. The limestone is commonly coralliferous and highly porous, while the volcanic rock is composed of poorly sorted pyroclastic materials with low porosity. Flat terraces and plateaus that are separated by steep scarps dominate the surface terrain. The physiographic nature of the island can be distinguished in five landforms: a southeastern ridge, a median valley, a central plat eau, a north-central highland, and northern lowland. The high point on Tinian is Mount Kastiyu along the southern ridge at an altitude of 614 feet.

Located approximately 73 miles SSW of Saipan, the island of Rota is approximately 10.5 miles long and 3miles wide with a coastline of 38.3 miles and a land base of approximately 32.8 miles. The highest elevation is Mount Manira at 1,625 feet. The island has an excellent water supply source from Matan Hanom. Since Rota was not developed extensively during the occupation of the Japanese during World War II, much of its landscape is preserved with native vegetation and fertile farmlands.

The Northern Islands consist of 10 islands with a combined land area of 55.3 square miles. With the exception of Pagan and periodically Anatahan the remaining smaller northern islands are either uninhabited or have extremely small populations. The island of Aguigan, south of Tinian, is uninhabited and has an area of 2.7 square miles.

4.2 Cultural and Political History

It is believed that a navigating people known as the Chamorro around 3,000 B.C originally settled the Northern Marianas. After Magellan encountered the islands in 1521, he claimed the islands for Spain and gave name to the archipelago as "Las Islas de las Velas Latinas," which translates to "the island of the Latine sails" in reference to the shape and symmetry of Chamorro sails. In 1668, the islands were renamed to "Las Marianas" in honor of Mariana of Austria, widow of Phillip the 4th of Spain.

During the 17th century, Spanish colonists subjected the Chamorro people to episodic violence when extensive losses occurred to their population. By the early 1800s, a new migratory people, known as the Carolinians, settled within the islands from island atolls west and north of Truk or Chuuk. By 1899, colonial power was transferred from Spain to Germany, where the islands remained under German flag until the beginning of World War I in 1914. By the end of the war in 1919, the German administration had been forced out of the islands and the islands were occupied by a newly formed group, the League of Nations that was comprised of World War I allied powers, whose charter known as the Covenant was approved as part of the Treaty of Versailles at the Paris Peace Conference in 1919. The purpose of the Covenant was to "promote international cooperation and to achieve international peace and security." Under this establishment, the islands were then administered by Japan, who had been allies with the United States, Great Britain, and France during the latter end of the World War I.

In 1935, Japan withdrew from the League of Nations but continued to occupy the Northern Mariana Islands. On June 15, 1944, U.S. forces engaged in battle with some 30,000 Japanese military personnel that were garrisoned within the islands. American forces gained control of the island on July 1944 and would become a key strategic and logistical point against Japan that brought an end to World War II.

The Northern Mariana Islands were not a permanent legal possession of Japan at the time of the war as it had only been entrusted to Japan under a mandate by the League of Nations. Therefore, the United States could not strip territory from defeated Japan at the conclusion of the hostilities since the islands were never recognized as permanent legal possession of Japan in the first place. On July 1947, the area was recognized as a Trust Territory by the United Nations. During this period after the war, the United States Navy became the administrator under a Trusteeship Agreement with the United Nations, the successor to the League of Nations. Politically, the islands remained a part of the United Nations Trust Territory of the Pacific Islands until its dissolution in 1978.

On May 28, 1986, the United Nations Trusts concluded that the United States had discharged all its obligations to the Mariana Islands. Currently, as a political entity, the Commonwealth has the elements of a U.S. territory, a state and an independent nation. The citizens of CNMI are U.S. citizens but do not vote in federal elections and do not pay federal taxes. However, expatriates from the U.S. living in the CNMI may vote in federal elections if they possess valid voting cards in their home state or county. CNMI receives general federal aid as other states and territories.

However, exemption from U.S. immigration, naturalization and labor laws that was granted within the Covenant Agreement of the Commonwealth is no longer applicable. The U.S. Labor law has been intertwined into the CNMI. The federal government took control of immigration in the CNMI on November 28, 2009. The President signed PL 110-229 into law in May 2008 and the US takeover began November 28, 2009.

4.3 Population & Land Use

The CNMI population in the 2010 US Census is 48,220. There is a drop of 22.7% in population from the 2000 US Census. The island of Saipan is the primary hub of commercial and residential activity within the Northern Mariana Islands. Areas along the island’s coastline have attracted commercial, retail, tourism attractions, and commercial activities. The urbanized center of the island is within the Gualo Rai, Garapan, Navy Hill, and Capital Hill district. Garapan is the principal hotel and tourism district with a higher density of commercial, retail, and hotels to serve its guests. Several major hotels including the Fiesta Resort, Hyatt Regency, and the Hafa Adai Hotel are located within this district with the Duty Free Shopping Galleria and other pedestrian commercial centers in close proximity. As per the provisions within the Constitutional mandate pertaining to homesteads for eligible residents, the majority of public lands designated for development have been committed for residential development with the remainder of available lands set aside for community facilities, land exchanges, roads, and other public uses. The introduction of casinos as a future industry in July 2014 may impact development and commercial activities on the island of Saipan, though specifics of these activities are currently unknown.

The population of 3,136 (2010 census) on the island of Tinian resides in a developed rural setting primarily located in the village of San Jose and parts of the adjacent central plateau and southeastern ridge, occupying approximately 25% of the island. The remaining 75% of the island is grassland and secondary forest, which about 40% of those lands are reserved for military purposes on the northern part of the island. The remaining grassland and forest is used for scattered grazing of cattle and horses.

Public land use accounts for approximately 60% of the rural area on Tinian, with land uses that include the airport, harbor, schools, cemetery, agricultural cooperatives, marshland, parks and beaches, and unused grassland and secondary forest. Residential and commercial land covers approximately the remaining 40% of the rural area on Tinian with designated land uses that include a casino resort, small businesses, farming, grazing, and housing.

The island of Rota has a population of 2,527 (2010 census) that reside in a primarily rural and agricultural setting. Most of the island remains in agricultural use or open space with a few, scattered agricultural, mixed-use residential, commercial, and industrial uses located within the rural interior. Business, government, and industrial activities are predominantly concentrated in the main village of Songsong, which is situated on the island's southwestern peninsula, and in the village of Sinapalo, in the north-central portion of Rota.

4.4 Climate

The climate of CNMI can be characterized as possessing relative high and uniform temperatures with an annual mean temperature of 83 degrees Fahrenheit (F). The overall seasonal variation in mean monthly temperature is less than 3.5 degrees F. However, there are some fluctuations in temperature, which are primarily affected by elevation. The humidity is normally very high with monthly averages between 79 and 86 percent, which is offset by frequent wind patterns that provide relief. The humidity factor is most intense between the months of July and November. The mean annual rainfall is approximately 83.8 inches, with intermittent variance throughout the year. The seasonal patterns are designated as dry and wet season, with greater rainfall experienced during the period of July through November. Heavy and prolonged rainfall usually is associated with tropical depressions and typhoons that pass over or near the islands.

Within CNMI, there are three predominant wind patterns that commonly occur and include trade winds, doldrums and typhoons. Trade winds are the results of wind circulation patterns that follow the North Pacific anticyclone, increasing in activity during the summer months. In the winter, there is a shift in the wind patterns characterized by the arrival of the westerly and frontal influences from the North Temperate Zone becoming more prevalent. Westerly winds typically are characterized by the presence of strong winds and high wave activity from the southwestern section of the Pacific. The islands are situated within a fluctuation zone that lies between the Asiatic monsoon and the belt of northeast trade winds. On the island of Saipan, the trade winds are most prevalent between the months of November through March with an average wind speed of 9 knots (10.5 mph).

4.5 Geology and Soils

Most of the soils in CNMI can be characterized as lateritic, having evolved under high temperatures and abundant rainfall. In the elevated portions of Saipan, the soil is surface clay while the lowland has rich topsoil, which is generally less than 30 inches deep. Of the 29,811 acres of land on Saipan, approximately 1,300 acres or about 5 percent of the land can be classified as fair in overall productivity ratings for agricultural use. Another 35% can be categorized as suitable for productive grazing lands. Approximately, 60 percent of the lands on the island of Saipan can be categorized as having steep slopes, shallow soil, rocky surfaces, or are comprised of wetlands. These lands are best adaptable for watershed, secondary grazing, or conservation use.

Four major geologic units form the island of Tinian, which include the Tinian Pyroclastic Rocks (TPR), the Tapochau Limestone (TL), the Mariana Limestone (ML), and unconsolidated sediments (UCS) consisting of beach deposits, alluvium, and colluviums. The TPR are of the late Eocene Age and are the oldest exposed geological unit, which are comprised of fine to coarse-grained consolidated ash and angular fragments of volcanic origin with outcrops that are highly weathered and altered to clay. The TL units are of early Miocene Age and are composed of fine to coarse-grained, partially recrystallized broken limestone fragments and reworked volcanic fragments and clay with highly weathered surface exposures. The ML units are of Pliocene to Pleistocene Age and are the most extensive unit volumetrically above sea level. The ML units are composed of fine to coarse-grained fragmented limestone, commonly coralliferous, with some fossil and algal remains, and lesser amounts of clay particles.

The UCS units are of the Pleistocene to Holocene Age that are composed of poorly consolidated sediments, mostly calcareous sand and gravel deposited by waves, but also clays and silt deposited inland beside Hagoi Lake and Marpo Wetland.

The geological formation of Rota is a high volcanic center, which is surrounded by raised coral terraces and a fringing reef. There is abundant grassland and dry scrublands on the volcanic slopes, serving as a habitat to four threatened plant species, three threatened and one endemic avifauna species.

4.6 Hydrology & Groundwater Resources

The primary groundwater resources for the CNMI are coralliferous limestone that contain a freshwater lens that float on a saltwater base near sea level. The freshwater lens is recharged by rainwater, whereupon the lens shrinks and expands in response to the variations in recharge and groundwater withdrawal activity at well sites. The salinity of water withdrawn from wells will rise if the withdrawal rate is too high or rainfall is too low for prolonged periods.

Groundwater production on Saipan is approximately 11.15 million gallons per day (mgd). Groundwater is pumped from limestone aquifers throughout the island and pumping is concentrated in southern Saipan. The Commonwealth Utilities Corporation (CUC) supplies municipal water on Saipan. In 2009, the CUC served most of the population with water from 145 active production wells producing about ten to eleven million gallons per day, three developed springs, and a rainwater catchment system at the airport. Approximately an equal number of privately owned wells are scattered throughout Saipan for light industries, irrigation, and tourist-related businesses such as resorts and golf courses.

On the island of Tinian, the thickness of the freshwater lens is about 40 feet at the most inland well that is situated in a median valley. Previously conducted studies reveal that the lens can increase three to five feet during the wet season and decrease one to two feet during the dry season. The municipal well on the island consists of two parallel horizontal tunnels 300 feet in length that produces approximately 1.0 mgd. Two wetland areas near sea level are supplied perennially by groundwater. Hagoi Lake in the northern lowland is a fresh to brackish water body surrounded by a wetland. Marpo wetland in the median valley is a wetland with a small area of shallow open water.

Rota is about 12 miles (20 km) long and 5 miles (8 km) wide at the widest point, and supports a population of about 2500. The entire island surface is covered by uplifted limestone, except for the 2.5-mile (4 km) scarp along the southernmost flank of the island, where the volcanic core is exposed. Currently, almost all of the island’s potable water is produced from springs that emerge along the face of the scarp at the contact between the limestone and the underlying volcaniclastic basement.

Protecting the watersheds that supply these springs have been given a high priority to maintain water quality.

4.7 Vegetation

The United States Department of Agriculture has divided the Northern Mariana Islands into four broad land classes: forest, secondary vegetation, agroforest, and nonforest. Forestlands include five primary types of areas that include native limestone forest, introduced trees, mangrove forest, casuarina forest, and atoll forest. Limestone forests grow on areas of uplifted or raised limestone and once dominated the islands of Rota, Aguijan, Tinian, and Saipan.

Native forest lands are primarily found on Rota and in the southwest region of Tinian. Very few areas of native forest remain on Saipan, with a few scattered pockets on the Banadero cliffs and the Kagman Peninsula. Most altered native forests are impacted by such tree species as the Tangantangan (Leucaena sp.), Sosugi (Acacia spp.), and Kalaskas (Albizia sp). The introduction of the scarlet gourd (corcinnia grandis) an African vine of the melon family, Cucurbitacae, is threatening the vegetation and ecology of Saipan and the CNMI is threatened to an extent that it may diminish the beauty of the islands which are heavily dependent on tourism. According to Dr. Aubrey Moore, a former researcher at Northern Marianas College's Agriculture and Life Sciences Department (ALS), now known as the Northern Marianas College CNMI Cooperative Research, Extension and Education Service (NMC CREES) the scarlet gourd is difficult to destroy with herbicides. The vine has an extensive tuberous root system that is difficult to dig out and may survive a first, or even a second, application of herbicide. Dr. Moore, have observed that this scarlet gourd is very aggressive and now much more widespread covering trees and other native vegetation so heavily that the sunlight cannot get to the leaves of the plants below it, eventually suffocating them. The scarlet gourd lacks the normal natural enemies that would have assured that the vine kept its place in the environment. Unfortunately, many of the natural enemies of this plant are also crop pests.

Secondary vegetation areas include fast growing shrubs, small trees and vines on recently disturbed areas. Agroforest areas include trees cultivated for food crops, fruit, wood, and other products. Nonforest areas include wetlands, savanna/grasslands, and areas developed for urban use. Table 4-1 and 4-2 provide details as to the percentage distribution of land class types and forestlands within the CNMI.

Table 4-1
Percentage Distribution of Land Class Types within the CNMI

Island	Forest	Secondary Forest	Agroforest	Nonforest
Saipan	35%	30%	11%	24%
Tinian	24%	54%	1%	21%
Rota	62%	13%	5%	20%

Table 4-2
Percentage Distribution of Forest Lands within the CNMI

Island	Introduced	Native Limestone	Casuarina
Saipan	77%	12%	11%
Tinian	41%	28%	31%
Rota	2%	94%	4%

4.8 Economy

The global economic crisis affecting us today plagues the CNMI with severe economic challenges due to its impact on the CNMI‟s two major industries: 1) tourism and 2) construction. The continuing decline in tourist arrivals and the pullout of Japan Airlines is adversely impacting the tourism industry and ancillary businesses. The CNMI‟s construction industry is also facing an all-time low due to the lack of new development and construction projects.

Another major industry within the CNMI is tourism. Previously fueled by an economic boom in the late 1980s and early 1990s by the Asian market, the islands experienced a high visitor count of 736,117 tourists arriving in 1996. However, the financial crisis in 1997 created a decline in tourist arrivals. By 1998, levels of tourist arrivals slightly increased but did not reach the peak previously experienced. But in 2006, an estimated 435,494 visitors arrived in the CNMI with approximately 62% visiting from Japan, 19% from Korea, 8.8% from China and 7.4% from the United States with the remainder from areas of East Asia. In 2009, a total of 375,808 visitors arrived in the CNMI with 56% from Japan, 24.7% from Korea, 7.4% from China, 2.9% from the US, and the remainder (9%) from Russia and East Asia.

The depressed economic impact to the CNMI's two main industries has resulted in the closure of many primary and ancillary businesses thereby greatly reducing the CNMI government's local revenues prompting budget cuts to fund critical and essential government agencies and greatly affecting the delivery of critical and essential government services. As of this 2014 update, the CNMI still faces fiscal challenges resulting from the aforementioned reasons. State funds continue to be supplemented with federal assistance, primarily through grant programs.

Implementation of The Consolidated Natural Resources Act of 2008 (US Public Law 110-229), which takes away local control of immigration and labor in the CNMI, is now going through a transitional period and is having adverse effects causing uncertainties on businesses and guest workers due to ambiguities its implementation by both the Federal and local government. These developments are affecting local businesses and foreign investor confidence on investing in the CNMI.

According to the 2007 Census on Agriculture, approximately 4,013 acres of land are utilized for agriculture and 2,955 acres are used for pasture or grazing lands for several cattle ranching operations. The majority of remaining agricultural lands are used for croplands. The distribution of farm size is fairly equitable with an almost equal proportion between small farms (1 to 4 acres) and larger operations (10-50 acres). The primary product groups that support the agricultural industry within the CNMI include root crops; vegetables and melons; fruits, nuts, and nursery crops; livestock, poultry, and eggs; and aquaculture. The market value of agricultural products sold within the CNMI contributes approximately $2.4 million annually.

In July 2014, the CNMI enacted Public Law 18-56, more commonly known as the Casino Bill, which authorizes, establishes, and regulates exclusive gaming licenses within the CNMI. The introduction of full-fledged casinos is expected to bring significant income of cash flow to the CNMI, with particular benefit to the CNMI Government through licensing agreements, and spur growth in various aspects of the economy, including increased tourism and new construction.

4.9 Critical Facilities – Essential

The identified assets that are discussed in this section were recorded based upon information provided by public agency and organizational meetings, response action committee meetings, interviews with local public officials and agency representatives, and first response personnel in civil defense, police, fire, and ambulatory care.

As defined by FEMA guidelines, essential facilities are those identified critical facilities that are necessary to be in operation for the health and welfare of the whole population, especially following major hazard events. Examples of essential facilities include the emergency operations center; public shelters; disaster recovery centers; police stations; fire stations; hospitals and health clinics. A new state-of-the-art Emergency Operation Center (EOC) building funded through a FEMA grant was completed in 2010. It has been furnished and operable since 2012. July 2013, the state of the art EOC was officially open with a ribbon-cutting ceremony. Although not established, alternate EOC sites include the Office of the Governor or the Commonwealth Ports Authority Conference Room at the Airport. The Saipan EOC has a backup generator and a 250,000-gallon water tank.

On the islands of Rota and Tinian, the local EOC is situated at each respective Office of the Mayor, with each respective Department of Public Safety office serving as an alternate. The EOC serves as the central location for command and control in planning, decision-making, and coordination of all response and recovery operations at both the State and local levels of government. For the island of Rota, the Office of the Mayor has a backup generator and the Rota Public Works can deliver water using an 8,000-gallon water truck. For the island of Tinian, there is no backup generator or water tank but those can be provided from Tinian Public Works.

Public Shelters

The Public School System is responsible for the provision of temporary shelters for typhoon, flooding, and tsunami hazards by using school buildings and classrooms that are structurally secure against typhoons. These buildings have a foundation, exterior walls, and roofs constructed out of concrete. Additional public shelters are managed by the CNMI Division of Community and Cultural Affairs. Table 4-3 provides a listing of shelters, the village coverage, and ready usable rooms that is available.

Table 4-3
Official Shelters for the CNMI

Island	Shelter Site	Responsible Agency	Shelter Capacity (number of persons)
Saipan	Tanapag Elementary School (Building A)	PSS	180
	Garapan Elementary School (Bldg. D & Bldg. E)	PSS	100
	Marianas High School (Bldg. A, Bldg. C, Bldg. D, Bldg. E)	PSS	405
	San Vicente (Cafeteria)	PSS	165
	Koblerville Elementary School (Building B)	PSS	270
	Dandan Elementary School (Cafeteria)	PSS	79
	Chacha Overview Junior High School (Cafeteria)	PSS	100
	Kagman High School (Cafeteria)	PSS	50
	Kagman Community Center	DCCA	80
	Gilbert C. Ada Gymnasium	DCCA	80
Tinian	Tinian Elementary School (Bldg. I & K)	PSS	150
	Tinian High School (Bldg. B)	PSS	75
Rota	Aging Office Building	DCCA	100
	Rita Hocog Inos Jr./Sr. High School	PSS	75
Northern Islands	No Designated Shelter	N/A	N/A

Disaster Recovery Centers

During past disasters, disaster recovery centers (DRC) were opened in every island. On Saipan, the multi-purpose gymnasium in Susupe was utilized. On Tinian, a similar gym facility was used as a DRC. On Rota, the multi-purpose gymnasium in the village of Songsong was used. HSEM is designated as the lead agency to staff the DRCs with other agencies assigned to assist with DRC operations.

Police Stations

The Department of Public Safety (DPS) is primarily tasked with all law enforcement assignments. The department is divided into sections and bureaus with specific law enforcement tasks and consists of Uniform Services, Criminal Investigation, Boating Safety, Logistics and Support, and Armory. Under the Uniform Services, there are two subdivisions: the Patrol Section and Traffic Services. On the island of Saipan, the main police station is located in Susupe with a substation housed in Garapan. The island of Tinian has one police station in San Jose Village, while Rota has the main station in Songsong Village and a substation in Sinapalo Village.

The Patrol Section is designated as the primary responding unit to all calls for public assistance. The island of Saipan is currently divided into 6 zones. Depending on population and crime rate, each zone is composed of either one to three beats. Each beat is patrolled by one uniform patrol car at any given time of the day. At the present, there are 14 beats serving the six zones on Saipan. The Traffic Section is responsible for the investigation of traffic accidents and the enforcement of traffic regulations. The Traffic Section must also respond and direct traffic whenever primary traffic control lights are down because of power failures or lack of maintenance. The Boating Safety Section (BSS) is the only CNMI agency in charge of marine law enforcement with staffing on the islands of Saipan, Tinian, and Rota. The Criminal Investigation Bureau is tasked with conducting follow-up investigations on all criminal complaints that are not resolved by the Uniform Services Section.

Fire Stations

The Fire Division of DPS is divided into three main sections to achieve its current objectives to prevent the ignition of fires, provide life support service and reliable ambulance transportation, identify the underlying causes of emergency responses, and develop and implement prevention programs that target at-risk sectors of the community. The Division includes the following sections: the Suppression Section, Emergency Medical Services and Rescue, and Inspection and Investigation. The Suppression Section is primarily tasked to combat fire incidents in the CNMI. There are four fire stations on the island of Saipan and one each on the islands of Tinian and Rota. Each station is equipped with a fire pump truck and support apparatus that include a tanker or a rescue vehicle. A listing of the station locations on each island is provided below:

Saipan

- Station I is located in Susupe Village
- Station II is located in Garapan Village
- Station III is located in Capitol Hill
- Station IV is located in Koblerville Village
- Station V is located in San Roque Village
- Station VI is located in Kagman

Tinian and Rota

- San Jose Village (Tinian)
- SongSong Village (Rota)

Hospitals and Health Clinics

The Commonwealth Health Center Corporation (CHCC) located on Saipan is an 156,000 square foot two-level Medicare certified unit that accommodates 74 inpatient beds, 4 adult ICU beds, auxiliary services, extensive outpatient facilities, public health offices and clinics. The CHCC has a staff of about

45 doctors, 150 nurses, and a well-equipped inpatient pharmacy. The Department of Public Health and CHCC provide inpatient and outpatient services. Additionally, the division of Mental Health & Social Services provides various community health programs. The hospital scope of services includes an Emergency Department, Obstetrics, Post-partum, Neonatal Intensive Care Unit, Adult Intensive Care Unit, Surgical, General Medicine, Pediatrics, Dialysis Unit, and various outpatient clinics. Clinical support services include the Pharmacy, Clinical Laboratory, Respiratory Care Services, Physical Therapy, Radiology, Medical Social Services, Dietitian Services, Surgical Services and Anesthesia. The Center also has a helipad (FAA Identifier C21) whose dimensions are 45" X 45", whose surface is made out of concrete and is in good condition.

There are four private health clinics on the island of Saipan. The Pacific Medical Center (PMC) has a staff of three medical doctors and five nurses. The Saipan Health Clinic has a staff of three medical doctors, one certified physician assistant, and six nurses. The Marianas Medical Center has a staff of one medical doctor, one physician assistant, and one nurse. The Pacific Care Health Center has a staff of two doctors, two physician assistants, and six nurses. Further, there are private Seventh Day Adventist dental and Marianas Eye Institute clinics that charge higher rates than the government. There are also health centers with dental facilities on Rota and Tinian.

On the island of Tinian, the Health Center has four inpatient beds, two medical doctors, thirteen nurses, and one nurse practitioner. All of the medical facilities except for the Marianas Medical Center have a back-up generator and water source.

The island of Rota has a well-equipped, modern medical facility that offers 24-hour emergency service and a wide range of health care capabilities. Two medical doctors and seven nurses staff the Rota Health Center. The center houses 10 inpatient beds.

Community Vulnerability Assessment (CVA)

Appendix C provides a summary of the information gathered from the Facilities Assessment Matrix (FAM) forms that were returned to the HSEM by participating agencies, organizations, and businesses. The information contained therein was based upon available data and responses received.

Tables 4-4 through 4-6 provide a listing of critical facilities that were identified in the FAM by participating agencies and organizations as essential facilities that were used for the Community Vulnerability Assessment (CVA).

Table 4-4
CVA-Identified Essential Facilities on Saipan

Agency or Organization	Department or Division	Facility
CNMI Public School System	Tanapag Elementary School	Tanapag Elementary School temporary shelter

	Garapan Elementary School	Garapan Elementary School temporary shelter
	Oleai Elementary School	Oleai Elementary School temporary shelter
	Marianas High School	Marianas High School temporary shelter
	WSR Elementary School	WSR Elementary School temporary shelter
	San Vincente Elementary School	San Vincente Elementary School temporary shelter
	Koblerville Elementary School	Koblerville Elementary School temporary shelter
Commonwealth Ports Authority	Francisco C. Ada International	
		Operations Building
		Generator Building
		ATCT
		ARFF Building
Commonwealth Utilities Corporation	Geological Survey Water Division	GSWD
	Power Division	Feeder 7
		Chalan Kiya SUB
		Feeder 1
		Feeder 2
		Feeder 3
		Feeder 4
		Kiya 1 Feeder
		Kiya 2 Feeder
		Kiya 4 Feeder South East
	Power Generation	CUC Power Plant I
		CUC Power Plant II
		Pump Shop at Sadog Tasi
		Electrical Shop at Sadog Tasi
		Wastewater Division Office
Department of Community		

and Cultural Affairs	Sports and Recreation	Gilbert C. Ada Gymnasium
Department of Finance	Procurement & Supply	CNMI Procurement and Supply
Department of Public Health	Commonwealth Health Center	Commonwealth Health Center
Department of Public Lands	Saipan Division	Department of Public Lands Office
Office of Mayor (Saipan)		
	Community Services Division	CK Community Services Office
	Field Operation Division	Field Operations Office, L. Base
	Administration Division	Main Office, Afetna Square, S.A.
Department of Public Safety	Fire Division	Fire Station 1 Susupe Fire Station 2 Garapan Fire Station 3 Capitol Hill Fire Station 4 Kolberville Fire Station 5 Kagman Fire Station 6 San Roque
Department of Public Safety	Police Division	DPS Central Susupe (multiplebldg BMV Susupe Boating Safety Smiling Cove mari DPS satellite offices Capitol Hill Koban office Garapan CIB office Garapan
Office of the Governor	CNMI Homeland Security and Emergency Management	CNMI Emergency Operations Center, Capitol Hill, Saipan
American Red Cross	Disaster Services	
		American Red Cross Chapter
		ARC NMI Single Family Shelter
		Disaster Storage Warehouse

Table 4-5
CVA-Identified Essential Facilities on Tinian

Agency or Organization	Department or Division	Facility Name
CNMI Department of Public Works	Public Works Division	Main Office/Mechanic Shop
CNMI Public School System	Tinian Elementary School	Tinian Elementary School, temporary shelter
	Tinian Junior/Senior High School	Tinian Junior/Senior High School temporary shelter
Commonwealth Ports Authority	West Tinian	ARFF Building

Commonwealth Utilities Corporation	Power Division	
		Feeder 1 Power Distribution
		Feeder 2 Power Distribution
		Feeder 3 Power Distribution
		Feeder 4 Power Distribution
	Power Generation	
		Fuel Storage Tank
		Substation
		Power Plant
Department of Public Lands	Tinian	Department of Public Lands Office
Office of the Governor	Coastal Resources Management Office	Tinian CRM (rental)
Tinian Mayor's Office	Office of the Mayor	Tinian Mayor's Office
		Tinian Community Youth Center
Department of Public Safety	Fire Division	Tinian DPS/Fire Building
	Police Division	DPS/Police Building
Department of Public Health	Tinian Health Center	Tinian Health Center

Table 4-6
CVA-Identified Essential Facilities on Rota

Agency or Organization	Department or Division	Facility Name
CNMI Public School System	Rota High School	Rota High School Temporary Shelter
Commonwealth Ports Authority	Rota International Airport	Administration Building/Terminal
Dept. of Community & Cultural Affairs	Aging Center	Designated Typhoon Shelters
Homeland Security and Emergency Management (HSEM)	HSEM – Rota	HSEM
Department of Public Lands	Rota Division	Department of Public Lands
Rota Mayor's Office	Office of the Mayor	Main Office
Department of Public Health	Rota Health Center	Rota Health Center
Department of Lands & Natural Resources	Division of Land Registration and Survey	DLNR Admistration Building

Appendix D provides a series of generated GIS inventory maps that illustrate the identified essential facilities for each island.

4.10 Critical Facilities – Transportation Systems

Transportation data is important for emergency operations during any type of disaster and for providing access for relief and recovery efforts. Failure of these lifelines could be a great impediment to dealing with the impacts of a hazard.

Airports

The Saipan International Airport is located between Dandan and Obyan on the southeastern side of the island. The runway is approximately 8,700 feet long by 250 feet wide. The airport has six gates and services various types of aviation craft from small planes to the Boeing 747 class aircraft.
The West Tinian Airport is situated on the west side of the island with a new international runway recently completed near the existing runway. The existing runway is 5,000 feet long by 150 feet wide. The new

Tinian International Airport is 8,600 feet long. The West Tinian Airport is limited to small 18 passenger aircraft, Shorts 360s, but has the capacity to support a military C-130 aircraft. The new runway allows for Boeing 727 and 747 class aircraft to land.

The Rota International Airport is located in Sinapalo on the northern side of the island. The runway is 6,000 feet long by 250 feet wide and is capable of landing Boeing 727 aircraft. All the airports are connected to island power with main and back-up generators.

Seaports and Anchorages

The Port of Saipan is the primary seaport facility that is located on the northwest side of the island near the Exxon-Mobil Tank Farms. The dock is over 1,000 feet long and has a capacity of three large cargo vessels (250-300 feet long) that can be docked simultaneously. The grand debut of the port occurred in April 1999, which represented the culmination of the Saipan Harbor Improvement Project (SHIP), took place more than 20 years after its original inception and six years after construction began in 1993. The port is considered a world-class facility featuring 2,600 linear feet of berthing space, a 22-acre container yard, a water line, an underground fuel line protected by a concrete vault, an underground sewage removal system and dockside lights for nighttime operation. Additional improvements included the upgrading of the port's electrical system to better accommodate refrigerated containers. The channel, turning basin, and berthing areas have been widened and deepened to uniform 40 feet to support medium to deep draft vessels into port. With the help of the United States Coast Guard, the Commonwealth Ports Authority improved its navigational aids and repositioned the harbor buoys to mark the safest route into port.

Saipan Harbor includes Garapan Anchorage, the outer anchorage, and Puetton Tanapag. Puetton Tanapag (Tanapag Harbor) is also referred to as the inner harbor. Puetton Tanapag is sheltered by the barrier reef to the north. Most of the outer anchorage has been dredged to a depth of 52 feet, with some shallower areas dredged to lesser depths. The lagoon formed by the barrier reef is mostly shallow except for the harbor basin. The entrance channel to Puetton Tanapag lies due west of the harbor basin. In 1979, the channel was dredged to a depth of 29 feet and a width of 350 feet; it was proposed to be dredged to a least depth of 30 feet and a width of 540 feet.

There is no berth or anchorage available in Saipan Harbor that would be safe during the close passage of a typhoon. Saipan Harbor, being small and shallow, is not susceptible to extreme seas being generated within the barrier reef. The main problem is with externally generated seas and swells entering through the harbor entrance, which is almost one nautical mile wide. Since the harbor entrance faces southwest, Saipan is most susceptible to tropical cyclones that pass to the west and especially those on a northward track. Such an event happened with the passage of Typhoon Olive in April 1963.

Bahia Laulau, also called Magicienne Bay or Lau Lau Bay, lies on the southeast coast of Saipan Island. The bay is used solely as an anchorage with no provisions of berthing facilities. The bay is entirely open to the southeast and is exposed to the prevailing winds and swells. However, the bay does offer protection from northerly and westerly winds. Much of the shoreline is fringed by reef and fronted for a short distance by shoals. The 10-fathom line is located less than 400 yards off shore. Outside this fathom line, the bottom drops away steeply. Large vessels can anchor in convenient depths off the village of Laulau at the northern side of the bay.

With no protection to seaward whatsoever and being deep except close to shore, Bahia Laulau is susceptible to all southeasterly seas and swells without attenuation. However, protection is afforded for all seas and swells approaching from directions between southwest through northwest to northeast. The best protection is afforded for northwesterly seas and swells. Since most tropical storms approach from directions between south and east, Bahia Laulau is likely to be severely affected in the majority of cases.

On Tinian, the seaport facility is situated on the west side of San Jose village. The dock is 1,000 feet long, which was built by U.S. naval engineers during World War II, and can service three large cargo vessels simultaneously. A 3,500-foot breakwater protects the harbor. On Tinian, the usable length of the main quay is 2,200 feet with depths varying between 25 and 29 feet. There are two piers, pier 1 and pier 2 lying to the southwest of the main quay. Each has a usable length of 500 feet at both sides and a depth of 25 feet. Two shorter quays between the main quay and pier 1 and between piers 1 and 2 have 225 feet of berthage space each and a depth of 25 feet, bringing the total berthing space to 4650 feet. There are also some short quays in a shallow lagoon at the northwest end of the inner harbor, but these are used by local craft United States Navy ships normally occupy the new part of the main quay. There is also an area available for anchorage within the inner harbor, but it is very small with a diameter of only 1,000 feet. The bottom of this portion of the harbor consists of coral and sand providing reasonable holding.

The outer anchorage provides no shelter from westerly winds and there is very little protection from easterly winds except close to the shore. However, the inner harbor provides some protection from all winds, especially those between north and southeast. For winds between south and west, protection is provided by a breakwater built on the barrier reef that fronts the town, and is therefore minimal. Although the breakwater has sustained some damage, it still provides some barrier against wave and swell action. It is therefore considered that the inner harbor at Tinian would provide protection against both win d and wave action in all conditions except the close passage of a typhoon.

The Tinian Shipping and Transportation, Inc. Company do not provide daily ferry service between the islands of Tinian and Saipan. The ferry service has been discontinued.

On Rota, the West Dock is the primary seaport facility located on the southwest side of Songsong village. There are two docking areas that comprise West Dock, one is approximately 100 feet long and the other is 150 feet long. This dock can support two vessels simultaneously. Sea walls and revetments in the West Harbor need repair. Typhoon Pongsona changed some of the harbor walls in 2002. All seaports are connected to island power with main and back-up generators.

Highway and Roads

The existing roads in the CNMI are classified into four categories: primary roads that serve major points such as large villages, airports, harbors, and major recreational and commercial facilities; secondary roads that connect villages and communities; village roads that function as residential or intra -village streets; and tourist or scenic roads that service island tourist attractions. Overall, there are approximately 390 miles of road throughout the three major islands, of which 164 miles are paved and 227 miles are unpaved.

The road system on Saipan was constructed by the Japanese prior to World War II followed by road construction efforts by the American Armed Forces shortly after occupation in 1944. Of all the islands within the CNMI, Saipan has the largest amount of existing roadway infrastructure with a series of paved roadways, some of which are multi-lane arterial roadways.

The existing roadways that service the regions of Saipan are described below:

Chalan Pale Arnold (Middle Road): This road begins at Chalan Monsignor Guerrero in San Jose and proceeds north to the northern tip of the island. The road is classified as a primary road from Chalan Monsignor Guerrero to As Matius, whereupon it becomes a secondary road.

Beach Road: This road is considered to be the main road on Saipan that begins at the road to Micro Beach in Garapan and proceeds south. Between the road to Micro Beach and Street “D,” Beach Road is a two-lane roadway with a painted median. Within this area is a significant amount of commercial retail businesses adjacent to the road.

South of “D” street, the road continues as a two-lane undivided roadway with the shoreline and park area to the west of the road. The east side of the Beach Road in this segment contains low-density commercial businesses. Quartermaster Road, perpendicular to Beach Road, was widened to provide a southbound, left-turn lane.

South of Quartermaster Road, Beach Road becomes a four-lane undivided roadway with the density of commercial retail uses increasing toward the Chalan Monsignor Guerrero end of the segment.

South of Chalan Monsignor Guerrero, Beach Road continues as a four-lane, undivided roadway that is widened to provide exclusive left-turn lanes at major intersections. The northern part of this segment had development concentrated on the eastern side with direct access to Beach Road and park and shoreline on the west side. A traffic signal is provided at the intersection of As Perdido Road.

South of the As Perdido Road, Beach Road becomes a two-lane roadway with a painted median. This road curves inland shortly after the Pacific Island Club Resort in San Antonio and turns into the road through Koblerville.

Chalan Monsignor Guerrero: This road is classified as a primary roadway that provides connection between Tun Herman Pan Road and Chalan Pale Arnold. The cross-section between Tun Herman Pan Road and the point just east of Tun Antonion Apa is a four-lane roadway with paved shoulders.

Between Chalan Pale Arnold and Beach Road, Chalan Monsignor Guerrero has two lanes with a painted median.

Tun Herman Pan Road (Airport Road): This two-lane undivided primary road connects the Saipan International Airport with Chalan Monsignor Guerrero, providing a critical mobility connection between the airport and the northern and western parts of Saipan.

Chalan Monsignor Martinez (As Lito Road): This road provides connection between Koblerville and Chalan Monsignor Guerrero. On the southern end, it intersects with Beach Road to complete a southern loop with Saipan. As the road enters Koblerville there is an increase in the density of residential and neighborhood retail uses.

As Perdido Road: This road provides an east-west connection between Beach Road and Saipan International Airport. Near the intersection with Chalan Monsignor Martinez, there are pockets of residential areas. There are scattered light industrial and agricultural uses situated to the west. Near the intersection with Beach Road, land use becomes more commercial.

Connector Roadways: There are numerous connector roadways between the primary roads that are generally two-lane undivided paved roads.

Village Streets: Within the villages of Chalan Kanoa and Susupe, the roadways are generally narrow and paved. The residential developments in Koblerville, Dandan, Kagman, Gualo Rai, Navy Hill, Capitol Hill, and Marpi generally have paved residential streets that are wider than the village streets.

According to the CNMI Comprehensive Highway Master Plan (1997), the most important long-range transportation priority for the island of Saipan is the classification and preservation of key transportation corridors. Given the importance of tourism for the Saipan economy, transportation corridors between Saipan International Airport and key resort locations in Chalan Kanoa, Garapan, and San Roque need to be preserved to maximize transportation convenience for tourists and tourist-related support services. Further, maintaining transportation corridors serving the movement of freight from cargo terminals at the Saipan International Airport and Tanapag Harbor is also a priority. Future enhancements include the provision of bicycle and pedestrian routes, paths, and lanes along several main arterial roads and collector streets and the provision of a sidewalk on Beach Road from the Kanoa Resort to As Perdido Road.

When U.S. forces occupied the island of Tinian during the war, a system of roads were planned and oriented on the island in a similar fashion to the corridor patterns of Manhattan, New York. Two divided roadways were built across Tinian to effectively transport the huge quantities of bombs up from the port at San Jose during the wartime effort. Many of these wartime-built roads are in fairly good condition. However, the roadways within San Jose stand to benefit most from a reconfiguration of operation. On Tinian, Broadway Avenue (named after the same street in New York) is a gravel roadway toward the south end of San Jose village.

As with Saipan, maintaining the connections between the airport, harbor, and future resort areas on the island of Tinian is an important priority. Mobility between the residential areas of Marpo Heights, San Jose village, and the development areas in the southwest is important to strengthen and maintain to support the island's economy in the tourist-casino industry. Potential enhancements on Tinian would include the provision of bicycle and pedestrian paths along Broadway north to Boston Post Road and around the western side of the island on Riverside Drive and then terminating on the western side of San Jose Village.

The island of Rota has one major paved roadway that connects the airport with the areas of Sinapalo Village and Songsong Village. Within Songsong Village, this road is called San Francisco de Borja Road and serves as its main street. Within both Sinapalo and Songsong Villages, there is a mixed patchwork of paved and unpaved roads. The percent of paved roadways seem to be increasing. Many of the collector roadways within Songsong and Sinapalo are not paved and significant erosion occurs after heavy rainfall. During dry conditions, these coral roadways generate dust.

The long-range land use policy on the island of Rota is to support slower-paced growth oriented to future eco-tourism type activities. Thus, the long-range transportation plan for Rota is to complement future plans of land use and development. Planned actions include: the integration of bicycle and pedestrian paths along existing roadways; paving selected collector roadways within Songsong Village to reduce dust emissions and; installing proper roadway drainage systems within Songsong Village to reduce flooding.

Community Vulnerability Assessment (CVA)

Table 4-7 provides a listing of critical facilities that were identified in the CVA by participating agencies and organizations as either a transportation system or facility.

Table 4-7
CVA-Identified Transportation Facilities in the CNMI

Island	Agency or Organization	Department or Division	Facility Name
Rota		Rota International Airport	
			ARFF Building
			Car Rental Building

	Commonwealth Ports Authority		Roadway
			Terminal Building
		Rota West Harbor	Rota Seaport
			Building
Saipan	Commonwealth Ports Authority	Francisco C. Ada International Airport	Airport Terminal
			Commuter Terminal
			Continental
			Building
			Incinerator Building
		Port of Saipan	Saipan Seaport Bldg
	Department of Public Works	Technical Services Division	Central Repair Shop
	Office of the Mayor	Community Services Division	CK CS Office
		Field Operation Division	FOO, Lower Base
Tinian	Commonwealth Ports Authority	West Tinian Airport	Airport Terminal
			Car Rental Office
			Flight Service
			Office
			New Cargo Building
		Port of Tinian Tinian Seaport Bldg	Tinian Seaport Bldg

4.11 Critical Facilities – Lifeline Utility Systems

Lifeline utility systems cover a wide range of services that support the daily activities within the CNMI and are essential in any emergency situation. These lifelines include water infrastructure, energy, transportation and ports of entry, telecommunications, and solid waste.

Water Supply

The public water system is currently not able to satisfy the ever-increasing demands placed on it by commercial development and rapid population growth. The Commonwealth Utilities Corporation (CUC) is the operating agency that acts as a "wholesaler" selling treated water to private sector retailers. Oftentimes these private firms add further treatment, like desalination, and sell water to the public or provide for its own use. Retailers that sell or give water to more than 25 people are called "Public Water Systems," or firms that get water directly or consecutively from a CUC pipeline. There are currently 45 Public Water Systems (PWS) on Saipan and Tinian, where approximately ten to eleven million gallons a day is pumped from Saipan's underground aquifers. In order to meet the demands for water, 6 new water wells were drilled in 2009. In addition to deep-water wells, facilities on Saipan, Tinian and Rota make use of reverse osmosis and rainwater catchment systems.

On the island of Saipan, freshwater is derived from primarily deep wells and springs. The CUC operates 145 wells on Saipan, one spring, and a rainwater catchment facility. Water is pumped from these places to reservoirs where the water is treated. The majority of the treated water source is either chlorinated groundwater or spring water that has been infused with chlorinated groundwater. The most prevalent contamination sources are from inorganic contaminants (salts and metals from stormwater runoff, discharge from septic tanks, or industrial wastes); organic chemical contaminants (volatiles from gas stations, septic systems, and stormwater runoff); microbial contaminants (bacteria, viruses and protozoa derived from sewage treatment plants, agricultural livestock, and septic systems); pesticides and herbicides (discharge from agricultural operations, stormwater runoff, or residential users of such chemicals); and radioactive contaminants (can be naturally occurring from gas operations or mining).

On the island of Tinian, freshwater is derived from a Maui-type well and three deep wells near Marpo. The majority of the water source is chlorinated groundwater. The most prevalent contamination sources are from natural erosion, fertilizer and sewer discharge or runoff, toxins derived from corroded materials such as batteries, paints, and galvanized pipes.

On the island of Rota, freshwater is derived primarily from water caves and deep wells (used in times of drought). The majority of the water source is chlorinated groundwater. The most prevalent contamination sources are from natural erosion, discharge & runoff from orchards, glass and electronics, drilling wastes, metal refineries, battery wastes and paints, fertilizer and aluminum factories, animal wastes, leaking septic tanks, sewage, corrosion of galvanized pipes, and discharge from petroleum discharge (perhaps WWII by-products).

Tables 4-8 through 4-10 provide a description of water sources, the region and villages serviced, type of water provided, and source of contaminants for each island.

Table 4-8
Water Sources on the Island of Saipan

Region	Village Served	Source of Water	Type of Water	Contaminant Source
1	As Matuis, San Roque	Marpi Quarry with 11 deep wells	Chlorinated groundwater	Natural erosion; discharge and runoff from fertilizers, sewage, leaking septic tanks.
2	Achuago, Tanapag, As Mahetog, Lower Base	Achuago: 1 spring; Tanapag: 2 springs and 2 deep wells	Spring water blended with chlorinated groundwater	Natural erosion; discharge and runoff from fertilizers, sewage, leaking septic tanks, battery wastes, and paints.
3	Sadog Tasi, Agag, As Teo, Papago	Capitol Hill: 3 deep wells; Agag: 6 deep wells	Spring water blended with chlorinated groundwater	Natural erosion; discharge and runoff from fertilizers, sewage, leaking septic tanks, battery wastes, and

				paints; corrosion of galvanized pipes.
4	I Denni, As Teo, Navy Hill, Puerto Rico, Northern Garapan, Sadog Tasi	Puerto Rico: 2 deep wells; Maui IV (WWII Deep Shaft); Navy Hill: 2 deep wells; Sablan Quarry: 10 deep wells	Chlorinated groundwater	Natural erosion; discharge and runoff from fertilizers, sewage, leaking septic tanks, battery wastes, and paints; electronics production waste from WWI; discharge from WWII metal scraps.
5	Gualo Rai	4 deep wells in Gualo Rai	Chlorinated groundwater	Natural erosion; discharge and runoff from battery wastes & paints, metal refineries, fertilizers aluminum factories, animal wastes, leaking septic tanks, sewage.
6	Kagman; Papago; San Vicente	Kagman – 4 deep wells and San Vicente 3 deep wells	Chlorinated groundwater	Natural erosion; discharge & runoff from orchards & fertilizers.
7	Kagman I, II, III	12 deep wells	Chlorinated groundwater	Natural erosion; discharge & runoff from orchards, glass & electronics wastes, metal refineries; battery wastes & paints, fertilizer, animal wastes, leaking septic tanks, sewage, metal degreasing & other factories, corrosion of galvanized pipes.
8A	Kannat Tabla, San Jose, Chalan Laulau, Lower Gualo Rai, Fina	Isley Field: 12 deep wells; Fina Sisu 1 well, As Perdido:	Chlorinated groundwater	Natural erosion; discharge & runoff from battery wastes & paints; metal/ auto, animal wastes, fertilizer, leaking septic tanks,

	Sisu, As Lito, As Perdido, South Garapan	“Kumoi Well”		sewage, cleaning agents used to rinse grease from machines, corrosion of galvanized pipes.
8B	Chalan Kanoa, Susupe, San Jose, Airport	Isley Field: 5 wells, Obyan Field: 19 wells Airport Rainwater Catchment	Surface Water & Chlorinated groundwater blended	Natural erosion; discharge & runoff from orchards, glass & electronics wastes, metal refineries; battery wastes & paints, fertilizer & aluminum factories, animal wastes, leaking septic tanks, sewage, discharge from WWII metal scraps, corrosion of galvanized pipes.
8C	Dandan Homestead (Upper/Lower) Obyan, South San Vicente, As Lito Samba, As Kito Rd, Airport Rd	Isley Field: 17 deep wells, Obyan Field: 5 deep wells, Dandan: 2 deep wells, As Lito: 3 deep wells	Chlorinated groundwater	Natural erosion; discharge & runoff from orchards, glass & electronics (WWII wastes), battery wastes & paints, metal scraps, drilling wastes, fertilizer, animal wastes, leaking septic tanks, sewage, corrosion of galvanized pipes.
8D	Dandan, Northern Marianas College	Dandan: 1 deep well	Chlorinated groundwater	Natural erosion; discharge & runoff from fertilizer, animal wastes, leaking septic tanks, sewage.
8E	Dandan-Karl Reyes to CMS Quarry	Dandan: 1 deep well	Chlorinated groundwater	Natural erosion; discharge & runoff from fertilizer, animal wastes, leaking septic tanks, sewage.

9A	Koblerville, San Antonio, Chalan Piao, As Gonno	Koblerville: 14 deep wells & 1 Maui type well	Chlorinated groundwater	Natural erosion; discharge & runoff from orchards, glass & electronics (WWII wastes), battery wastes & paints, WWII metal scraps, drilling wastes, fertilizer & aluminum factories, animal wastes, leaking septic tanks, sewage, corrosion of galvanized pipes, discharge from petroleum (perhaps WWII by products).
9B	Koblerville, As Perdido	Koblerville: 2 deep wells	Chlorinated groundwater	Natural erosion; discharge & runoff from battery wastes & paints; metal/ auto, animal wastes, fertilizer, leaking septic tanks, sewage, cleaning agents used to rinse grease from machines and other discharging, eroding metals, corrosion of galvanized pipes.
10	Chalan Kiya	Duenas Residence: 1 deep well	Chlorinated groundwater	Natural erosion; discharge & runoff from orchards, glass & electronics (WWII wastes), fertilizer, animal wastes, leaking septic tanks, sewage, corrosion of galvanized pipes.

Table 4-9
Water Sources on the Island of Tinian

Region	Village Served	Source of Water	Type of Water	Contaminant Source
Tinian	Entire island	Maui-type well and 3 deep wells near Marpo	Chlorinated groundwater	Natural erosion; discharge and runoff from fertilizers, sewage, leaking septic tanks, battery wastes, and paints; corrosion of galvanized pipes; discharge from chemical plants and other industrial activities

Table 4-10
Water Sources on the Island of Rota

Region	Village Served	Source of Water	Type of Water	Contaminant Source
Rota	Songsong Village, Sinapalo I, II, III	Water Caves (2): 3 deep wells (used in droughts)	Chlorinated groundwater	Natural erosion; discharge & runoff from orchards, glass & electronics, drilling wastes, metal refineries, battery wastes & paints, fertilizer & aluminum factories, animal wastes, leaking septic tanks, sewage, corrosion of galvanized pipes, discharge from petroleum (perhaps WWII by products).

Wastewater Treatment and Disposal

Wastewater is provided with secondary treatment in DEQ regulated facilities. Currently, the CNMI DEQ administers the regulatory and enforcement programs. Private and commercial users not served by municipal sewer lines should have an approved and permitted on-site wastewater treatment system. Facilities that generate more than 5,000 gallons per day of wastewater are not allowed to install a traditional septic system. Rather, the installation and operation of a more advanced treatment system is required. However, many low-income families still utilize latrines as a method of human waste disposal.

Currently, all municipal wastewater facilities in operation within the CNMI have sufficient capacity. The Commonwealth Utilities Corporation operates two wastewater treatment systems on the island of Saipan, which are located at Agingan point and Sadog Tasi. However, the primary issues of concern with the existing system include a lack of funding to extend the existing wastewater system and to afford the regular maintenance of lift station pumps as well as the seepage of rainfall into the collection systems during heavy periods of rain.

Residents on Tinian primarily use septic systems pending the full integration of sewer infrastructure. However, the island of Rota has one wastewater treatment facility that is able to service approximately 2,650 people with the remainder of the island population utilizing septic systems and pit latrines. Additionally, a sequence of settling ponds was constructed as part of the Rota Resort Development's sewage treatment system, which was modeled by professors at California State University.

Power

CUC Power Division, which operates an integrated system of power generators and transmission facilities, provides electrical service for the islands. On the island of Saipan, only one diesel generation facilities currently supply power. The installed capacity on the island of Saipan is 98.2 MW, however, there is currently only 61.7 MW that is operational and the current peak demand is 38 MW, down from an all time of high of 72 MW in 2002. On Tinian, a 10 MW power plant was completed in November 1999 and in the fall of 2004 an additional 2-5MW unit came on line. The Tinian power plant has two generator pads remaining that do not have power-generating units. On the island of Rota, there is one power plant located adjacent to the West Dock. This power plant contains a 2-2.5 MW and a 1-1.5 MW generation unit. The Rota Resort has a power plant with 3-1 MW units. The Rota Resort had an agreement to sell power to the CUC but that agreement has expired. The Rota Resort is now negotiating with CUC for a long-term agreement to provide power to the main grid. Current demand on Rota is 1.7 MW down from 2.7 MW. The recent decrease in demand seen on all three islands has been attributed to the rise in utility rates. On Saipan, the decrease in power demand has also been attributed to the recent closure of several large garment factories.

Solid Waste Disposal

On the island of Saipan, there is one EPA certified landfill. The Puerto Rico dump has been closed to public dumping since 2003. The Puerto Rico dumpsite was originally created by the U.S. Navy in the mid-1940s as a dock facility post World War II. Between 1953 and 2003 the area had been used for disposal of municipal solid waste, though it did not become the principal municipal solid waste disposal facility on the island of Saipan until 1978. With the economic development boom in the 1980s, the island wide volume of waste increased tremendously, from an estimated island volume of 128 tons per day in 1994 to 320 tons per day in 2003. Due to several violations of the Clean Water Act, the Environmental Protection Agency issued an administrative order in 1994 that mandated that the Puerto Rico site be closed. Although the site is no longer a receptacle for waste, the facility is not officially closed. Options have been considered as to the final disposition of the site, of which preliminary improvements call for stabilizing the area and potentially restoring the site to public park with limited access.

The EPA certified Marpi landfill opened in February 2003 and has a capacity of approximately one million cubic yards, which at the current rate of waste generation should last about 20 to 25 years. The 43-acre landfill in Saipan's northern district, along with its transfer station, cost approximately $18.5 million. The Marpi Landfill footprint covers 27 acres and is designed to house 6 cells, two of which have been completed and are able to accept waste. A high-density polyethylene liner prevents leachate from seeping into ground water or finding its way into the ocean. Water accumulating within the liner is pumped out (on the side of the landfill farthest from the shore) and into a separate treatment system before it is tested and, when acceptably clean, is disposed of in a leaching field. Soil cover is applied to the refuse daily to minimize noxious fumes and to defend against vectors such as rats, dogs and insects. To help reduce the volume of waste that is deposited into the Marpi landfill, tipping fees are avoided if users take recyclables such as aluminum, glass, metal, cardboard and paper to a collection station operated by a private contractor. The aluminum and paper are shipped to Asian scrap markets, while the glass is ground into sand and used in construction-related activities. The government assists by subsidizing the recycling costs.

On the island of Tinian, the open dump is estimated at about 20 thousand cubic yards that will last approximately less than two years at the current rate of waste generation, which is currently in violation of regulations, by the U.S. EPA and the CNMI Department of Environmental Quality, Solid Waste Division. However, to comply with local and federal environmental regulations, Tinian will close its dumpsite and build its own fully compliant $3 million landfill sometime within the next two years.

On the island of Rota, the open dump capacity is the same as Tinian with a similar rate of waste generation and regulatory violations. Contrary to Tinian's projected construction of a new solid waste facility, the island of Rota is currently in the process of securing funds to address its waste management issues.

Telecommunications

Pacific Telecom Incorporated or PTI bought out IT&E Guam on February 27, 2008 and now operates as IT&E, and is responsible for the operation and maintenance of telephone service within the Northern Mariana Islands. Fiber optics and copper cables are buried underground and are utilized as the primary system with satellite relay service utilized as secondary system with Korea and Hong Kong. The fiber optic cables, which currently need of repair or replacement, run from Saipan to Rota, and feed to a hubbed network on Guam. On the island of Saipan, the Motorola SMARTNET 800 MHz Trunk two-way radio communication system serves as the primary communication system of almost all government agencies. The SMARTNET operates on two consoles, one at the DPS and the other at the EMO. The DPS console maintains all public safety channels for the different divisions under DPS such as police, fire, and EMS. The EMO console maintains all the other agencies such as the EMO, DPW, and the Office of the Governor. The CUC and the CPA are two autonomous agencies that operate their own two-way radio communications independently. The Office of the Mayor in Saipan operates its own two-way radio communication system using a Motorola VHF. CUC uses the Motorola GRC 500 two-way radio communication system on Saipan, Tinian, and Rota. The repeater site of the Motorola SMARTNET system is located on Mount Tapochau and is maintained by HSEM. Island power was connected to this site and a backup generator is available. The communication building was hardened which replaced the old metal container housing all the transmitters and repeater equipment. Secondary communications systems include underground landline telephones provided by PTI. This system remains operational during major storms and disasters. Other secondary systems include cellular service that most departments and agencies use and private Ham Radio Operators group that are willing to volunteer their services in disaster response operations. The American Red Cross has two satellite systems to be used in emergencies in case existing communications systems are not available.

On the island of Tinian, the primary two-way radio communication system for the Office of the Mayor and all response agencies is maintained by Radio Comm, a private company, under a lease agreement with the local government. Secondary communications systems include underground landline telephones provided by PTI. Other secondary systems include cellular service but islandwide coverage is not provided.

On the island of Rota, the primary two-way radio communications system operates differently than on the other islands. Agencies such as the CPA, the CNMI Historic Preservation Office, DEQ and CRMO own their hand-held radios and are using the VHF SMARTRUNK system. DPS owns and operates a VHF SMARTRUNK system that was installed by Radio Com but is now being maintained by HSEM Saipan. Currently, the Office of the Mayor has obtained a new integrated early warning system and communication system for all agencies in Rota funded under the Public Assistance and Hazard Mitigation Grant Program. Secondary communications systems include underground landline telephones provided by PTI. Other secondary systems include cellular service but island-wide coverage is limited.

Table 4-11
CVA-Identified Utility Systems in the CNMI

Island	Agency or Organization	Department or Division	Facility Name
Rota	Commonwealth Ports Authority	Rota International Airport	Generator House
			Generator House 2
	Commonwealth Utilities Corporation	Rota Division	Feeder - 3 substation
			Ginalangan Reservoir
			Ka'an Reservoir
			Power Plant
			Warehouse
			Well SP-1
			Well SP-2
			Well SP-3
	Department of Public Health	Rota Health Center	Water Pump
Saipan	Commonwealth Utilities Corporation	Wastewater Division	Agingan Wastewater Treatment
			Sadog Tasi Wastewater Treatment
		Warehouse	CUC Warehouse
		Water Division	CUC Saipan Water Wells (138 Total)
		Power Division	CUC Power Plant I
Tinian	Department of Public Works	Public Works	Maintenance Shop
	Commonwealth Ports Authority	West Tinian Airport	Canopy
			Generator House
			Quonset Hangar
		Water Division	.25 MG MDC Tank

	Commonwealth Utilities Corporation		.50 MG Carolina Tank
			MW-I Pump House Storage
			MWII-Pump Station
			MWI-Office
			Deep Well #4
			Deep Well #6
			Water Distribution Line
			Deep Well #5
			Maui Well 1
			Maui Well (Office/Storage)
			Maui Well II
			Deep Well #1
			MWI-Office
		Power Division	Lubrication Tank (EMD)
			Clean Oil Tank 1
			Clean Oil Tank 3
			Lubrication Tank (Wartsila)
			Clean Oil Tank 2
			Warehouse

4.12 Critical Facilities – High Potential Loss Facilities

High Potential Loss Facilities are those facilities that would have a high loss associated with them such as military installations, nuclear power plants, or dam structures. Here, the term „loss‟ can be characterized in terms of loss to life or property. For the purposes of this stud y, the types of facilities that could be considered as high potential loss facilities are those that provide service and support for on-going military operations within the CNMI.

Military Facilities

Military Sealift Command ships routinely anchor off Saipan. Maritime Prepositioning Ship Squadron Three, normally in the Guam/Saipan area, has four ships. The ships are manned by civilians under contract to the U.S. Military Sealift Command. Three ships operate out of Guam and Saipan without a permanent homeport in that area.

The Navy maintains a training area on Tinian, which served as the launch of the atomic weapons that brought an end to World War II. Training on Tinian occurs within the Military Lease Area, with limited activities in San Jose Harbor. Over two thirds of the island is retained by the U.S. Federal government for military contingency purposes.

The Farallon de Medinilla, an uninhabited 200-acre island, stands about 280 feet above sea level and is approximately 3 miles by 1/2 mile. The Farallon de Medinilla Target Range is located about 150 miles north of Guam and is leased from the Government of the Commonwealth of the Northern

Mariana Islands. The range has been used since 1976 under an agreement between the United States and the Commonwealth of the Northern Mariana Islands. Farallon de Medinilla is classified as public land that is under lease by the US military from the Commonwealth. The Commonwealth of the Northern Mariana Islands has a lease agreement with the US militar y that allows use of the island until 2075. The Farallon de Medinilla Target Range is the Pacific Fleet‟s only U.S.-controlled range available for live-fire training for forward deployed naval forces.

Community Vulnerability Assessment (CVA)

There were no identified areas of high potential loss in the CVA.

4.13 Critical Facilities – Hazardous Materials Storage and Disposal

According to the United States Department of Agriculture Cooperative State Research, Education, and Extension Service, Southwest States and Pacific Islands Regional Water Quality Program, a primary concern to maintaining adequate sources of drinking water within the CNMI is to address the potential seepage and/or leakage of trichloroethylene (TCE) in the islands‟ water aquifer systems. Past issues with the illegal dumping of TCEs, which is a hazardous chemical used as a spot remover for fabrics in the garment sector and as a degreaser in automotive repair, have warranted the monitoring of storage and disposal of such chemicals.

Other types of hazardous materials such as poly-chlorinated biphenyls (PCBs) that were left on the island in damaged electrical equipment after World War II continue to be an issue of concern within the CNMI. Further, the protection and immediate emergency response to chemical contaminants from hazardous material spills of the islands‟ coral reef ecosystems and groundwater resources is of major concern. Overall, previously conducted environmental remediation projects directed towards this end have been initiated within the CNMI include: groundwater and soil remediation; underground storage tank removal; asbestos and lead paint abatement; and post-typhoon hazardous materials clean-up activities.

CNMI HSEM has completed the CNMI Hazardous Materials Commodity Flow Analysis Report that lists all the primary importers of hazardous materials into the CNMI and the types and quantities of hazardous materials being imported. In addition, HSEM recently completed updating the Facility Profiles Reports (FPR) for the CNMI. The FPR lists all facilities in the CNMI that are required to submit Tier Two reports required under the Emergency Planning and Community Right-To-Know Act (EPCRA). The EPCR Act requires all facilities that meet the Threshold Planning Quantities of certain chemicals to submit Tier Two reports. These reports provide facility information that will assist first responders in the event of a major hazardous materials incident within those facilities.

The release of hazardous materials could be caused by accidental release or natural events such as typhoons and major earthquakes with a great potential for loss of life and/or damage to the environment.

Table 4-12
CVA-Identified Areas for Hazardous Waste Storage in the CNMI

Island	Agency or Organization	Department or Division	Facility Name
Rota	Commonwealth Ports	Rota International Airport	Fuel Enclosure

4.14 Vulnerable Populations

Although there are a few pocket areas of high population density on each major island in the CNMI, the issue of vulnerability has less to do with high density than it does with assuring that these populations have adequate access to evacuation routes, food, water and subsequent medical services during and after a disaster. In many areas, the only developed land lies near the shoreline or within the coastal plain, creating potential vulnerability to any hazard that produces flooding conditions.

Residential Population Centers

As shown in Table 4-13, island of Saipan has several residential population centers, with the area of San Antonio having approximately 1,150 residents more than the next highest residential area situated in Garapan.

Table 4-13
Residential Population Centers on the Island of Saipan

Area	Population
San Jose	954
San Roque	741
Navy Hill	1139
Capitol Hill	1028
Susupe	2078
Gualo Rai	1660
DanDan	3280
Kagman	4291
Chalan Kanoa	3019
Tanapag	3151
San Vivente	2091
Koblerville	3272
Garapan	3983
San Antonio	4697

Source:U.S Census Bureau 2010

With an island residential population of approximately 3,500 people, the village of San Jose on Tinian is the primary center with over 2,000 people residing within the village. The ethnic origin and race of the majority of the population on Tinian are Chamorro, Filipino, and Chinese.

On the island of Rota, the two residential primary population centers are Sinapalo and Songsong village. The entire island hosts a population of approximately 3,300 with a diverse population of Chamorro, Bangladeshi, and Filipino ethnicities being the most represented. Approximately 1,400 people reside in Songsong with the remaining population primarily centered in Sinapalo or outlying rural areas.

Elderly Care Facilities

The CNMI has a significant and increasing number of elderly residents (Man-amko). In 2000, the population of those over the age of 65 is approximately 1,050, of which nearly 50% are categorized as having a disability. Approximately 85% of this population resides on the island of Saipan.

The Mountain-Pacific Quality Health Foundation is one of the primary organizations assisting with the provision of resources and assistance to home health agencies within Hawaii, Guam, American Samoa, and the Northern Mariana Islands. The Foundation is a non-profit, physician-sponsored organization funded by the Centers for Medicare and Medicaid Services, a federal agency of the U.S. Department of Health and Human Services. The mission of the organization is to improve the quality of care for the islands‟ elderly population, provided training and materials, expertise in quality indicator development and performance measurements, and consultation for specific problems.

Community & Social Services

In the CNMI, there is a strong cultural and social value of a community addressing the needs of each individual within the family unit. The strong sense of community is exhibited in the numerous social agencies that exist within the CNMI, providing a stable social foundation for those that are in need of assistance. The CNMI VOAD or Voluntary Organizations Active in Disasters is a network of social services organizations chaired by the Executive Director of Ayuda Network, Inc. and organized to coordinate most social services organizations to be able to more effectively provide services to all island residents after a disaster event. Several CNMI agencies, including the Commonwealth Development Authority, the Department of Cultural and Community Affairs, and the Department of Public Health have identified the following agencies and organizations as social service providers:

- Alcoholics Anonymous
- Ayuda Network
- Al-Anon
- Army Reserve Center
- Boy Scouts of America (Saipan, Tinian)
- Catholic Social Service-Karidat (Saipan, Tinian)
- Carolinian Affairs Office
- Child Protective Services
- Northern Marianas Protection and Advocacy Service
- Nutrition Assistance Program, Department of Community and Cultural Affairs
- Office on Aging
- Survivors for Victims of Rape and Sexual Abuse
- Saipan Chamber of Commerce
- Tinian Chamber of Commerce
- Veterans‟ Affairs Office
- Women’s Affairs Office
- Division of Youth Services
- Salvation Army

Special Health Service Needs

According to the 2000 census data, there are approximately 9,600 people that live in the CNMI who have a disability. People with disabilities within the CNMI often live with other family members or relatives who assist them. In general, family members would assist them to evacuate either to another relative's house or to a public shelter. There are no auxiliary procedures outside normal evacuation warnings that are issued or disseminated via radio or television for the general public.

4.15 Economically Important Assets

These assets are identified as major economic employers or finance centers within the CNMI that could affect the local or regional economy if significantly disrupted.

Banks and Finance Companies

According to the CDA, both federal and local bank laws apply within the CNMI. In addition to banking services, the Mariana Islands are host to several finance companies, security broker dealers, trust companies, remittance companies, and foreign exchanges.

There are eight identified banking institutions on the island of Saipan, which include:

- **Bank of Guam**
  - Garapan and Chalan Piao (Saipan)
  - San Jose (Tinian)
  - Songsong (Rota)
- **Bank of Hawaii**
  - Puerto Rico and Chalan Kanoa (Saipan)
- **Bank of Saipan**
  - Chalan Kanoa and Garapan (Saipan)
- **City Trust Bank**
  - Gualo Rai (Saipan)
- **Financial & Insurance Services Group Inc.**
  - Garapan (Saipan)
- **First Hawaiian Bank:**
  - Oleai and Gualo Rai (Saipan)
- **Bank Pacific Ltd.**
  - Garapan (Saipan)

Hotels and Tourist Facilities

It is general policy that the hotels within the CNMI are responsible for providing shelter for their guests. The majority of hotels are constructed out of concrete with existing provisions of backup power and water supply. The lead agency responsible for the coordination of tourist activity with airlines, travel bureaus and the hotel association is the Mariana Visitors Authority. Tables 4-14 through 4-16 provide information as to the identified hotels and other types of tourist accommodations within the CNMI.

Table 4-14
CNMI Hotels and Tourist Accommodations – Saipan

Hotel Name	Number of Rooms	Village Location
Aquarius Beach Tower	63	Chalan Kanoa
Lao Lao Bay Golf Resort	54	Kagman
Chalan Kanoa Beach Club	28	Chalan Kanoa
Hafa Adai Beach Hotel	428	Garapan
Fiesta Resort	416	Garapan
Hyatt Regency Saipan	325	Garapan
Saipan Ocean View	87	Garapan
Gold Beach Hotel	46	Garapan
Century Hotel	33	Garapan
Capitol Hotel	29	Garapan
Holiday Resort Hotel	26	Garapan
Summer Holiday Hotel	26	Garapan
Hotel Galleria	30	Garapan
Himawari Hotel	38	Garapan
Himawari Hotel & Spa	20	Garapan
Micro Beach Hotel	42	Garapan
Marianas Resort Club	152	Marpi
Pacific Islands Club	308	San Antonio
Bianca Hotel	16	San Jose
Aqua Resort Club	91	San Roque
World Resort Corp	265	Susupe
Kanoa Resort	224	Susupe
Sun Palace Hotel	36	Susupe
Victoria Hotel	26	Garapan
Total Rooms:	2,809	

Table 4-15
CNMI Hotels and Tourist Accommodations – Tinian

Hotel Name	Number of Rooms	Village Location
M & F Hotel	13	San Jose
Lori Lynns Hotel	13	San Jose
Tinian Dynasty Hotel & Casino	412	San Jose
Total Rooms:	438	

Table 4-16
CNMI Hotels and Tourist Accommodations – Rota

Hotel Name	Number of Rooms	Village Location
Rota Resort & Country Club	52	
Bed & Breakfast	4	Songsong
Coral Garden Hotel	18	Songsong
Bay View Motel	10	Songsong
Hotel Valentino	20	Songsong
Sunrise Motel	5	Pli'i
Total Rooms:	109	

Three hotel businesses participated in the CVA originally conducted in 2004 and include the Fiesta Resort, the Hyatt Regency Saipan, and the Pacific Islands Club Hotel. These businesses were included in the loss estimation calculations conducted for this 2014 report.

Shopping & Entertainment

The Northern Mariana Islands offer convenient shopping for residents and tourists alike. Major shopping areas abound with modern supermarkets, duty free shops replete with designer goods, specialty shops and the ubiquitous "mom and pop" stores. The following are a list of identified major shopping outlets:

ABC Stores
Cabrera Center
DFS Galleria
Hafa Adai Shopping Center
Joeten Shopping Center
Payless Supermarket
Joeten Superstore (formerly Price Costco)
Townhouse Shopping Center

4.16 Socially, Culturally, and Environmentally Important Assets

Historic & Archaeological Sites

According to the CNMI State Historic Preservation Office, the following areas on the island of Saipan are demarcated as approved cultural sites and are filed with the National Register of Historic Sites:

- Banzai Cliff
- Campaneyan Kristor Rai (Catholic Bell Tower)
- Chalan Galaide Latte Site
- Isely Field Historic District
- Japanese 20 mm Cannon Blockhouse

- Japanese Hospital
- Japanese Lighthouse
- Laulau Kattan Latte Site
- Unai Obyan Latte Site
- Managaha Island Historic District
- Unai Lagua Japanese Defense Pillbox
- Unai Achugao Archaeological Site
- Suicide Cliff-Laderan Banadero
- Waherak “Maihar” (Puluwat Sailing Canoe)
- Hachiman Jinja Shrine
- Landing Beaches

According to the CNMI State Historic Preservation Office, the following areas on the island of Rota are demarcated as approved cultural sites and are filed with the National Register of Historic Sites:

- As Nieves Latte Stone Quarry
- Mochong Archaeological District
- Chugai Pictograph Site
- Dugi Archaeological Site
- Japanese Coastal Defense Gun
- Rectory in Songsong Village
- Commissioner‟s Office (Songsong)
- Japanese Hospital
- Nanyo Kohatsu Kabushiki Kaisha “Sugar Mill”

According to the CNMI State Historic Preservation Office, the following areas on the island of Tinian are demarcated as approved cultural sites and are filed with the National Register of Historic Sites:

- Original Site of Nayo Kohato
- House of Taga (Figure 4-6)
- Taga Well
- Unai Chulu
- Ushi Field
- Runway Able
- Japanese Village Ruins
- Shinto American Memorial
- Korean Memorial
- 107thU.S. Naval Monument
- Old Japanese Communications Center
- Shinto Shrine

In general, there are four categories of project types that require the implementation of a historic preservation review (HPR) process and include the following:

- Projects requiring an Earthmoving Permit: These types of projects include an undertaking of mechanized vegetation clearing and earthmoving activities.

- Projects requiring a Coastal Resource Management (CRM) Permit: Projects undertaken in Areas of Particular Concern (APC) or have potential to significantly impact coastal resources.
- Projects that receive federal funding or require federal permits: Projects with federal involvement must comply with Section 106 regulations of the National Historic Preservation Act.
- Projects that will affect historic structures or buildings: Any project that includes either the renovation of identified historic structures or the removal and demolition of historic resources must undergo the HPR process.

Churches

While the indigenous people of the CNMI are predominantly Roman Catholic, there are a wide variety of other religions practiced in the Northern Mariana Islands including various protestant denominations, Jehovah's Witnesses, Seventh Day Adventists, Baptists, Buddhists, and Muslim faiths. The following is a list of identified religious centers within the CNMI:

- Calvary Baptist Church
- Marianas Baptist Church
- China Mission Church of God
- Church of Jesus Christ
- Church of Jesus Christ of Latter Day Saints
- Immanuel Methodist Church
- Jae II Presbyterian Church
- Jehovah‟s Witness Missionary (Saipan and Rota)
- Korean Presbyterian Church
- Kristo Rai Catholic Church
- Mount Carmel Chancery/Rectory
- Saipan Bible Fellowship Church
- Saipan Community Church
- San Roque Catholic Church
- Santa Remedio Catholic Church
- San Jose Catholic Church, Saipan
- San Antonio Catholic Church
- Santa Soledad Catholic Church
- San Vincente Catholic Church
- Seventh-Day Adventist Church
- Somang Baptist
- Saint Jude Parish
- Upper Room International Fellowship
- San Jose Catholic Church, Tinian
- San Francisco De Borja Catholic Church, Rota
- San Isidro Chapel, Rota

Cemeteries & Traditional Burial Grounds

According to Public Law No. 11-117, H.B. No. 11-512, HD1 of the Eleventh Northern Marianas Commonwealth Legislature, there are three burial sites on Saipan in which the deceased may be interred. These include the Chalan Kanoa Catholic Cemetery (private), the Wireless Hill Public Cemetery located at Capitol Hill, and the Tanapag Cemetery. These sites are at capacity and could pose an environmental hazard to underground water resources. A new cemetery, called the Marpi Public Cemetery was designed by the Department of Public Health, in coordination with Department of Land and Natural Resources and the Department of Public Works. A new Veterans Cemetery in Marpi was completed in 2006.

On the island of Tinian, the public cemetery is situated within the village of San Jose. To the north lies the former American Military Cemetery that contains the remains of U.S. Marines from the 4th Marine Division that died during World War II.

According to S.L.B. No. 13-13 of the Rota Legislative Delegation, Thirteenth Northern Marianas Commonwealth Legislature, Third Regular Session, 2003, a local bill for an act was introduced by the delegation which found that the historical and cultural heritage of Rota permits and encourages the interment of deceased family members on private properties so that the memories of the lives of such loved ones may be honored and respected. The Rota Legislative Delegation further found that the CNMI has enacted legislation authorizing the internment and burial of deceased persons but restricting such interment and burial to permitted cemeteries. The Rota Legislative Delegation notes that legislation such as Public Law 11-117 does not preclude the enactment of local legislation when such local legislation comports with the spirit and intent of the law. Accordingly, the Rota Legislative Delegation found that it is necessary to authorize the interment and burial of deceased persons on private properties in the First Senatorial District, provided however, that such interment and burial complies with the applicable Commonwealth Rules and Regulations governing the internment and burial of deceased persons. On the island of Rota, the public cemetery is situated within the village of Songsong.

Protected Shorelines & Coral Reef Systems

The CNMI Coastal Resources Management Office (CRMO) was established in 1983 to promote the conservation and sustainable development of coastal resources. The CRMO has established Areas of Particular Concern (APC), which are geographically delineated regions within the CNMI that have special management requirements. The APCs are areas that a) possess a unique or vulnerable natural habitat, b) are essential habitat for living resources, c) where urban concentration for shoreline utilization is competitive, d) that might be subject to significant hazards due to storms, slides, and floods, or e) that are needed to protect, maintain, or replenish coastal resources. The following regions have been classified as APCs:

- Shoreline APC: This APC is identified as the area between the mean high water mark (MHWM) and 150 feet inland.
- Lagoon and Reef APC: This APC is identified as the area extending seaward from the mean high water mark (MHWM) to the outer slope of the reef.

- Wetlands and Mangrove APC: This APC is identified as those areas that are permanently or periodically covered with water and where species of wetland or mangrove vegetation can be found.
- Port and Industrial APC: This APC is identified as those land and water areas surrounding the commercial ports of Saipan, Tinian and Rota.
- Coastal Hazards APC: This APC is identified as those areas identified as a coastal flood hazard zones in the Federal Emergency Management Agency Flood Insurance Rate Maps.

Saipan's Lagoon encompasses about 20 square miles of mostly shallow water and is separated from the Philippine Sea by a long barrier reef about 2 miles offshore at the entrance to Tanapag Harbor. The width of the lagoon created by the reef varies from less than one foot to over three hundred feet.

Marine Protected Areas

The CNMI has several marine protected areas with varying levels of restricted activities. No-Take reserves prohibit the fishing or harvesting of any marine species of plant or animal, prohibit take of coral (live or dead), and prohibit all exploitive or destructive activities to marine life. There is currently a local moratorium on harvesting trochus and sea cucumber in the CNMI. All harvesting of these species is currently illegal.

In Saipan, there are three completely no-take reserves:

- Managaha Marine Conservation Area (Public Law 12-12).
- Forbidden Island Marine Sanctuary (Public Law 12-46), and
- Bird Island Marine Sanctuary (Public Law 12-46).

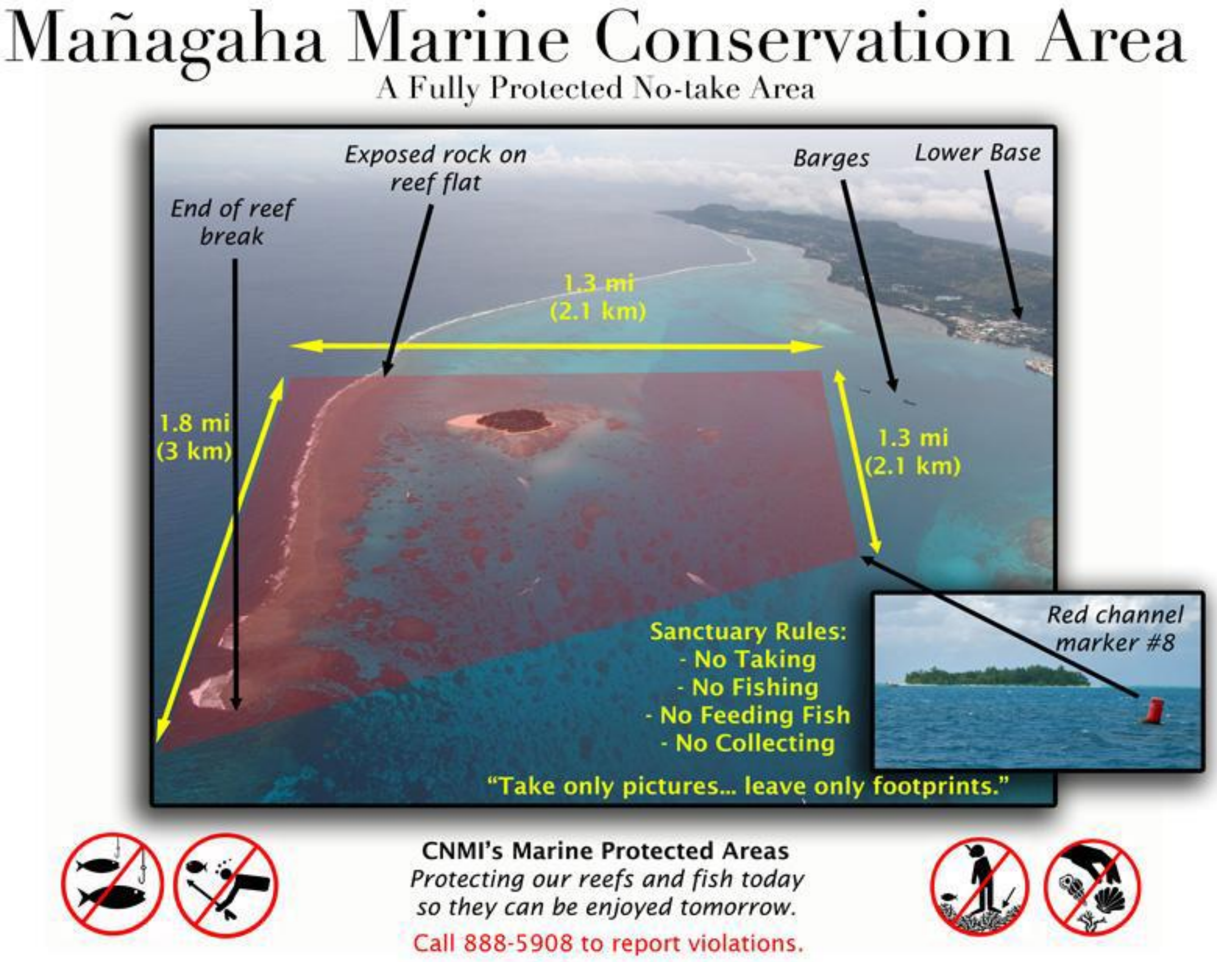


Figure 4-1 Map of Managaha Marine Conservation Area

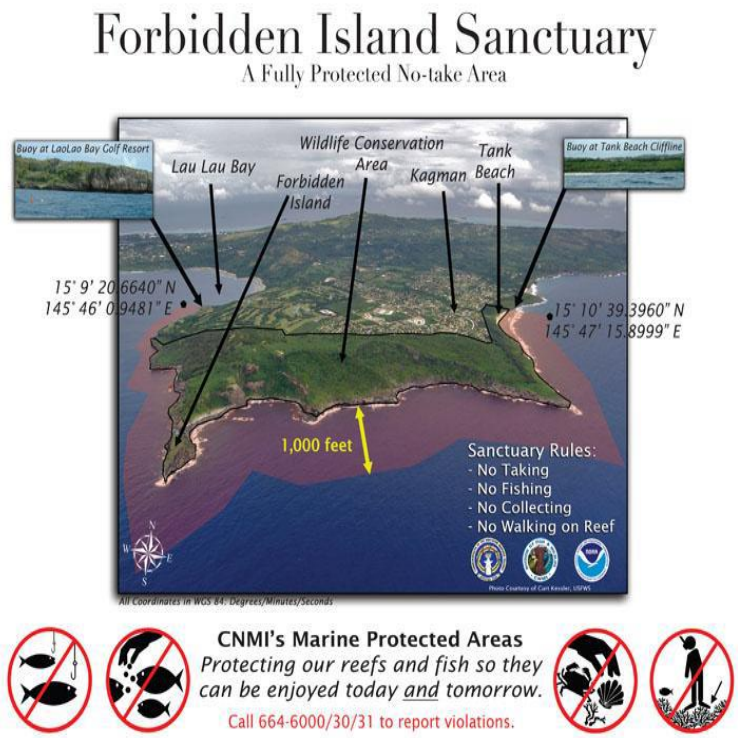


Figure 4-2 Map of Forbidden Island Marine Conservation Area

Figure 4-3 Map of Bird Island Marine Conservation Area

The Sasanhaya Fish Reserve for the island of Rota is a no-take zone for all marine species designated under Rota Local Law 9-2 §1.

The island of Tinian's new marine reserve designated under Public Law 15-90 is bounded from the southwest of Carolinas Point to Puntan Diablo (map unavailable). This is primarily a no-take reserve.

Mariana Trench Marine National Monument

The Mariana Trench Marine National Monument was one of the monuments designated through an Executive Order by President George W. Bush on January 6, 2009, that declared three areas of the Pacific Ocean as marine national monuments. By designating these areas as national monuments, the Administration ensures that the marine environment will receive the highest level of environmental recognition and conservation. Destruction or extraction of protected resources within the boundaries of these monuments will be prohibited, as will commercial fishing in the coral reef ecosystem areas of the monuments. Scientific and recreational activities may be permitted consistent with the care and management of the protected resources of these monuments.

The Mariana Trench Marine Monument consists of an area totaling 95,216 square miles (60,938,240 acres). The monument consists of submerged lands and waters of the Mariana Archipelago. It includes three units: the Islands Unit the waters and submerged lands of the three northernmost Mariana Islands (Farallon de Pajaros or Uracas, Maug, and Asuncion); the Volcanic Unit (Vents Unit) the submerged lands within 1 nautical mile of 21 designated volcanic sites; and the Trench Unit the submerged lands extending from the northern limit of the Exclusive Economic Zone of the United States in the Commonwealth of the Northern Mariana Islands (CNMI) to the southern limit of the Exclusive Economic Zone of the United States in the Territory of Guam.

No waters are included in the Volcanic and Trench Units, and CNMI maintains all authority for managing the three islands within the Islands Unit above the mean low water line. The Interior Secretary placed the Mariana Trench and Volcanic Units within the National Wildlife Refuge System, and delegated his management responsibility to the Fish and Wildlife Service. The Secretary of Commerce, through the National Oceanic and Atmospheric Administration, has primary management responsibility for fishery-related activities in the waters of the Islands Unit. In the Islands Unit, unique reef habitats support marine biological communities dependent on basalt rock foundations, unlike those throughout the remainder of the Pacific. These reefs and waters are among the most biologically diverse in the Western Pacific and include the greatest diversity of seamount and hydrothermal vent life yet discovered. They also contain one of the most diverse collections of stony corals in the Western Pacific, including more than 300 species, higher than any other U.S. reef area. The submerged caldera at Maug is one of only a few known places in the world where photosynthetic and chemosynthetic communities of life co-exist. The caldera is some 1.5 miles wide and 820 feet deep, an unusual depth for lagoons.

The Volcanic Unit (Vents Unit) an arc of more than 20 undersea mud volcanoes and thermal vents supports unusual life forms in some of the harshest conditions imaginable. Here species survive in the midst of hydrothermal vents that produce highly acidic and boiling water. The Champagne vent, found at the NW Eifuku volcano, produces almost pure liquid carbon dioxide, one of only two known sites in the world. The Sulfur Cauldron, a pool of liquid sulfur found at the Daikoku submarine volcano is unique in the entire world. The only other known location of molten sulfur is on Io, a moon of Jupiter. The northernmost Mariana reefs are unlike other reefs across the Pacific, it provides unique volcanic habitats that support marine biological communities requiring basalt. Maug Crater represents one of only a handful of places on Earth where photosynthetic and chemosynthetic communities of life are known to come together. The Trench Unit's Mariana Trench is the deepest point on Earth, deeper than the height of Mount Everest above sea level. It is 940 nautical miles long by 38 nautical miles wide. It is five times longer than the Grand Canyon and includes some 78,956 square miles (50,532,102 acres) of virtually unknown characteristics.

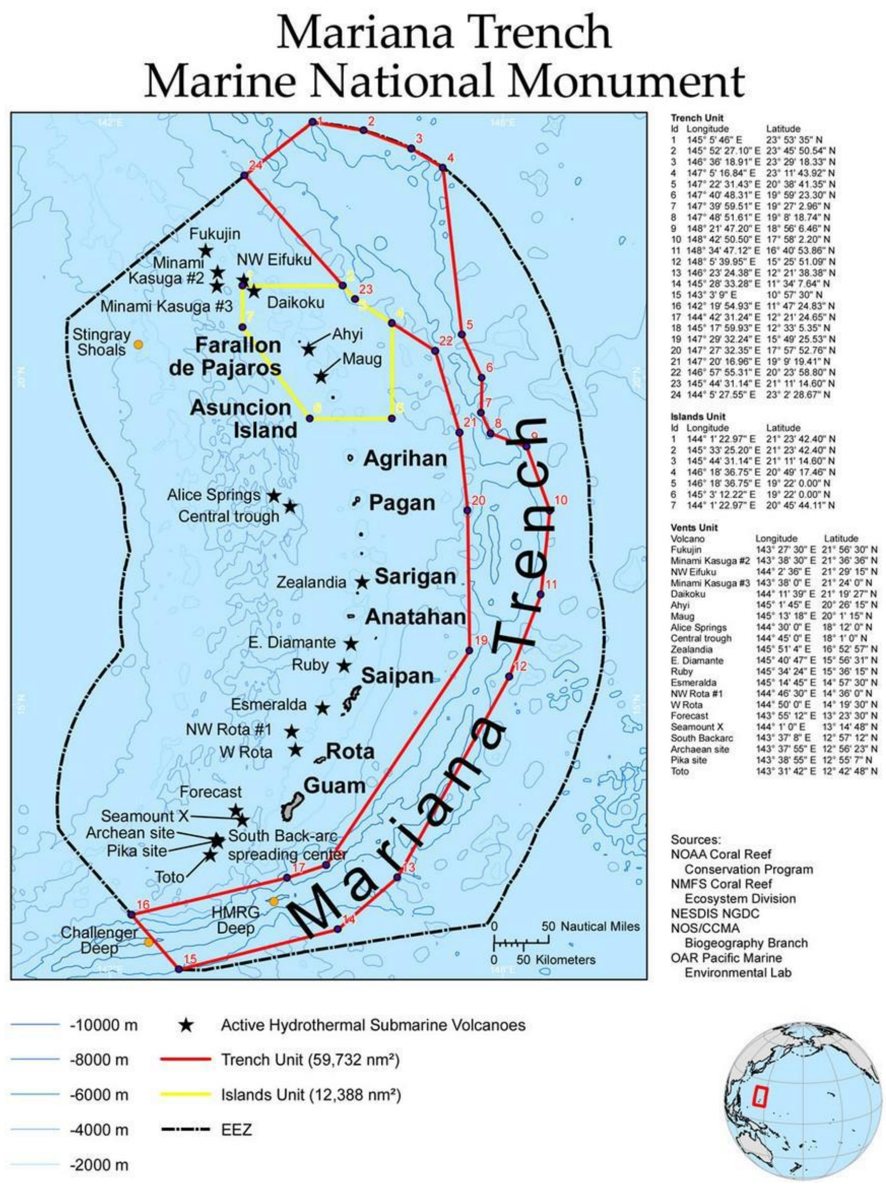


Figure 4-4 Map of Mariana Trench Marine Monument

Forest Flora Species

The forest flora species within the CNMI is diverse with plants adapting to the unique ecological habitats that exist on each island. Table 4-17 provides a list of commonly found flora species types within the CNMI.

Table 4-17
List of Forest Flora Species

Table 4-18
List of Forest Flora Species

Chamorro Name	Scientific Name	Common Name	Basic Description	Habitat
Galak Dankulo	Asplenium nidus	Bird's Nest Fern	Fern with large, glossy, dark fronds	Plant found throughout the Mariana Islands.
Paipai	Guamia Marianne	Custard Apple Plant	Small compact understory tree with thick yellow flowers, triangular in shape	Endemic plant found through the Mariana Islands.
Gulos	Cynometra ramiflora	Legume Plant Family	Shrubby understory tree with dull white flowers; fruits are brown pods with irregular edges	Dominates undisturbed forested limestone habitat terraces on Saipan, Tinian, and Aguijan.
Lada	Morinda citrifolia	Indian Mulberry	Small tree with white 5-pointed star flowers; fruit are fleshy and green, maturing to a yellowish white	Plant found throughout the Mariana Islands.
Tangantangan	Leucaena leucocephala	Legume Plant Family	Small tree with globe shaped flower heads	Introduced during aerial seed operations after World War II to prevent soil erosion.
Trongkon Kalaskas	Albizia lebbeck	White Monkeypod	Medium to large tree that has a spread crown with yellow green pompom flowers	Introduced tree found through out the Mariana Islands.
Nunu	Ficus proxlia	Banyan Tree	Medium to large tree related to the breadfruit tree. Food source for native birds and fruit bats	Found through out the Mariana Islands.
Dukduk	Artocarpus mariannensis	Breadfruit	Medium to large tree that has a gray trunk and buttressed roots	Endemic tree found through out the Mariana Islands.
Ifit	Intsia bijuga	Legume Plant Family	Slow growing medium to large tree with thick, ridged, leathery fruit pods	Found through out the Mariana Islands.
Yoga	Elaeocarpus joga	Basswood Plant Family	Medium tree with shiny green leaves and white feathery flowers	Indigenous tree that grows on limestone in open areas and in forests.
Umumu	Pisonia grandis	Four „O Clock Plant Family	Short, stocky tree with many branches and is related to the Bougainvillea	Common nest tree and limestone forest dominant.
Trongkon Guafi	Serianthes nelsonii	Legume Plant Family	Medium to large tree with midribs of green leaves.	On the International List of Rare and Endangered Species and naturally found only on Rota.

Forest Fauna Species

The limestone forest regions are a common habitat to several endemic and introduced fauna species. Table 4-18 provides a succinct list of terrestrial and avi fauna found within the CNMI.

Table 4-18
List of Forest Fauna Species

Chamorro Name	Scientific Name	Common Name
Ayuyu	Birgus latro	Coconut Crab
Achiak	Perochirus ateles	Micronesian Gecko
Hilitai	Varanus indicus	Spotted Monitor Lizard
Nosa	Zosterops conspicallata	Bridled White Eye
Paluman Totot (State Bird)	Ptilinopus roseicapilla	Marianas Fruit Dove
Paluman Fachi/Apaka	Galliocolumba xanthonura	White Throated Ground Dove
Naabak/Chichirika	Rhipidura rufifrons	Rufous-fronted Fantail
Egigi	Myzomela cardinalis	Cardinal Honeyeater
Sali	Aplonis opaca	Micronesian Starling
Aga	Corvus kubaryi	Marianas Crow
Chichirikan Tinian	Monarca takatsukasae	Tinian Monarch
Canario	Celptornis marchei	Golden White Eye
Benado	Cervus unicolor	Sambar Deer
Fanihi	Pteropus mariannus	Marianas Fruit Bat

Ecological Critical Habitats

The Endangered Species Act of 1973 provides a legal means by which identified ecosystems that are determined to be essential to the sustainability of an endangered or threatened species can be conserved. Under this Act, the U.S. Fish and Wildlife Service in the Department of the Interior is responsible for all terrestrial and freshwater species, as well as migratory birds.

On October 15, 2002, a proposed rule to designate critical habitats for endangered species within Guam and the Mariana Islands was published in the Federal Register. The six federally listed species whose habitats are under consideration are the Aga (Corvus kubaryi, Mariana Crow), Sihek (Halcyon cinnamomina, Micronesian kingfisher), the Chuguangguang (Myiagra freycineti, Guam broadbill), the Nosa (Zosterops conspicillatus, Rota bridled white-eye), and the Fanihi (Pteropus mariannus, Mariana fruit bat; Pteropus tokudae, little Mariana fruit bat). There are lands proposed for critical habitat designation for the Mariana crow that are situated on the island of Rota.

On January 22, 2004, the Rota bridled white-eye was designated as an endangered species by the U.S. Fish and Wildlife Service (FWS), which can only be found on the island of Rota. The Director of the FWS Pacific Region supports a cooperative effort with interested parties and private landowners to ensure the protection of this species. Fewer than 1,100 birds are thought to remain on Rota, a 90% decline since the early 1980s. The possible factors contributing to the sharp decline in population include degradation or loss of habitat due to development, agricultural activities, and naturally occurring events such as typhoons; predation by rats and black drongos; and the use of pesticides.

Wetlands

Much of the original extent of coastal and freshwater wetlands in the CNMI has been altered by previous agricultural efforts in the cultivation of sugar cane and rice during the Japanese occupation period from 1914-1944. Wastewater formerly emanating from nearby sugar mill operations once drained into Lake Susupe on the island of Saipan and therefore deposited high quantities of organic material. In addition to agriculture and development impacts to wetlands, the exotic mosquito fish (Gambusia affinis) and the tilapia (Sarotheradon mossambicus) also contribute to alterations within these aquatic ecosystems.

Lake Susupe and the large contiguous reed mangroves on the western coastal plain of Saipan comprise over 60% of the freshwater wetlands in the CNMI. Smaller wetlands on Saipan, the Pagan lakes, and Lake Hagoi and a wetland on Tinian make up most of the remainder of wetland systems. Lake Hagoi, which is situated near the north field runways on Tinian, is considered to be an important wetland ecosystem within the CNMI as it provides a habitat for several endemic and migratory bird species. Further, the freshwater wetlands of Saipan and Tinian are essential to the survival of the Mariana Moorhen and the Nightingale Reed-warbler.

In the near future, portions of publicly owned wetland may be used to cultivate taro in an experimental moorhen habitat improvement program administered by the CNMI Department of Lands and Natural Resources. Although subject to little economic activity, the value of the wetlands for flood control and groundwater recharge should not be underestimated. Underground sources for public water supply are limited; the wetlands are sites of groundwater recharge and help to reduce salt-water intrusion. While allowing recharge, the wetland stores great quantities of stormwater run-off during heavy rains. The wetlands also filter out large quantities of eroded material and pollutants that might otherwise increase impacts to the coastal lagoon and reef resulting in coral die off.

4.17 Other Important Facilities

Public and Private Schools

According to the 2009 Curriculum, Instruction, and Assessment for the CNMI Public School System, there were 10,445 students enrolled in a public school for the academic year with 549 teachers employed. Another 2,343 students were enrolled in various private schools with approximately 516 students enrolled in Early Childhood or Headstart pre-school programs with centers provided in Tanapag, Garapan, Oleai, San Vincente, Chalan Kanoa, San Antonio, Kagman, and San Roque on the island of Saipan. Additionally, there are Headstart programs on Tinian and Rota.

Consisting of 20 campuses, the CNMI Public School System has 12 elementary schools for grades one through six and 8 secondary schools for grades seven through twelve. On the island of Saipan, there are total of ten elementary schools, seven of which are situated along the western portion of the island. Two other elementary schools, Gregorio T. Camacho and Tanapag Elementary School, are located at the northern end of the island. Garapan Elementary School is at the central part of the island and within the vicinity of the main business district in Saipan. Oleai Elementary School, William S. Reyes, San Antonio Elementary School, and Koblerville Elementary School are located at the southern end of the island while San Vicente Elementary School and Dandan Elementary are nested along the eastern-side of the island.

On the secondary level, five of the eight schools are situated on the island of Saipan. Hopwood Junior High School enrolls students from grades seven through eight. Cha Cha Oceanview Junior High provides instruction from the sixth through eighth grade. Saipan Southern High and Kagman High are new institutions providing educational opportunities for grades nine to twelve. Finally, Marianas High School also enrolls students from the ninth to twelfth grade.

On the island of Tinian, Tinian Elementary School is situated in the village of San Jose. Currently, Tinian Junior High School and High School are situated on one campus. Presently, there is a plan to build a separate junior high school for the island of Tinian.

Within the village of Songsong on the island of Rota is Rota High School, Rota Junior High School provides instruction for sixth and eighth grades and Rota High provides instruction for grades nine through twelve. Sinapalo Elementary School located in Sinapalo Village is a new elementary school that provides instruction from grades kindergarten through 5 th grade.

In addition to those schools under the public system, there are several private schools that provide instruction from elementary through secondary levels. The majority of these institutions are managed and operated by local church affiliates and comprise a total school enrollment of 2,343 students.

Table 4-19
Listing of Public Schools within the CNMI

Islands	School	Grades	Students	Classrooms	Structure
Saipan	Marianas High School	9-12	1213	66	wood,tin,semi-concrete,concrete
	Cha Cha Junior High School	6-8	421	30	concrete
Saipan	Dan Dan Elementary School	K-6	481	24	wood,tin,concrete
	Garapan Elementary School	K-6	829	50	wood,tin,semi-concrete,concrete
Saipan	GTC Elementary School	K-6	234	16	wood,tin,semi-concrete,concrete
	Hopwood Junior High School	7-8	1134	64	wood,tin,semi-concrete,concrete
Saipan	Kagman Elementary School	K-5	544	34	concrete
	Kagman High School	9-12	797	37	concrete

Saipan	Koblerville Elementary School	K-6	431	26	wood,tin,semi-concrete,concrete
	Oleai Elementary School	K6	534	25	wood,tin,semi-concrete,concrete
Saipan	Saipan Southern High School	9-12	836	31	concrete,structure metal
	San Antonio Elementary School	K-6	313	15	wood,tin,semi-concrete,concrete
Saipan	San Vincente Elementary school	K-6	659	34	Wood,tin,semi-concrete,concrete
	Tanapag Elementary School	K-6	210	20	wood,tin,semi-concrete,concrete
Saipan	W.S. Reyes Elementary School	K-6	714	39	wood,tin,semi-concrete,concrete
Tinian	Tinian Junior & Senior High School	7-12	294	38	concrete
	Tinian Elementary School	K-6	279	23	concrete,semi-concrete
Rota	Sinapalo Elementary School	K-5	229	16	concrete,metal
	Rota Junior High School	6-8	129	19	concrete
	Rota High School	9-12	164	16	concrete

Northern Marianas College (NMC)

The Northern Marianas College is a community college dedicated to providing the best quality postsecondary and adult educational opportunities within the Commonwealth. With instructional sites on Tinian and Rota, the College's main campus is located in Saipan. The College has a student population of about 1,100 students.

The following degree programs are currently offered at the College: Bachelor of Science in Elementary Education; Associate in Arts in Business and Liberal Arts; Associate in Science in Nursing and Natural Resource Management; Associate in Applied Science in Business Administration (with emphasis in Accounting, Business Management, and Computer Applications), Hospitality Management, and Criminal Justice. The College also offers a variety of certificate programs.

Currently, the instructional sites on Tinian and Rota offer continuing and adult education, and also offer federally-supported programs that aim to assist students from various grade levels in preparation for college success.

Weather Monitoring Stations

Surf observations are taken from four stations on Saipan, which are located at Coast Guard Beach, Agingan Point, Tank Beach, and Wing Beach by the CNMI HSEM Response and Recovery Section twice a day and is transmitted by facsimile or AFETN to the Guam National Weather Service for the Saipan weather update.

Meteorological aviation reports (METAR) and Terminal Aerodrome Forecasts (TAF) data are provided at three observation stations within the CNMI. In the U.S., METAR reports are taken once an hour between 50 minutes past the hour and the top of the (next) hour. TAFs are produced four times a day starting at approximately 30 minutes before each main synoptic hour. All the observations taken within this time are considered to be for the same cycle. The METAR and TAF stations at the Saipan International Airport are the only full-time station with two part-time stations in operation at Rota International Airport and West Tinian Airport.

Ice Plants

There are two major ice plants in Saipan. The Saipan Ice and Water Company is located in the Lower Base Area. The facility encompasses two buildings that house three reverse osmosis units and a 375 bottles-per-hour automatic bottler. The plant features an in-house testing laboratory and provides service to 16 designated delivery areas on Saipan. The J.G. Sablan Ice and Water Plant is located in the Garapan area. Both private companies distribute ice and water daily to businesses, residential, and government offices. There are also smaller private ice and water companies in Saipan and in the main villages on the islands of Tinian and Rota.

5.0 – Hazard Profiles and Analysis

For the 2014 SSMP update, CNMI HSEM and stakeholders reviewed the identified threats and hazards for the CNMI outlined in the 2010 SSMP during a meeting in July 2014. As a result of that meeting, members of the SERC, comprising division heads and municipal representatives, voted that the 7 hazards contained in the 2010 plan were still valid and accurately reflect threats to the region and the CNMI. Additionally, the SERC voted to include climate change as an additional hazard as a result of increased discussions throughout the Pacific region concerning the broad effects of climate change and their impact on island communities.

A climate change hazard profile has been added to the 2014 SSMP and includes information taken from SMEs at the CNMI Bureau of Environmental and Coastal Quality and from the 2014 Saipan Vulnerability Assessment (SVA).

5.1 Hazard Identification and Analysis

Islands within the Commonwealth are subject to a multitude of regularly recurring hazards, including typhoons, earthquakes, tsunamis, flash flooding and drought. Although little can be done to eliminate most of these hazards, it is possible to reduce or eliminate their destructive effects on people and development through the application of appropriate hazard mitigation measures. To select measures that reduce the long-term vulnerability to natural hazards, it is critical to understand the characteristics of the hazard (e.g. magnitude and frequency of occurrence of the hazard) and to identify locations that are at high risk to their effects.

For the purposes of this plan, a community analysis was conducted, which entails the systematic identification of hazards that could occur in a community and the identification and analysis of available resources and authorities for managing these potential emergencies. Over the years, several individual hazard event assessments and mapping activities have been carried out throughout the CNMI. However, either in the CNMI or elsewhere, it is rare that information about multiple hazards has been combined to support integrated multi-hazard assessment and mitigation efforts. Table 5-1 provides a hazards matrix that was compiled by the CNMI EMO, which identified the hazard types that could potentially impact the CNMI islands. The matrix also evaluated data that was either: 1) available at the time, 2) available but needed updating or 3) if data collection was required.

Table 5-1
CNMI Hazards Matrix

Hazard Type	Profile Hazard Events	Assess Vulnerability by Jurisdiction	Assess Vulnerability by State Facility	Estimate Lossess by Jurisdiction	Estimate Losses by State Facility
Typhoon	C	A	A	A	A
Flooding	C	C	A	A	A
Earthquake	BA	A	A	A	A
Volcanic Eruption	A	A	A	A	A
Tsunami	A	A	A	A	A
Drought	B	B	A	A	A
Wildfire	A	A	A	A	A
Climate Change	C	A	A	A	A
Codes: A-Requires Data Collection; B-Data Available, Need Update; C-Current Data Available					

5.2 Typhoons Profile

Two principal types of storms influence the climatic character of CNM: small-scale storms that consist of thunderstorms and squalls, and large systems of tropical storms and typhoons which can dominate an area over 300,000 square miles and persist for over a week's time. The months of August to mid-December are characterized as the seasonal period for tropical disturbances for this area.

A tropical disturbance is a loosely organized area of thunderstorms that maintains its identity for 24 hours or more and originates over ocean waters. A tropical depression is an organized system of clouds and thunderstorms with defined circulation and maximum sustained winds of 38 m ph that may include localized rain and thunderstorms. Tropical storms have defined circulation and maximum sustained winds of 39-73 mph and usually are accompanied by heavy rains and thunderstorms.

Typhoons are severe tropical cyclones that occur within the Western Pacific and attain a minimum sustained wind speed of 74 mph. Typhoons are characterized as giant whirlwinds in which air moves around a center of low pressure, reaching maximum velocity in a circular band extending outward 20 or 30 miles from the rim of the eye (center). Previous wind speeds during severe typhoons have been recorded with gusts as high as 160 to 235 mph. A super typhoon is defined as a storm system that has sustained winds of 150 mph (130 knots) or greater.

During a typhoon, high winds, marine overwash, storm surge and small-scale wind bursts may damage or destroy homes, businesses, public buildings and infrastructure. Termed "microbursts" and mini-swirls, these localized winds may reach wind speeds in excess of 200 miles per hour. In addition to severe winds, typhoons have several other characteristics. Barometric pressure is very low, for example, usually 29 inches of mercury or less. Typhoon winds are directly related to the lowest barometric pressure reading at the center of the storm. Typhoon winds are strongest near the Radius of Maximum Winds, the area within the storm path near the lowest central pressure. The general concept is that the larger the radius, the larger the area of maximum destruction. The strongest winds are usually on the right side of the eye, as one faces the direction the storm is moving. Wind speeds decrease as the distance away from the radius of maximum winds increase. Table 5-2 details the impact elements of a typhoon.

Table 5-2
Impact Elements of a Typhoon

Element	Characteristics
Hazard	• Wind • Rain • Waves • Flooding • Storm Surge
Exacerbation	• Local tides • Local coastal configuration
Results	• Wind damage from typhoon and spawned micro-bursts and mini-swirls • Storm surge and wave damage • Coastal stream/wetland flooding • Mudslides/landslides in low-lying areas
Losses	• Structures & contents, including lifeline structures and equipment, such as roads, bridges, and roadway culverts • Lives & injuries • Communications • Beach erosion • Fire • Shipping and fishing • Soil fertility from saline intrusion • Vegetation • Crops • Livestock • Pollution • Infrastructure (e.g. water, electricity, sewer) failure

The movement pattern of these storm systems can be erratic and unpredictable. The major hazards posed by a typhoon include violent winds, torrential rainfall, flooding, storm surge, and high surf. The surge action attributable to storms can cause severe erosion of coastal areas and can salinize land and groundwater resources, contaminate fresh water supply, cause agricultural loss, and damage surrounding physical structures. Further, strong winds can cause tremendous amounts of debris to become projectiles and can also damage crops and destroy lightly constructed structures.

Not all of storms intersect the Mariana Islands. More commonly, near misses that generate large swells and moderately high winds causing varying degrees of damage are the hallmark of typhoons passing close to the islands. Impacts from these can be severe and lead to flooding, beach erosion, large waves, high winds, and marine overwash despite the fact that the typhoon may have missed the island.

The general season for typhoons is between the months of August to December. In the event of a potential typhoon striking the islands, the CNMI HSEM issues either a typhoon "warning" or "watch", indicating the projected length of time before the storm's arrival. Within the CNMI, there are four conditional settings that demarcate the estimated time of arrival of a typhoon:

- Condition IV: Estimated Time of Arrival within 72 hours.
- Condition III: Estimated Time of Arrival within 48 hours.
- Condition II: Estimated Time of Arrival within 24 hours.
- Condition I: Estimated Time of Arrival within 12 hours

Wind Pressure

Pressure differentials caused by typhoon winds create vacuums within buildings, commonly causing breakage of window glass or failures of overhead doors. The internal pressures add to the external pressures producing more severe pressures on the building components of the structure. The roof is then subjected to tremendous internal pressure building from inside, together with the negative wind pressures lifting the roof from outside. The resulting combined forces may be too intense, even for well-structured roof systems. Subsequent damage from high winds and rain to the interior and content can result after a roof is torn away from a structure.

Coastal Flooding & Storm Surge

Coastal flooding can be defined as coastal inundation caused by a rise in sea level due to such phenomena as seismic sea waves, high surf, storm surge, or prolonged strong onshore flow of wind and high astronomical tides. Storm surge is a phenomenon caused by the extreme low pressure and strong winds that exist around the eye of a typhoon, which causes a dome of water to form at levels higher than the surrounding ocean surface. Large swells, high surf, and wind-driven waves ride atop this dome as it impacts land areas, causing severe flooding in coastal areas, particularly when storm surge coincides with normal high tides, thereby creating conditions of inundation and flooding to occur in the low-lying coastal areas below elevations of 10 feet.

During storm surge flooding, water is pushed up onto otherwise dry land by onshore winds. Friction between the water and the moving air creates drag that, depending upon the distance of water (fetch) and velocity of the wind, can pile water up to depths greater than 20 feet (6.1 m) from the shoreline inland. The storm surge is the most dangerous part of a typhoon as pounding waves create very hazardous flood currents. Worst-case scenarios occur when the storm surge occurs concurrently with high tide. Stream flooding is much worse inland during the storm surge because of backwater effects.

About 90% of the deaths experienced in the past near the coast resulting from typhoons are caused not by wind, but by storm surge. Storm surge is the rise of water above sea level at the time of storm onset. The height of storm surge along the open coast depends on a number of factors, which include: (1) wind speed and associated barometric pressure, (2) depth of water or shoaling factor, (3) storm trajectory, and (4) speed of the storm. Coastal configuration in the form of estuaries or bays can cause a funneling or amplification effect. Coincidence with high tide will also increase surge height.

Although the maximum surge usually affects only a relatively short length of coastline, combined storm surge and wave action may have damaging effects over the entire coastline facing a major storm center. Wind-driven waves on top of the storm surge pose a number of added problems. The wave run-up can flood areas not reached by the surge itself. The scouring power of waves is considerable. The duration of storm surge is usually relatively short, being dependent upon the elevation of the tide, which rises and falls twice daily in most coastal places and the speed of a storm's onset.

However, maximum tide elevations can be identical on consecutive days. The high velocities of typhoon winds often produce wave heights higher than the maximum level of the prevailing high tide in the Mariana Islands.

Storm surge, rain, and wind cause most of the damage associated with typhoons. Storm surge floods and erodes coastal areas, salinizes land and groundwater, causes agricultural losses, results in loss of life, and damages structures and infrastructure. Rain damages structures, infrastructure, and results in loss of life. Strong winds can result in loss of life, create tremendous amounts of debris which impact utilities and transportation, cause agricultural losses, and destroy lightly constructed buildings.

Indirect costs include the widespread distribution of debris, accidental spills of fuel, sewage and industrial waste, household chemicals, or other contaminants onto the land or into the marine environment; in addition to environmental damage associated with storm debris or material cleanup, including the loss of landfill capacity. As experienced with previous typhoons within the Mariana Islands, post -storm debris management can be another problem. This occurs when vast amounts of vegetation debris, including potentially toxic, treated building materials from destroyed buildings are exposed there.

The damage to and destruction of the built environment, particularly public infrastructure such as transportation, utilities, and communications often represents enormous economic, social, and general functional costs to a community, while also impeding emergency response and recovery activities. A nonfunctional road can have major implications for a community: general loss of productivity; disruption of physical access preventing residents from getting to work or other daily activities, prevention of emergency vehicles from reaching their destinations, with the associated health and safety implications and the potential access difficulties causing the disruption of important lifeline supplies such as food and other deliveries to the community.

Damaged or destroyed utility lines and facilities including electricity, computer and satellite links, gas, sewer, and water services can cripple a region after a disaster. Power lines are often badly damaged or destroyed, resulting in the loss of power for days, weeks or even months. In addition to basic modern households appliances being affected, public water supplies, water treatment and sewage facilities can also be impacted. Electric pumps cannot pump drinking water into an area without power. Disaster victims who do get water may have to boil it to eliminate waterborne pathogens introduced to the supply in damaged pipelines.

Past History-Typhoons

Typhoons and tropical storms have been a common occurrence throughout the history of the CNMI. The hazards resulting from Typhoons Pongsona, Chata'an and many prior storms are related to high winds, heavy rain and extreme storm surge. These storm conditions have caused structural damages to buildings, utilities, roads, ports, boats, and the loss of agricultural crops. The damages from loss of electric power generation and distribution sources resulted in the loss of other essential services such as public water supply and public sewage waste disposal. Sustained winds for many hours caused extensive structural damages to residential buildings and some public and commercial buildings. In general, damages are especially severe to buildings constructed with wooden framing and corrugated tin walls and roofs.

With previous storms, damage to primary power distribution lines, blown down power poles, and water amage to the transformers have caused major failures in the electrical system. As such, the emergency restoration of the power distribution system to the water wells has been made a top priority to provide water services as soon as possible. In past events, temporary generators were installed to provide power to some of the water wells. The lack of power and water combined with the CNMI's inability to dispose of unsanitary waste increases the risk of diseases and epidemic. A succinct history of notable storm systems is outlined in the paragraphs below.

In April 1968, Typhoon Jean brought total destruction to public and private facilities within the Mariana Islands. Estimated losses equaled $18 Million with more than 1,000 homes lost in addition to livestock and crops. However, no lives were lost.

In December of 1986, Typhoon Kim, with maximum sustained winds of 135 mph, swept across the island of Saipan for nearly 12 hours causing major destruction to public and private facilities. The total loss to public facilities, residential, agricultural crops, and livestock equaled $25 M.

In 1997, two major storm systems struck the Northern Mariana Islands. According to the final disaster report of the American Red Cross, Super Typhoon Keith, which produced sustained winds of over 160 mph in November 1997, caused significant damage on Saipan, Tinian, and Rota. Over 106 homes were destroyed and another 477 homes sustaining major damage, which were primarily constructed out of metal or wood. Less than month later, Super Typhoon Paka crossed near Rota with heavy rain and sustained winds of 160 mph, with gusts as high as 175 mph. The island of Rota was declared a major disaster area with extensive damage to homes, public facilities, infrastructure, and agriculture.

TS 08W was named Tropical Storm Chata'an (pronounced tsa-Ta-an) by the Japan Meteorological Agency, RSMC-Tokyo at 0600 UTC on June 29, 2002. The monsoon trough in which Chata'an was embedded brought heavy rains and strong winds to a large portion of the tropical western North Pacific, including Pohnpei State and Chuuk State. Shortly thereafter, Chata'an took a more westward track toward the Rota Channel and northern Guam. The eye entered the northeast side of the island at about 2130 UTC on July 4, 2002 and exited the northwest side of the island about 0000 UTC on July 5, 2002. The northern edge of the eyewall most likely stayed in the Rota Channel and inflicted major damage to agricultural parcels on the island of Rota.

On 2 December 2002, a tropical disturbance began to organize near 6.5N 165E, or about 370 miles east of Pohnpei. At 1100 UTC on December 2nd, the Joint Typhoon Warning Center issued a Tropical Cyclone Formation Alert indicating that the circulation associated with the disturbance was likely to become a significant tropical cyclone in the subsequent 12 to 24 hours. At 0000 UTC on December 3rd, the JTWC upgraded the Depression to Tropical Storm (TS) 31W as it continued on a northwest track. TS 31W was named Tropical Storm Pongsona (pronounced Bong-sahn-WAH or Pong-sahn-WAH) by RSMC-Tokyo at 1200 UTC on 3 December, as it took a more westward track.

In the 18-hour period from 1800 UTC 7 December until its peak intensity at 1200 UTC on December 8, Pongsona intensified from 105 knots (121 mph) to 130 knots (150 mph), reaching the super typhoon status of 130 knots (150 mph) while the center of the eye was northwest of Guam and the southeastern eye wall cloud was just off of the northwestern coast of the island. After passing over Guam, Pongsona continued on a northwest track, where it also pummeled Rota, especially the southwestern part of the island. After passing west of Rota, the intense typhoon moved to the north, west of Tinian and Saipan.

On Rota, high water marks were taken at Songsong Village. At Songsong, the deepest inland high water mark was recorded at 613 feet (187 meters) from the shoreline. This site is at the crest of the peninsula that makes up the main base of the town of Songsong. The storm surge came from the south and nearly crested over the peninsula for a distance of about two football fields. The highest elevation measured was at 23.6 feet (7.19 meters). On the northwest side of the peninsula at the West Harbor, the inland reach was 78.74 feet (24 meters) and the elevation was 11.6 feet (3.54 meters).

The East Harbor on Rota disappeared under the power of the storm. Further, cargo containers fell into the West Harbor. Clearance of the channel in the West Harbor was a priority in order to receive supplies and relief material. However, the water system on the island remained intact during the storm and remains in service. Rota High School was the designated shelter but its gym and other buildings no longer serve as shelters due to structural inadequacies.

Table 5-3
Past Major Typhoon & Tropical Storm Disasters within the CNMI (1984 – 2014)

Date	Storm	Location	Estimated Damage	Remarks
Oct 84	Thad	NMI	Minor Damage	
Oct 84	Vanessa	NMI	No Damage	
Nov 84	Bill	NMI	No Damage	
Jan 85	Elsie	NMI	No Damage	
July 85	Jeff	NMI	No Damage	
Aug 85	Nelson	NMI	No Damage	
Sept 86	Ben	NMI	No Damage	Fishing vessel OWOL lost at sea with seven crew members

Oct 86	Forrest	NMI	No Damage	
Dec 86	Kim	NMI	$25 Million	Presidential Disaster Declaration
Dec 86	Marge	NMI	No Damage	
Dec 86	Norris	NMI	No Damage	
July 87	Wynne	NMI	No Damage	
Aug 87	Dinah	NMI	No Damage	
Aug 87	Ed	NMI	No Damage	
Sept 87	Freda	NMI	No Damage	
Oct 87	Lynn	NMI	$ 426,757	Presidential Disaster Declaration
June 88	Vanessa	NMI	No Damage	
July 88	Warren	NMI	No Damage	
Sept 88	Hal	NMI	No Damage	
Oct 88	Ruby	NMI	No Damage	
Jan 89	Winona	NMI	No Damage	
April 89	Andy	NMI	No Damage	
Oct 89	Colleen	NMI	No Damage	
Oct 89	Forrest	NMI	No Damage	
Dec 89	Jack	NMI	No Damage	
Jan 90	Koryn	NMI	$2.2 Million	Presidential Disaster Declaration
April 90	Lewis	NMI	No Damage	
Aug 90	Abe	NMI	No Damage	
Oct 90	Hattie	NMI	No Damage	
Oct 90	Kyle	NMI	No Damage	
Nov 90	Page	NMI	No Damage	
Nov 90	Owen	NMI	No Damage	
Dec 90	Russ	NMI	No Damage	
May 91	Walt	NMI	No Damage	
Sep 91	Ive	NMI	No Damage	
Nov 91	Mireille	NMI	$ 1.2 Million	Request for Declaration Denied
Nov 91	Seth	NMI	No Damage	
Nov 91	Verne	Agrighan	Crop Damage	
Nov 91	Yuri	NMI	Crop Damage	
Aug 92	Omar	Rota	Minor Damage	Crops & 7 structures destroyed
Aug 92	Janis	NMI	No Damage	
Aug 92	Kent	NMI	No Damage	
Sept 92	Ryan	Agrighan	Minor Damage	Crops destroyed
Oct 92	Brian	NMI	No Damage	
Nov 92	Gay	NMI	Minor Damage	
Nov 92	Hunt	NMI	No Damage	
Nov 92	Elsie	NMI	No Damage	
March 93	Irma	NMI	No Damage	
July 93	Nathan	NMI	No Damage	
Aug 93	Steve	NMI	$ 1.4 Million	Request for Declaration Denied
Sept 93	Cecil	NMI	No Damage	
Oct 93	Hattie	NMI	No Damage	
Sept 94	Melissa	NMI	No Damage	
Oct 94	Verna	NMI	Minor Damage	Crops destroyed
Oct 94	Wilda	NMI	$ 1.1 Million	Request for Declaration Denied

Nov 94	Zelda	NMI	$ 2.0 Million	Request for Declaration Denied
Jun 97	Nestor	NMI	Minor Damage	
Aug 97	Winnie	NMI	Major Damage	17 homes destroyed ships run aground
Oct 97	Joan	NMI	Minor Damage	
Nov 97	Keith	NMI	Major Damage	Presidential Disaster Declaration; total of 670 homes damaged 98 homes destroyed.
Date	Storm	Location	Estimated Damage	Remarks
Dec 97	Paka	Rota	Major Damage	Presidential Disaster Declaration
Oct 98	Alex	NMI	No Damage	
Oct 01	Krosa	NMI	No Damage	
Dec 01	Faxai	NMI	No Damage	
July 02	Chata'an	Rota	$ 3.5 Million	Presidential Disaster Declaration
July 02	Halong	NMI	No Damage	
Aug 02	Phanfone	NMI	No Damage	
Dec 02	Pongsona	NMI	Major Damage	Presidential Disaster Declaration
Jan 03	Yanyan	NMI	No Damage	
Aug 03	Krounah	NMI	No Damage	
June 04	Ting Ting	NMI	$ 1.4 Million	
Aug 04	Chaba	NMI	$14.4 Million	Presidential Disaster Declaration
Sept 04	Songda	NMI	No Damage	
Oct 04	Nock-Ten	NMI	No Damage	
Sept 05	Nabi	NMI	Minor Damage	
Aug 06	Saoma	NMI	No Damage	
Apr 07	Kong-Rey	NMI	No Damage	
Year 2008	NO	STORMS	REPORTED	
Sept 09	Choi-wan	NMI	No Damage	
Oct 09	Melor	NMI	No Damage	
Sept 2010	Malakas	NMI	No Damage	Tropical Storm
July 2011	Ma-on	NMI	No Damage	Tropical Storm
2012	Sanvu	Rota	No Damage	Tropical Storm
2012	Maleksi	NMI	No Damage	Tropical Storm
2012	Maria	NMI	No Damage	Tropical Storm
2013	Soulik	NMI	No Damage	Tropical Storm
April 2014	Tapah	NMI	No Damage	Tropical Storm
July 2014	Halong	Rota	Minor Damage	Tropical Storm

Potential Impacts

According to the CNMI HSEM Emergency Operations Plan (2000), the highest probable months of a typhoon or tropical storm passing within 200 nautical miles of Saipan are from September through November. The general typhoon season within the CNMI extends from August through December. Table 5-4 provides further details of the calculated probability percentages for each month.

Table 5-4
Probability Percentage of a Typhoon or Tropical Storm Passing Within 200 Nautical Miles of Saipan

Month	Typhoon	Tropical Storm
January	2%	4%
February	1%	4%
March	1%	1%
April	5%	3%
May	8%	1%
June	1%	5%
July	11%	11%
August	7%	17%
September	20%	25%
October	25%	15%
November	14%	13%
December	5%	5%

Although typhoon strength and intensity is often unpredictable, it is expected that the Northern Mariana Islands will experience devastating winds from a well-developed storm or typhoon within 90 nautical miles from the islands during any given month. To identify land areas that are potentially at risk, criteria was established based upon known historical trends with overwash from storm surge and its relationship to topographical features. Table 5-5 defines the criteria for rating the hazard intensity of areas within the CNMI in relationship to potential impacts by typhoons and tropical storms.

Table 5-5
Hazard Intensity Rating Definitions for Typhoons & Tropical Storms

Hazard	Low	Moderate	High
Coastal Storm Inundation	No history of inundation.	History of minor inundation	History of severe inundation up to 10 m marker. Coastal inundation within designated V and VE flood zones with base elevation up to 7 feet.
High Winds	No history of high wind activity.	History of periodic episodes of high winds with localized structural damage.	History of high winds with widespread structural damage.

Appendix J provides a series of hazard maps that illustrate the historical profile of the past storms and identified potential hazard areas that are susceptible to typhoons.

5.3 Flooding Profile

Floods are a temporary inundation of water with a landmass that stems from excessive rainfall or wave action. Flooding is the result of large-scale weather systems that generate prolonged rainfall patterns or on-shore winds. Flood problems can exist where development has encroached into identified flood plains, which are identified land areas that are adjoining to a channel, stream, ocean, or some other watercourse or body that are susceptible to flooding such as lakes and wetland areas. Floods have the potential and capability to undermine buildings and bridges, erode shorelines and coastal plain areas, destroy vegetation, and wash out access routes and transportation nodes.

Hydrologic hazardsin the CNMI include coastal and inland floods, storm surge, coastal erosion and droughts. It is essential to understand the interrelationship of hydrologic hazards with other hazard groups. For example, extreme rainfall from a storm can create flooding conditions and sometimes flash flooding, while winds from a typhoon can exacerbate storm surge, high surf, and coastal erosion.

Under the National Flood Insurance Program (NFIP), the FEMA is required to develop flood risk data for purposes of floodplain management. FEMA develops these data sets through the Flood Insurance Studies (FIS) program, where detailed and approximated values of flood risk are utilized in identifying vulnerable communities. Using the results derived from the FIS, FEMA outlines the potential threat areas through the documentation of a Flood Insurance Rate Map (FIRM) that depicts the flood areas within the studied community. See Appendix _ for CNMI FIRM Maps.

Flash Flooding

This type of flood can be characterized as floodwater that rapidly rises with little or no warning, usually as a result of intense rainfall over a short period of time in a concentrated area of mountainous terrain or high-sloped drainage basins. If the rainfall pattern exceeds threes inches an hour, there is potential for flash flooding to occur, causing ditch overflow and roadways to be washed-out.

Flood flows frequently contain large concentrations of sediment and debris collected as they sweep channels clean. Flash floods may trigger hazardous events such as mud and landslides, structural failures, and other threatening conditions. Rainfall intensity and duration are the primary source of flash floods. Further, the amount of watershed vegetation, soil conditions, any artificial flood storage areas, and the configuration of the streambed and floodplain are also important.

In urban areas, flash flooding is an increasingly serious problem due to the removal of vegetation, and replacement of ground cover with impermeable surfaces such as roads, driveways and parking lots. In these areas, and drainage systems, flash flooding is particularly serious because the runoff is dramatically increased. The greatest risk in flash floods is that there is minimal to no warning for people who may be located in the path of high velocity waters, debris or mudflow. Flash floods are capable of tearing out trees, undermining buildings and bridges, and scouring new channels.

Past History-Flooding

Six areas on Saipan are prone to flooding and include Kanat Tabla, the San Roque village, the road at Tanapag, the lower base industrial area, Garapan/Putan Muchot, and the Chalan Kanoa -Lake Susupe area. Lake Susupe lies in a broad, shallow depression on the western edge of an extensive low wetland. The normal surface area of the lake is approximately 45 acres with an additional 372 acres of surrounding marsh land and contains 17 small ponds and has a maximum depth of 7.2 feet. Presently, the lake has no outflow with water loss attributable only through percolation and evaporation. In previous flooding events, specifically Typhoon Carmen in 1978, flooding in the surrounding area was the result of the water rising 5.4 feet above average within the lake.

An area of Garapan that is identified within the Flood Insurance Rate Map #750001 Series 0001-0065 consists of a 1.9 square mile basin, which has not been subject to frequent flooding, but given its low elevation (approximately 3-8 inches above mean sea level) and a lack of a suitable outlet channel to convey runoff, this area has been subject to severe flooding conditions.

No perennial streams flow on Tinian and there are no records of streamflow or flood runoff. However, runoff is expected after intense rainfall but amounts have not been quantified. Rough estimates of runoff from the limestone areas of Saipan range from 6 to 12 percent of rainfall. Several drainage systems have been installed under Capital Improvement Projects (CIP) to alleviate flooding in residential areas.

Potential Impacts

Floods often result in loss of life, as well as depriving survivors of their property, possessions and time. Floods can also generate health hazards from polluted waters and create physiological stress on people trying to contend with the outcomes of property damage or the loss of irreplaceable family valuables. Floods can cause severe damage to the economy. Buildings and inventories are physically damaged or destroyed by the onslaught of water. Income is lost as businesses are forced to close by floodwaters, or lose customers who cannot get to the establishment. The loss of income can have a ripple effect on jobs and other related businesses. Flooding conditions can be a major problem for many struggling businesses and force them to close or relocate out of the area. Flooding of streets, highways and underpasses affects many more people than those who live in floodplains. Travelers, commuters, and commerce are affected.

Most flood deaths are a result of driving or riding into floodwaters, so the threat to life is not limited to floodplain residents. Even areas not under direct flooding conditions can experience indirect impacts. When floods inundate a water or wastewater treatment plant, the entire community may lose its water supply or experience the failure of its sewer system. Overloaded sewers can flood streets and homes with sewage whereupon downstream communities could be subjected to an inundation of polluted water. Further, businesses can be impacted by the lack of utility service or inaccessibility to inundated areas. Long-term impacts could include the closure of marginal businesses, which are more dependent upon daily activity.

Annual precipitation in the Northern Mariana Islands is approximately 83 inches a year. Although the geological composition of the islands allows for adequate saturation in most parts of the islands, those identified low-lying areas with poor drainage or those prone to storm surges have a moderate potential to be impacted by flooding conditions. Further, the continued development of urbanized centers that lack proper drainage or erosion control measure can contribute to the damaging impacts of floods. Table 5-6 provides criteria for defining the intensity of a flooding hazard.

Table 5-6
Hazard Intensity Rating Definitions for Flooding

Hazard	Low	Moderate	High
Flooding	No history of coastal or inland flooding and no reasonable basis for expected flooding due to low seasonal rainfall in watershed. Areas within designated Zone X-other areas.	History of non-damaging flooding where streams or highlands with seasonal high rainfall are present. Areas within designated Zone X-other flood areas.	Historically high flood damage on gentle slopes. Areas within 100-year flood designated Zones A, AE, AH, AO, A99, V, and VE and floodway areas in zone AE. Zone V Flood Areas with base flood elevation of 7 feet.

Appendix K provides a series of maps that identify potential hazard areas within the CNMI that are susceptible to flooding.

5.4 Earthquake Profile

As with oceanic-continental convergence processes, when two oceanic plates converge, one is usually subducted under the other and in the process a trench is formed. The Mariana Trench (paralleling the Mariana Islands), for example, marks the edge where the fast-moving Pacific Plate converges against the slower moving Philippine Plate. The Challenger Deep, at the southern end of the Mariana Trench, plunges deeper into the Earth's interior (nearly 11,000 meters or 36,089 feet) than Mount Everest, the world's tallest mountain that rises above sea level (about 8,854 meters or 29,048 feet).

Subduction processes in oceanic plate convergence also result in the formation of volcanoes. Over millions of years, the erupted lava and volcanic debris pile up on the ocean floor until a submarine volcano rises above sea level to form an island volcano. Such volcanoes are typically strung out in chains called island arcs. As the name implies, volcanic island arcs, which closely parallel the trenches, are generally curved. The trenches are the key to understanding how island arcs such as the Mariana and the Aleutian Islands have formed and why they experience numerous strong earthquakes. Magma that forms island arcs is produced by the partial melting of the descending plate and/or the overlying oceanic lithosphere. The descending plate also provides a source of stress as the two plates interact, leading to frequent moderate to strong earthquakes.

The Mariana Islands are situated in a tectonically active region characterized by the northwestward subduction and underthrusting of the Pacific Plate beneath the Mariana plate along the Mariana Trench, and the eastward spreading of oceanic crust from the Mariana Trough. Seismic hazards are those related to ground shaking. Landslides, ground cracks, rockfalls, tsunami are all seismic hazards. Generally, though, hazard definitions of earthquakes are equated to damages to structure and their contents. Earthquakes are generally measured in terms of magnitude and intensity.

Engineers, seismologists, architects, and planners have carefully evaluated seismic hazards related to building construction, devising a system of classifying seismic hazards on the basis of the expected strength of ground shaking and the probability of the shaking actually occurring within a specified time. The results are included in the International Building Code (IBC) seismic provisions. The IBC contains six seismic zones, ranging from zone 0 (no chance of severe ground shaking) to zone 4 (10% chance of severe shaking in a 50-year interval). The shaking is quantified in terms of g-force, the earth's gravitational acceleration. According to the U.S. Geological Survey, one problem in assigning seismic hazard zones within the CNMI is that the ground shaking during a strong earthquake may vary within a small area. This variation is due to the nature of the underlying ground; for example, whether it is mainly lava bedrock or soil. Two homes in the same neighborhood may suffer different degrees of damage depending on the properties of the ground upon which they are built. In addition, local topography strongly affects earthquake hazards. Steep slopes composed of loose material may produce large landslides during an earthquake. The risk from living in a seismically active area, unlike that of living in an area prone to being covered by lava, also depends to a large degree on the type of construction used in a given home. Earthquake shaking may damage certain types of houses, while leaving other types of construction unscathed. For all of these reasons, earthquake hazards are highly localized, and it is difficult to define broad zones with the same relative degree of hazard.

Previous History

The epicenters of most earthquakes are located on the Pacific Ocean floor and intensities generally diminish before reaching the Mariana Islands. The earthquake history of Saipan since 1800 records two major events, one in 1849 and the other in 1902, (actual magnitudes are not known). In April 1990 an underwater earthquake measuring 7.5 on the Richter Scale was recorded as occurring 225 mile

Table 5-7
Significant Earthquake for the Mariana Islands Region from 1983-2012

DATE	TIME OF ORIGIN			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDE	NOTES
	HR	MIN	SEC	LAT	LONG			
5/24/12	06	36	51				5.1	Rota Region
1/26/12	14	42	05				5.2	Rota Region
4/20/11	03	46	11				5.2	Guam Region
9/01/10	07	16	00				5.1	Guam Region
7/10/10	15	39	43				5.6	Rota Region
4/23/10	6	46	20	13.67	144.65		5.4	Felt in Saipan and Rota, not damage reported.
2/04/09	5	58	00	13.79	146.30		5.9	Felt on Rota, no damage reported.
1/03/06	12	27	57	13.84	146.30		5.8	Felt on Rota, no damage reported.
2/05/05	3	24	25	16.01	145.87		6.6	Felt strongly in Saipan and Tinian, no damage reported.
2/02/05	2	30	25	14.08	144.71		6.3	Felt strongly in Saipan and Tinian, no damage reported.
10/04/04	19	20	34	14.55	146.99		6.0	No damage reported.
8/14/02	13	57	52	14.10 N	146.99E	30G	6.5	Minor damage to some buildings on Saipan. Felt strongly in northern and central Guam and far south as Talofofo.
4/26/02	16	06	07	13.088 N	144.619E	86	7.1	At least 5 people slightly injured and some minor damage (VII) to buildings on Guam. Broken water and sewer lines with frequent power outages throughout the island. Felt strongly on Saipan.
10/12/01	15	02	16	12.686 N	144.980E	37G	7.0	One person injured; many buildings damaged (VII) and utilities disrupted on Guam. Felt strongly on Saipan.
7/3/01	13	10	42	21.641 N	142.984E	290D	6.5	Mariana Island Region. Recorded in Kanagawa Prefecture, Japan.
4/23/97	19	44	28	12.986 N	144.901E	101D	6.2	Four people injured and some damage to buildings on Guam. Felt strongly on Rota, Saipan and Tinian. Power outages on Guam and Rota.
6/9/96	01	12	16	17.444 N	145.458E	149D	6.0	Felt Strongly on Saipan.

8/23/95	01	06	02	18.856 N	145.218E	595G	6.3	Felt on Saipan.
4/8/95	17	45	12	21.833 N	142.691E	267G	6.4	Felt within Mariana Island Region.
8/8/93	08	34	24	12.982 N	144.801E	59G	8.0	48 people injured on Guam. Extensive damage (IX) to hotels in Tumon Bay. Slight damage (V) on Saipan. Felt on Rota (VI) and Tinian (V). Tsunami generated with max wave heights as selected tide stations of 7 to 98 cms from Honshu to Hawaii.
6/6/93	13	23	20	15.823 N	146.595E	14G	6.6	Felt within Mariana Island Region.
4/5/90	21	12	35	15.125 N	147.596E	11G	7.5	Felt (IV) on Guam and Saipan. A small tsunami was generated with a maximum wave height at selected tide stations of 3 to 24 cm from Truk to Kailua-Kona. Several smaller aftershocks followed the main quake.

Table 5-8
Hazard Intensity Rating Definitions for Seismic Activity

Hazard	Low	Moderate	High
Seismicity	No seismic activity in recent recorded history	Areas of limited history of seismic activity with minor historic seismic damage Areas with soils subject to Liquefaction.	History of frequent seismic activity with major historic seismic damage. Areas with soils subject to liquefaction or with unconsolidated fill. High population density areas along identified fault lines.

Appendix L provides a series of hazard maps that illustrate the historical profile of the past earthquake events.

5.5 Volcanic Eruption Profile

Volcanic activity is one of the most perceptible signals of the earth's basic thermal and kinetic instability. All the Mariana Islands lie along the Mariana Ridge, which with the collective of islands, seamounts, the Mariana Trench to the east and the Mariana Trough to the west, are referred to as the Mariana Island Arc System. For the Mariana Island Arc System, volcanism is concentrated along the Mariana Ridge, a submerged topographic high on the sea floor, situated 50 to 100 kilometers west of the Mariana Trench and the Mariana Island Arc System.

The Mariana Island Arc System is divided into two distinct geological histories. The six islands south of Anatahan, including the island of Guam, are extinct volcanic edifices that during their long and episodic upward growth have acquired a veneer of limestone, which is a rock comprised of cemented skeletal remains of coral and calcareous marine organisms that consist mostly of calcium carbonate. The emerging volcanic structures acquired this sheath of limestone by remaining submerged in shallow marine waters as the organisms have accumulated over a vast span of time.

A succinct discussion of the various volcanic areas within the CNMI is provided below.

Farallon De Pajaros (Uracas)

Approximately 315 nautical miles north of Saipan, the island has a land area of 1 square mile with an active volcano, which keeps its steep slopes smooth by frequent flows of lava and ash. The summit is crowned with white Sulphur and at times dense clouds of yellow smoke and fire emit from the crater. The north, south and west shores are precipitous and bare. The highest point on the island stands at 1,047 feet.

Maug

Located approximately 280 nautical miles north of Saipan, the area is comprised of three islands (North, West, and East Islands respectively), which are the remains of a partly submerged volcano that surrounds a deep and spacious harbor. Steep cliffs border the islands. On the north and west islands there are columns resembling tombstones, which crown the ridges, which are outcrops of basaltic veins. The island is uninhabited. The highest peak stands at 746 feet on North Island.

Asuncion

This island is comprised of 2.8 square miles and located about 260 nautical miles north of Saipan. Last active in 1906, this volcano rises steeply as an almost perfect cone. White smoke occasionally emerges from the top and slopes. Lava has streamed down the mountainsides giving it a black surface. Shrubs and a few trees can be found on the island. The highest point on the island is at 2,923 feet.

Agrihan

Situated 206 nautical miles north of Saipan, the volcanic island has an area of 11.4 square miles and was last active in 1917. There are areas of gentle slopes near the shore on the southeast and southwest sides and the crater entrance on the north side. The remaining island consists of steep slopes and deep gorges. The coast is rocky and steep with a landing beach on the southwest coast. The highest point on the island is 3,166 feet.

Pagan

Located 173 nautical miles north of Saipan and one of the largest and most active volcanoes of the Marianas Islands, Pagan consists of three stratovolcanoes connected by a narrow isthmus. Both North and South Pagan stratovolcanoes were constructed with calderas, 7-and 4kilometers in diameter, respectively. Mount Pagan at the northeast end of the island rises above the flat floor of the caldera, which probably formed during the early Holocene. South Pagan is a stratovolcano with an elongated summit containing four distinct craters. The highest point on the island stands at 1,870 feet. Most of the historical eruptions of Pagan have originated from North Pagan volcano. The 1981 eruption, which sent a Plinian column to the elevation of 13 kilometers elevation, was the largest eruption in Pagan's historical record. According to reports, 54 people were evacuated at the start of the eruption by the Japanese freighter M/S Hoyo Maru on May 16th and later transferred to the M/V Fentress. Since the May 1981 eruption, several small to moderate ash eruptions have been observed, and plumes have occasionally been visible on satellite imagery. Seismic monitoring of Pagan ended in 1984. The pre-1981 Pagan record includes 11 eruptions dating back to the early 1800's, and a tentative eruption in 1669. On November 24, 2012, volcanic activity was monitored by the Emergency Management Office (EMO). It was observed on satellite images. The Aviation Color Code was set on Yellow for several days.

Alamagan

Situated 146 nautical miles north of Saipan, this island has an extinct volcano with a large crater at the summit. The island has a land area of 4.4 square miles. The west side is cut by deep gorges covered with high savanna grass. The southeast side is a steep slope of bare lava. There are deep valleys with caves. Coconut palms grow on the gradual slopes. Warm fresh water springs are located on the northern part of the west coast. The highest point on the island is 2,441 feet.

After a century of dormancy, the Alamagan volcano awakened in December 1998 when it spewed thick black smoke and a sulfuric haze, prompting the immediate evacuation and rescue of residents on the island. In July 1999, a state of emergency wa s declared for Alamagan Island due to high levels of tectonic seismicity within the Marina subduction zone. On March 15, 2000, Governor Pedro P. Tenorio extended a declaration of disaster emergency in the Commonwealth of the Northern Mariana Islands (CNMI) in the wake of the continued threat of a major volcanic eruption on Alamagan. During this period, Governor Tenorio stated that the area was to remain off-limits to human habitation and that travel to the island is restricted, except for monitoring activities conducted by the authorities. According to the emergency declaration, the volcanic activity and seismic phenomena continued to exist almost eight months since the initial signs emerged of a major pending eruption. However, on September 22, 2000, the State of Emergency declaration was cancelled for Alamagan with limited island access granted by the Office of the Governor for scientific expeditions. To date, the potential for future eruption activity on Alamagan is still an uncertain possibility.

Guguan

Located 130 nautical miles north of Saipan, this island has a land area of 1.5 square miles. The northwest wall of the active volcano has collapsed and a new cone has built up above the wall of the old one. There are deep ravines between the two peaks. Smoke and large quantities of Sulphur sometimes erupt from the volcano. The Sulphur has given the mountain the appearance of a snowcap from a distance. The coast is bordered by steep basaltic rock with gables of high ridges with deep rain erodedgorges. At times a lake forms within the crater. The island is uninhabited and has a peak of 988 feet.

Sarigan

The island is 95 nautical miles north of Saipan and is an extinct volcano. The island has numerous ravines and valleys with dense tropical vegetation. It is surrounded by perpendicular cliffs, which make landing difficult.

Anatahan

The island of Anatahan is located 120 km (75 miles) north of Saipan Island and 320 km (200 miles) north of Guam. The island has an area of 12.5 square miles with a high point of 2,585 feet. Anatahan is a stratovolcano that contains the largest known caldera in the Northern Mariana Islands. The island’s steep slopes are furrowed by deep gorges covered by high grass. The coastline is precipitous with several landing beaches on the northern part and western shore and a small sandy beach on the southwest shore. The wreckage of a World War II B-29 Superfortress lies on the northside edge of the crater’s flatlands.

The first historic eruption in recent times began on the evening of May 10, 2003 only 3 months after the R/V Thompson surveyed its flanks during the 2003 Submarine Ring of Fire expedition. The explosive eruption created a large plume of volcanic ash that rose to an altitude of 40,000 feet, whereupon aircraft and ships were warned to avoid the area. No one was directly threatened by the initial activity, because residents had evacuated the small volcanic island a few weeks earlier and a research crew moved off the island a week before the eruption.

Thus far, the eruption has consisted of a nearly continuous small eruption column (less than 5 km) punctuated by stronger explosive activity. In early June, a small lava flow erupted in the volcano's east crater, which was mostly destroyed by subsequent explosive activity.

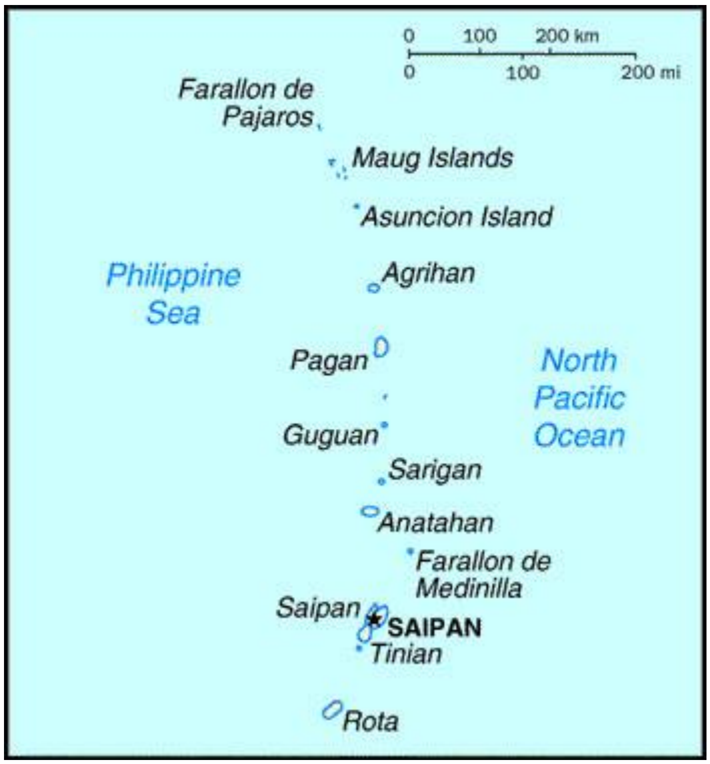
Esmeralda Banks

24 miles west of Tinian, is the southern most active volcano in the Iz-Volcano-Mariana Arc and is one of the most active vents in the western Pacific. It rises to within 100 feet of sea level and is considered to be an area of potential eruption. In the early part of the 20th century the banks were reported to be above sea level but disappeared below water as a result of an earthquake.

Ruby

A submarine volcano that rises to within 230 meters of the sea surface northwest of Saipan was detected in eruption in 1966 by sonar signals. In 1995 submarine explosions were detected, accompanied by a fish kill, sulfurous odors, water bubbling, and the detection of volcanic tremor.

Figure 5-1
Map of the CNMI



Potential Impacts

In analyzing historic and recent data, the islands of Anatahan, Pagan, Alamagan, and Agrigan can be quantified as the most active volcanic areas. Volcanic eruptions can cause catastrophic damage in a variety of ways, particularly with the emission of ash and sulfur gases. Most of the active volcanoes within the CNMI exist on distant and remote islands to the north but normal wind patterns could pose a threat to the southern islands with ash fall. Volcanic emissions and ash pose a threat not only to young, asthmatic and elderly people, but may also disrupt air transportation in the CNMI.

Table 5-9 provides the criteria of defining hazard intensity for volcanic activity.

Table 5-9
Hazard Intensity Rating Definitions for Volcanic Activity

Hazard	Low	Moderate	High
Volcanism	No history of volcanic activity in recent recorded history	Areas of limited history of volcanic activity	Areas of frequent volcanic activity.

Appendix M provides a series of hazard maps that illustrate the historical profile of the past volcanic eruptions and identified potential hazard areas that are susceptible to volcanic activity.

5.6 Tsunami Profile

A tsunami is a series of waves generated in a body of water by an impulsive disturbance that vertically displaces the water column. Tsunamis are characterized as shallow-water waves with long periods and wavelengths. A tsunami possesses the potential to have a wavelength in excess of 100 km and a period on the order of one hour.

Generators of tsunamis include earthquakes, landslides, volcanic eruptions, and explosions. Tsunamis are created when the sea floor abruptly deforms and displaces the overlying water from its equilibrium position. Waves are formed when the displaced water mass, which is subjected to gravitational forces, attempts to regain its equilibrium. The major contributing factor that determines the initial size of a tsunami is the amount of vertical sea floor deformation, which is a product of the generator's magnitude, depth, and fault characteristics. Features that influence the size of a tsunami along the coast are the shoreline and near-shore bathymetry, the velocity of the sea floor deformation, the source, and the efficiency of energy transfer from the sea floor to the water column.

When a tsunami approaches a coastline, the wave begins to slow and increase in height; the height achieved depends on the topography of the sea floor. Often, the first sign of a tsunami is a receding water level caused by the trough of the wave. In some instances, however, the first sign of a tsunami is a small rise in the water level just before the recession. In both cases, the incoming wave approaches the shore much like the incoming tide, though much more rapidly. The maximum vertical height of the water in relation to sea level is referred to as "run -up." The maximum horizontal distance is referred to as "inundation." "Run-up" is the maximum height of the water observed above a reference sea level. When a tsunami finally reaches the shore, it may appear as a rapidly rising or falling tide, a series of breaking waves, or even a bore. A bore is a traveling wave with an abrupt vertical front or wall of water when the wave moves from deep water to shallow. Reefs, bays, entrances to rivers, undersea features and the slope of the beach all help to modify the tsunami as it approaches the shore. When the trough of the wave arrives first, the water level drops rapidly. The areas of where this occurs at a harbor or offshore area may be drained of its water, exposing sea life and ocean bottom. Fatalities have occurred where people have tried to take advantage of this situation to gather fish or explore the exposed reefscape. The wave returns to cover the exposed coastline faster than the people can run. Although there may be an interval of minutes or perhaps an hour between each wave, it is these latter waves that can be more destructive than the first.

Residents returning too soon to the waterfront, assuming that the worst has passed, represent another kind of preventable fatality.

Tsunami manifest themselves as either large breaking waves, often largest around headlands where they are concentrated by wave refraction, or as rapidly rising sea level like a flooding tide. The geography of the shoreline often plays an important role in the form of the tsunami. Shores of islands protected by coral reefs commonly receive less energy than unprotected coastlines lying in the direct path of an approaching tsunami. Islands in a group may "shadow" one another reducing the tsunami effect. Small islands may experience reduced run-up as the tsunami waves may refract around them. Fringing and barrier reefs appear to have a mitigating influence on tsunamis by dispersing the wave energy.

Pacific Tsunami Warning System

The lack of a warning during the 1946 tsunami that devastated many coastal areas in Hawaii led scientists and governmental agencies to establish the Pacific Tsunami Warning System (PTWS), for the Hawaiian Islands and United States territories in the Pacific by 1948. The main objectives of this system are to detect and locate the existence of all possible tsunami-causing earthquakes by the use of properly monitored seismographs; to ensure that a tsunami actually exists by measuring water level changes at tide-gauging stations located throughout the Pacific; and finally, to determine the time of arrival of the tsunami and to provide an adequate warning for evacuation procedures.

A Tsunami Watch is automatically issued by the warning center for any earthquake having a magnitude of 7.5 or larger on the Richter scale (7.0 or larger in the Aleutian Islands) and located in an area where a tsunami can be generated. For the CNMI, the CNMI HSEM is notified whereupon limited public announcements are made by the local media. In May of 2007, NOAA donated AM radios for the purpose of enhancing the CNMI's tsunami early warning system to 26 public and private schools on Saipan in addition to the former CNMI EMO and all four of the jurisdictional mayor's offices. Data from tidal gauge stations is awaited for confirmation of the actual existence of a tsunami.

Reports on wave activity from the tide-gauging stations nearest to the earthquake epicenter are requested by the warning center. If the stations report that there is no observed tsunami activity, the Tsunami Watch is canceled. If these stations report that a tsunami has been generated, a Tsunami Warning is issued for areas that may be impacted in the next hour. At this time the public is informed of the ensuing danger by the emergency broadcast system. Evacuation procedures are implemented, and sea going vessels are advised to head out to sea, where in deep waters they will not be affected by the tsunami.

Past History

There is no historical record of tsunami occurrences in the Northern Mariana Islands. However, during the August 1993 earthquake, a small tsunami (15 cm) was generated and detected in Agana Harbor on the island of Guam. It is presumed that although unofficially recorded, the same tsunami was detectable within the CNMI.

Some seismologists offer a theoretical explanation that the Mariana Trench prevents tsunamis generated east of the trench from affecting the Mariana Islands due to its depth. Since the nature of tsunamis generally builds up force and speed in shallow waters, the depth of the trench neutralizes its force and speed before it reaches the Mariana Islands. The ocean currents normally drifting in a southwest direction also neutralize tsunamis generated west of the Mariana Islands in the Marina trough. It is thought that perhaps these features explain the reasons why the Mariana Islands have not experienced a tsunami historically. But it is possible that a violent eruption of a submarine or underwater volcano around the Mariana Islands can generate a tsunami.

The Pacific Tsunami Warning Center has issued a total of 20 warnings throughout the Pacific since it was first established in 1948. Of these 20, five warnings resulted in significant Pacific-wide tsunamis. Even though all significant Pacific-wide tsunami events have been detected since 1948, 61 people perished when they failed to heed the warning for the 1960 tsunami that struck Hilo, Hawai'i. Since 1964, there have been no significant Pacific-wide tsunami events.

However, the most destructive tsunami types within the Pacific are those classified as local or regional, with their destructive effects confined to coasts within a hundred to a thousand miles of the source, which often is an earthquake event. For example, a regional tsunami in the Sea of Japan or East Sea severely damaged the coastal regions of Japan, Korea, and Russia, causing an estimated $800 million in damage and over a hundred deaths.

Potential Impacts

In general, for coastal areas that are situated at sea level, there is no safe place during a tsunami. On low-lying shorelines such as in the coastal plains and inland valleys that characterize much of the Northern Mariana Islands, a tsunami may occur as a rapidly growing high tide that rises over several minutes, inundating the low coastal regions with surge flooding. The return of these floodwaters to the sea causes much damage. At headlands the refractive focusing of the wave crest leads to energy concentration and high magnitude run-up.

The potential of tsunami activity is associated with seismic activity within the Pacific, particularly the areas of Japan and Hawaii. With historical run-up heights of approximately 10 ft. (3 m above low tide) in other similar Pacific Island topographies, those areas within the CNMI that have a gentle to moderate coastal zone slope are potential hazard areas for tsunami impacts. Table 5-10 illustrates the prescribed criteria for defining hazard intensities for tsunamis in the CNMI.

Table 5-10
Hazard Intensity Rating Definitions for Tsunami Inundation

Hazard	Low	Moderate	High
Tsunami Inundation	Coastal areas above 10 meter inundation line.	Coastal areas along the fringe of 10 meter inundation line.	Coastal areas below 10-meter inundation line and along the shore.

5.7 Drought Profile

The generalized concept of drought condition is a period of abnormally dry weather. Drought diminishes natural stream flow and depletes soil moisture, which can cause social, environmental and economic impacts. In general, the term "drought" is reserved for periods of moisture deficiency that are relatively extensive in both space and time. A drought is caused by a deficiency of rainfall and can be increased by other factors such as high temperatures, high winds, and low relative humidity. Drought can also result from human activities that increase demand for water. Expanding populations, use of irrigation all put pressure on water supplies. The severity of the drought depends not only on the duration, intensity, and geographic range, but also on the regional water supply demands made by human activities and vegetation.

Drought differs from other natural hazards in three significant ways. First, the onset and termination of a drought period are difficult to determine since the effects accumulate slowly and may linger even after the apparent termination of an episode. Second, the absence of a precise and universally accepted definition adds to the confusion about whether a drought exists and if so, identifying the degree of its severity. Third, unlike most other natural hazards, drought impacts are less obvious and are spread over a larger geographic area. These characteristics have hindered the development of accurate, reliable, and timely estimates of drought severity and effects.

Meteorological Drought

This type of drought is usually defined on the basis of the degree of “dryness” from normal over some period of time. These definitions are usually region-specific, and presumably based on a thorough understanding of regional climatology. Within the United States, meteorological drought is defined when there is less than 2.5 mm of rainfall in 48 hours. As a standard, meteorological measurements are the first indicators of drought.

Agricultural drought

This type of drought links various meteorological characteristics to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration rates, soil water deficits, and reduced groundwater and reservoir levels. Agriculture is usually the first economic sector to be affected by drought.

Hydrological drought

This type of drought refers to precipitation deficiencies in surface and subsurface water supplies. The frequency and severity of hydrological drought is often defined on a watershed basin scale and is measured as stream flow and volume capacity of major water sources such as lakes.

El Niño Conditions

During the past 15 years, the most severe droughts impacting the CNMI have been associated with the El Niño Phenomenon and persistent zones of high-pressure systems throughout the islands. The oceanic and atmospheric event, which can change weather patterns within the Pacific and along its eastern coastlines in both the Northern and Southern Hemispheres, is known as El Niño, (named the "Christ Child" because it begins near Christmas). It is believed by some scientists to be related to a reversal of the equatorial undercurrent in the western Pacific. Presently the cause of the start and end in this change of direction of the current is unknown. The phenomenon appears to run in cycles that recur every four to seven years, warming the waters of the eastern Pacific and causes unusually heavy rain, thereby producing a cooling effect on the waters around Indonesia, whereupon, drought conditions are then experienced throughout the Pacific. This equatorial undercurrent is about 275 miles wide and extends across the Pacific flowing eastward at the equator at about one mile per hour. However, at times it has been measured flowing in the opposite direction. Scientists theorize that the reversal of this current may precipitate the El Niño event, which can have a devastating effect on the ecology, particularly fisheries. Studies indicate that between periods of El Niño there occur La Niña events, periods of one to two years when the surface water of the equatorial Pacific becomes cooler and flows westward. This can be equally influential in affecting the climate of affected places.

Previous History

During an El Niño period, the Mariana Islands usually experience a decrease in rainfall with the driest records all associated with El Niño years. Rainfall decreases because of a southerly shift in the atmospheric circulation of the north Pacific, known as the Hadley Cell. The Hadley Cell is a large continuous belt of air that rises moisture-laden, from the warm waters north of the equator and moves across the subtropics where the Mariana Islands are located. During its journey, the air cools losing its ability to hold moisture, and produces abundant rainfall. Eventually it descends back to

Earth's surface as a column of dry, cool air and creates a pressure system known as the Pacific High. Under normal conditions the Mariana Islands experience a wet climate, while to the north and northeast, the Pacific High creates a dry climate. However, during El Niño the surface waters at the equator become significantly warmer and the rising motion of the Hadley Cell shifts to the south. This brings the Pacific High south as well, and the Mariana Islands experience a decrease in rainfall.

In 1996, researchers from the Water and Environmental Research Institute (WERI) at University of Guam developed rainfall forecasts in terms of percent of rainfall for three-monthly seasons for the Micronesian Islands. In June 1997, the Pacific ENSO Applications Center (PEAC) alerted governments in the U.S. affiliated Pacific islands that a strong El Niño was developing and that changes in rainfall and tropical storm patterns during the next 12 months would be just like those in 1982-1983. In September 1997, PEAC issued its first definitive rainfall forecast, which stated that severe droughts were likely beginning in December and that certain islands were at an unusually heavy risk of typhoons. Efforts were made to impress on them the fact that the cost of providing disaster assistance could be reduced significantly should plans be implemented before water needs became critical. Most of the Pacific Island governments served by PEAC developed drought response plans or task forces.

Even with these precautionary measures, the 1997-1998 El Niño produced such extensive drought conditions that widespread water rationing became necessary. Increased storm activity heightened the effects of the drought. CNMI experienced three typhoons in two months, and Super Typhoon Paka severely debilitated the islands of Guam and the Marshall Islands. These storms brought the last significant rainfall. By January 1998, the rainfall stopped in the Micronesian Islands. Within the Mariana Islands, citrus and garden crops were the most affected by drought conditions, and the hospital had to buy imported fruits and vegetables rather than rely on local suppliers. Other climate-related consequences also felt through the Mariana Islands included:

• Changes in the migratory patterns of economically significant fish stocks;
Stress on coral reefs associated with increased temperatures;
• Increased sedimentation from erosion in areas scorched by wildfire;
• Reduced air quality in areas affected by increased local wildfires.

Table 5-11
Average CNMI Seasonal Rainfall Variations During El Niño Southern Oscillation (ENSO)

El Nino	**Year (0)**				**Year (+1)**			
	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
	88%	87%	84%	104%	73%	63%	92%	92%
La Nina	**Year (0)**				**Year (+1)**			
	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
	113%	139%	106%	104%	135%	182%	115%	82

Although the CNMI has experienced past droughts, the most detrimental effects usually have been confined to limited areas. The areas most affected by drought are those that normally are dry and depend on winter rains and those that receive little rain from the trade winds. Also, greatly affected are the areas that have no ground-water supply or water supply from another area.

Potential Impacts

The availability of freshwater resources is already a problem for many island communities, because of their unique geography and the growth of population, tourism, and urban centers. Many islands suffer from frequent droughts and water scarcity from not enough precipitation. In other cases, rainfall is abundant but access to freshwater is limited by lack of adequate storage facilities and delivery systems, or a mismatch between where it rains and where the water is needed. Future climate changes in the islands regions could include: changes in naturally occurring variations in weather patterns (e.g., El Niño could occur more frequently or last longer), ocean temperature, and ocean currents; changes in the frequency, intensity, and tracks of tropical cyclones (storms called typhoons in the Atlantic and typhoons in the Pacific) and their resulting precipitation; and/or changes in sea level. Any of these changes would affect the amount, timing, or availability of freshwater, such that freshwater issues will be increasingly serious concerns for the US affiliated Islands.

The island communities of the Marianas rely upon groundwater resources called freshwater lenses. The size of the groundwater lens is directly related to the size of the island. It is also related to the normal amount and type of precipitation (e.g., heavy downpours recharge lenses, while light rain generally does not), and the leaking of fresh lens water into the ocean. The larger islands have larger lenses, thus are better buffered against drought conditions. Smaller islands have no lenses or shallow lenses that easily become depleted or contaminated with salt water. During drought conditions, there is no recharge to the lens, and the fresh water is depleted rapidly, especially if consumption is high. Low sea levels associated with El Niño periods lower the water table even more, making it more difficult to access the water and easier to damage the fragile connection between the fresh water lens and the underlying salt water. Water quality is also an issue: many volcanic islands, like the Marianas, have highly permeable rock, which increases the potential for groundwater contamination. In some Pacific Islands pollution problems reduce the ability of the system to provide clean, fresh water.

Patterns of precipitation are important in determining whether islands have an adequate freshwater supply. Long periods of rainfall are needed to recharge the freshwater lenses because short and light rainfall tends not to contribute to filling aquifers (ground water sources). Land cover is also an important factor in how much water permeates into the ground or flows into rivers and streams. If the land is covered by forest, the forest floor absorbs and holds the rainwater for drier periods, but if the forest has been removed by urban development, for example, the rain runs off faster leaving less for use during dry conditions. On some islands, destruction of forest cover has caused many formerly year-round streams to stop flowing in the dry seasons and has contributed to landslides during periods of heavy rain.

Table 5-12
Hazard Intensity Rating Definitions for Drought

Hazard	Low	Moderate	High
Drought	Areas with access to groundwater resources.	Areas with partial access to groundwater resource or water transmission system.	Areas completely dependent upon water catchment or containment system. Areas identified as Agriculture lands.

Appendix O provides a series of hazard maps that identifies potential hazard areas that are susceptible to drought conditions.

5.8 Wildfire Profile

One of the major impacts of drought that contributes to environmental, economic, and social impacts are wildland fires. In general, the three necessary ingredients for a fire to ignite include oxygen, a heat source, and fuel. Wildfires can be classified into several varieties. According to the National Oceanic Atmospheric Administration (NOAA), there are four types of wildfires: Ground Fires, Surface Fires, Crown Fires, and Spotting Fires. Ground fires burn the humus layer of the forest floor, surface fires burn forest undergrowth and surface litter, and crown fires advance through the tops of trees. Atmospheric factors such as temperature, humidity, and rainfall are important factors in determining the combustibility of a given natural habitat.

Wildfires provided both benefits and disadvantages. The ecological benefits of wildfires often outweigh their negative effects. A regular occurrence of fires can reduce the amount of fuel build -up thereby lowering the likelihood of a potentially large wildfire. Tropical moist savannas in many regions are maintained by fire and would revert to seasonal tropical forest conditions if fire could be excluded. Some seasonal tropical forests regularly affected by fire produce valuable timber and non-wood forest products. Fires can also provide a way of controlling insect pests by killing off the older or diseased trees and leaving the younger, healthier trees. Overall, fire is a catalyst for promoting biological diversity and healthy ecosystems. It fosters new plant growth, and wildlife populations often expand as a result.

Besides the obvious disadvantages of loss of human life and property damage that can result from a wildfire, fire can also cause soil damage, especially through combustion in the litter layer and organic material in the soil. This organic material helps to protect the soil from erosion. When organic material is removed from the soil by an intense fire, erosion can occur. Heat from intense fires can also cause soil particles to become hydrophobic. Rainwater then tends to run off the soil rather than to infiltrate through the soil. This can also contribute to erosion. There is also the potential for alien plants to become established after a wildfire in areas previously uninhabited by them.

Past History

Brushfires are a common occurrence during the dry season, often spreading to populated areas within the islands. In 1972, a major wildfire broke out on the island of Pagan. However, there were no deaths or injuries attributable to the fire event.

The highest at risk areas are in the central interior of Saipan around the areas of San Vincente and Mount Tapochau. In 1998, a wildfire on Mount Tapochau burned for two days threatening nearby residential areas and farm lots. In 2001, long spells of nearly cloudless, hot, dry weather began to cause defoliation of some trees and the desiccation of grasslands with the advent of wildfires increasing during the dry season. The Fire Department has also identified the grassland areas around Lake Susupe as high-risk areas, especially during droughts. As the margins of the marshland retreat and grasses and sedges dry up, they become tinder for brushfires which threaten nearby homes in this highly populated area of the island. On the island of Tinian, the rainfall in April of 2001 was a meager 37% of the average, resulting in a breakout of numerous small wildfires.

According to data provided by the CNMI Division of Fire, a total of 131 fires in 2013 were categorized as wild-land/brushfires. Primary fuel sources for these fires were dryland grasses, weeds, and vines. Upon investigation, the major cause of these types of fires has been attributable to incendiary acts, while a small proportion are related to a controlled burning of debris that gets out of control.

Potential Impacts

All of the Mariana Islands are susceptible to wildfires, especially during prolonged drought and high winds. The greatest danger of fire is where the wildland borders urban areas. The fundamental influences on the spread of a wildfire include the fuel type and its characteristic, weather conditions in the area, and the terrain. The amount of natural fuel (trees and brush) in close proximity to human populations contributes to increasing the risk to life and property. Other threatened locations include agricultural areas that are adjacent to wildlands where downed trees and flammable brush are prevalent. According to a report by the U.S. Forest Service and the State of the CNMI, a cooperative fire protection program is administered and implemented at an annual shared cost of $419,000.

Each year, the Mariana Islands are endangered by hundreds of wildfires. Wildfires are associated with periods of little or no rainfall and are typically the highest with the months associated with severe drought conditions in the CNMI. Historically, approximately 90% of wildfires in the last decade have been directly caused by humans, either through negligence, accident, or intentional arson. Accidental and negligent acts include unattended campfires, sparks, burning debris, and irresponsibly discarded cigarettes. The remaining 10% of fires are mostly caused by lightning, but may also be caused by other acts -of-nature such as volcanic eruptions or earthquakes. The risks of these fires are varied, but the greatest risk to property is in situations where wild brush fire is ablaze in areas that traditional firefighting equipment cannot be utilized, (i.e. mountaintops, steep ridges and valleys). In general, wild fire dangers are not as great on the islands of Tinian and Rota but in the denser and more developed areas on the island of Saipan. The current public awareness and community outreach campaign utilized to inform the community of existing seasonal potential of wildfire hazards occurring.

Fortunately, wildland fires have not caused extensive damage or destruction to buildings nor injury to people. However, as residential development expands or encroaches into relatively untouched wildlands, people living in these communities will be at greater risk of encountering a wildland fire. For the CNMI, areas that were comprised of dry savanna lands were considered to be high-risk hazard zones for wildfires.

Savannas are areas where grasses, including Miscanthus floridulus (sword grass), are the primary vegetative coverage. By definition, savannas commonly have scattered trees interspersed in the landscape. In general, the savannas of the Mariana Islands occur on steep slopes and comprise approximately 17% of the lands on Saipan, 1% on Tinian, and approximately 2% on Rota. Additionally, there are sword grass savannas growing on the peaks of several of the northern islands. Along the southern portion of Mount Tapochau on the island of Saipan, there is a sword grass savanna that grows in Chinen soils, which develops over limestone instead of volcanic rock like the Akina and Laolao soils. Savanna lands that are comprised of Chinen soils frequently burn during the dry season.

With the continuing growth of the tourist industry and the resident population within the CNMI, the potential of fire impacts becomes a greater risk. There is limited capability to deal with major wildfires in the CNMI. If such an incident should occur, assistance from some outside source would be necessary. Table 5-13 illustrates the firefighting resources that are available on each major island. Table 5-14 provides the criteria of defining hazard intensity ratings for wildfire activity.

Table 5-13
Firefighting Resources within the CNMI

CNMI Government Department or Agency	Type of Equipment	Number of Vehicles or Pieces of Equipment Available
DPS Division of Fire, Saipan	Pump Truck (1000 gals) Tanker Truck (3000 gals) Forestry Truck (150 gals) Rescue Utility Truck Fire Boat	2 1 1 3 1
Commonwealth Ports Authority (CPA), Aircraft Rescue & Firefighting (ARFF), Saipan	Rescue Vehicle Fire Engine	1 4
DPS Division of Fire, Rota	Forestry Truck (300 gals) Rescue Vehicle	1 1
CPA ARFF, Rota	Fire Engine	1
DPS Division of Fire, Tinian	Ladder Truck (750 gals) Pump Truck (2000 gallon) Rescue Vehicle	1 1 1
CPA ARFF, Tinian	Fire Truck w/ generator	2

Note: Several public and private agencies do have earthmovers and water pumps, which could be utilized in the event of fire hazard.

Table 5-14
Hazard Intensity Rating Definitions for Wildfires

Hazard	Low	Moderate	High
Wildfires	Highest elevations on the island with high incidence of rainfall	Mid-elevations with wet climate And the windward side of the Island.	Dry lowlands; savannah lands, identified chinen soil type areas with no access to water source Areas with dry overgrowth that can serve as flash fuel

Appendix P provides a series of hazard maps that identifies potential hazard areas that are susceptible to wildfires

5.9 Climate Change Profile

The most recent climate models and projections suggest a wide range of changes to the global climate system over the next century and beyond. The potential impacts of these changes vary greatly across space and time, and are by no means geographically uniform. However, there is a high level of confidence that the Western North Pacific will experience changes, such as:

- Increase in mean surface air temperature
- Increase in frequency of heavy precipitation and proportion of mean annual rainfall
- Rise in mean sea level
- Enhanced wave energy level and more extreme ocean wave environments
- Increase in sea surface temperature and ocean acidification

These changes constitute a deviation from the atmospheric and oceanic conditions that the CNMI has built its economy, infrastructure, and natural heritage upon. The Northern Mariana Islands, and Saipan in particular, should expect implications from this change.

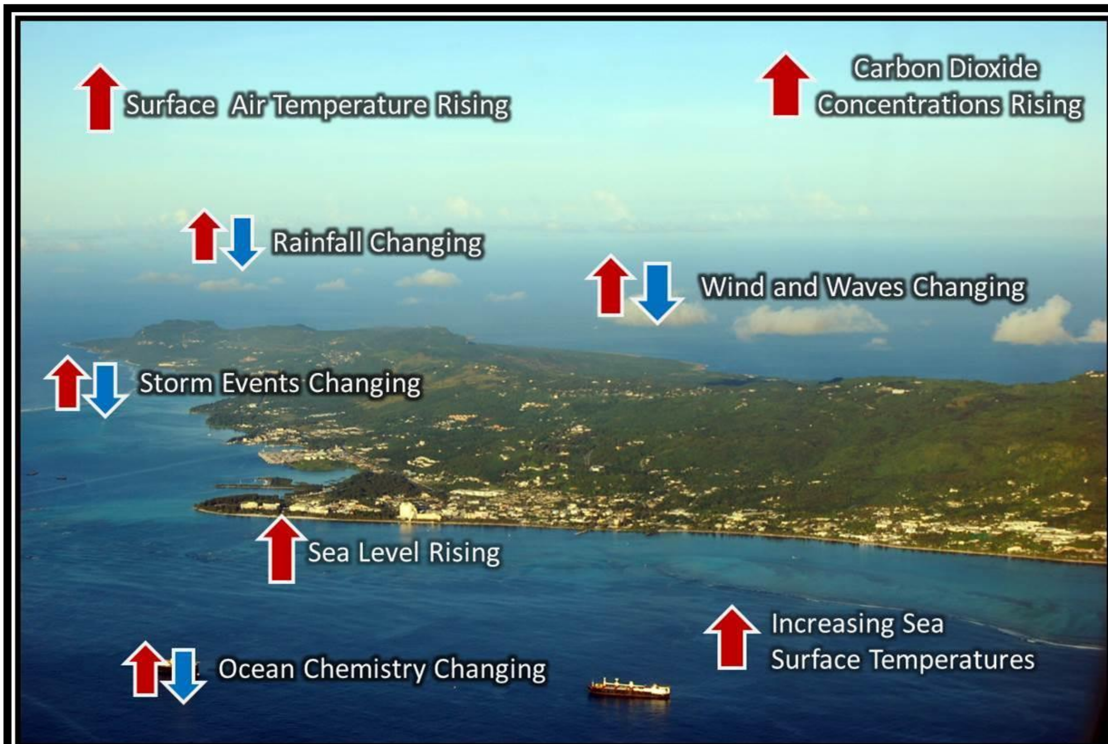


Figure adapted from 2012 Pacific Islands Regional Climate Assessment (*Climate Change and Pacific Islands: Indicators and Impacts*) and NOAA National Climatic Data Center's *State of the Climate 2009*

Figure 5-2: Climate Projections

Climate Change in the Western North Pacific and Implications for the CNMI

The regional projections referred to here are particular to the Western North Pacific (WNP). This area includes Guam, CNMI, Republic of Palau (RP), Federated States of Micronesia (FSM), and Republic of the Marshall Islands (RMI). Downscaled projections specific to the CNMI were not available for most climate variables.

The WNP is experiencing changes to its climate through both natural changes on an interannual and decadal basis, and through long-term anthropogenic change. Some shifts are subtle, and difficult to detect, while others are more pronounced. These changes are indicated by observed rising carbon dioxide in the atmosphere, increases in air and sea temperatures, rising sea levels, increased ocean acidity, and shifts in rainfall distribution (Keener et al. 2012a). **Table 5-15** summarizes expected long-term impacts to the climate system in the WNP through the 21st century. This is followed by a more detailed discussion of a few key climate variables.

Climate Change Variable	Projection	Potential Impacts
Temperature	Steady increase, with seasonal extreme highs	Increase of extreme temperatures leading to stress on habitat and public health. Increase of potential storm energy in atmosphere and ocean.
Precipitation	Small increase in *average* rainfall. Increase in *extreme* rainfall events. Wet season gets wetter; dry season gets drier.	Impact on overall freshwater supply uncertain. Potential for short-term flooding increased in rainy season.
Sea Level	Gradual increase, with interannual and decadal fluctuations.	Possible inundation of low-lying areas over extended periods of time, with increased flooding impact of short-term events such as storms. Damage to infrastructure, property, tourism.
Sea Surface Temperature	Steady increase, with interannual variations depending on El Nino-Southern Oscillation. Increase in degree heating weeks to induce coral bleaching on an annual basis before 2050.	Decline of overall coral health and increase frequency of bleaching events. Decrease in both ecosystem value and tourism appeal.
Ocean Acidity	Steady increase, with declining pH of up to 0.3 by the end of the century.	Threats to coral structure and health; uncertain impacts on ocean food chains.
Ocean Waves	Intensification in extratropical wave environments, and potential increase in overall storminess.	Exacerbated impacts from storm surge and sea level change. Short-term flooding and erosion. Potential hazard to public.

Table 5-15: Potential impacts of climate change in the CNMI

One of the most important drivers of climate in the region is the large-scale east-west tropical circulation and overturning of air known as the Walker circulation. This circulation is one of the primary drivers for seasonal winds and associated movement of weather systems across the equatorial Pacific. The Walker Circulation is one of the main reasons for Saipan's comfortable conditions from ~December – February. Observed Pacific sea level pressure over the last century suggests that this circulation is weakening a bit, and some climate models indicate that the consequent weakened surface winds have altered the thermal structure and circulation of the tropical Pacific Ocean (Vecchi et al. 2006). Because this circulation affects all the various components that make up the CNMI's seasonal climate, the potential for further weakening of circulation in the

WNP during the 21st century poses some interesting implications regarding more specific climate variables.

On a shorter time scale the El Nino-Southern Oscillation (ENSO) introduces some of the most extreme variability to WNP climate patterns. During El Nino events the east-west circulation and trade winds that bring the CNMI its normal seasonal variation (cooler temperatures, regular rainfall and consistent winds) weaken, and the CNMI faces greater potential for drought and typhoons. The cold phase of ENSO, La Nina, is characterized by a strengthening of the trade winds and east – west flow across the tropical Pacific. These events can increase rainfall in the region, and bring higher sea levels as the enhanced east-west flow pushes surface water from the eastern Pacific toward the WNP.

Because of the extreme changes that ENSO can cause, any assertions concerning short-term impacts to regional climate come with uncertainty; however, long-term projections appear to place the average climate conditions of the future outside the range of current observed variability (Mora et al. 2013b). For example, the mean high temperature experienced now in the CNMI will be similar to, if not less than, the *average* temperature in the CNMI in 2080. Keeping this concept in mind, a closer look at long-term climate change in the WNP is warranted, despite significant short-term variability.

Air Temperature and Precipitation

In the WNP, observed temperatures over the past 60 years have been characterized by increasing trends (Lander and Guard 2003, Keener et al. 2013b). Annual surface air temperature in the region is projected to increase another 1.1° to 1.3°F by 2030, 1.9° to 2.6°F by 2055, and 2.7° to 5.1°F by 2090 (Australian Bureau of Meteorology & CSIRO 2011).

While the trend in WNP air temperature is increasing at a similar rate to that of general Northern Hemisphere temperatures, changes in precipitation have much greater variation, and are more difficult to distinguish from changes in response to interannual and decadal fluctuations (Keener et al 2012b). Inter-annual variations of rainfall in the CNMI are closely linked to ENSO. Saipan is in an ENSO core region that tends to experience very dry conditions in the year following El Niño, and an increase in threats from typhoons during an El Niño year (Lander 2004). In fact, the driest year on record in Saipan over the last several decades was in the wake of the strong 1997 El Niño event. Without a solid understanding of the relationship between climate change and ENSO, it will be difficult to make confident projections regarding rainfall trends in the CNMI.

Despite the difficulties in distinguishing near-term variability from long-term trends, overall WNP rainfall projections suggest that the wet season will get wetter and the dry season drier, with overall increases in mean annual rainfall in the western portion of the region (e.g. Palau). Changes to mean annual rainfall in the CNMI do not appear to be significant; however, both the intensity and frequency of days of *heavy* rainfall are projected to increase over the 21st century (Australian Bureau of Meteorology & CSIRO, 2011). This presents significant flooding possibilities, especially when compounded by increases in sea level and potential coastal inundation.

Sea Level Change and Rise

Between 1993 and 2010, sea levels in the WNP rose at a rate of over 10mm per year. This is over three times the rate of the GMSL average during that time (Keener et al. 2012a). While this extreme rate of rise is not expected to continue, and has been attributed to natural variation (PDO), it is an example of how sea levels in the region can change relatively rapidly.

This begs consideration of SLC in adaptation work, regardless of time frame. Strong ENSO phases, for example, have been linked to temporary changes in sea level of up to 10-20 centimeters in the Western Pacific (Marra et al. 2012). When daily, seasonal, interannual, and decadal shifts in sea level are combined with long term projections a more accurate representation of an extreme sub-regional scenario can be achieved. A simple example of this would be to combine the effects of a high tide, a strong low pressure system, and a strong La Nina in the WNP with a long term SLR projection of 0.63 meters. The total water level resulting from this scenario could exceed 1 meter. While the sea would not remain at this level permanently, it would create temporary hazards to coastal infrastructure, properties, beach resorts, and low-lying development in the CNMI. Understanding these hazards and how climate change may exacerbate them is essential for adaptation planning.

Coastal erosion, as a naturally occurring process, has always been a paramount concern for Pacific Islands, and the impacts of SLR are likely to increase the impacts of coastal erosion processes (Mimura 1999, Mimura et al. 2007, Fletcher & Richmond, 2010). Many low-lying islands and atolls in the WNP have already reported issues with erosion and occasional inundation. While the islands of the CNMI are significantly higher than some Pacific atolls, many of the considerations for low islands apply to the nearshore and coastal portions of high islands. In fact, impacts to lowest lying portions of high islands can be quite similar to those experienced on low islands (Marra et al. 2012). Comparable impacts such as this are a necessary consideration for Saipan given its concentration of built environment on the western coastal plain.

Sea Surface Temperatures

While increasing sea levels present direct challenges to the CNMI's villages, shorelines, and coastal infrastructure, increasing sea surface temperatures (SSTs) pose imminent threats to the near-shore environments and coral reefs throughout the WNP. In addition to the general global increase in SSTs, regional phenomena also contribute to the potential for coral bleaching. Historically, the occurrence of significant ENSO events has been linked to increased SSTs, consequent bleaching, and in many cases widespread mortality of reef-building corals in the WNP. The CNMI's location within an ENSO core zone means that inter-annual SST changes associated with ENSO translate into cyclical coral bleaching threats (Starmer et al. 2008).

Regardless of ENSO variation, bleaching is expected to increase at a relatively rapid rate in the Western Pacific, with bleaching occurring on an annual basis before 2050 (van Hooidonk et al. 2013). **Figure 5-3** illustrates the years in which annual bleaching on tropical reefs is expected to begin in the WNP, based on a future scenario in which greenhouse gas emission rates continue at their current rate (RCP 8.5).

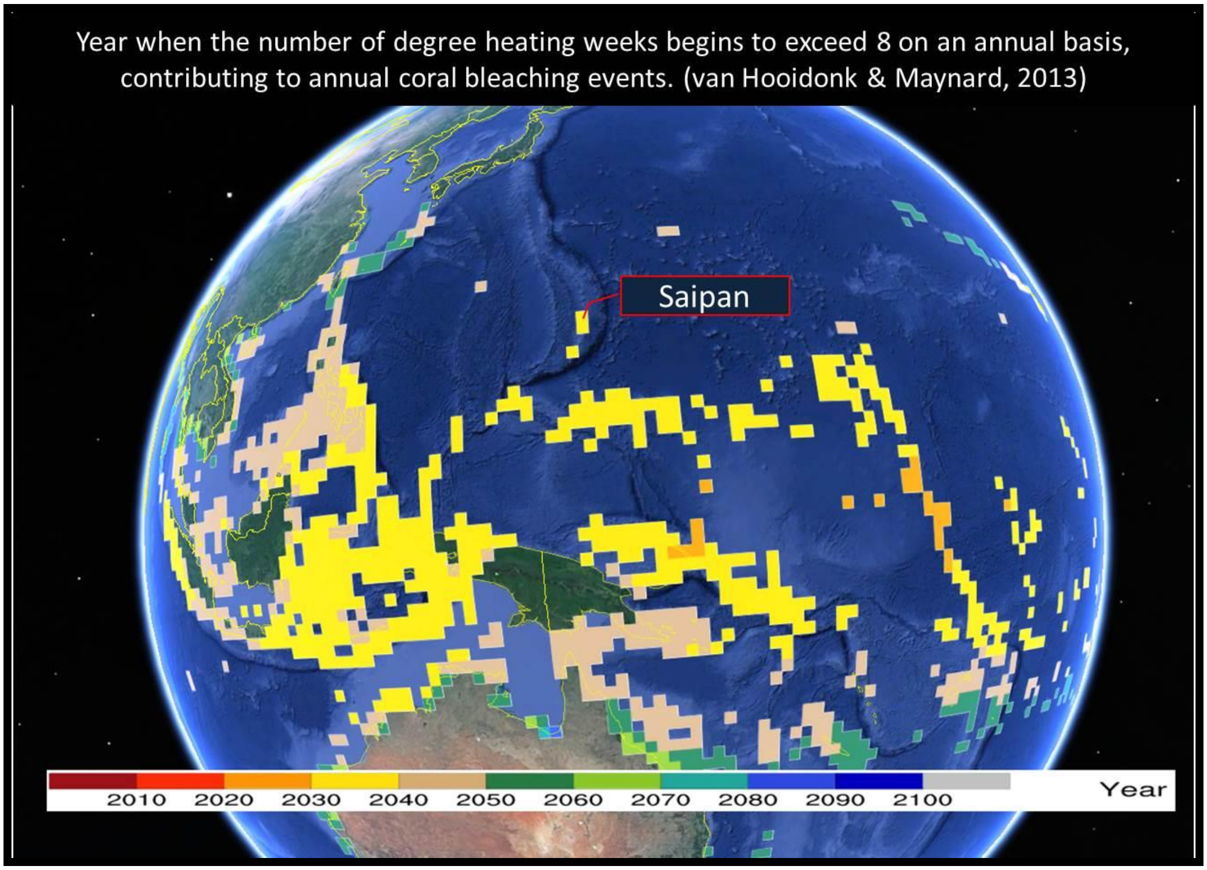


Figure 5-3: Timeline for coral bleaching threats in the Western Pacific

Potential Impact

Coastal inundation can result from a variety of scenarios that occur at varying temporal scales. While long-term SLR caused by climate change has the potential to impact Pacific Islands with varying severity, the combination of extreme events (storms, king tides, etc…) and long-term SLR will have more damaging and widespread effects (Chowdhury et al. 2010). The mapping approach taken here acknowledges this range of coastal flooding threats, and attempts to integrate a variety of scenarios that represent them. This analysis covers only the island of Saipan, as the necessary data inputs to conduct the analysis (high resolution Lidar) could not be obtained for other islands in the CNMI. Future updates to the CNMI SSMP should include additional sea level rise and coastal flooding analyses as Lidar or other elevation data becomes available.

Mapping Approach

Nine coastal flooding and inundation scenarios were chosen for analysis. These scenarios included long-term sea level shifts corresponding to the U.S. Army Corps of Engineers (USACE) SLR curve calculations for civil works projects (2011), and additional short-term adjustments to sea level due to 10 and 50 year storms (storms with a 1 in 10 or 1 in 50 chance of occurring in a given year) **(Appendix R).**

- Sea level rise curve calculations are based on methods developed by NOAA, USGS, and USACE to calculate future *local* mean sea level, and include adjustments that factor in vertical land movement and regional sea level variation.

- The 10 and 50 year storm sea levels were modeled by the USACE for the Saipan lagoon (Chou 1989), and accounted for a total water level increase during typhoons of varying severity.

These total water levels and SLR calculations were assessed separately and in combination to identify the degree to which climate change might exacerbate naturally occurring inundation due to storms. Detailed methodology for this mapping process and scenario development is available in **Appendix R.**

GIS layers were developed to represent two flooding extents and associated depths for each of the nine scenarios. These layers included flooding extents that were either (1) hydraulically connected to the shoreline, or (2) a result of an expansion of Lake Susupe and the Susupe wetland area.

While Lake Susupe's water surface elevation may not change at the same rate as sea levels (particularly during short-term events), there is evidence of changing water chemistry and salinity due to shifts in past sea levels (Caruth 2003). Therefore the area that could be potentially *affected* by changes in sea level was calculated, albeit separately from coastal flooding. This area is termed "wetland flooding" in summary maps and statistics, whereas flood extents that are connected to the shoreline are termed "coastal flooding". In situations where both *coastal* and *wetland* flooding are considered, the term "combined inundation" is used.

GIS data for land parcels and land cover were clipped to the boundaries of the flooded areas for each of the nine *coastal* inundation extents. Frequency and summary statistics were calculated for the clipped land uses and land cover, showing the occurrence and acreage of impacted land uses and types of vegetation/land cover.

The following pages summarize the results of the mapping process and analysis.

Note:

*A coding scheme was developed to represent the SLR/SLC scenarios (***Appendix R***) .The scenario codes used for different sea levels and flooding extents (e.g. A1, C2, etc…) do not reference any future* CO^2 *or emissions scenarios from SRES or IPCC assessment reports (see AR4), and were used simply as a naming convention to keep numerous data layers organized and packaged.*

Scenario	Rise (Ft.)	Rise (Meters)	Scenario Code	Inundated Area - Coastal (km²)	Inundated Area - Coastal (acres)	Wetland Flood (km²)**	Wetland Flood (acres)	Combined Inundation Area (km²)	Combined Inundation Area (acres)
10 year Storm; no Sea Level Change	4.89	1.49	**A1**	0.93	229.81	1.27	313.83	2.2	543.64
USACE Curve Intermediate - 50 yrs. + 10 yr. Storm	5.10	1.554	**A2**	1.23	303.95	1.36	336.07	2.59	640.01
USACE Curve Intermediate - 100 yrs.	0.89	0.27	**B1**	0.11	27.18	0.02	4.94	0.13	32.12
USACE Curve Intermediate - 100 yrs. + 10 yr. Storm	5.77	1.76	**B2**	1.78	439.86	1.92	474.45	3.7	914.31
USACE Curve High - 50 yrs.	1.64	0.5	**C1**	0.2	49.42	0.06	14.83	0.26	64.25
USACE Curve High - 50 yrs. + 10 yr. Storm	6.53	1.99	**C2**	2.49	615.30	2.27	560.94	4.76	1176.24
USACE Curve High - 100 yrs.	5.02	1.53	**D1**	1.2	296.53	1.31	323.71	2.51	620.25
USACE Curve High - 100 yrs. + 10 yr. Storm*	9.91	3.02	**D2**	9.7	2396.97			9.7	2396.97
USACE Curve High - 100 yrs. + 50 yr. Storm*	11.91	3.63	**D3**	11.27	2784.93			11.27	2784.93

***** Coastal Inundation in scenarios D2 and D3 extends into wetland area, Wetland flood extent is included in coastal inundation calculation.

****** The area of existing surface water in Susupe wetlands is subtracted from flood extent area (i.e. Wetland flood area = (wetland inundation area - 0.19 km²))

Table 5-16: Summary of Inundation Scenarios

The areas of inundation vary widely depending on the scenario used. If SLC due to a storm is factored in, these areas expand greatly. An important consideration is that some of the less-extreme SLR scenarios, while not visually striking in figures or the maps on the following pages, will still have a significant impact on the island. Because these maps adopted a "bathtub" approach to inundation mapping, the models do not account for additional coastal flooding factors such as wave run-up, erosion, and other dynamic coastal forces (additional information concerning these considerations is available in the ***Appendix R***). These forces will have an impact on all the areas that are directly adjacent to the coastal flood extent, and if taken into account in a model, would likely increase the area of inundation.

A good example of this is Scenario B1, which is a somewhat conservative estimate of SLR by the end of this century (at the low end of IPCC AR5 RCP 8.5 projections). In this scenario, only a small margin of shoreline is inundated (27 acres). However, this is the same part of the shoreline that currently reduces the energy of waves, and bears the brunt of erosive processes from long-shore currents and seasonal adjustments in sea level. With this shoreline rendered inadequate as far as coastal protection is concerned, the areas directly adjacent to the shoreline are placed within a new zone of erosion and/or wave run-up. On Saipan, this means features such as Beach Road, the Beach

Pathway, tourism facilities in Garapan, American Memorial Park, and Port Facilities will have increased threat levels, and suffer impacts from minor wave and storm events at greater frequencies.

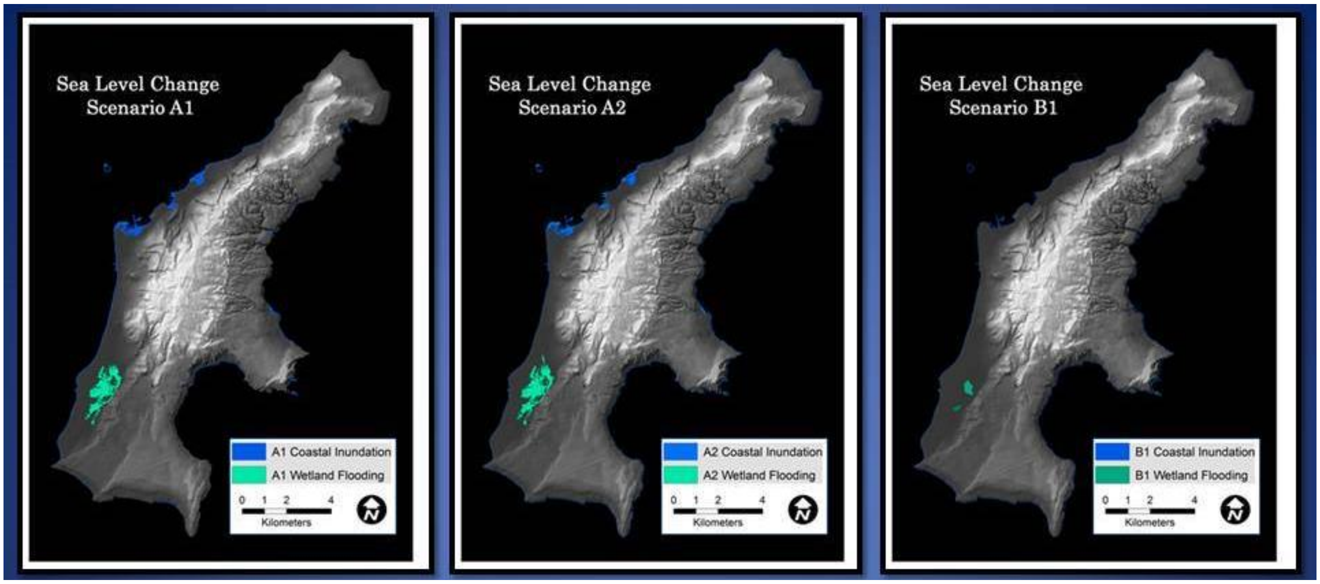


Figure 5-5: Inundation Scenarios 1

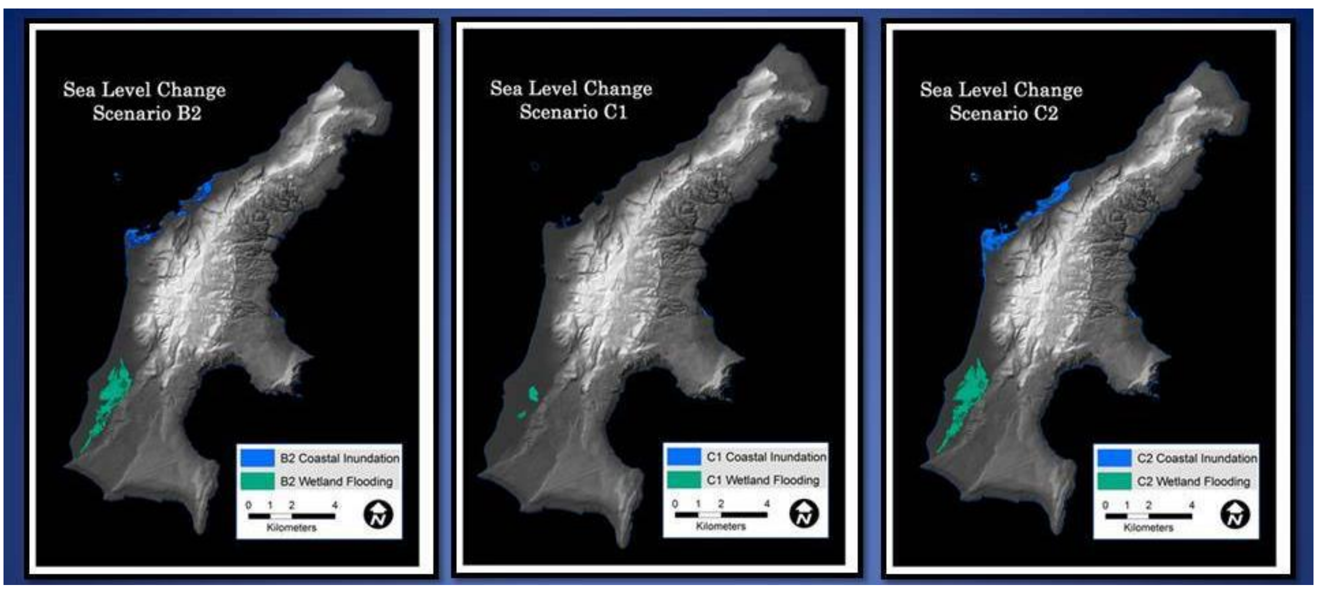


Figure 5-6: Inundation Scenarios 2

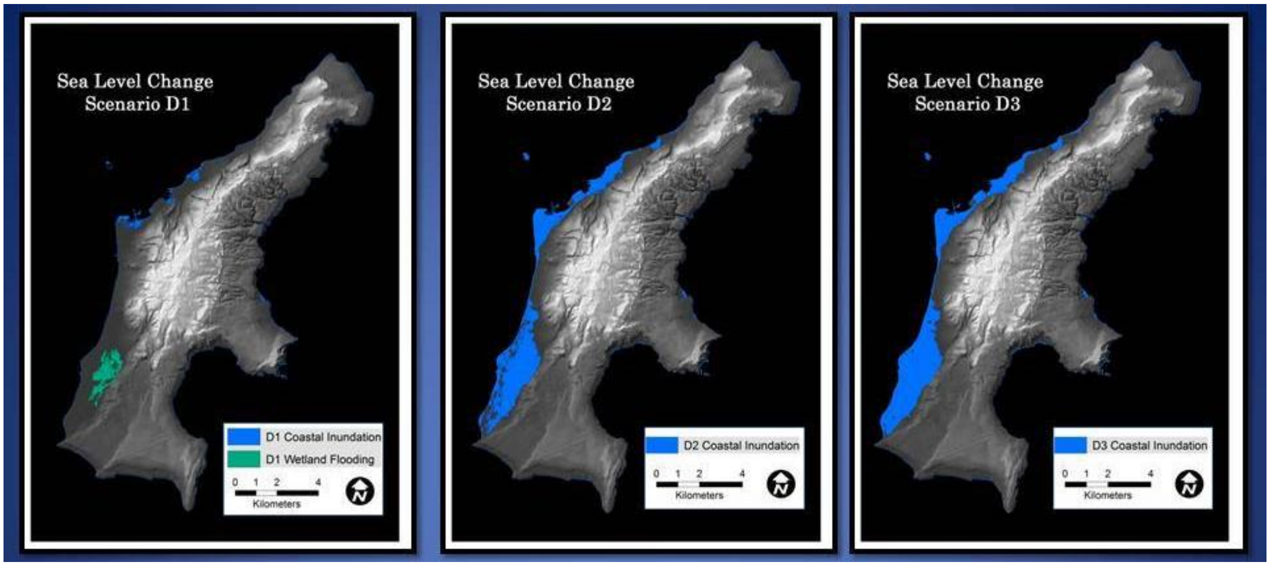


Figure 5-7: Inundation Scenarios 3

Taking a look at the basic flood extent calculations, it is apparent how rapidly the area of *storm-induced* flooding expands when *climate-induced* SLR is brought into the picture. Along Saipan's lagoon shoreline there is generally 4-8 feet of gentle-moderate sloping beach and shoreline vegetation before the land levels off into the coastal plain and low-lying developed areas. The top of this slope forms a sort of inundation thresh hold for the low lying communities on Saipan's west side. In the more extreme scenarios explored in the VA, sea level overtops a critical elevation contour along the shoreline, and coastal flooding expands inland to cover a much greater area as the inundation thresh hold is breached.

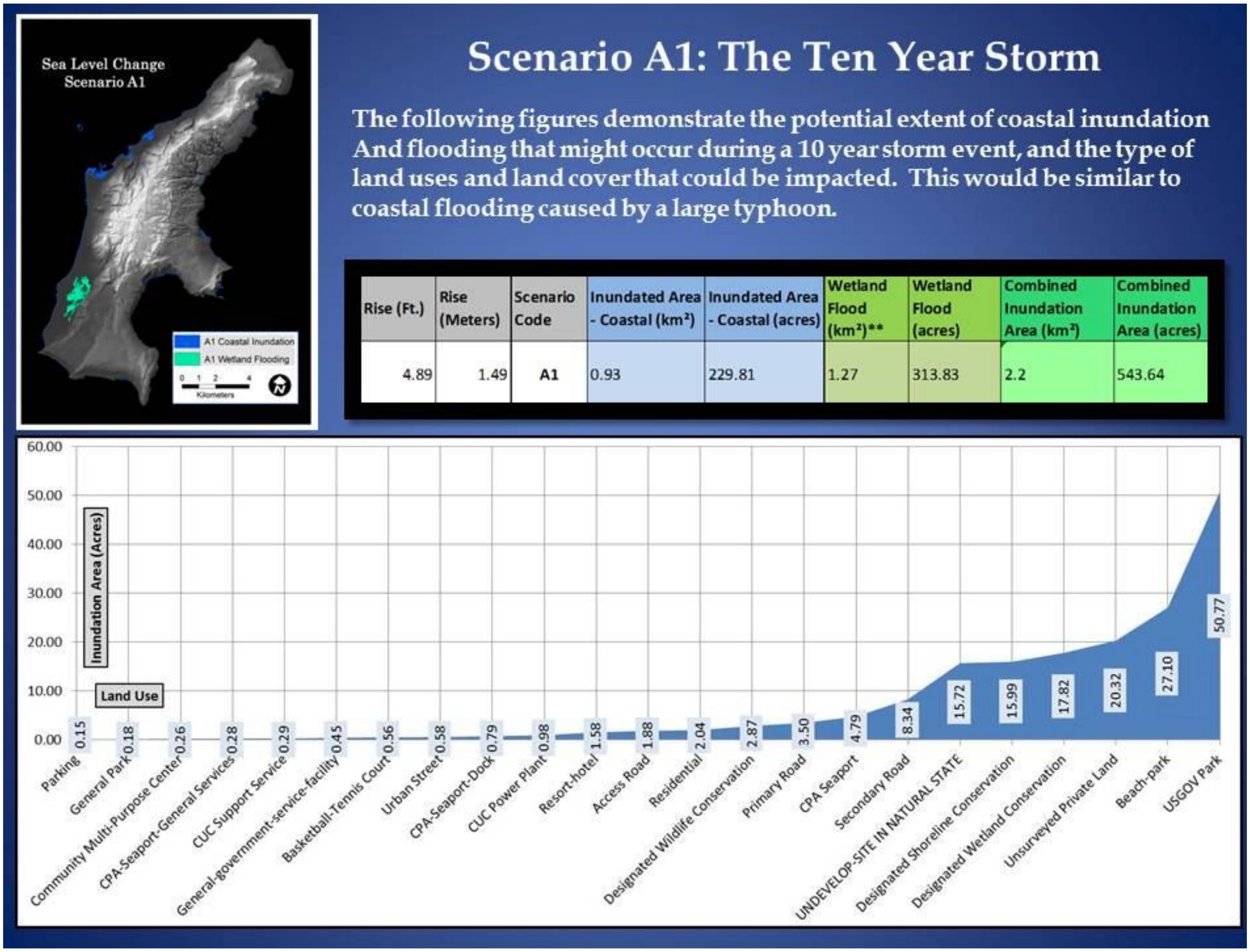
Thus climate change-induced SLR simply enables the 10 year storm to breach a critical point at which the sea moves beyond the beach and into populated areas. The last column in the table below shows the percent increase in coastal flooding area that occurs during a 10 year storm as a result of climate-induced increases in sea level. If the USACE high curve is used to calculate 50 years of SLR (Scenario C2), a 10 year storm in 2063 might flood over twice the area that it currently would. This increase in flooded area is not proportionate to the increase in water level. In that particular scenario, increasing sea level by ~30% leads to a 116% increase in coastal inundation.

Scenario Code	Scenario	Combined Inundation Area (km²)	Combined Inundation Area (acres)	Increase in Flooded Area from 10 year storm baseline (km²)	Increase in Flooded Area from 10 year storm baseline (acres)	Percent Increase in Flooded Area from 10 year storm baseline
A1	10 year storm without sea level rise (SLR)	2.2	543.64	0	0.00	0.00
A2	10 year storm with 50 years of SLR (intermediate curve)	2.59	640.01	0.39	96.37	17.73
B2	10 year storm with 100 years of SLR (intermediate curve)	3.7	914.31	1.5	370.67	68.18
C2	10 year storm with 50 years of SLR (high curve)	4.76	1176.24	2.56	632.60	116.36
D2	10 year storm with 100 years of SLR (high curve)	9.7	2396.97	7.5	1853.33	340.91

Table 5-17: Sea Level Rise Changes

The significant changes that SLR can make to naturally-occurring SLC are also evident in the following detail figures. These figures illustrate the land uses and land cover that could potentially be inundated by a given scenario, and provide some detail maps at a larger spatial scale to highlight impacts. Scenarios A1, C2 and D1 are shown within this section of the document to illustrate three possible states of sea level:

- A naturally occurring elevated sea level due to a large typhoon (Scenario A1)
- A naturally occurring elevated sea level due to a large typhoon that is exacerbated by SLR (Scenario C2)
- An extreme case of SLR due solely to climate change, with no influence from a typhoon (Scenario D1)



Rise (Ft.)	Rise (Meters)	Scenario Code	Inundated Area - Coastal (km²)	Inundated Area - Coastal (acres)	Wetland Flood (km²)**	Wetland Flood (acres)	Combined Inundation Area (km²)	Combined Inundation Area (acres)
4.89	1.49	A1	0.93	229.81	1.27	313.83	2.2	543.64

Figure 5-8: 10-Year Storm (Scenario A1)

The ten year storm, which would be similar to a moderately sized typhoon, places a large amount of stress on parcels and land use directly adjacent to the shoreline, but flooding extent does not extend inland for more than 100 meters or so in most locations. The most heavily impacted parcel, labeled USGOV Park in the CNMI land use coding scheme, is American Memorial Park, and has over 50 acres inundated. The remaining parcels that are heavily impacted or that experience flood depths greater than a few tenths of a meter are publicly-accessible shoreline areas, parks, and undeveloped sites, as well as a few parcels of private land.

It is important to note that a few key features identified by stakeholders in a community-based vulnerability assessment (Greene 2013) are marginally impacted. This is the case in almost all the scenarios as these are directly adjacent to the lagoon waters. These features are shown in the following figure.

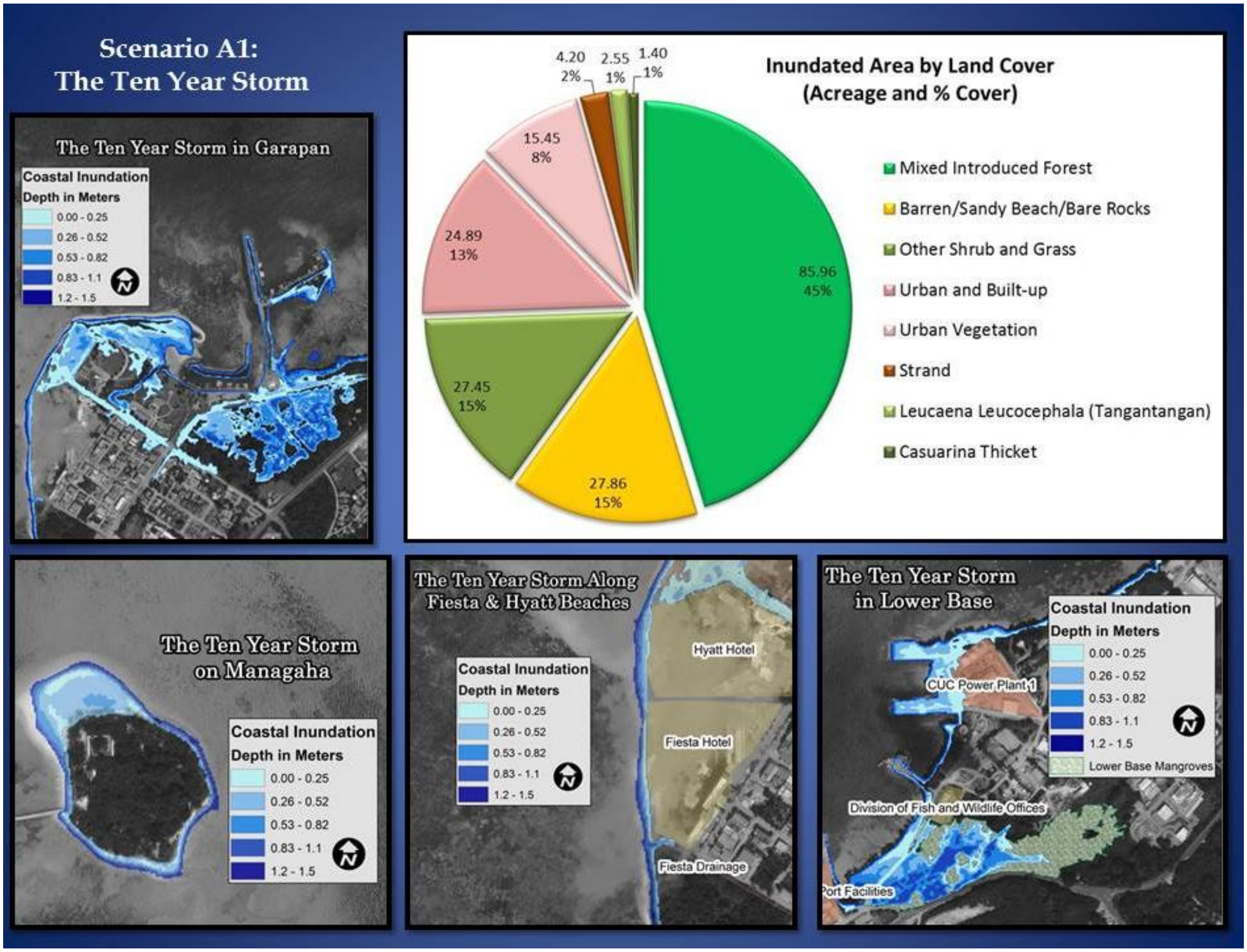


Figure 5-9: Scenario A1 Land Inundation

Here we see several key features impacted by severe flooding. Most of American Memorial Park's wetlands are completely inundated, while flooding occurs along the streets separating the Park from Garapan's core business area and the Hyatt Resort. On the shoreline side of Hyatt and Fiesta Hotel, the sea level is raised to a point just below the elevation contour that marks the top of the beach slope. Along this line wave over-topping and run-up would impact the recreational features along the resorts' beaches, but they would likely avoid permanent flooding. More severe flooding of these features is demonstrated in scenario C2.

The mangroves and wetlands present in Lower Base are also completely inundated in this scenario. This would likely create a backwater effect in which any run-off or drainage from precipitation in the Capitol Hill area would build up behind the wetlands, creating additional inland flooding.

The detail map of Lower Base also illustrates multiple threats to industrial and government facilities. Notably, primary access to the CUC Power Plant and DFW Offices is cut off near the Port, and the Power Plant itself is partially inundated along the shoreline.

The percentage of impacted land cover types also demonstrates the *composition* of inundated land. The primary area of “mixed introduced forest” in the figure above is actually the land cover class assigned to the flooded vegetation in American Memorial Park. Next to this the major impacts occur on beaches and strand vegetation located along the shoreline. About 20% of the impacted area is characterized by urban and impervious surfaces, posing additional flooding threats within more developed villages.

C2: The 10 Year Storm in 50 Years

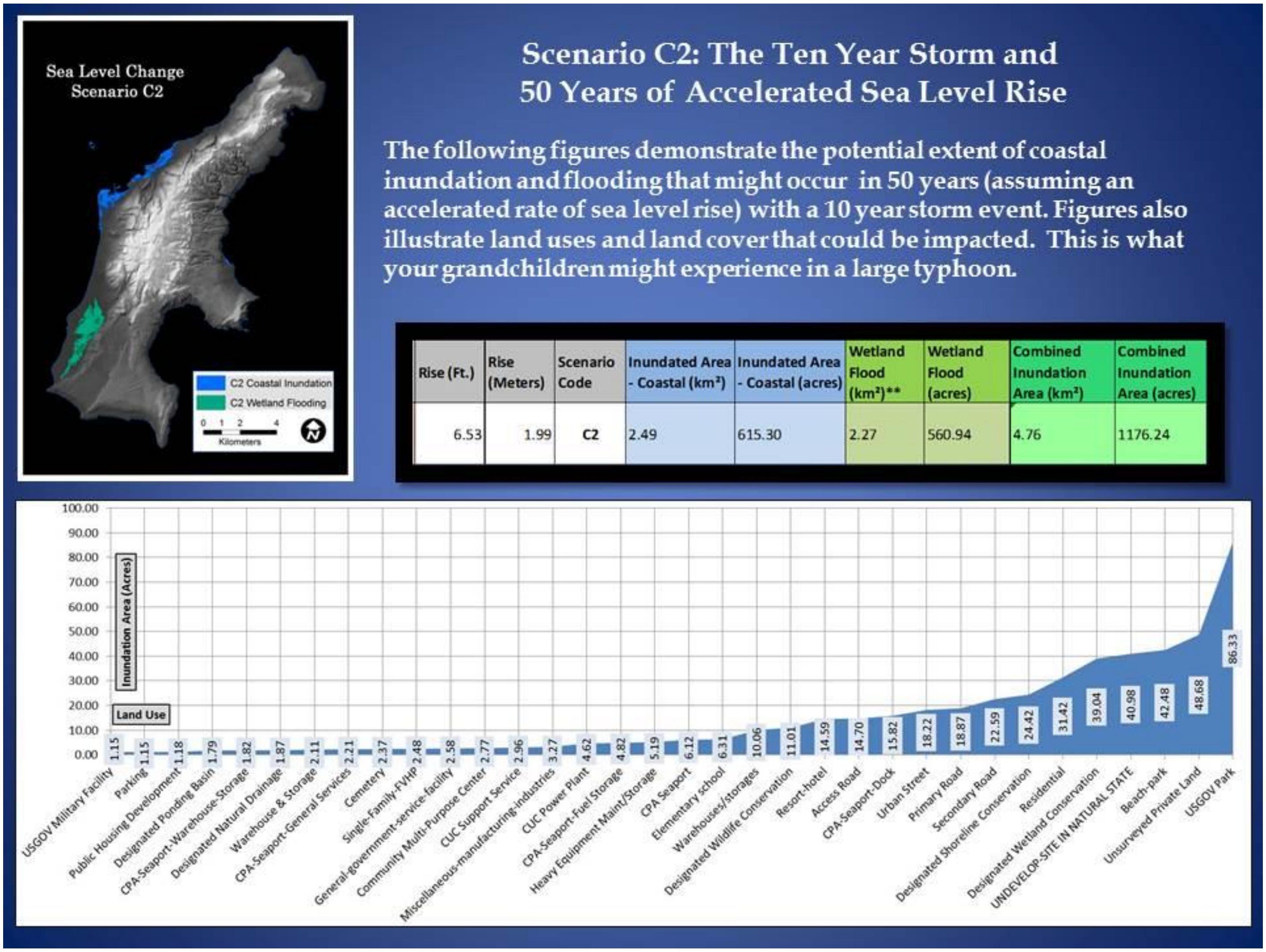


Figure 5-10: 10-Year Storm in 50 Years (Scenario C2)

In scenario C2, 50 years of accelerated SLR are added to the 10 year storm from scenario A1. The results from a simple analysis of this scenario demonstrate the great potential of climate change to amplify the impacts of natural climate stressors such as storms.

In the context of land use, the major parcels suffering from flooding remain largely the same as in scenario A1; however, roughly twice the area is inundated. Perhaps what is most significant in this scenario is a change in the second tier of impacted parcels (between ~4 - ~20 acres) from A1. The land uses that are now impacted due to the addition of 50 years SLR include more critical infrastructure, such as primary, secondary and access roads, the CPA Seaport, and CUC Power Plant. Tourist facilities, residential areas in Garapan and Tanapag, and Garapan Elementary School also experience flooding.

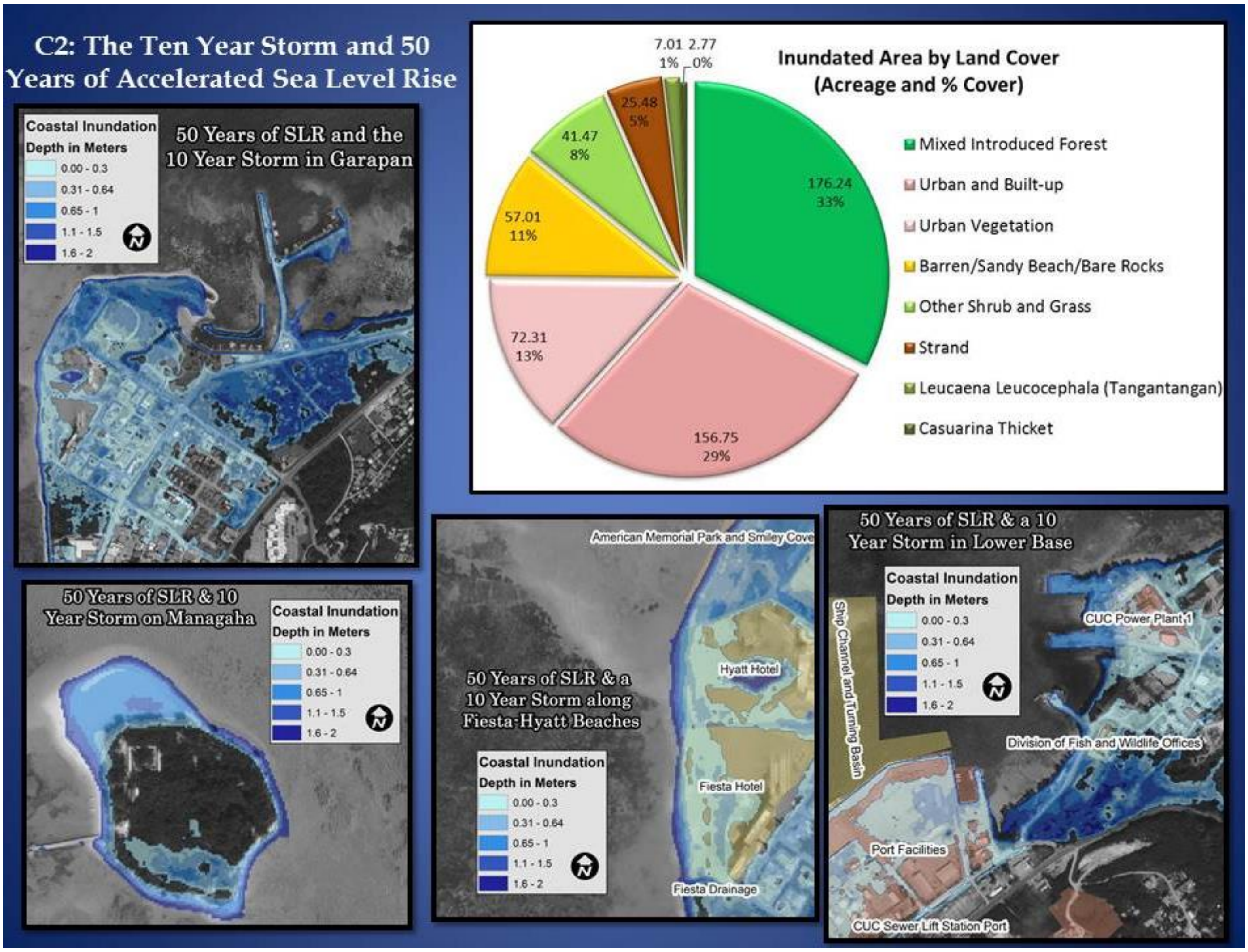
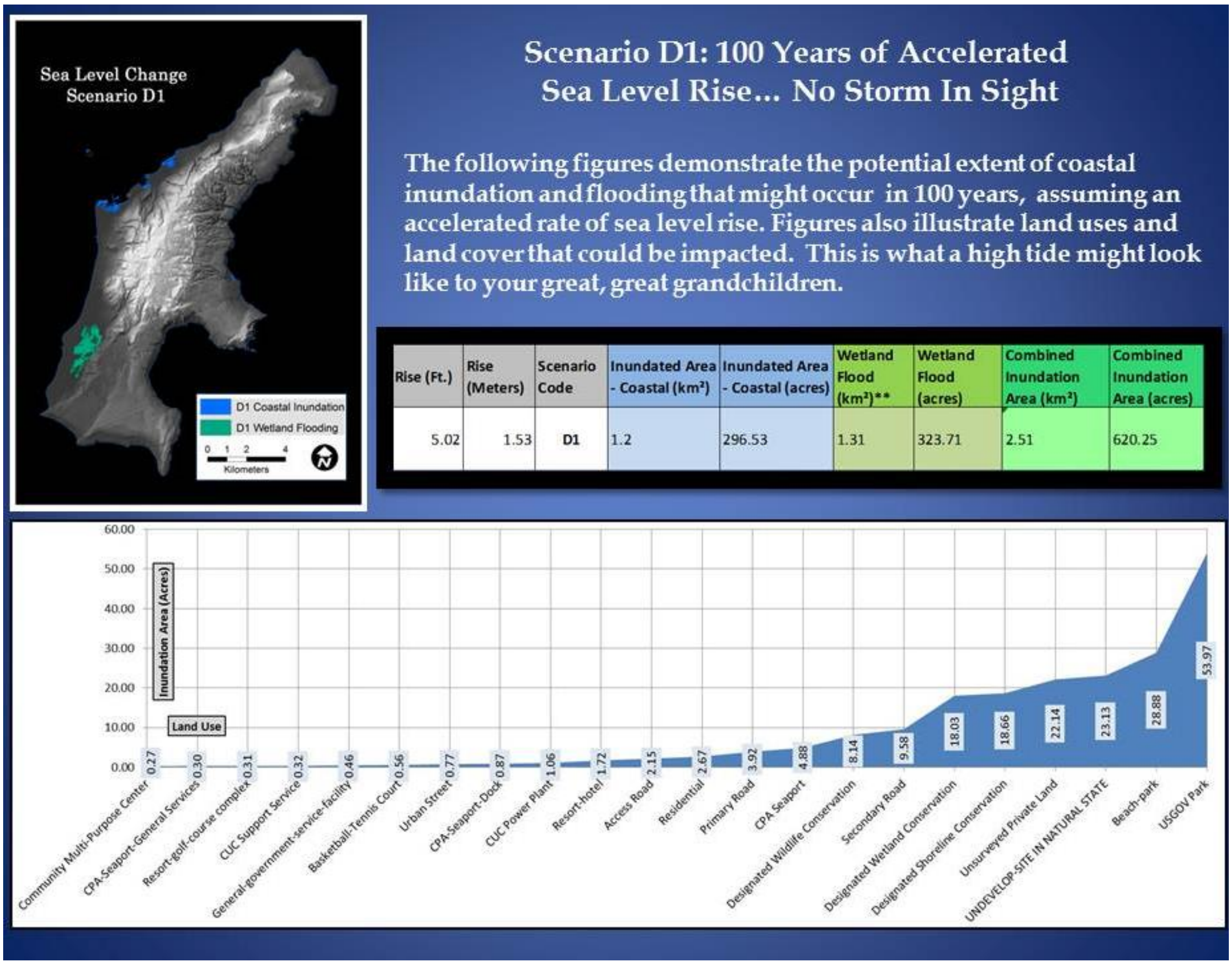


Figure 5-11: Scenario C2 Land Inundation

The composition of impacted land cover also changes drastically from scenario A1 to C2. While the mixed-introduced forest of AMP still constitutes the largest percentage of flooded area, over 40% of additional inundated area is either part of an urban core, or a developed space within a village. This reflects flooding through Garapan, the Lower Base industrial area, and Tanapag. In the detail maps we see that the safety of Port Facilities, DFW offices, and the CUC Power Plant are fully compromised. The core of Garapan is thoroughly flooded, with some notable flood depths along the Fiesta drainage. The primary tourism facilities in Garapan also become flooded.

Managaha Island also suffers inundation. Compared to scenario A1, flooding in C2 has overcome a critical contour line along the shore, and inundated a significant portion of the developed area on the island, not to mention cut off tourist access via the docking facility. While there is no chance that tourists or staff would be on the island in a storm such as this, the combined short-term action of increased sea levels, currents, and waves on the island's unstable shoreline would likely alter the shape and volume of the island in a manner that would require serious physical modification to continue tourist activities.

D1: Normal Conditions in 100 Years



Rise (Ft.)	Rise (Meters)	Scenario Code	Inundated Area - Coastal (km²)	Inundated Area - Coastal (acres)	Wetland Flood (km²)**	Wetland Flood (acres)	Combined Inundation Area (km²)	Combined Inundation Area (acres)
5.02	1.53	D1	1.2	296.53	1.31	323.71	2.51	620.25

Figure 5-12: Normal Conditions in 100 Years

Scenario D1 is an extreme scenario built upon the upper end of SLR projections for the 21st century, but regardless of probability, such an increase in sea level remains within the realm of possible futures, and therefore merits consideration. The scenario is also of interest due to the similarities it shares with scenario A1. D1 illustrates conditions in which the extent of coastal inundation during

high tide by the end of the century (D1) exceeds that of a large typhoon at the beginning of the century (A1). The axiom "today's flood is tomorrow's high tide" is embodied in this scenario.
Examining the impacts of flooding on parcels, American Memorial Park faces a flood extent similar to that of A1, though this time the park is compromised permanently (as opposed to short-term flooding via a typhoon). Saipan's publicly accessible shoreline is inundated, although by the end of the century the shoreline is more likely to be re-arranged or retreated after decades of gradually increasing sea levels. In this scenario a significant amount of physical modification over a span of many decades would be required to maintain existing public shoreline access or park facilities.

A similar level of physical alteration to infrastructure and the shoreline would be necessary to maintain the Seaport and Power Plant facilities at their current locations, and a relocation of the Lower Base Power Plant might be a viable option in the face of permanent inundation. Conservation areas and wetlands would also be permanently inundated, necessitating new restoration priorities.

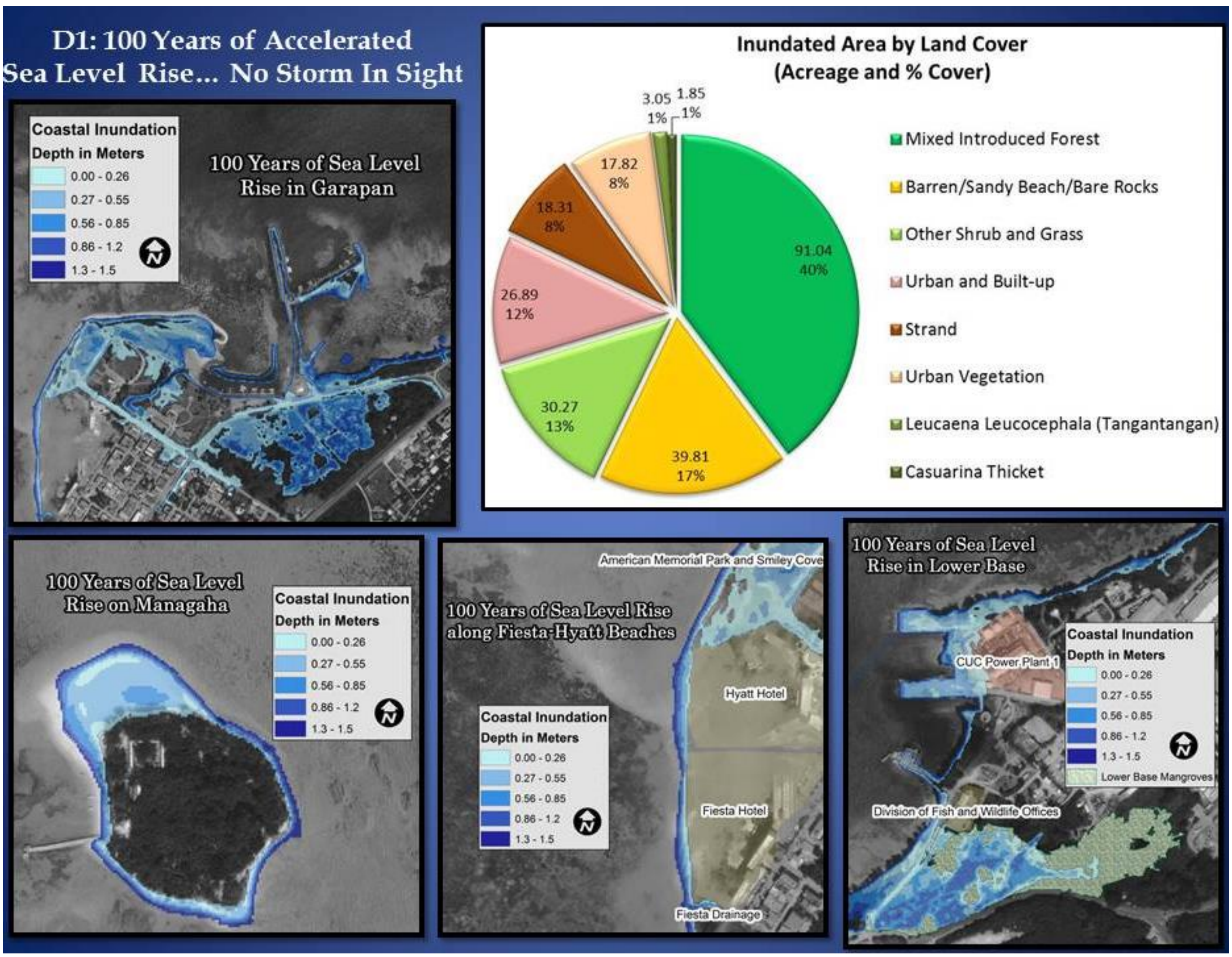


Figure 5-13: 100 Year Land Inundation

The detail maps for scenario D1 further highlight the implications of an extreme, long-term SLR scenario. While Managaha's current tendency toward instability and re-shaping would lead to a different configuration of the island by 2100, any areas currently susceptible to erosion would certainly be exacerbated. If vegetation is not allowed to establish in areas that are currently accreting (e.g. the northwest section of beach), there would be a major loss of the island's ability to migrate and adapt to natural coastal processes.

Resort facilities would also face a retreating and re-arranged shoreline (provided significant hardening and modification of the shoreline was not implemented), and the DFW Offices would certainly require relocation. While the maps do not illustrate permanent inundation of Garapan's core *at the surface*, there would likely be chronic flooding of the low-lying stormwater and waste-water infrastructure due to a back-water effect within drainage systems. Lift stations and any non-pressurized sewer mains could face permanent impairment as a result of this effect.

The following section explores the severity of flood scenarios in two of the most vulnerable focus areas: Garapan and Lower Base.

Flood Severity and Focus Areas

The cumulative potential impact of coastal flooding in Garapan and Lower Base is a result of both the extent and depth of flood waters. This combination can be thought of as flood severity. Figure x focuses on coastal flood severity in Scenario C2 by examining the mean depth of flood waters within individual land parcels. While flood depths vary greatly over large parcels, visualization of average depths allow for a quick assessment of spatial variation in flood impacts.

Both Garapan and Lower Base exhibit significant susceptibilities to flooding. The physical configuration of the landscape allows for a great degree of hydraulic connectivity, especially where storm water drainages and impervious surfaces occupy low-lying areas. In these situations, a primary or secondary road (or its parallel drainage) may act as a conduit for coastal flooding, connecting basins or "sinks" that are critically impacted.

Ultimately, this connectivity enhances the ability of flood waters to move inland and impact properties and facilities that were previously set back a sufficient distance from the shoreline.

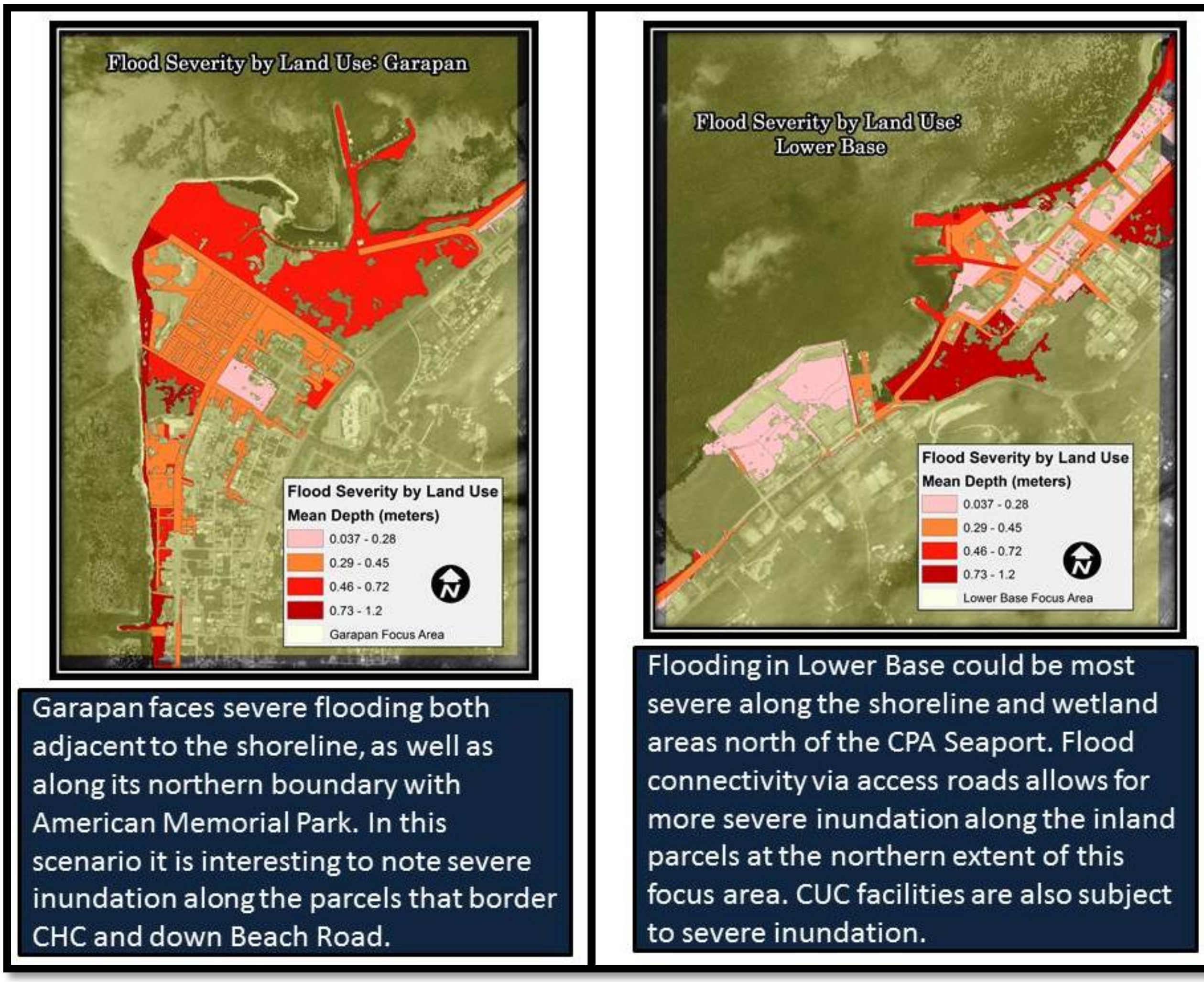


Figure 5-14 Flood Severity in Garapan and Lower Base, Saipan

Additional Climate Impacts

While an assessment of potential impacts from SLR was possible, other climate stressors and phenomena such as changes in precipitation, drought, rising sea surface temperatures, and ocean acidification will require ongoing monitoring and impact assessment. At present there is a large degree of uncertainty as to how precipitation and dry conditions may change in the CNMI. This uncertainty is best addressed by referring to potential extremes, which are addressed in other hazard profiles within the SSMP.

Rising sea surface temperatures and associated changes in ocean chemistry will undoubtedly have a large impact in the CNMI. While recreational, subsistence, and commercial fisheries are threatened with possible shifts in marine species range and behavior, the overall integrity of the CNMI's coral ecosystems may also be compromised in the next century. This degradation could have a severe impact on the CNMI's tourism resources, which rely on overall marine ecosystem health. Quantitative studies of potential impacts to the CNMI's marine resources from climate stressors are warranted.

6.0 – Loss Estimates

Minimal changes were made to loss estimates for the 2014 SSMP Update. During scheduled visits to the islands of Saipan, Tinian, and Rota, agency representatives were provided copies of the FAM, loss estimates, and CVA from the 2010 SSMP to review and update any information that may need changing. As a result of these meetings, HSEM received little to no data. This resulted from loss of institutional knowledge and historical data at multiple agencies stemming primarily from employee turnover since the 2010 SSMP Update.

Loss estimates were only updated for the Department of Land and Natural Resources (DLNR), the Public School System (PSS), and the Department of Public Safety (DPS). The remaining data is imported from the 2010 SSMP and is still valid. Future updates of the SSMP will be coordinated in a timelier manner to allow participating agencies to perform detailed analysis of strctures, content, and populations within their responsibility and to report back to the SERC and HSEM. Additionally, the SERC is now an integral part of the HMP process and consists of department heads with resources within their respective agencies to analyze, compile, and share information to the group.

Since the 2010 SSMP, development in the CNMI has been minimal as result of continuing economic challenges, both in the public and private sectors. Tourism, historically the CNMI’s number one industry, is expected to see positive benefits from the recently passed Casino Bill. Future SSMP revisions may include additional information on lives, strucutal, and content loss from new facilities or locations stemming from this legislation. The Commonwealth Casino Commission will be invited to participate in future HMP meetings and provide inout for this yet-established industry.

6.1 Estimated Losses Attributable to Identified Hazards

The loss estimate data outlined in this section remains largely unchanged from the CNMI’s 2010 SSMP. Similarly, the process describing the methodology for developing loss estimates is pulled from the 2010 SSMP. As previously mentioned, agency restructuring (i.e. CNMI OHS and EMO merger) and staff turnover resulted in the loss of historical knowledge and HMP/SSMP experience. These reasons made it difficult for participants to provide accurate and up-to-date information for loss estimates within the already tight update timeline.

The calculations provided in this section are approximate estimates that provide a relative ranking of risk to the different elements and land areas within the CNMI from the identified hazard types. The estimate of losses is expressed in dollars for the replacement value and content value of the facility or infrastructure and in the number of people that might be vulnerable to the hazard within or near a facility based upon information provided as to the number of personnel assigned to a particular facility or the facility’s maximum capacity by participating agencies that submitted a completed Community Vulnerability Assessment (CVA). Though this information was not reevaluated by all participants for the 2014 update, future SSMPs will include more detailed updates from a larger number of agencies. This process can be facilitated by HSEM staff and SERC members during bi-annual SERC meetings.

Agencies responses provided in the CVA were compiled and catalogued into a database, providing information for 424 facilities. Upon completion of all data entry, queries were conducted to identify which facilities may be susceptible to specific hazard types. It should be noted that the results of the queries were based upon best available information that was provided by each participating agency. Table 6-1 illustrates the database characteristics that were available and applicable in evaluating the potential losses to each identified hazard type. Climate Change was not included during the initial development of the CNMI's loss estimates. Ongoing research of the effects of climate change and continued discussions among leadership will allow future SSMP updates to include this information. The Climate Change column of Table 6-1 has been grayed out to reflect this lack of information.

Table 6-1
Database Characteristics Evaluated for Loss Estimate Approximates

Database Characteristics	Typhoon & Strong Winds	Flooding	Earthquake	Drought	Wildfire	Volcanic Hazard	Tsunami	Climate Change
Type of foundation	X	X	X		X		X	
Construction of Exterior Wall	X		X		X		X	
Roof Material	X				X			
Topography	X	X					X	
Within Flood Zone		X						
Construction Date		X	X					

Where applicable, a loss estimation table was utilized as a means of estimating the potential damage that could occur from a hazard given the magnitude of the hazard, which is expressed as a percentage of the replacement cost of the facility or infrastructure. For purposes of analysis, the following assumptions were made.

- The estimated loss to structures is a multiplied value of the structural replacement cost and the percent of estimated damage assuming specified building criteria.

- The estimated loss to contents is a multiplied value of the content replacement value and the percent of estimated damage assuming similar building criteria. For purposes of this study, the calculation of functional downtime, which is the average time during which a functional activity is unable to be provided due to impact of a hazard event, was not conducted. Further, the calculation of displacement time, which is the average time that the occupants of a facility must operate from a temporary location while repairs are being made to the primary facility, was not conducted. These are areas for future studies and updates to the SSMP.

6.2 Typhoon Loss Estimate

Mass Management Tool (MMT)

One model that was utilized in evaluating the potential losses that are attributable to the impacts of a typhoon is the Island Mass Management Tool (MMT). The MMT is a spreadsheet model utilized by FEMA that supplements the HURREVAC program which provides emergency management teams the ability to track the path of a typhoon as it moves toward land. The MMT serves as a decision-making tool for the effectual management of mass movements of population during a typhoon, whose application provides a greater degree of safety to the most vulnerable populations within each respective island group. The MMT allows for the implementation of sequential or multiple actions that address affected populations first and the remaining island population groups in an appropriate order of prioritized need.

The MMT provides island emergency disaster relief managers with the ability to address a gamut of planning issues related to the approach of a typhoon that include:

- Assessing the typhoon threat, and probability of that threat, for the "model" storm and "worst case" storm scenarios for the affected island environment.
- Assessing reactions of vulnerable and non-vulnerable populations.
- Assessing vulnerable and non-vulnerable persons by pre-defined threat zones.
- Assessing public shelter demand and capacities, as well as examining the potential capacities of private refuges.
- Assessing potential threats to critical facilities such as utility services, transportation modules, and health care services.
- Assessing time requirements involved in mass management.
- Assessing specific typhoon-related communication needs.

The MMT is customized for specific island environments, whose design is based upon using existing data from multiple sources and are sectored into five modules that evaluate socio -economic data, behavioral activities data, evacuation statistics extrapolated from previous disaster-related events, shelter and critical facilities information, and evacuation timing and hazard scenarios.

With the applied data inputs and assumptions, the evacuation outputs of the MMT for the CNMI indicate that given a moderate typhoon (category 1, 2 or 3 storm), approximately 3,400-3,800 people would need to be evacuated to a public shelter, with the varying difference attributable to seasonal occupancy. For a worst case typhoon (category 4 or 5 storm), the number of evacuees significantly increases from the moderate storm calculations, with approximately 7,200 people requiring public shelter. Depending upon the scale of the storm, the scenario outputs indicate that nearly 6,319 to 10,508 vehicles would be utilized during a typhoon scenario, with non-public shelter seeking individuals also using the roads to secure their own refuge, thus creating potential logistical concerns of traffic circulation and congestion for those transiting from the areas of evacuation to the designated public shelters.

According to the output calculations of the MMT, of the five designated public shelters for the CNMI outer islands, the shelters areas on the island of Rota do not have the capacity to house the estimated number of evacuees within the respective district during the event of a moderate and severe storm. Likewise, on the island of Saipan, the Garapan

Elementary School and Koblerville Elementary School do not have the capacity to house the estimated number of evacuees in each of their respective regions. According to CNMI HSEM, there is contingent shelter space, whereupon emergency management would have to establish clear procedural guidelines that would direct the movement of evacuees to these shelters. In the model, the time required for evacuation clearance during a moderate storm ranges from 12 minutes to 2 hours based on proximity to shelter for the evacuation districts, which is mainly attributable to population density of permanent residents and seasonal occupancy rates of visiting tourists in pocket areas, as well as the associated number of vehicles utilized by both groups during the evacuation. During a worst-case scenario storm, the evacuation times increases slightly from the moderate storm estimates, ranging from 24 minutes to 3 hours.

Community Vulnerability Assessment (CVA)-Typhoon

Several factors were considered in assessing the capacity of facilities to withstand high-velocity storm-surge flooding, erosion, and strong winds that were attributable to typhoon activity. Building Loss Estimates compiled by FEMA for typhoons were utilized in estimating the amount of damage that could result from flooding activity. Currently, there are no standard loss estimate models for erosion damage or wind damage. As a result, other factors including past historical data, the location of the facility, known rates of erosion for soil types, the structure replacement value were utilized. The contents of a structure are often vulnerable to the impacts of wind and water during a typhoon. In conducting the loss estimate for the CNMI, the V Zone Flood Contents Loss Estimate Table provided in the FEMA Benefit -Cost Analysis Coastal V Zone Module (1999) was utilized. With previous historical information, an estimated flooding depth of 7 feet was used to determine the percent of contents damaged.

In the analysis of data provided in the CVA database, those facilities that were situated within the coastal plain or mountaintop, whose roof was constructed out of materials other than concrete (including those that were recorded as “unknown” or left unanswered during the survey), were classified as the most vulnerable. Of the 424 facilities that were recorded in the CVA database, 200 facilities were identified as vulnerable to the threat of a typhoon. Table 6-2 provides the estimated replacement costs of the identified vulnerable facilities, their contents, the estimated damage ratios as a percentage, and the total estimated damage costs.

Table 6-2
CVA-Potential Total Loss Estimates for a Typhoon Hazard

Hazard Type: Typhoon	Replacement Value (RV)	RV Damage %	Loss to Structure	Content Value (CV)	CV Damage %	Loss to Content	Vulnerable Population
Rota	$11,126,680	70%	$7,788,676	$20,926,571	70%	$14,648,600	895
Saipan	$104,217,945	70%	$72,952,562	$287,555,000	70%	$201,288,500	11,579
Tinian	$23,555,308	70%	$16,488,716	$20,614,300	70%	$14,430,010	3,887
Total	**$138,899,933**		**$97,229,953**	**$329,095,871**		**$230,367,110**	**16,361**

As shown in Table 6-2, the estimated total maximum potential loss to structures from typhoon activity is approximately $97 million, with an additional $230 million to their contents. An approximate maximum of 16,361 people within these facilities would potentially be at risk of injury or death. **Appendix S** provides a detailed listing of the facilities and or infrastructure that were identified in the CVA as vulnerable to typhoons.

6.3 Flood Loss Estimate

In assessing the physical vulnerability of structures to flooding conditions, one of the critical factors is assessing which structures get damaged as a result of exposure to water moving at potential high velocities and debris impacts. For the analysis of CVA facilities, the Building and Content Loss Estimation Tables derived from the FEMA Benefit-Cost Analysis Full Data Module (1999) were utilized to evaluate potential infrastructural damage.

Community Vulnerability Assessment (CVA)-Flooding

In the analysis of data provided in the CVA, those facilities that were situated within the coastal plain or where identified as located within a flood zone (including those that were recorded as "unknown" or left unanswered during the survey), were classified as the most vulnerable. As with the calculations for typhoon losses, an estimated flood depth of 7 feet was utilized in the deriving flooding loss estimates. For the islands of Rota and Tinian, the building type category of "one story-no basement" was broadly applied in estimating both building and content losses. For the island of Saipan, the building type category of "two story no basement" was used.

Of the 424 facilities that were recorded in the CVA database, 130 facilities were identified as vulnerable to the threat of flooding. Table 6-3 provides the estimated replacement costs of the identified vulnerable facilities, their contents, the estimated damage ratios as a percentage, and the total estimated damage costs.

Table 6-3
CVA-Potential Total Loss Estimates for a Flooding Hazard

Hazard Type: Flooding	Replacement Value (RV)	RV Damage %	Loss to Structure	Content Value (CV)	CV Damage %	Loss to Content	Vulnerable Population
Rota	$3,828,120	43%	$1,646,092	$16,060,791	65%	$10,439,514	1,398
Saipan	$20,817,760	26%	$5,412,618	$140,834,000	39%	$54,925,260	2,633
Tinian	$47,251,471	43%	$20,318,133	$25,895,481	65%	$16,832,063	1,544
Total	**$71,897,351**		**$27,376,842**	**$182,790,272**		**$82,196,837**	**5,575**

As shown in Table 6-3, the estimated total potential loss to structures from flooding activity is approximately $27.3 million, with an additional $82 million to their contents. An approximate maximum of 6,864 people within these facilities would potentially be at risk of injury or death. **Appendix T** provides a detailed listing of the facilities and or infrastructure that were identified in the CVA as vulnerable to flooding.

6.4 Earthquake Loss Estimate

There are several factors that contribute to the determination of the performance ability of a structure to the impact of an earthquake. The majority of these factors are related to structural design but do include other factors such as the height of the building, the design of the first story, and the building materials utilized. For example, brick and stone are materials that have capacity to resist compression and crushing but perform poorly in resisting the effects of tension, which occurs as a building is being pulled apart. Non-reinforced masonry buildings have little resistance to tension forces and often collapse under relatively light ground shaking forces. Buildings that were constructed prior to seismic building code requirements or under low seismic and general building codes will have a greater potential to perform poorly under the intense conditions of an earthquake.

Community Vulnerability Assessment (CVA)-Earthquake

In the analysis of data provided in the CVA, those facilities that were situated within the coastal plain or where identified as being built prior to 1991 were classified as the most vulnerable. Although there was information provided as to materials used in the construction of building foundations, there was no supplementary information as to whether or not buildings build with concrete were reinforced. Building damage ratios were derived from tables provided by FEMA, which utilized known peak ground acceleration values with the seismic design levels of the facilities to determine the percentage of structural damage.

For purposes of conducting a generalized analysis of potential building loss, a decision was made to apply a building damage ratio that was averaged from tables generated from HAZUS calculations that derived estimate percentages based upon a relationship between building types to PGA values. For this study, using the estimated .398 PGA value provided in Section 5 of this report, the estimated building damage percent was 24%. As a rule of thumb, the percent of contents damage due to earthquakes is estimated as half of the percent of structural damage. This relative proportion is slightly higher for structures built using higher seismic codes because these structures are usually designed to sway and absorb the motion of ground movement. However, for purposes of this study the half ratio was applied.

Of the 424 facilities that were recorded in the CVA database, 398 facilities were identified as vulnerable to the threat of earthquakes. Table 6-4 provides the estimated replacement costs of the identified vulnerable facilities, their contents, the estimated damage ratios as a percentage, and the total estimated damage costs.

Table 6-4
CVA-Potential Total Loss Estimates for an Earthquake Hazard

Hazard Type: Earthquake	Replacement Value (RV)	RV Damage %	Loss to Structure	Content Value (CV)	CV Damage %	Loss to Content	Vulnerable Population
Rota	$43,656,360	24%	$10,477,526	$40,943,191	12%	$4,913,183	4,918
Saipan	$302,854,910	24%	$72,685,178	$364,967,520	12%	$43,796,102	26,056
Tinian	$47,251,471	24%	$11,340,353	$25,895,481	12%	$3,107,458	12,620
Total	**$393,762,741**		**$94,503,058**	**$431,806,192**		**$51,816,743**	**43,594**

As shown in **Table 6-4**, the estimated maximum total potential loss to structures from earthquake activity is approximately $94.5 million, with an additional $51.8 million to their contents. An approximate maximum of 43,594 people within these facilities would potentially be at risk of injury or death. **Appendix U** provides a detailed listing of the facilities and or infrastructure that were identified in the CVA as vulnerable to earthquakes.

6.5 Volcanic Eruption Loss Estimate

The primary factor that determines the "performance" ability of a building to withstand the impact of a volcanic eruption is identifying whether the facility or infrastructure is within the path of the explosive forces or within a region of an island that is susceptible to ash fallout patterns. All active volcanoes are in the Northern Islands, which are generally vacant or sparsely populated.

Community Vulnerability Assessment (CVA)-Volcanic Activity

None of the facilities listed within the CVA were identified as being situated within an active volcanic area. However, some of these facilities may be subject to economic losses due to ash and haze conditions that create restrictions in using air space and surrounding fishing grounds near identified volcanic areas for commercial distribution.

6.6 Tsunami Loss Estimate

In assessing physical vulnerability, the most prevalent factor to identify the potential facilities that are exposed to the impacts of the tsunami is proximity to the coastline. Structures that are located in coastal areas with known offshore faults are at the greatest risk of damage. The focus on determining vulnerability also includes identifying areas where a tsunami may inundate major transportation routes or that would create a statewide effect, such as the airports and harbors.

Community Vulnerability Assessment (CVA)-Tsunami

Because of the lack of historical incidents, there is no empirical data to base any projected losses. In general, there are no standard loss estimation models for tsunamis. However, estimates can be generated with some model assumptions about surge zones and the number of structures at risk. At this time, the level of risk is uncertain with no known historic costs.

For purposes of this study, an analysis of data provided in the CVA was conducted. It was hypothesized that those facilities that were situated within the general coastal plain and below an elevation of 10 meters were classified as the most vulnerable. In past discussions with the former EMO (now HSEM), evidence of coastal storm wash emanating from a category 4 storm suggested that a 10-meter elevation was the best judgment approximation. However, it should be noted that this is not an official surge line but one generated for purposes of conducting this study.

Estimated structural vulnerability was based upon the proximity of the structure to the shoreline. The ratio of estimated losses and damages that was utilized for calculating potential damage related to tsunami activity is similar to the vulnerability assumptions that were utilized for flooding conditions.

Of the 424 facilities that were recorded in the CVA database, 160 facilities were identified as vulnerable to the threat of tsunami. Table 6-5 provides the estimated replacement costs of the identified vulnerable facilities, their contents, the estimated damage ratios as a percentage, and the total estimated damage costs.

Table 6-5
CVA-Potential Total Loss Estimates for a Tsunami Hazard

Hazard Type: Tsunami	Replacement Value (RV)	RV Damage %	Loss to Structure	Content Value (CV)	CV Damage %	Loss to Content	Vulnerable Population
Rota	$4,263,340	43%	$1,833,236	$16,303,120	65%	$10,597,028	1,632
Saipan	$138,810,270	26%	$36,090,670	$222,868,520	39%	$86,918,723	16,333
Tinian	$21,718,471	43%	$9,338,943	$19,338,943	65%	$12,741,455	4,084
Total	**$164,792,081**		**$47,262,849**	**$258,773,879**		**$110,257,206**	**22,049**

As shown in **Table 6-5**, the estimated total potential loss to structures from tsunami activity is approximately $47.2 million, with an additional $110.2 million to their contents. An approximate maximum of 22,049 people within these facilities would potentially be at risk of injury or death. **Appendix V** provides a detailed listing of the facilities and or infrastructure that were identified in the CVA as vulnerable to tsunamis.

6.7 Drought Loss Estimate

Given the range, complexity, and interaction of drought-related risks, and the potential range of decision makers involved, an integrated, interdisciplinary approach is required to provide a rounded appreciation of the problem. The occurrence of multiple ecological issues at different phases of a drought event requires close cooperation between entities having different technical specialties within relevant sciences, government and the private sector.

In the 2010 SSMP, a recommendation was made to develop an effective drought mitigation plan that at a minimum would include, (1) an analysis of past, current and projected water demand, in stream flow needs for appropriate ecosystem protection, water availability, and (from these) potential water shortages; (2) a description of how shortages would be met (for example: implementing projects to increase supply output, conduct leak detection/elimination, improve water use efficiency, and employ demand management strategies) and an estimate of associated costs; (3) a description of interagency/intergovernmental coordination and public participation; and (4) consideration of social and economic factors. However, as of this 2014 update, the plan has not been developed. For the CNMI's 2014 Pre-Disaster Mitigation Application, HSEM submitted a proposal to fund the subsequent update to the 2014 SSMP. Actions included procuring project management services, hosting workshops and meetings, and printing final copies of the approved plan. Submitting a similar request for the Drought Mitigation Plan (and other hazards plans) is an option for future PDM applications.

No known studies as to the impacts of drought specific to conditions within the CNMI have been conducted in recent times. However, according to a 1986 USGS study of the 1983 drought that occurred in the Western Pacific region, most of the identified agricultural activity on the island of Saipan is mostly for subsistence purposes, which is still a primary objective today. At that time, most of the produce grown on Rota was not affected because much of the irrigation water was sourced from spring water. However, both Rota and Tinian experienced a decrease in cattle population by as much as 11% due to sustained drought conditions.

According to information provided from the developed GIS application for this study, there are approximately 9,778 acres of agriculture on the island of Rota, 9,650 acres on Saipan, and 21,454 acres on the island of Tinian. If drought conditions were to develop, all of these lands would be susceptible to some level of impact.

Community Vulnerability Assessment (CVA)-Drought

No loss estimate analysis was performed on the facilities within the CVA. It is recommended that as data becomes available through additional studies, approximate loss estimates be calculated for future updates to this document.

6.8 Wildfire Loss Estimate

In assessing physical vulnerability, the most influential f actor that determines whether a structure is potentially at risk from the impact of a wildfire is the level and degree of exposure to fire and heat sources. Structures that are situated near the urban-wild land fringe area are at the greatest risk of damage from wildfires. Currently, there are no loss estimation models for structural or content loss to wildfires.

Community Vulnerability Assessment (CVA)-Wildfire

In the analysis of data provided in the CVA, those facilities whose wall or foundation were not 100% constructed out of concrete were classified as potentially the most vulnerable. In general, there are no standard loss estimation models for wildfires. Determinations could not be made as to the proximity of a potentially vulnerable structure to the urban fringe or to potential ignition source, such as the identified dry brush areas or to a water line that would be used to extinguish a blaze.

Of the 424 facilities that were recorded in the CVA database, 114 facilities were identified as vulnerable to the threat of a wildfire. Table 6-6 provides the estimated replacement costs of the identified vulnerable facilities, their contents, the estimated damage ratios as a percentage, and the total estimated damage costs.

Table 6-6
CVA-Potential Total Loss Estimates for a Wildfire Hazard

Hazard Type: Wildfire	**Replacement Value (RV)**	**RV Damage %**	**Loss to Structure**	**Content Value (CV)**	**CV Damage %**	**Loss to Content**	**Vulnerable Population**
Rota	$7,600,000	10%	$760,000	$18,949,600	10%	$1,894,960	267
Saipan	$86,032,200	10%	$8,603,220	$223,169,000	10%	$22,316,900	4,848
Tinian	$18,470,000	10%	$1,847,000	$17,432,000	10%	$1,743,200	2,625
Total	**$112,102,200**		**$11,210,220**	**$259,550,600**		**$1,743,200**	**7,740**

As shown in **Table 6-6**, the estimated total potential loss to structures from wildfire activity is approximately $11.2 million, with an additional $25.9 million to their contents. Approximately 7,740people within these facilities would potentially be at risk of injury or death. **Appendix W** provides a detailed listing of the facilities and or infrastructure that were identified in the CVA as vulnerable to wildfires.

6.9 Climate Change Loss Estimate

For the 2014 SSMP Update, no loss estimates for climate change were available. Future updates of the plan may include this information with new data and research into the hazard.

6.10 Assessment of Risk Priorities

A Risk Index (RI) is a planning tool that is a good place to start identifying mitigation needs and opportunities. The RI can be used to demonstrate the particular segments within the community that are at risk from one or more types of hazards. Based upon the available data that was integrated into the GIS, potential areas at risk to multiple hazard risks were identified. Further, a risk index worksheet is provided in Table 6-7 that identifies the risk potential of each hazard type by the following criteria: potential frequency of occurrence, magnitude, and severity. Each hazard is then evaluated based upon these criteria and assigned a risk priority. A description of each criterion is provided below. Frequency of occurrence can be classified as “probable”, “potential”, “possible”, or “doubtful” and can be described as follows:

- Probable: a near 100% probability that the hazard event will occur in the next year. A score of 4 is given for this category.
- Potential: between 10 to 100% probability that the hazard event will occur in the next year, or at least once in the next 10 years. A score of 3 is given for this category.
- Possible: between 1 to 10% probability that the hazard event will occur in the next year, or at least once in the next 100 years. A score of 2 is given for this category.
- Doubtful: less than 1% probability that the hazard event will occur in the next 100 years. A score of 1 is given for this category.

Magnitude can be classified as “catastrophic”, “critical”, “limited”, or “negligible” and can be described as follows:

- Catastrophic: More than 50% of the jurisdiction could be affected. A score of 4 is given for this category.
- Critical: Approximately 25-50% of the jurisdiction could be impacted. A score of 3 is given for this category.
- Limited: 10 to 25% of the jurisdiction could be affected. A score of 2 is given for this category.
- Negligible: Less than 10% of the jurisdiction could be affected. A score of 1 is given for this category.

Severity level of a hazard can be classified with similar criteria as magnitude but characterized as follows:

- Catastrophic: Potentiality of multiple deaths, complete shutdown of facilities for 30 days or more, and more than 50% of the property is severely damaged. A score of 4 is given for this category.
- Critical: Injuries and/or illness result in permanent disability, complete shutdown of critical facilities for at least two weeks, and more than 25% of property is severely damaged. A score of 3 is given for this category.
- Limited: Injuries and illnesses do not result in permanent disability, complete shutdown of critical facilities for more than one week, and more than 10% of property is severely damaged. A score of 2 is given for this category.
- Negligible: Injuries and illnesses are treatable with first aid, minimal quality of life impacts, shutdown of critical facilities for 24 hours or less, and less than 10% of property is severely damaged. A score of 1 is given for this category.

Risk priority is evaluated by cross-referencing the compiled asset and hazard profile data that provides a qualitative rating that can be used to focus emergency planning and mitigation efforts on high priority problems. The risk priority is classified by the composite score assigned to each hazard type, with a composite score from 3 to 6 indicating low risk, 7 to 9 as moderate, and 10 to 12 as high.

Table 6-7
Risk Index Assessment for the CNMI

Hazard	Frequency of Occurrence	Magnitude	Severity	Composite Score	Risk Priority
Typhoons & Tropical Storms	4	4	4	12	High
Flooding	4	3	2	9	Moderate
Earthquake	2	2	3	7	Moderate
Volcanic Eruptions	2	2	3	6	Low
Tsunami	1	2	3	6	Low
Drought	3	2	2	7	Moderate
Wildfire	3	2	1	6	Low
Climate Change					High

Since climate change is a new addition to the 2014 SSMP hazards list and itself a relatively new hazard facing the entire globe, not enough information was available during the update process to assign scores in the Risk Index Assessment with confidence. Furthermore, the nature of climate change and its effects on numerous hazards, including ones identified in the SSMP, make it difficult to directly assess factors such as frequency, magnitude, and severity, However, information from the Saipan Vulnerability Assessment (SVA) indicates that numerous characteristics of climate change will affect other hazards identified in the plan in both the short and long term. These include increased surface air temperature, heavy precipitation, sea level, wave energy, and ocean acidification that lead to increases across all Risk Index factors for events such as typhoons, tsuanmis, and drought. Because of this relationship between climate change and other hazard, it was decided that the hazard be assigned a High priority. This is also supported by increased discussions of climate change at summits for regional leadership, including the CNMI, Micronesia, and South Pacific nations.

7.0 – Hazard Mitigation Strategy

7.1 Hazard Mitigation Goals and Objectives

The Goals and Objectives stated in the 2010 SSMP were reviewed by HSEM staff for relevance and alignment with the goals and objectives outlined in other emergency plans and vulnerability assessments, including the 2014 CNMI Homeland Security Strategy, the 2013 CNMI THIRA, and the 2013 CNMI State Preparedness Report.

In cross-referencing the various plans and assessments, it was determined that the goals and objectives from the 2010 SSMP are still relevant and indicative of the priorities of the CNMI with respect to hazard mitigation and other areas of homeland security and emergency management. The following themes are present across all of the aforementioned documents:

- Continuity of Operations for essential government and lifeline services
- Interagency coordination and interoperable communications
- Public outreach for disaster preparedness and hazard mitigation activities
- Development of emergency plans based on risk and vulnerability assessments

The agencies that participated in the development and review of the CNMI SHSS, THIRA, and SPR participated in past updates of the SSMP, therefore, the input provided during the planning processes for these plans and assessments are representative of what may have been provided during a SSMP-specific goals and objectives review and are a comprehensive view state priorities.

At the highest level, the hazard mitigation goals of the CNMI are to:

- Save lives and minimize injuries against all hazards, but recognizing that the CNMI is most vulnerable to impacts from typhoons and tropical storms

- Reduce potential damages to public and private property

- Reduce adverse impacts on the environment and natural resources

- Reduce financial burden on the community, businesses and government

Following are the recommendations for the comprehensive hazard mitigation objectives and the appurtenant recommended actions for the CNMI.

Objective 1: Secure, strengthen, and maintain essential government facilities, identified lifeline utility systems and access for emergency medical assistance and response, and transportation systems to ensure the delivery of necessity goods and fuel.

Action 1-1: Harden essential critical facilities

Action 1-2: Identify essential facilities and governmental facilities that must maintain operations and assess hardening and retrofit requirements.

Action 1-3: Develop proposals to harden and retrofit facilities and seek funding from FEMA and other federal, state agencies and organizations.

Action 1-4: Convert the overhead power distribution system to an underground system over a period of time, earmarking a specific amount to be used for this purpose, and prioritizing the segments to be converted. Set policy governing requirements for new line installations.

Action 1-5: Replace wood poles with concrete poles over a period of time, earmarking a specific amount to be used for this purpose, and prioritizing the segments to be converted. Set policy governing requirements for new concrete pole installations.

Action 1-6: Secure buildings, trees and plant materials affecting power lines to reduce damages to the power distribution system. Encourage legislation to prohibit the planting of certain type of trees under power lines and along the rights of ways.

Objective 2: Review and improve polices and enforcement of building standards and codes, particularly the IBC, UFC, and NFIP requirements.

Action 2-1: Review and recommend improvements in the building codes enforcement and increase inspections.

Action 2-2: Ensure a valid CNMI land use plan is in place and enforced.

Action 2-3: Encourage the use of concrete in residential construction.

Action 2-4: Prepare and adopt public education materials regarding private sector buildings.

Action 2-5: Encourage homeowners and businesses to install typhoon shutters on windows and glass doors to prevent damage from strong winds, flying debris, and wind driven rain.

Objective 3: Improve inter-agency and inter-island coordination and communication.

Action 3-1: Review and update existing master plans for land use designations.

Action 3-2: Continue to promote interagency communication across all sectors and levels of government, including CNMI agencies, federal agencies, private sector organizations and private non-profit organizations.

Objective 4: Participate in public awareness and education activities that improve implementation of the strategy and in activities promoted by the CNMI HSEM and preparedness partners at all sectors and levels of government.

Action 4-1: Use risk and vulnerability assessment and maps to improve the quality of public awareness materials distributed within the CNMI.

Action 4-2: Use agency and committee interactions to gather feedback on this plan to make improvements over the next year.

Action 4-3: Develop a public awareness program in coordination with Federal, State and local offices. The information gathered would be disseminated among the local communities, integrated into the public school curriculum, and incorporated into the existing disaster awareness activities currently employed.

Action 4-4: Implement the Public Awareness Program to disseminate all-hazard mitigation information for earthquake or hurricane retrofits, hazard warning information, evacuation procedures, protective measures, and preventive techniques.

Action 4-5: Use the local multi-media approach and encourage media, community, and other agency involvement through the following activities: develop public radio stations on Tinian and Rota to expand existing community education initiatives; hold workshop and/or public information meetings; use properly secured billboards or sides of buildings to relay important information; use website sources to display hazard reduction community information; translate educational materials to many of the islands' prevalent languages; use the American Red Cross to develop and distribute literature and facilitate public education events.

Objective 5: Address post-disaster pollution control.

Action 5-1: Label and properly secure stored hazardous materials and hazardous waste so that it is safe from wind and rain.

Action 5-2: Develop a surface water quality control program that should include the installation of ponding basins to control and filter surface water runoff. Program should promote the control sedimentation and other forms of pollution that destroy the inner reef areas by installing drainage and seepage tanks to control non-point source pollution during heavy rains.

Objective 6: Improve fresh water resources.

Action 6-1: Explore and quantify water sources on all islands.

Action 6-2: Institute a system of storm water runoff management.

Action 6-3: Develop ponding basins to enhance aquifers.

Action 6-4: Develop a program of conservation among businesses, communities, and individual residences. Program should include the development of public information material and the installation and monitoring of water meters.

Action 6-5: Propose legislation to implement rainwater catchment systems in homes, businesses, and public buildings.

Action 6-6: Improve the collection of water in existing springs.

Action 6-7: Develop a water-recycling program. Support the development of wastewater treatment that produces effluents that can be recycled for industrial process, irrigation, and other non-drinking uses.

Action 6-8: Encourage the Army Corps of Engineers to develop and update the water master plan for Saipan, Tinian and Rota, and the Confidence Consumer Report for water quality.

Objective 7: Ensure that adequate shelter is available to all residents and visitors.

Action 7-1: Harden and retrofit identified typhoon shelter facilities (under PSS & DCCA) to include storm shutters, lighting, backup generators, water tanks and water pumps, enclosed walkways and adequate bathroom facilities that are compliant with ADA requirements for people with disabilities.

Action 7-2: Encourage residents and hotels to harden, retrofit and build safe rooms to take responsibility for sheltering.

Objective 8: Build and maintain geographic information system and data to improve upon existing risk assessment data.

Action 8-1: Improve the database and geographic information systems developed for the risk and vulnerability assessment to make decisions for disaster response plans and mitigation activities.

Action 8-2: Develop a protocol for accessing information and for improving information sharing among CNMI agencies. Develop a protocol for sharing information with community organizations that could benefit from using GIS in community planning activities.

Action 8-3: Continue to identify missing data and gaps in the risk and vulnerability assessment, and incorporate these into the CNMI GIS system.

Action 8-4: Enable use of the GIS systems including hazard risk and vulnerability assessment information for the building and land use permit system.

7.2 Categories of Hazard Mitigation Actions

Significant changes were made to the hazard mitigation actions for the 2014 SSMP update. During meetings with various agencies, it was apparent that a large amount of historical knowledge and experience with the previous SSMP update process and hazard mitigation planning in general was lost between the completion of the 2010 plan and the update for 2014. Employee turnover at different agencies and the shifting of plan maintenance from contractors to HSEM were contributing factors to these planning deficiencies, including the minimal changes made to plan components such as Loss Estimates, the FAM, and the CVA. In order to move forward and complete the update of the SSMP, participants in the update decided collectively to create a new set of hazard mitigation activities.

In May 2014, FEMA Region IX provided technical assistance to HSEM and facilitated discussions with CNMI stakeholders over a range of topics concerning the plan update. Specific care was given to the development of new hazard mitigation actions. FEMA staff guided participants in identifying activities allowable under Hazard Mitigation Assistance (HMA) Programs, crafting strong justifications for projects, prioritizing identified projects, and identifying possible sources of funding. Subsequently, HSEM staff held a follow-up meeting in June 2014 for agencies that were not present during the May Technical Assistance visit and to collect updates from participants that had attended. The result of these planning steps is a new set of mitigation actions from over 13 different government agencies across all 4 CNMI municipalities, as well as the American Red Cross. These mitigation actions are included in **Appendix Y.**

In the 2010 CNMI SSMP, hazard mitigation activities were grouped according to the six mitigation action types: prevention, property protection, natural resource protection, emergency services, structural, and public information. For the 2014 SSMP, 4 sub-categories were created to streamline priority ratings for submitted actions and to identify key focus areas at a higher level: shelters, critical infrastructure and key resources, facilities, and other (e.g. warning systems, communications, mapping systems, health and safety maintenance programs, public education and outreach, etc.)

HSEM staff collected, reviewed, and categorized all submitted hazard mitigation actions into the 4 categories. Members of the SERC were tasked with scoring each of the categories on a scale of 1 – 4 to indicate priority in terms of project criticality: 1 = critical, 2 = important, 3 = moderately important, 4 = low priority. A total of 10 scoring sheets were sent out; 7 were completed and received. Members that were non-responsive were advised that, in the interest of time, their input in the prioritization process would be invalid. The results were as follows (from Critical to Low Priority):

1. Shelter Hardening and Retrofitting
2. Critical infrastructure and Key Resources
3. Facilities
4. Others

7.3 Criteria for Prioritizing Funding

Using the STAPLE/E method recommended in the FEMA State and Local Mitigation Planning Guide, criteria was derived that assists HSEM, the SERC, and other mitigation planning participants in evaluating identified mitigation actions when funding is available. The evaluation criteria were designed with the intent to protect lives and property within the CNMI. They are:

- **Protects critical/lifeline facilities and services** – the proposed action recognizes facilities or lifeline services that have been identified as critical and must be protected from potential threats from identified hazards

- **Project costs within available funding** – the proposed action has completed plans, scope of work, and estimated costs that promote effective and efficient implementation of the project while reducing the potential for overruns and delays

- **Project addresses historical damage** – the proposed action accounts for historical trends and vulnerability to repetitive damage from known hazards based on risk analysis and assessments

- **Benefits multiple agencies and hazards** – the proposed action provides tangible benefit to multiple agencies or core capabilities across all islands of the CNMI and the spectrum of identified hazards; streamlines overall project costs and implementation processes

- **Preserves environmental, cultural, and historical resources** – the proposed action can be implemented in a manner that does not degrade significant elements of natural, cultural, and historical importance.

- **Provides economic benefit** – the proposed action directly or indirectly spurs economic development and may potentially provide long lasting economic benefit to the CNMI

7.4 Mitigation Resources and Programs

The following section outlines a number of assistance programs that may be used to fund hazard mitigation projects or planning activities (such as those included in this plan), as well as recovery operations post-disaster.

CNMI Funding

- **Legislative Appropriations –** funds allocated per fiscal year to departments in order to carry out respective duties and responsibilities. Earmarks are also made towards specific projects (e.g. storm water drainage)

- **Capital Improvement Projects (CIP) –** funds allocated towards new construction or renovation, maintenance, or rehabilitation of existing facilities and infrastucture. Additionally, funds can cover major equipment with prolonged useful lifespans.

Pre-Disaster Programs

The planning benefit of pre-disaster mitigation is that there are fewer constraints posed on time and resources. Pre-disaster programs are designed to meet community needs, achieve multiple objectives, promote public participation, increase funding eligibility, and guide post-disaster recovery efforts. The following is a list of applicable pre-disaster programs that could be considered within the CNMI. Since the approval of the 2004 SSMP, the CNMI has applied for and received pre-disaster mitigation grants for several mitigation projects and mitigation planning for the development of an Enhanced State Mitigation Plan.

- **Emergency Management Performance Grants (EMPG)** – These agreements are the mechanism by which FEMA provides funding to States to develop and maintain emergency management programs and capabilities. States conduct a self-assessment of emergency management needs, including mitigation, and develop a 5-year plan to meet those needs. Based on the plan, FEMA provides various levels of funding through a FEMA-State Cooperative Agreement. These agreements include the following programs: State Hazard Mitigation Program, the National Hurricane Program, the National Earthquake Hazards Reduction Program, and the Community Assistance Program.

- **State Hazard Mitigation Program (SHMP)** – The purpose of the SHMP is to help the CNMI develop a comprehensive mitigation program. The funds are intended to cover such costs as comprehensive mitigation planning, interagency coordination, and the provision of technical assistance to local governments.

- **National Hurricane Program (NHP)** – The purpose of the NHP is to reduce the loss of life, property, economic disruption, and disaster relief costs from typhoons. Program funds are to be used for establishing, enhancing, and maintaining basic levels of preparedness and mitigation capabilities; promoting effective mitigation measures to reduce damage to public and private property; conducting hazard identification and evacuation studies; conducting post-storm analyses to evaluate the effectiveness of mitigation measures; conducting training and exercise; and promoting public awareness and education.

- **National Earthquake Hazards Reduction Program** – This program is intended to mitigate earthquake losses through the development and implementation of seismic design and construction standards and techniques; technical assistance materials, education and risk reduction programs; centers addressing specific aspects of the earthquake risk; and the dissemination of earthquake information.

- **Pre-Disaster Mitigation (PDM) Grant** – PDM is a nationally competitive grant program annually funded through US congressional appropriation and administered by FEMA. States and territories with an approved SSMP qualify for funding for eligible mitigation plan development and cost-effective mitigation projects.

- **National Flood Insurance Program (NFIP)** – The emphasis of the NFIP floodplain management requirements is directed toward reducing threats to lives and the potential for damages to property in flood-prone areas. In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the Nation's floodplains. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance.

- **Flood Mitigation Assistance (FMA) Program** – This program provides pre-disaster grants to state and local governments for planning and implementation. Created by the National Flood Insurance Reform Act of 1994, the goal of FMAP is to reduce or eliminate NFIP claims, thus the eligible participants in this program are identified NFIP participating communities. The program receives approximately $20 million annually from the National Flood Insurance Fund. The funds are used to help States and communities implement mitigation measures to eliminate or reduce long -term risk of flood damage to structure insurable under NFIP.

    Three grant types are available through this program: a) planning, b) project implementation, and c) technical assistance. Funds for planning are used to prepare or update Flood Mitigation Plans. Grants for projects are used to implement mitigation measures identified in the community's approved Flood Mitigation Plan. Technical assistance funds are used to help the State in providing technical assistance or to implement approved projects.

    The program is currently emphasizing the need for States and local communities to address repetitive loss properties. These include structures with 4 or more losses and structures with 2 or more losses where the insurance payments have exceeded the property's value. FEMA may contribute 75% of the total eligible costs. The remaining 25% must come from a non-federal source and only half of that 25% can be provided as in-kind contributions from third parties. There are limits to the frequency of grants and the amount of funding that can be awarded to a State or community in any 5-year period.

- **NFIP-Community Rating System (CRS)** – This program provides discounts on flood insurance premiums in those communities that establish floodplain management programs that go beyond NFIP minimum requirements. Under the CRS, communities receive credit for more restrictive regulations, acquisition, relocation, or flood proofing of flood-prone buildings, preservation of open space, and other measures that reduce flood damages or protect the natural resources and functions of floodplains.

- **Community Assistance Program-State Support Services Element (CAP-SSSE)** – The objective of this program is to ensure that communities participating in the National Flood Insurance Program (NFIP) are achieving flood loss reduction measures consistent with program direction. The CAP -SSSE is intended to identify, prevent and resolve floodplain management issues in participating communities before they develop into problems requiring enforcement action.

Post-Disaster Programs

According to the CNMI Emergency Operations Plan, if the Governor determines that the CNMI government capabilities are insufficient to meet the immediate needs of the people during the post-response to a disaster, the Special Assistant for HSEM or the Governor's designee as the State Coordinating Officer (SCO) is directed to seek Federal assistance through the disaster relief program for which the CNMI is eligible, under Public Law 93-288. The SCO advises the Governor in regards to the preparation and delivery of the request for Presidential declaration, and notifies the FEMA Region IX Director of its forthcoming request.

Following a Presidential disaster declaration, several mitigation programs become available to "declared" communities under the Robert T. Stafford Disaster Relief and Emergency Assistance Act. All mitigation assistance authorized under this Act is administered by FEMA. Other post-disaster programs that are identified include beach erosion projects and community development grants, which are administered by the U.S. Army Corps of Engineers (USACE) and the Federal Department of Housing and Urban Development (HUD), respectively.

- **Hazard Mitigation Grant Program (HMGP), Stafford Act, Section 404** – Created in 1988, the goal of this program is assist States and local communities to implement long-term hazard mitigations measures following a declaration. Funds are to be used on projects that reduce or eliminate the losses from future disasters by providing long -term solutions and where the potential savings are greater than the cost to implement the project. Five percent of the HMGP funds can be classified as discretionary funding and awarded to finance non-traditional hazard mitigation projects. Seven percent of the funds awarded must be used to develop or improve State mitigation plans.

- **Infrastructure Recovery, Stafford Act, Section 406** – This program addresses repair, restoration, and replacement of public facilities and damaged private nonprofit facilities. It authorizes funding for the additional costs of mitigation measures necessary to meet current standards.

- **Human Services, Stafford Act, Section 408** – Under this section, grant awards are available to repair disaster-damaged dwellings. Appropriate mitigative actions such as safe land-use and construction practices are required and funded under this section.

- **State Hazard Mitigation Plan (SHMP), Stafford Act, Section 409** – As stated in section 2.0 of this document, this section of the Act requires state and local governments to evaluate all natural hazards and take appropriate action to mitigate those hazards. A comprehensive SHMP is a requirement for Federal disaster assistance.

- **Individual and Family Grant Program, Stafford Act, Section 411** – This program provides grants to cover disaster-related real property losses. Grant funds can be used to cover disaster-related mitigation measures up to the maximum grant amount.

- **Beach Erosion Control Project** – Administered by the USACE, this program is designed to control public beach and shoreline erosion. Reconnaissance studies are federally funded and the feasibility studies are a 50-50 cost share with the local sponsor. Federal participation cannot exceed $2.0 M. The Army Corps of Engineers designs and constructs the project.

- **Community Development Block Grants** – HUD sponsors this program whose objective is to develop viable urban communities through the provisions of decent housing and suitable living environments. Disaster-relief assistance is available under this program.

Disaster Applicable Programs

Federal agencies may also use funds from regular programs to support disaster recovery and mitigation.

- **Coastal Wetlands Planning, Protection, and Restoration Act** – Administered by the U.S. Fish and Wildlife Service, this program is intended to grant funds to coastal States and the Trust Territories for restoration, enhancement, and management of coastal wetlands.

- **Conservation Fund Grants, Land and Water** – Administered by the National Park Service, this program's objective is to acquire and develop outdoor recreational areas and facilities for the general public to meet current and future needs. The program is intended to create and maintain a nationwide legacy of high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the United States.

- **Farm Ownership Loans** – The Federal Department of Agriculture, Farm Service Agency (USDA-FSA) sponsors this program which is intended to assist farmers to develop, construct, improve, or repair farm homes, farms, and service buildings. It is also used to fund the drilling of wells, improve farm water supplies, and any applicable improvements.

- **Soil and Water Loans** – This program is also administered by the USDA-FSA and is designed to provide funding for the development of wells; the construction of dikes, terraces, and waterways; and other erosion-control projects.

Catalog of Federal Domestic Assistance (CFDA)

This online catalog provides access to a database of all Federal programs available to State and local governments; federally recognized tribal governments; territories of the United States; domestic public, quasi-public, and private profit and non-profit organizations; specialized groups; and individuals. Under the functional area of disaster prevention and relief, there are four subcategories of funding programs available under the CFDA: emergency preparedness and civil defense; flood prevention and control; emergency health services; and disaster relief.

7.5 Governmental Mitigation Responsibilities

The National Mitigation Strategy outlines the roles and responsibilities for implementing mitigation actions among all levels of government and the private sector. Funding and technical assistance for hazard mitigation may be available from all levels of government and the private sector. It was the responsibility of the mitigation planning team to identify mutual objectives that accomplish mitigation and other community goals that can utilize a variety of technical and funding resources. A succinct review of the responsibilities of each tier of government involvement is provided below.

Federal Government Responsibilities

The primary responsibility of federal government is to provide leadership in mitigation by administering programs that are intended to support and encourage local efforts to mitigate hazard losses. Federal agencies are expected to take the lead on evaluating their own facilities and ensuring that they are designed, constructed, and upgraded to reduce the impact of future hazard events. Further, these agencies create partnerships and support applied research on priority mitigative issues.

State Government Responsibilities

The CNMI government is required to uphold Federal regulations to reduce hazard losses and must seek to provide resources to achieve these goals. The State must emphasize to its own constituents the value of implementing hazard mitigation to reduce the risk of loss of life, injuries, economic costs, and the destruction of natural and cultural resources.

For a list of CNMI agencies that conduct hazard mitigation activities, please refer back to **Section 3.3** – Mitigation Stakeholders in the CNMI.

Local Island Government Responsibilities

The principle role of the CNMI Mayoral Offices is to recognize that hazards may exist in their communities and thus must champion the necessity to initiate mitigative action. In protecting their citizens from hazard risks, these local governments must enact and enforce building codes and other regulatory measures to protect life and property. It is also the role of local government to make the public aware of hazards that presents risks to people and property.

7.6 Private Sector and NGOs Hazard Mitigation Planning

The integration of private sector and non-governmental organizations (NGOs) interest is desired in the development of the SSMP and other state plans and assessments. NGOs including but not limited to the Saipan Chamber of Commerce, Volunteer Organizations Active in Disaster (VOAD), and the Hotel Association of the Northern Mariana Islands (HANMI) have the potential to greatly enhance state capabilities with their resources. However for the 2014 update, participation was limited to government organizations and a single non-profit organization, American Red Cross. In the interest of developing an approvable plan within a short time frame, participation was confined to agencies with readily available information and points of contact. Most of these entities were government organizations.

For future versions of the SSMP, discussions with private sector and NGO participants will focus on identifying, if any, existing and proposed hazard mitigation plans and policies that are utilized with their organizations. Further, if there are potential public-private partnerships that can be established to develop specific projects (i.e. shoreline protection that yields a benefit for a high end tourist facility as it is in the public interest to protect economic generators), these will be included in future updates to the SSMP as well.

8.0 – Prioritization of Mitigation Actions

For the 2010 SSMP, the Hazard Mitigation Committee determined that the prioritization of specific hazard mitigation actions would be conducted among local island representative(s) and that the results of these prioritization exercises would not be collectively combined to produce an overall State list. The planning team discussed this with each HMC member and a consensus was reached that the State's role is to support the issues that are inherent and unique to each island community and as such, the needs and recommended actions should be addressed on an island-by-island basis. A similar approach was taken for the 2014 SSMP.

As noted previously in Section 7 during discussion of the hazard mitigation action categories, participants in the 2014 update collectively decided to develop new mitigation actions in place of those listed in the 2010 SSMP. This decision was made to address planning and information gaps at the agency level resulting from employee turnover between the 2010 and 2014 update process. During technical assistance provided by FEMA Region IX staff in May 2014, agency representatives were guided through the process of identifying allowable projects, creating concise justifications, and indicating possible sources of funding. This TA enabled representatives to go back to their respect agencies and work with other SMEs to propose projects that addressed their most significant needs. A follow-up meeting was scheduled in June 2014 to continue development of these mitigation actions and to include participants that were not present during FEMA Region IX TA.

Participants were asked to submit, at most, 5 mitigation actions that were priorities to their respective agencies. A maximum number of submissions were used to ensure that timelines were met and that the participating agency gave careful consideration to its submitted actions.

8.1 Municipal Priorities

The CNMI is comprised of 4 municipalities: Saipan, Tinian, Rota, and the Northern Islands. While the former 3 are single land masses, the municipality of the Northern Islands consists of 10 smaller islands with little to no inhabitants. The prioritized lists of mitigation actions for each municipality was submitted through the respective Office of the Mayor, who have the overall responsibility of municipal matters, including state agencies with local presence on their islands. In the case of the Saipan Mayor's Office, submitted mitigation actions are more specific to agency needs as opposed to broader municipal challenges due to the fact that Saipan is the seat of government for the CNMI, with all state agencies located on the island. This enables those agencies to provide hazard mitigation actions directly to HSEM and other planning participants, and affords the Saipan's Mayor Office to address agency-level capabilities. Copies of mitigation actions submitted to HSEM are included in **Appendix Y**.

A summary of municipal and state agency submisions are included below:

Saipan

The mitigation actions submitted by the Saipan Mayor's Office focused primarily on physical hardening of two facilities: the Saipan Animal Shelter and the Lower Base Operations Facility. Retrofitting and hardening these locations allows the Mayor of Saipan to protect impounded animals, as well as heavy equipment used for general village maintenance and during disasters.

Tinian

The island of Tinian submitted its mitigation actions through the Office of the Mayor. The key priority for the island is hardening critical facilities to protect property and lives. Actions include the installation of shutters, portable generators, and warning systems at public schools used as shelters during disasters, hardening of the Tinian Airport against flying debris, and the hardening of the CPA Maintenance Building used as a staging area for resources during state and federal disaster activities.

Rota

Mitigation actions for the island of Rota were submitted through the Office of the Mayor, as well. Priorities for mitigative actions focused on addressing water systems, early warning systems, and shelters used during disasters. Three critical water systems were prioritized for hardening: the CUC water reservoirs in the villages of Sinapalo and Ka'an, as well as the water tank at the Rota Health Center. Typhoon shutters at the Aging Center were prioritized to mitigate damage against wind and flying debris since the facility is a key shelter for the island. Additionally, portable generators at both the Aging Center and Sinapalo Elementary School were submitted as actions in order to provide power and water to residents seeking shelter at these two facilities. Lastly, the municipality prioritized maintenance and upgrades on its Early Warning System (i.e. array of sirens/speakers). Rota is currently the only municipality within the CNMI with a wide-area warning system.

Northern Islands

The mitigation actions submitted by the Northern Islands Mayor's Office (NIMO) focused on the unique needs of individual islands with inhabitants and communications capabilities with the other municipalities of the CNMI. Plans include retrofitting the water well on Pagan to protect the residents' primary water source and hardening the existing church used as a shelter. For the island of Alamagan, NIMO hopes to construct a safe house that serves as a shelter from disasters such as typhoons and volcanic activity. On Agrigan, the current priority is to harden the island's dispensary facility that can potentially serve as a shelter for residents. Lastly, NIMO prioritized the acquisition of new single-sideband radios to maintain communication with state agencies during disasters, as well as a day-to-day basis. The geographic challenges posed by the different islands comprising the Northern Islands municipality make communication a critical lifeline service.

8.2 State Agencies

Over the course of the 2014 SSMP update, state agencies submitted actions that would mitigate against damage to life and property within their respective areas of responsibility and that would increase their effectiveness in providing necessary services to affected victims, areas, or other state agencies. Representatives who submitted mitigation actions on behalf of state agencies were instructed to account for the needs of their counterparts across the entire CNMI, such as municipal branches of their agencies on the islands of Tinian and Rota. A total of 9 state agencies and 1 non-profit organization submitted mitigation action worksheets as part of the 2014 SSMP update. They include:

- The American Red Cross
- CNMI Bureau of Environmental and Coastal Quality
- Commonwealth Health Center Corporation
- Commonwealth Ports Authority
- Commonwealth Utilities Corporation
- Department of Community and Cultural Affairs
- Department of Public Safety – Division of Fire
- Department of Public Safety – Division of Police
- CNMI Judiciary
- CNMI Public School System

9.0 – Plan Evaluation and Maintenance

The CNMI Standard State Mitigation Plan (SSMP) is a living document that requires updating once every 5 years according to the Final Rule outlined in 44 CFR Part 201. During the initial development of the plan and its subsequent update, a local HMC review of a pre-final form of the plan was conducted. Though the plan has been formally approved, the CNMI government recognizes that this report is based upon the best information that was available by the deadlines for submission to the CNMI and to FEMA for review and approval. As new data becomes available, the SSMP will be revised and updated at prescribed time intervals. There is recognition that the initial plan and its subsequent update contain data gaps that can be addressed with future studies and analyses as funding becomes available.

According to 44 CFR Part 201.4 (c)(5), the key elements of the plan evaluation and update process include:

- An established method and schedule for monitoring, evaluating and updating the plan.
- A system for monitoring implementation of mitigation measures and project closeouts.
- A system for reviewing progress on achieving goals as well as activities and projects identified in the Mitigation Strategies

FEMA Guidance also requires that the method and schedule for evaluating, monitoring, and updating the plan include in the previously approved plan be reviewed for successes and challenges and that any changes to the process are documented. A schedule for the monitoring, evaluating, and updating of the current plan over the next 5 years is also required.

9.1 Review of 2010 SSMP Maintenance Plan

As outlined in the 2010 SSMP, the procedures for plan maintenance include:

- Prepare a draft of the annual report by September of every year and present the draft to each island Hazard Mitigation Committee for review. Although previously, a Planning (Steering) Committee had not been formally established due to staff turnover and competing priorities on the limited number of EMO planning staff assigned multiple responsibilities, EMO needs to hire a dedicated staff to manage the hazard mitigation program.

- By March of every other year, prepare draft revisions to the mitigation plan based on the annual reports and its own independent research. The Planning Committee will review the draft revisions. The EMO will prepare final revisions by May of Year Three allowing time for any last minute changes to the budget as required by the plan revisions.

- The updating process will be a means to keep the Office of the Governor, the respective Mayoral Offices, and the CNMI legislature informed on hazard mitigation efforts. A standard resolution will be drafted for the legislature to adopt the revisions to the mitigation plan or the Governor may issue an Executive Order adopting it, whichever is more practical. If no revisions are necessary during the ongoing review period, a resolution or EO may be drafted that recites that determination.

Since the approval of the 2010 SSMP, responsibility of plan maintenance shifted from the former CNMI Emergency Management Office (and contractors hired through available funding) to internal staff of the now CNMI Homeland Security and Emergency Management. This presented numerous challenges in maintaining and evaluating the plan using the methods and schedule prescribed in the 2010 SSMP, such as:

- Employee turnover at state agencies
- Loss of historical knowledge between 2010 and 2014 SSMP updates
- Ongoing lack of a State Hazard Mitigation Officer
- Inexperience with plan update processes among HSEM staff and participating agencies

Despite these challenges, progress was made in key areas of updating the 2010 SSMP and aligning with the processes outlined in its maintenance plan. These include:

- Formation of the CNMI Statewide Emergency Response Commission (SERC) in place of the former Hazard Mitigation Committee
- Increased knowledge base and staffing for hazard mitigation activities stemming from merging of CNMI Emergency Management Office and the Office of Homeland security (now HSEM)
- Developed new sets of mitigation actions through coordination with municipal and state agency representatives
- Refined hazard mitigation categories and funding criteria to prioritize available funds for mitigation actions
- Validated 2010 Goals and Objectives against other, more recent risk assessments and state strategy documents
- Reviewed, validated, and added to the 2010 list of Threats and Hazards
- Maintained participation from key partners at the state and federal level, including FEMA Region IX

Key mitigation projects completed since the 2010 SSMP include:

Project	Source	Date Completed
CNMI EMO State Mitigation Plan	PDM	July 2010
PSS Drainage System Improvement	HMGP	November 2010
CUC/Water Task Force Water Well Hardening	PDM	March 2011

The 2014 SSMP maintenance procedures were developed in consideration of the challenges and progress since the 2010 Plan, and incorporate plan implementation and maintenance enhancements possible through new planning groups and current data.

9.2 Monitoring, Evaluating, and Updating the Plan

As discussed in Section 3 the 2014 Plan update has been developed primarily through SERC/LEPC, designated by Governor Eloy Inos to oversee the regular review and maintenance of the SSMP. Through the guidance and coordination of the HSEM Planning Division and an outside contractor, the SERC will meet bi-annually (twice per year) to support implementation, and discuss amendments to the established plan maintenance procedures as needed. Continuous participation from all 4 municipalities is crucial to the monitoring and evaluation of the SSMP.

The proposed plan implementation, maintenance, and update process shall include the following:

- Tracking progress on state-level (agency) mitigation activities
- Developing technical plan updates
- Documenting and supporting local hazard mitigation planning
- Documenting and tracking grant programs; develop grant applications for available funding with participating mitigation stakeholders
- Incorporating relevant data and information developed through studies and research at other state agencies (i.e. GIS data, loss estimates, air and water quality reports, etc.)

9.3 Monitoring and Evaluating Mitigation Actions

As the state-administering agency for DHS/FEMA preparedness funds in the CNMI, HSEM will work with recipients of grant funds to implement mitigation actions as proposed in this plan. Grant recipients are required to submit bi-annual progress reports on the status of their project(s). The SHMO or HSEM coordinating staff will work closely with the recipients to ensure all requirements of the project and/or program are met. Progress reports for active projects will be presented at bi-annual SERC meetings for review, whereas updates were previously presented to the CNMI Hazard Mitigation Committee. Though the planning structures for the 2014 SSMP are updated, the process remains largely unchanged.

HSEM Grants Management staff in coordination with the SHMO will be responsible for developing a system or using existing tools to monitor hazard mitigation grant awards and project milestones through application, implementation, and closeout.

9.4 Tracking Progress for Mitigation Goals and Objectives

As part of bi-annual hazard mitigation progress reports, implementing agencies must demonstrate how projects provide new capabilities or augment existing ones. Additionally, the reports must indicate which SSMP Goals and Objectives are directly impacted by the work being performed. This information will be reviewed at the bi-annual SERC meetings and provide insight into opportunities to collaborate on existing and/or future projects.

These metrics also provide valuable input to the state’s THIRA, SPR, and Homeland Security Strategy update process.

9.5 Updating the 2014 SSMP

As a guiding document for hazard mitigation planning for the state, the SSMP must be kept current with all relevant information. This includes new mitigation priorities, evaluation of existing ones, or new research and data relating to components such as loss estimates, critical infrastructure, and key resources in the CNMI. Plan updates must all account for changes in legislation or regulatory requirements at the federal, state, and local level.

Whereas previous plans were given a three-year period of approval, jurisdictions are now afforded a 5-year period of approval as of April 2014. By the beginning of the second year, HSEM staff and the SHMO will coordinate with the SERC and participating agencies to begin a thorough update of the existing 2014 SSMP. This includes identifying any additional resources that will result in a more comprehensive plan. Actions will include identifying available grant funding and procuring contract support through competitive processes. This helps augment planning and coordination support for the duration of the update process.

As part of the plan update, HSEM, SERC, and all mitigation planning participants will review the following for required or appropriate changes:

- Changes in federal, state, and local legislation or regulatory requirements
- Progress towards completing mitigation actions listed in the 2014 SSMP
- Changes in development
- Shift in hazard priorities or addition/removal of existing hazards
- Turnover at state agencies with critical information and historical knowledge of hazard mitigation planning
- New research and information in key areas (i.e. GIS data, loss estimates, air and water quality reports, etc.)
- Available local and federal funding sources (i.e. capital improvement project funds and grant programs)
- Changes in overall hazard mitigation Goals and Objectives; alignment with other threat assessments and state hazards documentation

The plan update will combine the outcomes of regular planning meetings and new findings and research to develop an accurate, up-to-date SSMP.

Following submission, review, and approval by DHS/FEMA, the plan will be adopted by the Governor of the CNMI for an additional five years.

10.0 References

American Red Cross, Northern Mariana Islands Chapter

n.d. White Paper on Disaster Mitigation: The American Red Cross Committed to Helping Families and Communities Safer from the Ravages of Natural Hazards. 6 pp.

n.d. Against the Wind: Protecting your Home from Hurricane Wind Damage.. 5 pp.

1999 Disaster Mitigation Advocacy Guide (December). 5 pp.

Bank of Hawaii

2003 Commonwealth of the Northern Marianas: Economic Report. Bank of Hawaii: Honolulu.

Commonwealth Development Authority

2001 CNMI Economic Indicators, 4thQuarter. CDA: Saipan, MP.

Commonwealth of the Northern Mariana Islands, Coastal Resources Management Office (CRMO)

2002 Coastal Hazard Identification and Management Report (DRAFT). CRMO: Saipan, MP.

Commonwealth of the Northern Mariana Islands, Department of Commerce

2001 Commonwealth of the Northern Marianas Statistical Yearbook. Central Statistics Division: Saipan, MP.

2001 CNMI Quarterly Economic Indicators October-December 2001. DOC: Saipan, MP.

Commonwealth of the Northern Mariana Islands, Emergency Management Office

2003 Commonwealth of the Northern Marianas Hazard Mitigation Grants Program Plan (March). EMO: Saipan, MP.

2000 Emergency Operations Plan (January). EMO: Saipan, MP.

Commonwealth of the Northern Mariana Islands, Department of Community & Cultural Affairs

1996 Protecting Our Past: A Guide to Historic Preservation Requirements in the Commonwealth of the Northern Mariana Islands. Division of Historic Preservation: Saipan.

Commonwealth of the Northern Mariana Islands, Marianas Visitor Authority

2005 Hotels and Motels in the CNMI. MVA: Saipan.

Commonwealth of the Northern Mariana Islands, Office of the Governor

2003 Commonwealth of the Northern Mariana Islands Flood Hazard Mitigation Plan (Draft- December). Prepared by Allied Pacific Environmental Consulting & Azuma Ltd: Saipan.

Commonwealth Utilities Corporation

2006 Community Utility News Consumer Confidence Report, July.

Federal Emergency Management Agency, Region IX (FEMA)

2003 U.S. Islands Mass Management Tool, Final for Tinian, Rota, and Northern Islands. Recorded Disk. Prepared by Group 70 International, Inc.

2002 U.S. Islands Mass Management Tool, Final for Kauai-Saipan-Guam. Recorded Disk. Prepared by PBS&J. 2002 National Flood Insurance Program, Program Description (August). Washington D.C.

2003 Island Task Force Report: A Briefing on Hurricane Evacuation Study Needs in the United States Island Communities. Prepared for the Interagency Coordinating Committee on Hurricanes: Washington, D.C.

1998 Hazard Mitigation Survey Team Report: Supertyphoon Keith & Typhoon Paka (DR-1192- MP & DR-1194-MP). Commonwealth of the Northern Mariana Islands.

1998 The Island of Kauai: Hurricane Vulnerability Study, Impact of Hurricane Iniki Strength Wind on Typical Dwelling Structures on Kauai. Prepared for State of Hawaii, Department of Defense. Shigemura, Lau, Sakanashi, Higuchi & Associates, Inc.: Honolulu.

1991 Flood Insurance Rate Map, Panels 3, 4, 10, 11, 15, 30. FEMA: Washington D.C.

1986 Floodproofing Non-Residential Structures. FEMA 102: Washington D.C.

1984 Elevated Residential Structures. FEMA 54: Washington, D.C.

FEMA; Government of Guam

1998 Building to Minimize Typhoon Damage: Guam Strategies for Policymakers. San

Francisco & Guam.

1998 Building to Minimize Typhoon Damage: Inspecting, Maintaining, and Repairing Buildings. San Francisco & Guam.

1998 Building to Minimize Typhoon Damage: In-residence Shelter Design. San Francisco & Guam.

1998 Building to Minimize Typhoon Damage: Design Guidelines for Essential Facilities. San Francisco & Guam.

1998 Building to Minimize Typhoon Damage: Design Guidelines for Buildings. San Francisco & Guam.

1998 Building to Minimize Typhoon Damage: Anchoring Shipping Containers. San Francisco & Guam.

Guam Coastal Management Program

2003 Emergency Response for Impacts on the Environment from Natural Disasters: Reference Study Guide for Plan Development. Prepared by Michael L. Ham, Environmental Consultant. Final Report. Guam. Lander, James F.; Whiteside, Lowell S.

2004 "The Tsunami History of Guam: 1849-1993." Science of Tsunami Hazards. Volume 20, Number 3. University of Colorado, CIRES, Boulder. Miller, Kelli

2001 "Modifying the Monsters: Can We Really Humble Hurricanes, Tame Tornados, and Halt Hailstorms?" Weatherwise. November/December. Heldref Publications: Washington D.C.

Minton, Palmer

2006 "Historical Record of Tropical Cyclones of Saipan, Commonwealth of the Northern Mariana Islands (1945 – 2005)." Technical Report prepared for the National Park Service.

Shea, Eileen L.; et al

2001 Preparing for a Changing Climate: The Potential Consequences of Climate Variability and Change. Prepared for the U.S. Global Change Program. East-West Center: Honolulu.

SMS

1995 County of Kauai Post-Iniki Housing Study. Prepared for the County of Kauai. SMS: Honolulu. State of Hawaii, Hawaii State Civil Defense 2003 Mitigation for Emergency

Managers: An Overview of Community Hazard Mitigation. Honolulu.

United States, Department of Agriculture

1989 Vegetation Survey of Rota, Tinian, and Saipan, Commonwealth of the Northern Mariana Islands. Resource Bulletin: PSW -27. Berkeley, California.

United States, Department of Commerce

2002 Population and Housing Profile: 2000 Census of Population and Housing, The Commonwealth of the Northern Marianas Islands. Washington D.C.

United States, Department of the Interior, U.S. Geological Survey

1986 The 1983 Drought in the Western Pacific: U.S. Geological Survey Open File Report 85-418. USGS: Honolulu.

Water and Environmental Research Institute of the Western Pacific

1999 Typhoon Vulnerability Study for Guam. WERI Technical Report 85. WERI: University of Guam.

1999 A Scale Relating Tropical Cyclone Wind Speed to Potential Damage for the Tropical Pacific Ocean Region: A User's Manual. WERI Technical Report 86 (2nd edition). WERI: University of Guam.

1998 Seismic Vulnerability on Guam. WERI Technical Report 77. WERI: University of Guam.

Climate Change Reference Profile

Allan, J., & Komar, P. (2000). Are ocean wave heights increasing in the eastern North Pacific? *Eos.Transactions of the American Geophysical Union. 81*(47), 561–567. doi:10.1029/EO081i047p00561-01.

Australian Bureau of Meteorology & CSIRO. (2011). Climate change in the Pacific: Scientific assessment and new research. Volume 1: Regional overview. Volume 2: Country reports. http://www.cawcr.gov.au/projects/PCCSP/

Carruth, R.L. (2003). Groundwater Resources of Saipan, Commonwealth of the Northern Mariana Islands. USGS Water Resources Investigations Report 03-4178.

Chou, Lucia W. (1989). Typhoon Water Surface Analysis for West Coast of Saipan. U.S. Army Corps of Engineers Miscellaneous Paper CERC-89-12. U.S. Army Waterways Experiment Station, Vicksburg, Mississippi.

Chowdhury, Md. R., Chu, P-S., Zhao, X., Schroeder, T.A., Marra, J.J. (2010). Sea level extremes in the U.S.-Affiliated Pacific Islands—a coastal hazard scenario to aid in decision analyses. *Journal of Coastal Conservation*. Springer Online. DOI 10.1007/s11852-010-0086-3

Fletcher, C. and Richmond, B. (2010). Climate Change in the Federated States of Micronesia: Food and Water security, Climate Risk Management, and Adaptive Strategies. Centre for Island Climate Adaptation and Policy (ICAP), University of Hawaii Sea Grant College Program, Hawaii.

Graham, N.E., & Diaz, H.F. (2001). Evidence for Intensification of North Pacific Winter Cyclones since 1948. *Bulletin of the American Meteorological Society*, *82*: 1869–1893. doi: http://dx.doi.org/10.1175/1520-0477(2001)082<1869:EFIONP>2.3.CO;2

Greene, R., editor. 2014. *Climate Change Vulnerability Assessment for the Island of Saipan*. Bureau of Environmental and Coastal Quality – Division of Coastal Resources Management, Commonwealth of the Northern Mariana Islands. Saipan, MP.

Hamlington, B. D., R. R. Leben, M. W. Strassburg, R. S. Nerem, & K.Y. Kim. (2013). Contribution of the Pacific Decadal Oscillation to global mean sea level trends. *Geophysical Research Letters*, 40: doi:10.1002/grl.50950.

Intergovernmental Panel on Climate Change. (2012). *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp.

Intergovernmental Panel on Climate Change. (2013). *Climate Change 2013: The Physical Science Basis - Approved Summary for Policy Makers*. Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC: Switzerland. Retrieved from http://www.climatechange2013.org/.

Iwao, K., Inatsu, M., & Kimoto, M. (2012). Recent Changes in Explosively Developing Extratropical Cyclones over the Winter Northwestern Pacific. *Journal of Climate*, *25*: 7282–7296.doi: http://dx.doi.org/10.1175/JCLI-D-11-00373.1

Keener, V. W., Marra, J. J., Finucane, M. L., Spooner, D., & Smith, M. H. (Eds.). (2012a). *Climate Change and Pacific Islands: Indicators and Impacts*. Report for the 2012 Pacific Islands Regional Climate Assessment. Washington, DC: Island Press.

Keener, V. W., Izuka, S. K., & Anthony, S. (2012b). Freshwater and Drought on Pacific Islands. In V. W. Keener, J. J. Marra, M. L. Finucane, D. Spooner, & M. H. Smith (Eds.). *Climate Change and Pacific Islands: Indicators and Impacts*. Report for the 2012 Pacific Islands Regional Climate Assessment (PIRCA). Washington, DC: Island Press.

Lander, M.A. (2004). Rainfall Climatology for Saipan: Distribution, Return-periods, El Niño, Tropical Cyclones, and Long-term Variations. Technical Report 103, Water and Environmental Research Institute of the Western Pacific University of Guam.

Lander, M. A., & Guard, C. P. (2003). *Creation of a 50-year rainfall database, annual rainfall climatology, and annual rainfall distribution map for Guam* (Technical Report No. 102). University of Guam, Water and Environmental Research Institute of the Western Pacific. http://www.weriguam.org/reports/item/creation-of-a-50-year-rainfall-database-annual-rainfall- climatology-and-annual-rainfall-distribution-map-for-guam

Mimura, N. (1999). Vulnerability of island countries in the South Pacific to sea level rise and climate change. *Climate Research*, *12*, Nos. 2–3, pp.137–143.

Mimura, N., Nurse, L., McLean, R., Agard, J., Briguglio, L., Lefale, P., Payet, R. and Sem, G. (2007). Small islands. In Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J. and Henson, C.E. (Eds.): *Climate Change 2007: Impacts, Adaptations and Vulnerability*, pp.687–716.

Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge Press, Cambridge.

Marra, J. J., Merrifield, M. A., & Sweet, W. V. (2012). Sea Level and Coastal Inundation on Pacific Islands. In V. W. Keener, J. J. Marra, M. L. Finucane, D. Spooner, & M. H. Smith (Eds.). *Climate Change and Pacific Islands: Indicators and Impacts*. Report for the 2012 Pacific Islands Regional Climate Assessment (PIRCA). Washington, DC: Island Press.

Mora C., Wei C-L., Rollo A., Amaro T., Baco AR., et al. (2013a). Biotic and Human Vulnerability to Projected Changes in Ocean Biogeochemistry over the 21st Century. *PLoS Biology 11*(10): e1001682. doi:10.1371/journal.pbio.1001682

Mora C., et al. (2013b). The Projected Timing of Climate Departure from Recent Variability. *Nature: 502*, 183–187 doi:10.1038/nature12540

Pfeffer, W. T., Harper, J.T., & O'Neel, S. (2008). Kinematic Constraints on Glacier Contributions to 21st-Century Sea-Level Rise. *Science*, vol. 321, p. 1340-1343.

Ruggiero, P. (2013). Is the Intensifying Wave Climate of the U.S. Pacific Northwest Increasing Flooding and Erosion Risk Faster Than Sea Level Rise? *Journal of Waterway, Port, Coastal, and Ocean Engineering*, *139*: 88-97. DOI: 10.1061/(ASCE)WW.1943-5460.0000172.

Starmer, J., Asher, J., Castro, F., Gochfeld, D., Gove, J., Hall, A., Houk, P., Keenan, E., Miller, J., Moffit, R., Nadon, M., Schroeder, R., Smith, E., Trianni, M., Vroom, P., Wong, K. & Yuknavage, K. (2008). The State of Coral Reef Ecosystems of the Commonwealth of the Northern Mariana Islands. Prepared for the NOAA Coral Reef Conservation Program.

U.S. Army Corps of Engineers. (2011). Sea Level Change Considerations for Civil Works Programs. U.S. Army Corps Circular 1065-2-212. http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf
van Hooidonk, R. J., Maynard, J. A., Manzello, D., & Planes, S. (2013). Opposite latitudinal gradients in projected ocean acidification and bleaching impacts on coral reefs. *Global Change Biology*. doi:10.1111/gcb.12394

Vecchi, G.A., Soden, B.J., Wittenberg, A.T., Held, I., Leetmaa, A. & Harrison, M.J. (2006). Weakening of tropical Pacific atmospheric circulation due to anthropogenic forcing. *Nature 441*, 73-76. doi:10.1038/nature04744.

Chou, L.W. (1989). Typhoon Water Surface Analysis for West Coast of Saipan, Mariana Islands. U.S. Army Corps Paper CERC-89-12.

NOAA Coastal Services Center. (2011). Frequent Questions: Digital Coast Sea Level Rise and Coastal Flooding Impacts Viewer. www.csc.noaa.gov/digitalcoast .

NOAA Coastal Services Center. (2010). Detailed Methodology for Mapping Sea Level Rise Inundation. www.csc.noaa.gov/digitalcoast .

Storlazzi, C.D., Berkowitz, P., Reynolds, M.H., and Logan, J.B. (2013). Forecasting the impact of storm waves and sea-level rise on Midway Atoll and Laysan Island within the Papahānaumokuākea Marine National Monument—a comparison of passive versus dynamic inundation models: U.S. Geological Survey Open-File Report 2013-1069, 78 p.

U.S. Army Corps of Engineers. (2011). Sea Level Change Considerations for Civil Works Programs. U.S. Army Corps Circular 1065-2-212. http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf .

Web Resources

ftp://ghtftp.cr.usgs.gov/pub/hazmaps/

http://atlas.pdc.org/APNHVA/kickoff.html

http://cnmi-guide.com/

http://earthquake.usgs.gov/activity/past.html

http://geohazards.cr.usgs.gov/

http://libweb.hawaii.edu/ttp/ttpi.html

http://lumahai.soest.hawaii.edu/Enso/subdir/update.dir/Update-4thQtr1998/peac.html

http://shoals.sam.usace.army.mil/Pages/marianas2001.htm

http://volcano.und.nodak.edu/vwdocs/volc_images/southeast_asia/mariana/basic_geology.html

http://vulcan.wr.usgs.gov/Volcanoes/NorthPacific/description_north_pacific_volcanic_islands.html

http://weather.unisys.com/hurricane/index.html

http://www.aoml.noaa.gov/hrd/tcfaq/D1.html

http://www.app1.fema.gov/library/lib06.htm

http://www.census.gov/

http://www.cnmi.net/

http://www.cnmihsem.gov.mp

http://www.commerce.gov.mp/csd/pdfs/map%2000%20tin%20dist.pdf

http://www.coralreef.gov/

http://www.crees.org/

http://www.crees.org/economics/CNMIagprodreport.pdf

http://www.crees.org/ecology/ch19_2.pdf

http://www.crid.or.cr/crid/CD_Alerta_Temprana/pdf/eng/doc14524/doc14524-2a.pdf

http://www.disasterrelief.org/

http://www.doi.gov/oia/Islandpages/cnmimain.htm

http://www.drought.unl.edu/index.htm

http://www.drought.unl.edu/plan/plan.htm

http://www.eastwestcenter.org/pidp-ab.asp

http://www.emergencyemail.org/

http://www.fema.gov/doc/library/nfipdescrip.doc

http://www.fema.gov/fima/how2.shtm

http://www.fema.gov/fima/planresource.shtm

http://www.fema.gov/hazards/

http://www.fema.gov/library/prepandprev.shtm

http://www.fema.gov/pdf/library/haz_cost.pdf

http://www.flagleremergency.com/ftp/femaguides.asp

http://www.fs.fed.us/

http://www.fws.gov/

http://www.globalsecurity.org

http://www.hazardmaps.gov/atlas.php

http://www.hazus.org/

http://www.hazus.org/HIHUG/index.htm

http://www.mpqhf.org/mpqhf_web/publications/documents/annualreports/HI2002AR.pdf

http://www.mvariety.com/

http://www.mymarianas.com/

http://www.nass.usda.gov/census/census97/cnmi/cnmi.htm

http://www.ncdc.noaa.gov/oa/climate/research/fire02.html

http://www.ngdc.noaa.gov/seg/hazard/hazards.shtml

http://www.nhc.noaa.gov/

http://www.nmcnet.edu/

http://www.noaa.gov/wx.html

http://www.northernislands.net/gallery/photo.html

http://www.oas.org/en/cdmp/

http://ocrm.nos.noaa.gov/pdf/wetlands.pdf

http://www.odci.gov/cia/publications/factbook/geos/cq.html

http://www.pacificislands.cc/pm12004/

http://www.pacificweb.org/

http://www.pmel.noaa.gov/

http://www.prh.noaa.gov/itic/

http://www.saipan.com/gov/

http://www.saipantribune.com/

http://www.sgma-saipan.org/stats/er_00.htm

http://www.soest.hawaii.edu/coasts/cgg_main.html

http://www.tinian.org/government/gov.html

http://www.usgcrp.gov/usgcrp/nacc/education/islands/default.htmhttp://www.vic-info.org/regionstop.nsf/0/3ce964355422d07f8a2568a800648f88?OpenDocument

http://www2.cr.nps.gov/pad/stateplans/mariana.htm http://www3.pdc.org/gui/login.jsp

https://disasterhelp.gov/portal/jhtml/index.jhtml

http://water.usgs.gov/wrri/02-03grants_new/prog-compl-reports/2003GU18B.pdf

http://fhm.fs.fed.us/fhh/fhh-05/pac_islands/pi_05.pdf

http://www.cawcr.gov.au/projects/PCCSP/

http://dx.doi.org/10.1175/1520-0477(2001)082<1869:EFIONP>2.3.CO;2

http://www.climatechange2013.org/.

http://dx.doi.org/10.1175/JCLI-D-11-00373.1

http://www.weriguam.org/reports/item/creation-of-a-50-year-rainfall-database-annual-rainfall-climatology-and-annual-rainfall-distribution-map-for-guam

http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf

www.csc.noaa.gov

http://www.climatecnmi.net/p/contact.html

www.csc.noaa.gov/digitalcoast

www.csc.noaa.gov/digitalcoast

http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf

http://corpsclimate.us/ccacesl.cfm

Appendix A – Acronyms

Areas of Particular Concern	APC
American Red Cross	ARC
Bureau of Environmental and Coastal Quality	BECQ
Boating Safety Section	BSS
Community Assistance Program – State Support Series Element	CAP – SSSE
Commonwealth Development Authority	CDA
Catalog of Federal Domestic Assistance	CFDA
Commonwealth Health Center Corporation	CHCC
Capital Improvement Projects	CIP
Commonwealth of the Northern Mariana Islands	CNMI
Commonwealth Ports Authority	CPA
Core Planning Group	CPG
Coastal Resource Management	CRM
Coastal Resource Management Office	CRMO
NFIP Community Rating System	CRS
Commonwealth Utilities Corporation	CUC
Community Vulnerability Assessment	CVA
Division of Coastal Resource Management	DCRM
Division of Environmental Quality	DEQ
Department of Land and Natural Resources	DLNR
Disaster Mitigation Act	DMA
Disaster Mitigation Planning Process	DMPP
Department of Public Lands	DPL
CNMI Department of Public Safety	DPS
CNMI Department of Public Works	DPW
Emergency Management Office	EMO
Emergency Management Performance Grants	EMPG
Emergency Management System	EMS
El Nino Southern Oscillation	ENSO
Emergency Operations Center	EOC
Emergency Operations Plan	EOP
Environmental Protection Agency	EPA
Emergency Planning and Community Right-To-Know Act	EPCR
Federal Emergency Management Agency	FEMA
Flood Insurance Rate Map	FIRM
Flood Insurance Studies	FIS
Flood Mitigation Assistance Program	FMAP
Facilities Profiles Report	FPR
U.S. Fish and Wildlife Service	FWS

Geographic Information System	GIS
Global Mean Sea Level	GMSL
Hazard Mitigation Committee	HMC
Hazard Mitigation Grant Program	HMGP
CNMI Homeland Security and Emergency Management	HSEM
U.S. Department of Housing and Urban Development	HUD
International Building Code	IBC
Intergovernmental Panel on Climate Change	IPCC
Local Emergency Planning Committee	LEPC
Meteorological Aviation Reports	METAR
Million Gallons Per Day	MGD
Mean High Water Mark	MHWM
Mariana Limestone	ML
Modified Mercalli Intensity Scale	MMI
Mass Management Tool – Islands	MMT
National Flood Insurance Program	NFIP
National Hurricane Program	NHP
Northern Marianas College	NMC
National Oceanic Atmospheric Administration	NOAA
Ocean Acidification	OA
Office of Management and Budget	OMB
Pacific ENSO Applications Center	PEAC
Pacific Medical Center	PMC
Pacific Tsunami Warning System	PTWS
Response Activities Coordinators	RAC
Risk Index	RI
Republic of the Marshall Islands	RMI
Republic of Palau	RP
Risk and Vulnerability Assessment	RVA
State Coordinating Officer	SCO
State Emergency Response Commission	SERC
Saipan Harbor Improvement Project	SHIP
State Hazard Mitigation Officer	SHMO
Sea Level Change	SLC
Sea Level Rise	SLR
Standard State Mitigation Plan	SSMP
Sea Surface Temperature	SST
Saipan Vulnerability Assessment	SVA
Terminal Aerodome Forecasts	TAF
Taking Care of Their Own	TCTO
Tapochau Limestone	TL
Tinian Pyroclastic Rocks	TPR

Unconsolidated Sediments	UCS
Uniform Fire Code	UFC
U.S. Army Corps of Engineers	USACE
Coordinated Universal Time (Zulu or Greenwich Mean Time)	UTC
Water and Environmental Research Institute	WERI
Western North Pacific	WNP

Appendix B – Planning Process Documents

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS

Eloy S. Inos
Governor

Jude U. Hofschneider
Lieutenant Governor

DIRECTIVE

Date: 26 SEP 2014
No. 2014-04

TO : ALL DEPARTMENTS AND AGENCIES

FROM: GOVERNOR

SUBJECT: Adoption of Updated Standard State Mitigation Plan for the Commonwealth of the Northern Mariana Islands

This Directive formally adopts the updated 2014 Standard State Mitigation Plan (SSMP) for the Commonwealth of the Northern Mariana Islands in compliance with the Disaster Mitigation , 42 U.S.C. § 5165, which requires every State and Territory of the United States of America to develop, update and obtain approval of its SSMP by the Federal Emergency Management Agency (FEMA). DMA 2000 requires that the SSMP be updated at least once every five years. Our updated 2014 SSMP fulfills this requirement, built upon our 2010, 2007, and 2004 SSMP editions approved by FEMA.
Our SSMP was updated by the Office of Homeland Security and Emergency Management Office (HSEM), as well as the State Emergency Response Commission (SERC).

The process of updating the SSMP provides an opportunity to reassess, update, and promote hazard mitigation that will reduce risks and vulnerabilities to protect human lives and property against natural and man-made hazards. It requires conducting and updating our hazards analyses, risks and vulnerability assessments, and hazard mitigation goals, objectives, and strategies for the CNMI. It also provides an organized and coordinated consistent set of goals for reducing or minimizing the loss to human life and property, major economic disruption, degradation of ecosystems and critical habitats and the destruction of cultural and historical resources from natural disasters.
This adoption of the updated 2014 SSMP gives the CNMI effective strategies that will promote hazard mitigation, reduce vulnerabilities, and ensure that the CNMI can respond to many hazards and threats that affects environmental, cultural, and historical resources.

The updated SSMP ensures that the CNMI has the strategic resources to safeguard public health, maintain public safety and mitigate loss or damage to real property and helps preserve each person's constitutional right to a "Clean and Healthful Environment". NMI Const., Art. I § 9.

By my authority as prescribed under the CNMI Constitution, Article III, Section 10, Governor's Emergency Powers, and Public Law 18-4 which provides the CNMI Government with the ability to prevent, detect, deter, respond, manage, coordinate, recover, and mitigate from an All Hazard or All Threat Incident, I endorse the recommendations of this plan and encourage its timely implementation for the well-being of the people of the CNMI.

ELOY S. INOS

SERC July 18, 2014 Meeting SIGN-IN SHEET

CNMI State Emergency Response Commission and Local Emergency Planning Committee referred to as the "Commission"

DISTRIBUTION LIST:

CNMI Homeland Security and Emergency Management (HSEM), Co-Chair
Marvin K. Seman, ~~Special~~ Assistant mkseman@cnmihsem.gov.mp

Sign: ______ Date: 7/18/2014

Bureau of Environmental and Coastal Quality (BECQ), Co-Chair (Environmental Representative)
Frank Rabauliman, Administrator frabauliman@gmail.com frankrabauliman@deq.gov.mp

Sign: ______ Date: 7/18/14

Department of Public Safety (DPS) Fire Division, Fire & EMS Representative
Thomas Manglona, Fire Chief tmanglona@hotmail.com

Sign: ______ Date: ______

Department of Public Safety (DPS) Police Division, Law Enforcement Representative
Pete Leon Guerrero, Captain plguerrero@dps.gov.mp

Sign: ______ Date: 18 July 2014

Commonwealth Health Center Corporation (CHCC), Health Representative
Warren Villagomez, Director warren.villagomez@dph.gov.mp

Sign: ______ Date: 7/18/14

Department of Community & Cultural Affairs, Community Representative
Joseph T. Attao, Special Project joseph_attao@yahoo.com

Sign: ______ Date: 7/18/14

Public School System, Youth Representative
Loria Dee Ada Hocog, Youth Representative loriadee.hocog@cnmipss.org loria.hocog@gmail.com

Sign: for Rose I. Ada Hocog Date: 7/18/14

SERC July 18, 2014 Meeting SIGN-IN SHEET

Municipality of Rota, Rota Representative
Tom Quitugua, Chief of Staff tomquitugua@gmail.com

Sign: ______________________ Date: 7/18/14

Municipality of Tinian, Tinian Representative
Don Farrell, Chief Executive Officer donfarrelltinian@gmail.com

Sign: ______________________ Date: ______________________

Municipality of the Northern Islands, Northern Islands Representative
Lee Kaipat, Administrative Assistant lee.kaipat@yahoo.com

Sign: ______________________ Date: 7/18/2014

Member Designee:

Print Name: Rose T. Ada-Hocog

Sign: ______________________ Date: 7/18/14

HSEM Support Personnel:

Ray Dela Cruz, Planner

Sign: ______________________ Date: 07/18/2014

Jeffrey Sanchez, Grants Manager/Planner

Sign: ______________________ Date: 7/18/14

Naomi Ada, Planner

Sign: ______________________ Date: 7/18/14

Juan A. Pua
Act. Fire Chief

7/18/14

State Emergency Response Commission (SERC)

Local Emergency Planning Committee (LEPC)

(2013/2014 SSMP Update)

Agenda

July 18, 2014, 09:00 ~ 11:30

Emergency Operations Center (EOC), Capitol Hill, Saipan, MP

1. Introduction of Members
2. Re Affirm Hazards identified on the 2010 SSMP
   A) typhoon
   B) flooding
   C) earthquake
   D) volcanic eruption
   E) tsunami
   F) drought
   G) wildfire
3. Add Climate Change to the current list of hazards affecting the CNMI
4. Prioritized Mitigation Actions submitted by stakeholders in the CNMI
5. Miscellaneous
6. Next Meeting
7. Adjournment

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
HOMELAND SECURITY AND EMERGENCY MANAGEMENT
OFFICE OF THE GOVERNOR
Honorable Governor Eloy S. Inos
Honorable Lt. Governor Jude U. Hofschneider
Marvin K. Seman, SAHSEM

July 10, 2014

To: See Distribution List

From: Chair, State Emergency Response Commission (SERC/LEPC)

Subject: FY 2013 Standard State Mitigation Plan (SSMP) Update

The Chair of the SERC/LEPC is asking that all Commission members or designees attend the meeting scheduled for July 18, 2014 from 09:00 ~ 11:30. The meeting will be at EOC Executive Room, Capitol Hill. This meeting is to address two (2) issues: 1) Prioritize Mitigation Actions submitted by government agencies, semi-autonomous agencies and NGOs and 2) to validate and add Climate Change as a new hazard to the CNMI.

The representatives for the Municipalities of Tinian and Rota will not be available to attend the in person. Instead, the two members will participate via tele-conference call. We apologize for the inconvenience, but we hope to have quality participation. Ray Dela Cruz will coordinate telephone numbers for those needing to call in.

Attached are the evaluation form for prioritizing the Mitigation Actions and the Mitigation Actions worksheets. The Climate Change profile writes up will be forthcoming via email early next week.

Your participation is appreciated. Should you have any questions please contact Ray Dela Cruz at email rdelacruz@cnmihsem.gov.mp or by phone at 670-287-7160.

Thank you.

Sincerely,

Marvin K. Seman
Chair, SERC/LEPC
Special Assistant, CNMI Homeland Security and Emergency Management

CC: Esther S. Fleming, Special Assistant for Administration

Attachments: Distribution List
Mitigation Action Strategy Worksheet
Evaluation Form

Caller Box 10007, Capitol Hill, Saipan, MP 96950
Telephone: (670) 664-2216 (mainline), (670) 322-9572/9274/8001-3 Facsimile: (670) 664-2218 (mainline), 322-7743
CNMI DISPATCH CENTER (24/7) Tel. No. (670) 237-8000/3 Fax No. (670) 322-9500

StormReady Community Tsunami Ready

06/12/2014

CNMI 2013 Standard State Mitigation Plan (SSMP) Distribution List

No.	Agency	Title	Name	Email Address
1	Gov's Office	Special Assistant for Administration	Esther S. Fleming	esther.fleming@gov.mp
2	NIM	Mayor	Tobias Aldan	mayor_aldan@gmail.com
3	NIMO	Admin. Assistant	Lee Kaipat	lee.kaipat@yahoo.com
4	Judicial	B & F Director	Juan Diego Tenorio	juandiego.tenorio@justice.gov.mp
4	PSS	C.I.P. Coordinator	Rachel Fusco	rachel.fusco@cnmipss.org
5	DCCA	Secretary, DCCA	Laura T. Ogumoro	laura.ogumoro@gov.mp
6	DCCA		Joseph Attao	Joseph_attao@yahoo.com
7	CUC	Acting Exec. Dir.	Alan Fletcher	alan.fletcher@cucgov.org
8	CUC	Safety Officer	Vince Pangelinan	vince.pangelinan@cucgov.org
9	CPA	Acting Exec. Dir.	Maryann Lizama	cpa.mqlizama@pticom.com
10	DPS	Commissioner	James Deleon Guerrero	commissioner@dps.gov.mp
11	MVA	Executive Director	Perry Tenorio	ptenorio@mymarianas.com
12	DPL	Secretary	Pete A. Tenorio	pete.tenorio@dpl.gov.mp
13	DPL		Evelyn Techur	evelyn.techur@dpl.gov.mp
14	DPW	Secretary	Martin Sablan	dpw.secretary@gmail.com
15	DPW	Administrator	Vicente Cabrera	vccabrera_dpw@yahoo.com
16	OMB	Gov's Auth. Rep.	Virginia Villagomez	vvvillagomez@gmail.com
17	OMB	C.I.P.	Leona Sablan	leona.cip@gmail.com
18	ARC	E. S. Director	Paul W. Camacho	paulwilliam.camacho@redcross.org
19	DPH	Director	Warren Villagomez	warrenvillagomez@gmail.com
20	DPH	PHEPP Planner	Rosita Waldron	chitangw@gmail.com
	BECQ	Administrator	Frank Rebauliman	frebauliman@gmail.com

21	BECQ	Director	David Rosario	davidrosario@deq.gov.mp
22	Fire Div.	Fire Chief	Tom Manglona	tmanglona@hotmail.com
23	Fire Div.	Captain	Julian Tagabuel	jultag01@hotmail.com
24	Zoning	Plannner	Maryann Arriola	maryann.arriola@zoning.gov.mp
25	BECQ	NOAA Fellow	Robbie Greene	robbie.greene@crm.gov.mp
26	BECQ	GIS Specialist	Erik Lash	erik.lash.crm@gmail.com
27	CPA	CADD Operator	Fermin Flores 2376518	ferminf@cpa.gov.mp
28	CUC	CFO	Charles Warren	charles_warren@cucgov.org
29	CUC	Power Div. Mgr.	Gary Camacho	gary.camacho@cucgov.org
30	CUC	Power Plant S. Mgr.	Richard Cano	richard.cano.@cucgov.org
31	CUC	Water/Waste Water Div. Mgr.	Ricardo Saavedra	ricardo.saavedra@cucgov.org
32	CUC	Wastewater Treatment Plant	Richard Wasser	richard.wasser@cucgov.org
33	CUC	Chief Engineer	John Riegel	john.riegel@cucgov.org
34	WTF		Kay Delafield 664-2274	cnmi.wtf.delafield@gmail.com
35	ARC	Executive Director	John Hirsh	john.hirsh@redcross.org
36	MOS	SPS Director	Joanne Aquino	lildarlings_childcare@yahoo.com
37	Judicial		Gene Weaver	gerald.weaver@justice.gov.mp
	DPL	Compliance Spec III	David Sablan	david.sablan.dpl.gov.mp
	Zoning	ZB Planner	Maryann Arriola	Maryann.arriola@zoning.gov.mp
	DCCA	Admin Manager	Vince Rabauliman	
	CUC	ASSO. ENGR.	LARRY MANACOP	larry.manacop@cucgov.org
	Judiciary	Dep. Dir. of Cts	Sonia Camacho for JD Tenorio	soniac@justice.gov.mp juan.diego.tenorio@justice.gov.mp
	CUC	ADMIN SPEC.	LEO LIGTO	

Note: Item # 36; Represented by Mr. (Daniel) Kinto, Director - Mayor of Saipan

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
HOMELAND SECURITY AND EMERGENCY MANAGEMENT
OFFICE OF THE GOVERNOR
Honorable Governor Eloy S. Inos
Honorable Lt. Governor Jude U. Hofschneider
Marvin K. Seman, SAHSEM

June 09, 2014

To: See Distribution List

From: Special Assistant for Homeland Security and Emergency Management

Subject: FY 2013 Standard State Mitigation Plan (SSMP) Update

The CNMI Homeland Security and Emergency Management (HSEM) require yours' or your designee to attend the meeting scheduled for June 12, 2014 from 08:30 ~ 11:30. The meeting will be at CUC Training Room #17 at the Joeten Dandan Complex. This meeting will be to address the CNMI Standard State Mitigation Plan (SSMP) 2013 Update.

The focus of this meeting is on the Mitigation Action Strategy. Submittal from all parties into the Mitigation Action Strategy will be limited to five (5) priority actions for each: Governor's Office, Departments, Semi-Autonomous Agencies, Judicial Branch and NGOs. Should your Office not be represented, you may lose out on the opportunity to have your concerns be heard and issues addressed.

Ray Dela Cruz, Planner from our office will facilitate the meeting. Your participation is appreciated. Should you have any questions please contact Ray Dela Cruz at email rdelacruz@cnmihsem.gov.mp or by phone at 670-287-7160.

Thank you.

Sincerely,

Marvin K. Seman
Special Assistant
CNMI Homeland Security and Emergency Management

cc: Esther S. Fleming, Special Assistant for Administration

Attachments: Distribution List
Mitigation Action Strategy Worksheet (sample)
Mitigation Action Strategy Worksheet (blank form)

Caller Box 10007, Capitol Hill, Saipan, MP 96950
Telephone: (670) 664-2216 (mainline), (670) 322-9572/9274/8001-3 Facsimile: (670) 664-2218 (mainline), 322-7743
CNMI DISPATCH CENTER (24/7) Tel. No. (670) 237-8000/3 Fax No. (670) 322-9500
StormReady Community TsunamiReady

#	Department (include division/section)	Name	Title	Email Address	Contact Number(s)
	CNMI 2013 Standard State Mitigation Plan (SSMP) Update				
	State Emergency Response Commission (SERC) Meeting at CPA Seaport Conference Room 05.13.2014				
1	American Red Cross	John Hirsh	Executive Director	john.hirsh@redcross.org	
2	Ports Police, CPA	Juan Dela Cruz	Acting Chief	asstchiefops@cpa.gov.mp	670-237-6528
3	Bureau of Environmental & Coastal Quality	Erik Lash	GIS Specialist	erik.lash.crm@gmail.com	670-664-8300
4	FEMA Region IX	Phillip Wang	Mitigation Planner	phillip.wang@fema.dhs.gov	510629-7753
5	FEMA Region IX, PAO	Lori Untalan	Hazard Mitigation Assistance Specialist	lorena.untalan@fema.dhs.gov	808-851-7913
6	CNMI Homeland Security and Emergency Management	Ray Dela Cruz	Planner	rdelacruz@cnmihsem.gov.mp	670-664-2216
7	Bureau of Environmental & Coastal Quality	Frank Rebauliman	Administrator	frebauliman@gmail.com	670-664-8500
8	Bureau of Environmental & Coastal Quality	David Rosario	Director	dividrosario@deq.gov.mp	670-664-8500
9	Dept. of Comminity and Cultural Affairs	Laura T. Ogumoro	Secretary	laura.ogumoro@gov.mp	670-664-2587
10	Mayor of the Northern Islands	Lee Kaipat	Administrative Assistant	lee.kaipat@yahoo.com	670-664-6466
11	Public Health	Rosita Waldron	PHEPP Planner	chitangw@gmail.com	670-236-8794
12	Zoning Office	Maryann Arriola	Planner	maryann.arriola@zoning.gov.mp	670-237-9661
13	CNMIHomeland Security and Emergency Management	Jeff Sanchez	Planner	jsanchez@cnmihsem.gov.mp	670-664-2216
14	Dept. of Public Safety - Fire Div.	Julian Tagabuel	Acting Chief	jultaoi@hotmail.com	670-664-9032
15	Bureau of Environmental & Coastal Quality	Robbie Greene	NOAA Fellow	Robbie.Greene@crm.gov.mp	670-664-8316
16	CommonWealth PORTS AUTHORITY	Fermin Flores	CADD Oper	ferminf@cpa.gov.mp	670-237-6518
17	DCCA.	Joseph ATTAO		joseph-attao@yahoo.com	670 664-2587
18	FEMA DRS				
19	DPS-FIRE	THOMAS MANGLONA	Fire Chief	tmanglona@hotmail.com	664-9127
20	DCCA DOA	JOE METTAO	COMM. DEV		782-0457

CNMI 2013 Standard State Mitigation Plan (SSMP) Update

SERC Meeting at CPA Seaport Conference Room 05.13.2014

	Department (include division/section)	Name	Title	Email Address	Contact Number(s)
1	Red Cross	Paul W. Camacho	Emergency Services Director	paulwilliam.camacho@redcross.org	234-3459 287-4401
2	PSS	Rachel Fusco	CIP Coordinator	rachel.fusco@cnmipss.org	322-3716 483-9121
3	CHCC	Tom Palacios	Manager, Gen. Supp	tspalacios3@gmail.com	285-0935
4		R			
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
HOMELAND SECURITY AND EMERGENCY MANAGEMENT
OFFICE OF THE GOVERNOR

Honorable Governor Eloy S. Inos
Honorable Lt. Governor Jude U. Hofschneider

Marvin K. Seman, SAHSEM

May 08, 2014

TO: See Distribution List

FROM: Special Assistant for Homeland Security and Emergency Management

SUBJECT: FY 2013 Standard State Mitigation Plan (SSMP) Update

CNMI Homeland Security and Emergency Management request your participation as part of the CNMI State Emergency Response Commission (SERC) and Local Emergency Planning Committee to address the CNMI FY 2013 Standard State Mitigation Plan (SSMP) Update. The initial meeting is scheduled for Monday, May 12, 2014 at 1:00 pm and will be for Executive and Department Heads. The meeting will be at the CPA Seaport Conference Room.

Follow up workshops will be held on Tuesday and Wednesday, May 13 and May 14 from 8:30 am to 4:30 pm, respectively. The venue for this follow-up meeting is again at the CPA Seaport Conference Room. Executive and Department Heads should assign Subject Matter Experts (SME) within their department to attend Tuesday and Wednesday meetings.

Your agency's participation will greatly benefit the approval of an updated CNMI SSMP, which the CNMI does not currently have. It is for this reason that FEMA, Region 9 is providing Technical Assistance by sending two Mitigation Specialists. The SERC meeting will be attended by Phillip Wang, Mitigation Planning Specialist and Lorena Untalan, Hazard Mitigation Assistance Specialist.

Your attendance will be appreciated. Should you have any questions please do not hesitate to contact me at 670-664-2216 office; 670-287-7154 cellphone or mkseman@cnmihsem.gov.mp email.

Very Respectfully,

Marvin K. Seman

Enclosed
cc: file

Caller Box 10007, Capitol Hill, Saipan, MP 96950
Telephone: (670) 664-2216 (mainline), (670) 322-9572/9274/8001-3 Facsimile: (670) 664-2218 (mainline), 322-7743
CNMI DISPATCH CENTER (24/7) Tel. No. (670) 237-8000/3 Fax No. (670) 322-9500

StormReady Community TsunamiReady

Sign In Sheet

05/09/14

State Emergency Response Commission (SERC)

Capt. Pete Leon Guerrero DPS/Police

RDH Ray Pangelinan (DPS TEQ/Mayor's Office TIQ)

Vicente L. Mettao (NIMO Staff) Northern Islands Mayor's Office

Lee Kaipat, NIMO Administrative Assistant 670.664.6400

Julian Tagabuel DPS Fire 664-9032

VINCE RABAULIMAN - DCCA 664-2576

Jojo MATTA - DCCA 664-2587

Naomi S. Ada - HSEM Planner

Jeff Sanchez - HSEM Planner 664-2216

Ray Dela Cruz HSEM Planner

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
HOMELAND SECURITY AND EMERGENCY MANAGEMENT
OFFICE OF THE GOVERNOR

Honorable Governor Eloy S. Inos
Honorable Lt. Governor Jude U. Hofschneider

Marvin K. Seman, SAHSEM

MEMORANDUM

5 May, 2014

TO: See Distribution List

FROM: Special Assistant for Homeland Security & Emergency Management

SUBJECT: Honorable Governor Eloy S. Inos designates CNMI State Emergency Response Commission (SERC) and Local Emergency Planning Committee (LEPC)

On April 17, 2014 Honorable Governor Eloy S. Inos recently signed a memorandum designating the creation of a CNMI State Emergency Response Commission and Local Emergency Planning Committee. A copy of the Governor's letter is enclosed for your review and copy. The SERC will provide for a broader and wider scope of addressing state level concerns and threat involving All-Hazards or CBRNE terrorism.

Our first meeting is scheduled for 9am on Thursday May 8, 2014 at the CNMI Homeland Security & Emergency Management Office in Capitol Hill, Saipan. This is a department or agency level meeting. Our meeting is estimated to take approximately 2 hours and several of our discussion topics is to have a brief introduction on the intent of the commission, its goals, expectations and plans.

For our attendees, that are not able to attend in person, a call in number for a teleconference will be provided via email. Kindly RSVP before 8am Thursday May 8, 2014.

Should you have any question or concerns, please feel free to contact me at 670.664.2216 or 670.287.7154 or via email at mkseman@cnmihsem.gov.mp.

Very Respectfully,

Marvin K. Seman

Enclosed
cc: File

DISTRIBUTION LIST

CNMI Homeland Security & Emergency Management (HSEM), Chair (State-Coordinating Official)
Bureau of Environmental and Coastal Quality (BECQ), Co-Chair (Environmental Representative)
Department of Public Safety (DPS) Fire Division, Fire & EMS Representative
Department of Public Safety (DPS) Police Division, Law Enforcement Representative
Commonwealth Health Center Corporation (CHCC), Health Representative
Department of Community & Cultural Affairs, Community Representative
Public School System, Youth Representative
Municipality of Rota, Rota Representative
Municipality of Tinian, Tinian Representative
Municipality of the Northern Islands, Northern Islands Representative

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS

Eloy S. Inos
Governor

Jude U. Hofschneider
Lieutenant Governor

17 APR 2014

Marvin K. Seman
Special Assistant for Homeland Security and Emergency Management
Commonwealth of the Northern Mariana Islands
Juan A. Sablan Memorial Bldg.
Caller Box 10007, Capitol Hill
Saipan, MP 96950

RE: State Emergency Response Commission (SERC) and Local Emergency Planning Committee (LEPC) Designation Request

Dear Special Assistant Seman:

In response to concerns for safety around chemical facilities, Congress enacted the Emergency Planning and Community Right-To-Know Act (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act (SARA). EPCRA covers the manufacture, use, exposure, transportation, and public education of hazardous materials. The SERC is the leading entity in the implementation of SARA at the state level to mitigate the effects of an accidental release or spill of hazardous materials. Public Law 18-04 also directs the SERC to be an all-hazard SERC. This means that the CNMI SERC is tasked to address hazardous materials issues and all other hazards and threats that might create an emergency situation in our communities.

Public Law 18-04 established that the CNMI Homeland Security & Emergency Management as the lead coordinating agency and therefore it provides for the CNMI Government and Local Officials with the ability to prevent, detect, deter, respond, manage, coordinate, recover and mitigate from an All-Hazard Incident or All Threats.

This memo will serve as the creation and designation for CNMI SERC and the designation of the SERC Chair and a Co-Chair to manage, coordinate, develop and implement the CNMI SERC. Due partly to the size of our community, the SERC members shall also serve as the Local Emergency Planning Committee (LEPC) within the CNMI and manages the LEPC Programs.

The SERC/LEPC shall comprise of the following agencies:

CNMI Homeland Security & Emergency Management (HSEM), Chair (State-Coordinating Official)

Caller Box 10007 Saipan, MP 96950 Telephone: (670) 237-2200 Facsimile: (670) 664-2211/2311

Bureau of Environmental and Coastal Quality (BECQ), Co-Chair (Environmental Representative)
Department of Public Safety (DPS) Fire Division, Fire & EMS Representative
Department of Public Safety (DPS) Police Division, Law Enforcement Representative
Commonwealth Health Center Corporation (CHCC), Health Representative
Department of Community & Cultural Affairs (DCCA), Community Representative
Public School System, Youth Representative
Municipality of Saipan, Saipan Representative
Municipality of Rota, Rota Representative
Municipality of Tinian, Tinian Representative
Municipality of the Northern Islands, Northern Islands Representative

As part of the SERC/LEPC, the committee shall develop the necessary Governance, Plans, Policies and Procedures to ensure that our communities are aware of the hazards around them and the necessary mechanism to response to an incident.

Sincerely,

ELOY S. INOS

cc: CNMI HSEM, Special Assistant
Saipan Mayor's Office
Rota Mayor's Office
Tinian Mayor's Office
Northern Islands Mayor's Office
BECQ, Administrator
DPS, Commissioner
PSS
DCCA
CHCC

No.	Agency	Title	Name	Email Address
1	NIM	Mayor	Tobias Aldan	mayor_aldan@gmail.com
2	NIM	Chief of Staff	Jerome Aldan	jlow11@live.com
3	PSS	Commissioner	Rita A. Sablan	coe.ras@cnmipss.org
4	PSS		Jack Diaz	jack.diaz@cnmipss.org
4	PSS		Rachel Fusco	rachel.fusco@cnmipss.org
5	DCCA	Acting Secretary	Laura Ogumoro	dyssup@gmail.com
6	DNLR	Secretary	Arnold Palacios	
7	CUC	Acting Exec. Director	Alan Fletcher	Alan.fletcher@cucgov.org
8	CUC	Safety Officer	Vince Pangelinan	vince.pangelinan@cucgov.org
9	CPA	Acting Exec. Director	Maryann Lizama	Cpa.mqlizama@pticom.com
10	DPS	Commissioner	James Deleon Guerrero	commissioner@dps.gov.mp
11	MVA	Executive Director	Perry Tenorio	ptenorio@mymarianas.com
12	MVA		Martin Duenas	mduenas@mymarianas.com
13	MOS	Mayor	Donald Flores	Flores.donald@gmail.com
14	DPW	Secretary	Martin Sablan	dpw.secretary@gmail.com
15	DPW	Exec. Secretary	Tina	Dpw.xsecretary@gmail.com
16	OMB	Gov’s Auth. Rep.	Virginia Villagomez	vvillagomez@gmail.com
17	ARC	Executive Director	John Hirsh	john.hirsh@redcross.org
18	ARC		Juan D. Tenorio	juan.tenorio@redcross.org
19	DPH	Director	Warren Villagomez	warrenvillagomez@gmail.com
20	MOR	Mayor	Melchor Mendiola	mjmendiola@gmail.com
				mayormendiola@gmail.com
21	MOR	Chief of Staff	Tom Quitugua	tomquitugua@gmail.com
22	MOT	Mayor	Ramon Dela Cruz	Tinian.mayor@gmail.com

	CNMI 2013 Standard State Mitigation Plan (SSMP) Update				
	Core Planning Group (CPG) Meeting - November 20, 2013 from 8:00am to 11:00am - EOC, Capitol Hill, Saipan				
	Department (include division/section)	Name	Title	Email Address	Contact Number(s)
1	Coastal Resources Mgmt	Lonnie Zarones	Lead Coastal Planner	lzarones@gmail.com	664-8300
2	Division of Environmental Quality	Dave Chargualaf		davidchargualaf@deq.gov.mp	664-8500
3	Mayor of Tinian	Don Farrell	Chief Executive Officer	donfarrelltinian@gmail.com	433-1800
4	Public School System	Rommel Mostales	Archeitectural Technician	rommel.mostales@cnmipss.org	483-9224
5	Mayor of NMI	Jerome Aldan	Chief of Staff	jayzway11@hotmail.com	
6	American Red Cross	John Hirsh	Executive Director	john.hirsh@redcross.org	
7	Fire Division, DPS	John Pua	Captain	pua.juan@yahoo.com	664-9136
8	Ports Police, CPA	Juan Dela Cruz	Asst. Chief	asstchiefops@cpa.gov.mp	237-6528
9	Office of Management and Budget	Leona Sablan		leona.cip@gmail.com	664-2264
10	Police Division, DPS	Pete Leon Guerrero	Captain	plguerrero@dps.gov.mp	664-9022
11	Zoning Office	Therese Ogumoro for Manglona	B. Arriola, Planner Zoning Administrator	therese.ogumoro@zoning.gov.mp	
12	Mayor of Rota	Tom Quitugua	Chief of Staff	tomquitugua@gmail.com	285-7463
13	Commonwealth Utilities Corporation	Vince Pangelinan	Safety Officer	vince.pangelinan@cucgov.mp	
14	Commonwealth Health Corporation	Warren Villagomez	Director	warrenvillagomez@gmail.com	
15	Mayor of Saipan	Joanne Aquino	Operations Development Assistant	Saipanmayorsoffice@gmail.com	
16	Technical Services Division, DPW	Vicente Cabrera	Acting Director	vccabrera_dpw@yahoo.com	
17	Coastal Resources Mgmt	Erik Lash	GIS Specialist	erik.lash.crm@gmail.com	664-8300
18	Tinian DPS	Ray Pangrlinan	Resident Dept. Head	tdpsrp@hotmail.com	888-4727
19	PSS	Rachel Fusco	CIP Coordinator/PSS	rachel.fusco@cnmipss.org	322-3716
20					

CNMI 2013 Standard State Mitigation Plan (SSMP) Update

Core Planning Group (CPG) Meeting - November 20, 2013 from 8:00am to 11:00am - EOC, Capitol Hill, Saipan

	Department (include division/section)	Name	Title	Email Address	Contact Number(s)
1	N.I.M.O.	Lee Korpat for Jerome Aldan	Admin. Assist.	L_korpat@yahoo.com/jayzway11@hotmail.com	(664-6460)
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

CNMI 2013 SSMP Update

Core Planning Group (CPG)

Agenda

November 20, 2013

08:00 ~ 11:00

CNMI EOC, Capitol Hill, Saipan, MP

1. Introduction of CPG members
2. CPG Members to review all submitted list of Priorities
3. CPG Members to finalize five (5) priorities EACH for Rota and Tinian
4. CPG Members to finalize ten (10) priorities for Saipan
5. If time allows, discuss status of “Mitigation Action Worksheet”
6. Miscellaneous

Coordinators: Ray Dela Cruz, Planner, HSEM
Naomi Ada, Planner, HSEM

CNMI 2013 Standard State Mitigation Plan (SSMP) Update

Core Planning Group (CPG) Meeting - November 06, 2013 from 8:00am to 11:00am - EOC, Capitol Hill, Saipan

	Department (include division/section)	Name	Title	Email Address	Contact Number(s)
1	Coastal Resources Mgmt	Lonnie Zarones	Lead Coastal Planner	lzarones@gmail.com	664-8300
2	Division of Environmental Quality	Dave Chargualaf		davidchargualaf@deq.gov.mp	664-8500
3	Mayor of Tinian	Don Farrell	Chief Executive Officer	donfarrelltinian@gmail.com	433-1800
4	Public School System	Rommel Mostales	Archeitectural Technician	rommel.mostales@cnmipss.org	483-9224
5	Mayor of NMI	Jerome Aldan	Chief of Staff	jayzway11@hotmail.com	285-0866
6	American Red Cross	John Hirsh	Executive Director	john.hirsh@redcross.org	
7	Fire Division, DPS	John Pua	Captain	pua.juan@yahoo.com	664-9136
8	Ports Police, CPA	Juan Dela Cruz	Asst. Chief	asstchiefops@cpa.gov.mp	237-6528
9	Office of Management and Budget	Leona Sablan		leona.cip@gmail.com	664-2264
10	Police Division, DPS	Pete Leon Guerrero	Captain	plguerrero@dps.gov.mp	664-9022
11	Zoning Office	Therese Ogumoro	Zoning Administrator	therese.ogumoro@zoning.gov.mp	
12	Mayor of Rota	Tom Quitugua	Chief of Staff	tomquitugua@gmail.com	
13	Commonwealth Utilities Corporation	Vince Pangelinan	Safety Officer	vince.pangelinan@cucgov.mp	
14	Commonwealth Health Corporation	Warren Villagomez	Director	warrenvillagomez@gmail.com	
15	Mayor of Saipan	Joanne Aquino	Operations Development Assistant	Saipanmayorsoffice@gmail.com	
16	Technical Services Division, DPW	Vicente Cabrera	Acting Director	vccabrera_dpw@yahoo.com	
17	Coastal Resources Mgmt	Erik Lash	GIS Specialist	erik.lash.crm@gmail.com	664-8300
18	Tinian DPS	Ray Pangrlinan	Resident Dept. Head	tdpsrp@hotmail.com	888-4727
19	PSS CIP	Rachel Fusco	CIP Coordinator	rachel.fusco@cnmipss.org	322-3716
20	CRM ~~CRM/NOAA~~	Becky Skeele ~~Bobbie Greene~~	Coastal Planner ~~NOAA Fellow~~	skeele.crm@gmail.com	664-8316

CNMI 2013 Standard State Mitigation Plan (SSMP) Update					
Core Planning Group (CPG) Meeting - November 06, 2013 from 8:00am to 11:00am - EOC, Capitol Hill, Saipan					
	Department (include division/section)	Name	Title	Email Address	Contact Number(s)
1	CRM	Robbie Greene	NOAA Fellow	RobertGreene.CRM@gmail.com	664-8316
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

CNMI 2013 SSMP Update

Core Planning Group (CPG)

Agenda

November 06, 2013

08:00 ~ 11:00

CNMI EOC, Capitol Hill, Saipan, MP

1. Introduction of CPG members
2. Risk Assessment (Are the Hazards listed in the 2010 Update still a valid concern?)
3. Capability Assessment (What have we done to stop, lessen, etc. impacts in the CNMI.)
4. Handouts:
    - NWS Guam (Chip Guard, Warning Coordinator Meteorologist) typhoon
    - CNMI HSEM, Seismic Section (Juan T. Camacho, Manager) rest of the hazards

5. If time allows, review and discuss "Mitigation Action Worksheet"
6. Miscellaneous
7. Next Meeting -

Wednesday, November 13, 2013 at EOC, Capitol Hill, 08:00~11:00
Agenda:

"Prioritized Mitigation Actions for 2013 Update"

Coordinators: Ray Dela Cruz, Planner, HSEM
Naomi Ada, Planner, HSEM

CNMI 2013 Standard State Mitigation Plan (SSMP) Update

Core Planning Group (CPG) Meeting - October 30, 2013 from 8:00am to 11:00am

	Department (include division/section)	Name	Title	Email Address	Contact Number(s)
1	*Coastal Resources Mgmt*	Lainie Zarones ~~*Ana Agulto*~~	Lead Coastal Planner ~~*Acting Administrator*~~	lzarones@gmail.com ~~ana.agulto@crm.gov.mp~~	*664-8300* LZ
2	*Division of Environmental Quality*	*Dave Chargualaf*		davidchargualaf@deq.gov.mp	*664-8500*
3	*Mayor of Tinian*	*Don Farrell*	*Chief Executive Officer*	donfarrelltinian@gmail.com	*433-1800*
4	*Public School System*	ROMMEL MOSTALES ~~*Jack Diaz*~~	ARCHITECTURAL TECHNICIAN	rommel.mostales@cnmipss.org ~~jack.diaz@cnmipss.org~~	483-9229
5	*Mayor of NMI*	*Jerome Aldan*	*Chief of Staff*	jayzway11@~~gmail~~ hotmail.com	
6	*American Red Cross*	*John Hirsh*	*Executive Director*	john.hirsh@redcross.org	
7	*Fire Division, DPS*	*John Pua*	*Captain*	pua.juan@yahoo.com	*664-9136*
8	*Ports Police, CPA*	*Juan Dela Cruz*	*Asst. Chief*	asstchiefops@cpa.gov.mp	*237-6528*
9	*Office of Management and Budget*	*Leona Sablan*		leona.cip@gmail.com	*664-2264*
10	*Police Division, DPS*	*Pete Leon Guerrero*	*Captain*	plguerrero@dps.gov.mp	*664-9022*
11	*Zoning Office*	*Therese Ogumoro*	*Zoning Administrator*	therese.ogumoro@zoning.gov.mp	
12	*Mayor of Rota*	*Tom Quitugua*	*Chief of Staff*	tomquitugua@gmail.com	
13	*Commonwealth Utilities Corporation*	*Vince Pangelinan*	*Safety Officer*	vince.pangelinan@cucgov.mp	
14	*Commonwealth Health Corporation*	*Warren Villagomez*	*Director*	warrenvillagomez@gmail.com	
15	*Mayor of Saipan*	*Joanne Aquino*	*Operations Development Assistant*	Saipanmayorsoffice@gmail.com	
16	*Technical Services Division, DPW*	*Vicente Cabrera*	*Acting Director*	vccabrera_dpw@yahoo.com	
17	Coastal Resource Management	Erik Lash	GIS Specialist	erik.lash.crm@gmail.com	664-8300 EL

CNMI 2013 Standard State Mitigation Plan (SSMP) Update

Core Planning Group (CPG) Meeting - October 30, 2013 from 8:00am to 11:00am

	Department (include division/section)	Name	Title	Email Address	Contact Number(s)	Initial
	Tinian DPS	Ray Pangelinan	Resident Dept. Head	tdpsrp@hotmail.com	888-4727	RP.

CNMI 2013 SSMP Update

Core Planning Group (CPG)

Agenda

October 30, 2013

08:00 ~ 11:00

CNMI EOC, Capitol Hill, Saipan, MP

1. Introduction of CPG members
2. CNMI SSMP 2013 List of Tables
3. Critical Facilities for Saipan, Tinian and Rota
4. Loss Estimate of different Hazards: Earthquake, Flooding, Tsunami, Typhoon & wildfire
5. Mitigation Action Worksheet
6. Prioritized Mitigation Actions of 2010 Update
7. Miscellaneous
8. Next Meeting -

   Wednesday, November 06, 2013, 08:00~11:00
   Agenda:

   Risk Assessment: Refer to Section 5; Appendix's M ~ T
   Capability Assessment: Section 3, 7 and 9; Appendix's B and AA

Coordinators: Ray Dela Cruz, Planner, HSEM
Naomi Ada, Planner, HSEM

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
HOMELAND SECURITY AND EMERGENCY MANAGEMENT
OFFICE OF THE GOVERNOR
Honorable Governor Eloy S. Inos
Honorable Lt. Governor Jude U. Hofschneider
Marvin K. Seman, SAHSEM

October 30, 2013

Jerome Aldan
Chief of Staff
Mayor of Northern Islands
Saipan, MP 96950

From: Ray Dela Cruz, CNMI Homeland Security and Emergency Management

Subject: CNMI 2013 Update of the Standard State Mitigation Plan (SSMP)

Dear Mr. Aldan:

You have been selected to be a part of the CNMI 2013 SSMP Core Planning Group (CPG). Your office and your involvement in your community helped us in selecting you as a key participant in this year's update.

In the interest of time and in an effort to perform an effective 2013 SSMP Update, you and a few other subject matter experts were selected, with confidence, to assist HSEM personnel in accomplishing this critical task.

The Core Planning Group is tasked with reviewing, prioritizing, and revising key Sections of the of the CNMI 2013 SSMP. Attached with this letter are documents for your review and for use during meetings.

The next scheduled meeting for the Core Planning Group is October 30, 2013 from 8:00 am to 11:00 am at the Emergency Operation Center (EOC) located at Capitol Hill.

For more information, please contact me at rdelacruz@cnmihsem.gov.mp or at (670) 664 – 2216.

Thank you.

Sincerely,

Marvin K. Seman
Special Assistant, CNMI HSEM

Encl:

Caller Box 10007, Capitol Hill, Saipan, MP 96950
Telephone: (670) 664-2216 (mainline), (670) 322-9572/9274/8001-3 Facsimile: (670) 664-2218 (mainline), 322-7743
CNMI DISPATCH CENTER (24/7) Tel. No. (670) 237-8000/3 Fax No. (670) 322-9500
StormReady **Community** TsunamiReady

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
HOMELAND SECURITY AND EMERGENCY MANAGEMENT
OFFICE OF THE GOVERNOR
Honorable Governor Eloy S. Inos
Honorable Lt. Governor Jude U. Hofschneider
Marvin K. Seman, SAHSEM

June 24, 2013

Ramon Dela Cruz
Mayor
Tinian, MP 96952

Subject: CNMI Standard State Mitigation Plan (SSMP)

Dear Mayor Dela Cruz:

The CNMI Homeland Security and Emergency Management (HSEM) is the agency tasked to update the CNMI 2013 SSMP. Again, we are reaching out to all the different agencies that participated and members of the Hazard Mitigation Committee (HMC) established to give input during the CNMI 2010 SSMP update. The HMC was not dissolve for this reason that the CNMI SSMP is to be regularly reviewed, discussed and updated as changes occurred. In the future, the HSEM will periodically schedule a meeting with members of the HMC of each Senatorial District.

Therefore, we are inviting you to join Ray Dela Cruz and Jeffery Sanchez, both Planners from HSEM for a presentation of the CNMI 2013 SSMP Update. After the presentation, they will be available for additional more questions and explanation regarding the Plan.

The presentation will be at the Mayor's Office Conference Room from 9:00 am ~ 10:00 am June 27, 2013. Should you have any questions please contact Ray Dela Cruz at rdelacruz@cnmihomelandsecurity.gov.mp or 670-287-7160 (cell). Your participation in the HMC is appreciated.

Thank you,

Marvin K. Seman
Special Assistant, CNMI HSEM

Caller Box 10007, Capitol Hill, Saipan, MP 96950
Telephone: (670) 664-2216 (mainline), (670) 322-9572/9274/8001-3 Facsimile: (670) 664-2218 (mainline), 322-7743
CNMI DISPATCH CENTER (24/7) Tel. No. (670) 237-8000/3 Fax No. (670) 322-9500

StormReady Community TsunamiReady

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
HOMELAND SECURITY AND EMERGENCY MANAGEMENT
OFFICE OF THE GOVERNOR

Honorable Governor Eloy S. Inos
Honorable Lt. Governor Jude U. Hofschneider

Marvin K. Seman, SAHSEM

June 18, 2013

Melchor Mendiola
Mayor of Rota
Songsong Village, Rota, MP 96950

Subject: 2013 Update of the Standard State Mitigation Plan (SSMP)

Dear Mr. Mendiola:

The CNMI SSMP needs to be updated, adopted by the CNMI and approved by FEMA by June 2013. Due to the tight deadline of this document, I urgently ask for your commitment and support in providing my office the information requested.

Attached are tables that show your agency and the corresponding data provided by your office during the 2010 SSMP update. We are basically asking to update by deleting, adding or correcting what's showing on those sheets to reflect what the case is currently.

We ask that you submit your updates by Wednesday, June 20, 2013. Should you have any questions you may contact Ray Dela Cruz at 287-7160 or email: rdelacruz@cnmihsem.gov.mp . The updates maybe faxed, emailed or delivered to our office.

The Disaster Mitigation Act of 2000 (Public Law 106-390) requires all states and territories to have a FEMA approved SSMP and updated at least every three (3) years. The CNMI SSMP was updated and approved by FEMA in June of 2010. Failure to update, adopt and get FEMA's approval of the CNMI SSMP for 2013 will jeopardize future disaster assistance programs extended to the CNMI following a Presidential Disaster Declaration.

Your cooperation in this matter is appreciated. Thank you.

Regards,

Marvin K. Seman
Special Assistant for HSEM

Caller Box 10007, Capitol Hill, Saipan, MP 96950
Telephone: (670) 664-2216 (mainline), (670) 322-9572/9274/8001-3 Facsimile: (670) 664-2218 (mainline), 322-7743
CNMI DISPATCH CENTER (24/7) Tel. No. (670) 237-8000/3 Fax No. (670) 322-9500

StormReady Community TsunamiReady

Appendix C – Database Summary of Information Provided in Completed CVA Responses

CNMI Facility Assessment Matrix

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre- 1991? (ft)	Max- Imum	Critical Facility	critical facility type	Cap.	foundation Type		Roof	Wall Type	

N. Islands

Office of the Mayor (Northern Islands)

Northern Islands Mayor’s Office — Jerome Aldan — 233-6466

Pagan Shelter	Bandera				0	168	1975	Yes	20	Yes	Essential facility		Concrete		concrete	Concrete	
$0	$30,000																
Pagan Water Tanks		Bandera			0	0	1927	Yes	0	Yes	essential & utility		Concrete		metal	Concrete	
$0	$5,000																
(7 total)																	
		Afrigan Water Tanks		Apelum			0	0	1927	Yes	0	Yes	essential & utility		concrete		metal
concrete		$0	$5,000														
(total)		coast															
		alamagan	Water Tks	South			0	0	1927	Yes	0	Yes	essential & utility		concrete		metal
concrete		$0	$5,000														
		Alamagan															
		Patidu Typhonn Shelter		Patidu			0	168	1927	Yes	15	Yes	essential facility		concrete & wood		wood & metal
wood & metal		$0	$30,000		Songsong Village		Songsong				250	1927	Yes	0	Yes	essential	facility
concrete & other		Metal	wood & metal		$0	$5,000		Selter (Alamagan)		Alamagan							
										Typhoon shelter		Apelum				768	1978
Yes	20	Yes	essential facility		concrete & other		wood & metal concrete & wood			$0	$30,000		(Agrigan)				

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
Pagan Shelter	$5,000	No	Unknown	Yes	coastal Plain	No	Yes	0	4/16/2010	Jerome Aldan	
Pagan water Tanks (7 Total)	$0	Unknown	Yes	No	Inland Flats	No	Unknown	0	4/16/2010	Jerome aldan	
Agrigan Water Tanks (3 Total)	$0	Unknown	Yes	No	Coastal plain & Hillside	No	Unknown	0	4/16/2010	Jerome Aldan	
Alamagan Water tanks	$0	Unknown	Yes	No	Hillside	Yes	No	0	4/16/2010	Jerome Aldan	
Patidu Typhoon Shelter	$5,000	Unkonwn	Yes	No	Hillside	No	Yes	0	4/16/2010	Jerome Aldan	
Songsong Village shelter (Alamagan)	$0	Unkonwn	Yes	No	Hillside	No	No	0	4/16/2010	Jerome Aldan	
Typhoon shelter (Agrigan)	$5,000	No	Yes	No	Hillside	No	Unknown	0	4/16/2010	Jerome Aldan	

CNMI Facility Assessment Matrix

Rota

CNMI Public School System

Rota high School

Sharlene Manglona 237-4041/42/43

Facility	Critical Functional Value (per Day)	Replacement value of structure	Village	GPS (Lat.)	GPS (Long.)	Site Elev. (ft)	Size (SF)	Year Built	Pre-1991?	Max-Imum Cap.	Critical Facility	critical facility type	foundation Type	Roof Type	Wall Type
Admistration	$3,586	$897,000	Liyo			45	5,037	1982	Yes	50	Yes	essential facility	concrete	concrete	concrete
Building B	$0	$1,014,000	Liyo			45	5,700	1994	No	131	Yes	essential facility	concrete	concrete	concrete
Building D	$0	$741,000	Liyo			45	4,200	1982	Yes	104	Yes	essential facility	concrete	concrete	concrete
Building H	$0	$725,400	Liyo			45	4,060	1982	Yes	106	Yes	essential facility	concrete	concrete	concrete
Cafeteria	$0	$780,000	Liyo			45	0	0	No	150	Yes	essential facility	concrete	concrete	concrete
Gymnasium	$0	$2,704,000	Liyo			50	15,000	0	Yes	350	Yes	essential facility	concrete	concrete	concrete
JROTC Liyo	$0	$624,000	Liyo			45	0	2007	No	75	Yes	essential facility	concrete	concrete	concrete

Rota Junior High School

Sharlene Manglona 237-4041/42/43

Facility	Critical Functional Value (per Day)	Replacement value of structure	Village	GPS (Lat.)	GPS (Long.)	Site Elev. (ft)	Size (SF)	Year Built	Pre-1991?	Max-Imum Cap.	Critical Facility	critical facility type	foundation Type	Roof Type	Wall Type
Rota Jr. high Admin	$0	$2,957,500	Songsong			0	0	1968	yes	10	No	essential facility	concrete	concrete	concrete
Rota Jr. High Bldg C	$0	$0	Songsong			0	0	2007	No	180	No	essential facility	concrete	concrete	concrete
Rota Jr. High Bldg MHO	$0	$0	Songsong			0	0	1984	Yes	240	No	essential facility	concrete	concrete	concrete
Rota Jr. High Bldg RJHS	$0	$0	songsong			0	0	1992	No	180	No	essential facility	concrete	concrete	concrete
Rota Jr. High Bldg Cafeteria	$0	$0	Songsong			0	0	0	Yes	150	No	essential facility	concrete	concrete	concrete

Sinapalo Elementary school

Sharlene Manglona 237-4041/42/43

Facility	Critical Functional Value (per Day)	Replacement value of structure	Village	GPS (Lat.)	GPS (Long.)	Site Elev. (ft)	Size (SF)	Year Built	Pre-1991?	Max-Imum Cap.	Critical Facility	critical facility type	foundation Type	Roof Type	Wall Type
Sinapalo ElementarySchool	$0	$6,000,00	Sinapalo			0	0	1995	No	300	No	essential facility	concrete	concrete	concrete

Commonwealth Ports Authority

Rota Int'l. Airport Martin T. Mendiola 664-3631

ARFF Building	Sinapalo	598	4,419	1995	No	0	Yes	Transportation Facility	concrete & other	concrete, wood, metal	Unknown	$0	$717,000
Car Reental Building	Sinapalo	598	276	1995	No	0	Yes	Transportation Facility	concrete & other	concrete & metal	unknown	$0	$20,000
Fuel Enclosure	Sinapalo	598	501	0	Yes	0	Yes	Transportation Facility	concrete & other	concrete & metal	Unknown	$0	$4,000
Generator House	Sinapalo	598	297	2010	No	0	Yes	Utility system	concrete & other	concrete & metal	Unkonwn	$0	$21,000

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
Administration	$595,400	Yes	Yes	No	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Building B	$67,600	Yes	Unknown	No	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Building D	$496,600	Yes	Yes	Yes	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Building H	$481,000	Yes	Unknown	No	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Cafeteria	$30,000	Yes	No	No	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Gymnasium	$1,600,000	Yes	Unknown	No	Hillside	Yes	Yes	1,000	4/12/2010	Sharlene Manglona	
JROTC Liyo	$30,000	Yes	No	Yes	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Rota Jr. High Admin	$1,820,000	Yes	No	Yes	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Rota Jr. High Bldg C	$0	No	No	No	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Roita Jr. High Bldg MHO	$0	Yes	Unknown	No	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Rota Jr. High Bldg RJHS	$0	Yes	Unknown	No	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Rota Jr. High Cafeteria	$0	Yes	No	No	Hillside	Yes	Yes	0	4/12/2010	Sharlene Manglona	
Sinapalo Elementary School	$3,750,000	Yes	Yes	No	Inland flats	Yes	Yes	0	4/12/2010	Sharlene Manglona	
ARFF Building	$750,000	Yes	Yes	Unknown	Coastal Plain	Yes	Yes	0	5/4/2010	Edward B. Mendiola	
Car Rental Building	$20,000	Yes	Yes	Unknown	Coastal Plain	Yes	Yes	200	5/4/2010	Edward B. Mendiola	
Fuel Enclosure	$4,000	Yes	Yes	Unknown	Coastal Plain	Yes	Yes	50	5/4/2010	Edward B. Mendiola	
Generator house	$21,000	Yes	Yes	Unknown	Coastal Plain	Yes	Yes	50	5/4/2010	Edward B. Mendiola	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Pump House		Sinapalo			598	64	0	Yes	0	Yes	essential facility	concrete & other	concrete & metal	Unknown
$0	$31,000													
Roadway		Sinapalo			598	0	0	Yes	0	Yes	Transportation Facility	concrete & other	Metal	Unknown
$0	$5,000													
Terminal Building		Sinapalo			598	31,359	0	Yes	0	Yes	Transportation Facility	concrete & other	concrete, wood, metal	Unknown
$0	$3.950,000													

Rota Seaport — Martin T. Mendiola 533-9497

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Rota Seaport Building		Songsong	N5100	E4700	9	2,400	1985	Yes	20	Yes	Transportation Facility	concrete	concrete	concrete
$0	$200,000													

Commonwealth Utilities Corporation

CUC Rota — Charles Manglona 532-9411

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Feeder- 3 substation		Songsong			6	0	1991	No	0	Yes	Utility System	concrete	metal	N/A
$0	$3,000													
Ginaingan Reservior		Ginainga			600	0	1992	No		Yes	Utility System	concrete	N/A	N/A
$0	$600,000													
Ka'an Reservior		Ka'an			120	0	1988	Yes		Yes	Utility System	Concrete	N/A	N/A
$0	$1,200,000													
Power Plant		Songsong			6	8,000	1986	Yes	50	Yes	Utility System	concrete	metal	metal
$0	$500,000													
Water Pump		Sinapalo			30	102	1983	Yes	0	Yes	Utility System	concrete	concrete	concrete
$0	$25,000													
Well SP 1		Sinapalo			580	0	2000	No		Yes	Utility System	N/A	metal	N/a
$0	$2,000													
Well SP 2		Sinapalo			580	0	2000	No		Yes	Utility System	N/A	metal	N/A
$0	$2,000													
Well SP 3		Sinapalo			580	0	2000	No		Yes	Utility System	N/A	N/A	N/A
$0	$0													

Department of Commerce

Department of Commerce — Eusebioi Hocog 532-9478

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Dept. of Commerce		Songsong	55P029	UTM15	20	1,950	1980	Yes	50	No	essential facility	concrete	concrete	concrete
$0	$150,000													
Office – Rota			9361	64726										

Department of Labor Richard E. Taisacan 532-9468/79

Department of Labor - Rota

Joe & Sons Building	Songsong			45	0	0	Yes	24	No	N/A	concrete	concrete	concrete	$1,134	$0

Department of Labor

DLNR Rota Nicolas Songsong 532-9494/95

DLNR Main Office Building Song	Songsong	N5904. 423	E5774. 258	0	4,578	1983	Yes	50	No	essential facility	concrete	metal	concrete	$6,000	$274,680
DLNR Storage	Songsong	N5037.	E5779.	0	3,200	2007	No	50	No	essential facility	concrete	metal	concrete	$0	$192,000

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
Pump House	$50,000	Yes	yes	Unknown	Coastal Plain	Yes	Yes	50	5/4/2010	Edward B. Mendiola	
Roadway Building	$5,000	Yes	Yes	Unknown	Coastal Plain	Yes	Yes	50	5/4/2010	Edward B. Mendiola	
Terminal Building	$3,950,000	Yes	Yes	Unknown	Coastal Plain	Yes	Yes	100	5/4/2010	Edward B. Mendiola	
Rota Seaport Building	$100,000	No	Yes	Unknown	Coastal Plain	Yes	No	0	5/4/2010	Edward B. Mendiola	
Feeder – 3 substation	$500,000	Yes	No	Yes	Coastal Plain	Yes	Yes	0	7/8/2013	Ricardo Saavedra	
Ginaingan Reservior	$600,000	No	No	No	Mountaintop	Yes	Yes	0	5/4/2010	Dominick Muna	
Ka'an Reservior	$600,000	No	No	No	Mountiantop	Yes	Yes	0	5/4/2010	Dominick Muna	
Power Plant	$12,000,000	Yes	No	Yes	Coastal Plain	Yes	Yes	0	5/4/2010	Dominick Muna	
Water Pump	$5,000	Unknown	No	No	Hillside	Yes	No	20	5/4/2010	Dominick Muna	
Well SP- 1	$100,000	Yes	Yes	No	Mountaintop	Yes	Yes	0	5/4/2010	Dominick Muna	
Well SP- 2	$100,000	Yes	Yes	No	Mountaintop	Yes	Yes	0	5/4/2010	Dominick Muna	
Well SP- 3	$100,000	Yes	Yes	No	Mountaintop	Yes	Yes	0	5/4/2010	Dominick Muna	
Dept. of Commerce Office -Rota	$20,000	No	NO	No	Coastal Plain	Yes	No		5/4/2010	Roy Masga	
Joe & Sons	$15,000	No	NO	No	Coastal Plainj	No	No	0	5/4/2010	Richard E. Taisacan	
DLNR Main Office Bldg Song	$150,000	Yes	No	No	Coastal Plain	Yes	Yes	0	5/4/2010	Antonio Maratita	
DLNR Storage	$0	Yes	Yes	Yes	Coastal Plain	Yes	No	0	5/4/2010	Antonio Maratita	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
West Harbor marina $0 Small boat	$500,000	Songsong	N5028. 418	E4645. 709	0	150	2005	No	200	No	essential facility	concrete	N/A	N/A

Department of Public Health

Rota Health Center — Sydie P. Taisacan 532-9461

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Administration Building $15,000	$88,400	Songsong	14.1413	145.142 9	67	1,040	1978	Yes	10	Yes	essential facility	concrete	concrete	concrete
B.E.H/morgue $0	$250,000	Songsong	14.1413 1	145.142 65	70	1,800	1976	Yes	20	Yes	essential facility	concrete	concrete & metal	concrete
Building A (extension) $2,000,000	$4,500,000	Songsong			67	14,400	2007	No	100	Yes	essential facility	concrete	concrete	concrete
Cafeteria $50,000	$261,120	Songsong	14.1419 5	145.142 81	67	3,072	1993	No	159	Yes	essential facility	concrete	concrete	concrete
E.R.E. Storage $5,000		Songsong			90	320	2006	No	0	Yes	essential facility	other	metal	metal
Hemodialsis $2,500,000		Songsong	14.149 4	145.142 45	70	7,000	1994	No	50	Yes	essential facility	concrete	concrete	concrete
Hospital Building $500,000	$850,000	Songsong	14.1408 5	145.142 63	67	10,000	1975	Yes	200	Yes	essential facility	concrete	concrete	concrete
In-Patient (A Wing) $3,800.00		Songsong	14.1408 4	145.142 09	78	14,400	2005	No	46	Yes	essential facility	concrete	concrete	concrete
Out-Patient (B wing) $5,400,000		Songsong	14.1408 5	145.142 63	78	10,000	1975	Yes	70	Yes	essential facility	concrete	concrete	concrete
Public Health $300.000		Songsong	14.1413	145.142	70	1,800	1976	Yes	30	Yes	essential facility	concrete	concrete	concrete

Department of Public Lands

DPL – Rota — Alejo Mendiola Jr. 532-9431

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Dept. of Public Lands $0	$185,000	Songsong	N5799.64	E5455.22	6	1,600	1993	No	160	Yes	essential facility	concrete	concrete	concrete

Department of Public Safety

Rota DPS — Manuel Atalig 532-9490

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Admin Building $0	$323,900	Songsong			76	170	0	Yes	18	Yes	essential facility	concrete	concrete	concrete

Police Building	Songsong	98	240	0	Yes	26	Yes	essential facility	concrete	concrete	concrete	$0	$222,000

Department of Public Works

Environmental Quality Gary Toves 532-3102

DEQ Field Office-Rota	Teneto	0	0	0	N/A	10	No	N/A	concrete	concrete	concrete	$0	$0

Public Works – Rota Romeo G. Cinco 532-9412

DPW Mechanic Shop	Igua	779	1,600	2006	No	17	Yes	essential facility	concrete	concrete	concrete	$0	$40,000
DPW Air Pressure/Storage	Igua	779	800	2007	no	5	yes	essential facility	concrete	metal	metal	$0	$4,900
DPW Fuel Pump House	Igua	779	60	2007	no	1	yes	essential facility	concrete	concrete	concrete	$0	$1,626

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
West Harbor Marina Small Boat	$0	Yes	Yes	Yes	Coastal Plain	Yes	No	0	5/4/2010	Antonio Maratita	
Administration Building	$20,000	Yes	Yes	No	Coastal Plain	Yes	Yes	0	5/4/2010	Antonio Atalig	
B.E.H/Morgue	$14,30	Yes	Yes	No	Coastal Plain	Yes	No		5/4/2010	Antonio Atalig tal	
Building A (extension)	$2,000,000	Yes	Yes	No	Coastal Plain	Yes	Yes	0	5/4/2010	Antonio Atalig tal	
Cafeteria	$50,000	Yes	Yes	No	Coastal Plain	Yes	Yes	0	5/4/2010	Antonio Atalig tal	
E.R.E Storage	$350,000	No	Yes	No	Hillside	Yes	Yes	300	5/4/2010	Antonio Atalig tal	
Hemodialsis	$1,800,000	Yes	Yes	No	Hillside	Yes	No		5/4/2010	Antonio Atalig tal	
Hospital Building	$1,000,000	Yes	Yes	No	Coastal Plain	Yes	Yes	0	5/4/2010	Antonio Atalig tal	
In-Patient (A Wing)	$1,500,000	Yes	Yes	No	Hillside	Yes	No	0	5/4/2010	Antonio Atalig tal	
Out-Patient (B wing)	$1,800,000	Yes	Yes	No	Hillside	Yes	No	0	5/4/2010	Antonio Atalig tal	
Public Health	$100,000	Yes	Yes	No	Hillside	Yes	No	0	5/4/2010	Antonio Atalig tal	
Dept. of Public Lands	$100,000	No	No	No	Coastal Plain	Yes	No	0	5/4/2010	Planning Division	
Admin Building	$102,000	No	No	No	Hillside	Unknown	Yes	20	3/31/2010	Manuel Atalig	
Police Building	$135,000	No	NO	NO	Hillside	Unknown	Yes	100	3/31/2010	Manuel Atalig	
DEQ field Office- Rota	$50,000	No	NO	NO	Coastal Plain	No	Yes	0	4/7/2010		
DPW Mechanic Shop	$99,600	No	Yes	No	Hillside	Unknown	Yes	0	6/28/2013	Romeo G. cinco	
DPW Air Pressure/storage	$10,300	no	yes	no	hillside	unknown	yes	0	6/28/2013	David A. Manglona	
DPW Fuel Pump House	$10,338	no	yes	no	hillside	unknown	yes	0	6/27/2013	David A. Manglona	

Facility Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre- 1991? (ft)	Max- Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
DPQ Admin Building $3,000 $80,000	Igua			786	1,344	2006	No	10	Yes	essential facility	concrete	concrete	concrete

Department of Community and Cultural Affairs

Aging Center Henry S. Atalig 664-2576

Facility	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
DCCA/Aging Office $0 $0	Sinapalo			891	28,764	2001	No	100	Yes	essential facility	concrete	concrete	other
Office/Manamko Center Designated Typhoon $0 $0	Sinapalo			0	0	2001	No	130	Unknown	essential facility	concrete	concrete	other

DCCA – Rota 532-0818

Facility	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
DCCA Aging Office $544 $150,000	Sinapalo			891	28,764	1996	No	100	Yes	essential facility	concrete	concrete	concrete
DCCA Office Building $1,425 $75,000	Songsong			63	5,800	1986	Yes	30	No	N/A	Concrete	Wood & other	Concrete
Historic Preservation $417 $25,000	Songsong			63	360	1986	Yes	6	No	N/A	concrete	wood & other	concrete

Homeland Security and Emergency Management

HSEM-Rota Vivian Hocog 532-4700

Facility	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
EMO Office $15,871 $300,000	Songsong			0	1,250	1987	Yes	20	Yes	essential facility	concrete	concrete	concrete

Marianas Visitors Authority

MVA –Rota Sandra Atalig 532-0327

Facility	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
MVA Carpentry Shop $500 $5,000	Songsong				200	2007	No	8	No	N/A	concrete	concrete & metal	concrete
MVA Mechanic Shop $800 $10,000	Songsong				480	1992	No	8	No	N/A	concrete	wood & metsl	concrete
MVA Nusery song $500 $5,000	Songsong				480	2007	No	8	No	N/A	concrete	metal & other	concrete
MVA Main Office $1,000 $80,000	Songsong				760	1988	Yes	8	No	N/A	concrete	concrete	concrete
MVA Storage building $60,000 $30,000	Songsong				760	1998	No	8	No	N/A	concrete	concrete	concrete

Northern Marianas college

Northern Marianas College							Ross Manglona		532-9477/9417			
NMC Rota campus $5,000 $2,000,000 Facility	Tatachong		25	3,000	1999	No	1000	Yes	N/A	concrete	concrete	concrete

Office of the Governor

Coastal Resources Management Office							William Pendergrass		532-0464			
CRMO – Rota $0 $33,120	Miling Katan		31	480	1991	No	2	No	N/A	concrete	concrete	concrete

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
DPW, Admin Building	$66,400	No	No	No	Hillside	Unknown	Yes	0	4/13/2010	Romeo G. Cinco	
DCCA/Aging Office/Mananko center	$0	Unknown	No	No	Hillside	Yes	Yes	0	4/12/2010		
Designated typhoon shelter	$0	Unknown	No	No	Hillside	Yes	Yes	0	4/12/2010		
DccA Aging Office	$175,000	No	No	No	Inland flats	Unknown	No	0	4/14/2010		
DCCA Office Building	$52,,671	Yes	No	Yes	Coastal Plainn	Unknown	No	0	4/14/2010		
Historic Preservation	$25,000	Yes	No	yes	Coastal Plain	Unknown	no	0	4/14/2010		
EMO	$50,000	no	no	yes	coastal plain	no	no	0	4/15/2010	Vivian Hocog	
MVA Carpentry Shop	$10,000	no	yes	no	hillside	unknown	unknown	0	4/16/2010	Damaso B. Catubay	
MVA Mechanic Shop	$30,000	yes	yes	no	hillside	unknown	unknown	0	4/16/2010	Damaso B. Catubay	
MVA Nusery Song	$15,000	yes	yes	no	hillside	unknown	unknown	0	4/16/2010	Damaso B. Catubay	
MVA Office building	$40,000	yes	yes	no	hillside	unknown	unknown	0	4/16/2010	Damaso B. Catubay	
MVA Storage Building	$0	yes	yes	no	hillside	unknown	unknown	0	4/16/2010	Damaso B. Catubay	
NMC RotaCampus Facility	$3,500,000	yes	yes	yes	coastal plain	no	no	0	4/28/2010	Martin Mendiola	
CRMO – Rota	$33,120	no	no	yes	coastal plain	no	no	0	5/4/2010	William Pendergrass	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre- 1991? (ft)	Max- Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Environmental Quality												664-8500/01		
DEQ field Office $0	$0	Teneto			0	630	0	no	20	no	N/A	concrete	concrete	concrete
Office of the Mayor														
Office of the Mayor										Tom Quitugua		532-9451/2/3		
Public Market (former $1,000 Headstart bldg.)	$85,000	Sinapalo			0	830	1980	yes	15	no	essential facility	concrete	concrete	concrete
Rota Mayor's Office $5,000	$480,000	Liyo			0	4,530	1991	no	48	yes	essential facility	concrete	metal	concrete
Youth Center $500	$110,000	Sinapalo			0	1,083	2006	no	20	no	essential facility	concrete	concrete	concrete

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
DEQ Field Office- Rota	$100,000	no	no	yes	coastal plain	no	no		4/7/2010	Marvin Seaman	
Public Market (former Headstart Bldg)	$20,000	no	yes	no	inland flats	yes	no	0	4/16/2010	Tom Quitugua	
Rota Mayor's Office	$60,000	yes	yes	no	hillside	yes	no	0	4/16/2010	Tom Quitugua	
Youth Center	$5,000	no	yes	no	inland flats	yes	no	0	4/16/2010	Tom Quitugua	

Facility		Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
			Replacement Functional	value of	Value (per	structure	Day)		(ft)			Cap.			

Saipan

CNMI Attorney General's Office

Civil Division

Wilfred C. Villagomez 664-2341

Civil Division-Main Office	$450,000	$300,000	Capitol Hill				0	0	Yes	0	Yes	essential facility	concrete	concrete	concrete

Criminal Division

Wilfred C. Villagomez 664-2341

Criminal Division #1	$120,000	$150,000	Susupe				0	0	Yes	0	no	essential facility	concrete	concrete	concrete
Criminal Division #2	$120,000	$150,000	susupe				0	0	yes	0	no	essential facility	concrete	concrete	concrete
Criminal Division #3	$10,000	$300,000	susupe				0	0	yes	0	no	essential facility	concrete	concrete	concrete

CNMI Public School System

Cha Cha Oceanview Jr. High School

Admin Building	$0	$648,000	Kagman				5,400	2000	no	180	yes	essential facility	concrete	concrete	concrete
Bldg A	$0	$472,000	Kagman				3,937	2000	no	262	yes	essential facility	concrete	concrete	concrete
Bldg B	$0	$474,000	Kagman				3,937	2000	no	262	yes	essential facility	concrete	concrete	concrete
Bldg C	$0	$505,920	Kagman				4,216	2000	no	281	yes	essential facility	concrete	concrete	concrete
Bldg D	$0	$505,920	Kagman				3,937	2000	no	262	yes	essential facility	concrete	concrete	concrete
Cafeteria	$0	$576,000	Kagman				4,800	2000	no	160	yes	essential facility	concrete	concrete	concrete
L.O.C. Bldg	$0	$109,200	Kagman				910	2000	no	30	yes	essential facility	concrete	concrete	concrete

SPED Bldg $0 $164,160	Kagman	1,368	2000	no	45	yes	essential facility	concrete	concrete	concrete
Voc .Bldg $0 $378,000	Kagman	3,150	2000	no	105	yes	essential facility	concrete	concrete	concrete

Dan Dan Elementary School

Admin Office $0 $340,800	Dandan	2,840	1998	no	94	yes	essential facility	concrete	concrete	concrete
Bldg A $0 $408,000	Dan Dan	4,020	1998	no	136	yes	essential facility	concrete	metal	metal
Bldg B $0 $360,000	Dan Dan	3,600	1998	no	120	yes	essential facility	concrete	metal	metal
Bldg C $0 $405,000	Dan Dan	4,050	1998	no	135	yes	essential facility	concrete	metal	metal

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
Civil Division –Main Office	$500,000	no	Unknown	no	Mountaintop	unknown	yes	0	5/5/2010	Wilfred C.Villagomez	
Criminal Division #1	$150,000	no	Unknown	Unknown	Hillside	unknown	yes	0	5/5/2010	Wilfred C.Villagomez	
Criminal Division #2	$150,000	no	Unknown	Unknown	Hillside	unknown	yes	0	5/5/2010	Wilfred C.Villagomez	
Criminal Division #3	$20,000	no	Unknown	Unknown	Hillside	unknown	yes	0	5/5/2010	Wilfred C.Villagomez	
Admin Bldg	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg A	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg B	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg C	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg D	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Cafeteria	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
L.O.C. Bldg	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
SPED Bldg	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Voc. Bldg	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Admin Bldg	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg A	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg B	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg C	$0	yes	no	no	Hillside	yes	Unknown	0	5/4/2010	Rommel Mostales	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Bldg D		Dan Dan			0	3,600	1998	no	120	no	essential facility	concrete	metal	metal
$0	$360,000													
Bldg E		Dan Dan			0	3,872	1994	no	129	yes	essential facility	concrete	metal	concrete
$0	$378,200													
Cafeteria		Dan Dan			0	4,070	1998	no	135	yes	essential facility	concrete	concrete	concrete
$0	$488,400													
Garapan Elementary										Rommel Mostales		237-3009		
Cafeteria		Garapan			0	3,402	1967	yes	113	no	essential facility	concrete	metal	concrete
$0	$340,200													
GES Bldg “A”		Garapan			0	4,128	1967	yes	137	no	essential facility	concrete	metal	concrete
$0	$412,800													
GES Bldg “B”		Garapan			0	4,128	1967	yes	137	no	essential facility	concrete	metal	concrete
$0	$412,800													
GES Bldg “C”		Garapan			0	4,128	1967	yes	137	no	essential facility	concrete	metal	concrete
$0	$412,800													
GES Bldg “D” 2-storey		Garapan			0	8,038	1980	yes	291	yes	essential facility	concrete	concrete	concrete
$0	$1,048,560													
GES Bldg “E”		Garapan			0	6,596	1980	yes	219	yes	essential facility	concrete	concrete	concrete
$0	$791,520													
Library		Garapan			0	3,600	1990	yes	120	yes	essential facility	concrete	concrete	concrete
$0	$432,000													
SPED Bldg Two storey		Garapan			0	841	1990	yes	28	yes	essential facility	concrete	concrete	concrete
$0	$10,080													
GTC Elementary School										Rommel	Mostales	237-3009		
Admin Office		San Roque			0	960	0	Yes	32	no	essential facility	concrete	wood &metal	concrete
$0	$96,000													
Bilingual		San Roque			0	576	0	Yes	19	no	essential facility	concrete	wood &metal	wood & metal
$0	$57,600													
Bldg A		San Roque			0	1,280	0	Yes	42	no	essential facility	concrete	wood &metal	concrete
$0	$128,000													
Bldg B		San Roque			0	3,720	0	Yes	124	no	essential facility	concrete	concrete	concrete
$0	$446,400													

Bldg C (Cafeteria)	San Roque	0	3,840	0	Yes	128	no	essential facility	concrete	wood &metal	concrete	$0	$384,000
Bldg D	San Roque	0	2,880	0	Yes	96	no	essential facility	concrete	metal	concrete	$0	$288,000
Bldg F	San Roque	0	4,500	0	Yes	150	no	essential facility	concrete	metal	concrete & metal	$0	$450,000
Bldg G&H	San Roque	0	5,400	0	Yes	180	no	essential facility	concrete	wood &metal	wood &metal	$0	$540,000
Restroom	San Roque	0	1,152	0	Yes	38	no	essential facility	concrete	wood &metal	concrete	$0	$115,200

Hopwood Jr. High School Rommel Mostales 237-3009

Bldg A	Chalan Piao	0	4,125	0	yes	137	no	essential facility	concrete	wood & metal	concrete	$0	$412,500

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
Bldg D	$0	yes	yes	no	inland flats	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg E	$0	no	yes	no	inland flats	yes	Unknown	0	5/4/2010	Rommel Mostales	
Cafeteria	$0	no	yes	no	inland flats	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg D	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
GES Bldg “A”	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
GES Bldg “B”	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
GES Bldg “C”	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
GES Bldg “D” 2 storey	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
GES Bldg “E”	$0	no	yes	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Library	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
SPED Bldg 2 storey	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Admin Office	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bilingual	$0	yes	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg A	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg B	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg C (Cafeteria)	$0	yes	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg D	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg F	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg G&H	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Restroom	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg A	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Bldg B $0	$354,500	Chalan Piao			0	3,540	0	yes	118	no	essential facility	concrete	wood & metal	concrete
Bldg C $0	$531,000	Chalan Piao			0	5,310	0	yes	177	no	essential facility	concrete	wood & metal	concrete
Bldg D $0	$546,840	Chalan Piao			0	4,557	0	yes	151	no	essential facility	concrete	concrete	concrete
Bldg E Semi concrete $0	$450,000	Chalan Piao			0	4,500	0	yes	150	no	essential facility	concrete	wood & metal	concrete
Bldg E solid $0	$756,000	Chalan Piao			0	6,300	0	yes	210	no	essential facility	concrete	concrete	concrete
Bldg V $0	$800,000	Chalan Piao			0	8,000	0	yes	266	no	essential facility	concrete	wood & metal	woo & metal
Cafeteria $0	$345,600	Chalan Piao			0	2,880	0	yes	96	no	essential facility	concrete	concrete	concrete
Ro LMA $0	$400,000	Chalan Piao			0	4,000	0	yes	133	no	essential facility	concrete	metal	wood & metal
P.E. 2 $0	$216,000	Chalan Piao			0	1,800	0	yes	60	no	essential facility	concrete	concrete	concrete
P.E. 1 $0	$384,000	Chalan Piao			0	3,200	0	yes	106	no	essential facility	concrete	concrete	concrete

Kagman Elementary School Rommel Mostales 237-3009

Bldg A Admin $0	$414.720	Kagman lll			0	3,456	1999	no	115	yes	essential facility	concrete	concrete	concrete
Bldg B Library $0	$286,000	Kagman lll			0	2,400	1999	no	80	yes	essential facility	concrete	concrete	concrete
Bldg A Cafeteria $0	$696,000	Kagman lll			0	5,800	1999	no	193	yes	essential facility	concrete	concrete	concrete
Bldg D $0	$921,600	Kagman lll			0	7,680	1999	no	256	yes	essential facility	concrete	concrete	concrete
Bldg E $0	$1,152,000	Kagman lll			0	9,600	1999	no	320	yes	essential facility	concrete	concrete	concrete
Bldg F $0	$921,600	Kagman lll			0	7,680	1999	no	256	yes	essential facility	concrete	concrete	concrete

Kagman High School Rommel Mostales 237-3009

Admin	$0	$432,000	Kagman lll	0	3,600	0	no	120	yes	essential facility	concrete	concrete	concrete
Bldg "I"	$0	$432,000	Kagman lll	0	3,600	0	no	120	yes	essential facility	concrete	concrete	concrete
Bldg A	$0	$439,200	Kagman lll	0	3,660	2000	no	122	yes	essential facility	concrete	concrete	concrete
Bldg B	$0	$432,000	Kagman lll	0	3,600	2000	no	120	yes	essential facility	concrete	concrete	concrete
Bldg C	$0	$288,000	Kagman lll	0	2,400	2000	no	80	yes	essential facility	concrete	concrete	concrete
Bldg D	$0	$288,000	Kagman lll	0		2000	no	80	yes	essential facility	concrete	concrete	concrete

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
Bldg B	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg C	$0	yes	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg D	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg E Semi-concrete	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg E Solid	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg V	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Cafeteria	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
LMA	$0	yes	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
P.E. 2	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
P.E. 1	$0	no	no	yes	coastal plain	yes	Unknown	0	5/4/2010	Rommel Mostales	
Bldg.A. Admin	$0	yes	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.B Library	$0	yes	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.C. Cafeteria	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.D.	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.E.	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.F.	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Admin.	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg."I"	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.A	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.B	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.C	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.D	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre- 1991? (ft)	Max- Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall	Type
Bldg E $0	$432,000	Kagman III			0	3,600	2000	no	120	yes	essential facility	concrete	concrete	concrete	
Bldg F $0	$432,000	Kagman III			0	3,600	2000	no	120	yes	essential facility	concrete	concrete	concrete	
Bldg G $0	$216,000	Kagman III			0	1,800	2000	no	60	yes	essential facility	concrete	concrete	concrete	
Bldg H $0	$432,000	Kagman III			0		2000	no	120	yes	essential facility	concrete	concrete	concrete	
Bldg “L” $0	$280,800	Kagman III			0	2,340	0	no	78	yes	essential facility	concrete	concrete	concrete	
Cafeteria $0	$654,360	Kagman III			0	5,453	0	no	181	yes	essential facility	concrete	concrete	concrete	
JROTC $0	$280,800	Kagman III			0	2,340	0	no	78	yes	essential facility	concrete	concrete	concrete	
Koblerville Elementary School											**Rommel Mostales**	**237-3009**			
Bldg “A” Admin $0	$176,640	Koblerville			0	1,472	1985	yes	49	yes	essential facility	concrete	concrete	concrete	
Bldg “B-3” CR $0	$688,200	KoblervilleII			0	2,232	1985	yes	191	yes	essential facility	concrete	concrete	concrete	
Bldg “F” Cafeteria $0	$290,160	KoblervilleII			0	2,418	1987	yes	0	no	essential & utulity	concrete	concrete	concrete	
Bldg “G-4” CR $0	$109,740	KoblervilleII			0	2,232	1985	yes	191	no	essential & utility	concrete	concrete	concrete	
GES BLDG “C-6” CR $0	$267,840	KoblervilleII			0	5,735	1985	yes	74	no	essential facility	concrete	concrete	concrete	
GES Bldg “D-4” CR $0	$438,960	KoblervilleII			0	3,658	1985	yes	121	no	essential facility	concrete	concrete	concrete	
GES Bldg “E-6” CR $0	$714,240	KoblervilleII			0	5,952	1989	yes	198	no	essential facility	concrete	concrete	concrete	
Marianas High School											**Rommel Mostales**	**237-3009**			
MHS Bldg “A” $0	$629,760	Susupe			0	5,248	1969	yes	174	yes	essential facility	concrete	concrete	concrete	
MHS Bldg “B” $0	$307,200	Susupe			0	2,560	1980	yes	85	yes	essential facility	concrete	concrete	concrete	

MHS Bldg “C”	Susupe	0	2,976	1983	yes	99	yes	essential facility	concrete	concrete	concrete	$0	$357,120
MHS Bldg “D”	Susupe	0	5,248	1969	yes	174	yes	essential facility	concrete	concrete	concrete	$0	$629,760
MHS Bldg “E”	Susupe	0	5,248	1969	yes	174	yes	essential facility	concrete	concrete	concrete	$0	$629,760
MHS Bldg “F”	Susupe	0	3,540	1997	no	118	no	essential facility	concrete	metal	concrete	$0	$354,000
MHS Bldg “G”	Susupe	0	3,840	1970	yes	12	no	essential facility	concrete	metal	concrete	$0	$38,400
MHS Bldg “H”	Susupe	0	4,080	1969	yes	136	yes	essential facility	concrete	metal	concrete	$0	$408,000

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
Bldg.E	$0	no	yes	no	hillside	yes	yes	0	5/4/2010	Rommel Mostales	
Bldg.F	$0	no	yes	no	hillside	yes	yes	0	5/4/2010	Rommel Mostales	
Bldg.G	$0	no	yes	no	hillside	yes	yes	0	5/4/2010	Rommel Mostales	
Bldg.H	$0	no	yes	no	hillside	yes	yes	0	5/4/2010	Rommel Mostales	
Bldg.”L”	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Cafeteria	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
JROTC	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg.”A” Admin	$0	no	no	no	coastal plain	yes	no	0	5/4/2010	Rommel Mostales	
Bldg.”B-3” CR	$0	no	no	no	coastal plain	yes	no	0	5/4/2010	Rommel Mostales	
Bldg.”F” Cafeteria	$0	no	no	no	coastal plain	yes	no	0	5/4/2010	Rommel Mostales	
Bldg.”G-4” CR	$0	no	no	no	coastal plain	yes	no	0	5/4/2010	Rommel Mostales	
GES Bldg.”C-6” CR	$0	no	no	no	coastal plain	yes	no	0	5/4/2010	Rommel Mostales	
GES Bldg.”D-4” CR	$0	no	no	no	coastal plain	yes	no	0	5/4/2010	Rommel Mostales	
GES Bldg “E-6” CR	$0	no	no	no	coastal plain	yes	no	0	5/4/2010	Rommel Mostales	
MHS Bldg.”A”	$0	no	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”B”	$0	no	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”C”	$0	no	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”D”	$0	no	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”E”	$0	no	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”F”	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”G”	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”H”	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
MHS Bldg “J” $0	$1,671,360	Susupe			0	13,928	2009	no	270	no	essential facility	concrete	metal	concrete
MHS Bldg “M” $0	$307,200	Susupe			0	1,500	1969	yes	50	no	essential facility	concrete	concrete	concrete
MHS Bldg “N” Cafeteria $0	$357,120	Susupe			0	3,840	1969	yes	128	no	essential facility	concrete	concrete	concrete
MHS Bldg “R” $0	$629,760	Susupe			0	2,400	1980	yes	72	yes	essential facility	concrete	concrete	concrete
MHS Bldg “S” $0	$629,760	Susupe			0	3,936	1969	yes	131	no	essential facility	concrete	wood & metal	concrete
MHS Bldg “I”Middle $0	$408,000	Susupe			0	3,168	1987	yes	105	no	essential facility	concrete	metal	concrete
MHS Bldg “I” North $0	$38,400	Susupe			0	10,000	1969	yes	333	no	essential & utility	concrete	metal	metal
MHS Bldg “I” South $0	$354,000	Susupe			0	10,000	1969	yes	333	no	essential transportation Hazardous materials	concrete	metal	metal

Oleai Elementary

Rommel Mostales 237-3009

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
OES Bldg “A” $0	$482,400	Oleai			0	4,020	1992	no	134	yes	essential facility	concrete	concrete	concrete
OES Bldg “B” $0	$651,000	Oleai			0	6,510	1970	yes	217	no	essential facility	concrete	metal	concrete
OES Bldg “C” $0	$288,300	Oleai			0	2,883	1974	yes	96	no	essential facility	concrete	metal	concrete
OES Bldg “D” $0	$288,300	Oleai			0	2,883	1974	yes	96	no	essential facility	concrete	metal	concrete
OES Bldg “E” $0	$918,000	Oleai			0	7,650	1987	yes	256	yes	essential facility	concrete	concrete	concrete
OES Bldg “F” $0	$918,000	Oleai			0	7,650	1998	no	255	yes	essential & transportation Hazardous materials	concrete	concrete	concrete
OES Bldg “G” $0	$466,200	Oleai			0	4,662	1970	yes	155	no	essential & utility	concrete	metal	concrete

Saipan Southern High

Rommel Mostales 237-3009

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Admin Office $0	$216,000	Kolblerville			0	2,160	2000	no	72	no	essential facility	concrete	metal	metal

Bldg. “A”	Kolblerville	0	6,784	2000	no	226	no	essential facility	concrete	metal	metal	$0	$678,400
Bldg. “B”	Kolblerville	0	6,784	2000	no	226	no	essential facility	concrete	metal	metal	$0	$608,000
Bldg. “C”	Kolblerville	0	6,080	2000	no	202	no	essential facility	concrete	metal	metal	$0	$608,000
Bldg. “D”	Kolblerville	0	7,040	2000	no	234	no	essential facility	concrete	metal	metal	$0	$704,000
Bldg. “E”	Kolblerville	0	1,600	2000	no	53	no	essential facility	concrete	metal	metal	$0	$160,000
Bldg. “F”	Kolblerville	0	1,920	2000	no	64	no	essential facility	concrete	metal	metal	$0	$192,000

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
MHS Bldg.”J”	$45,000	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”M”	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”N” Cafeteria	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”R”	$0	no	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”S”	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”I” Middle	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”I” North	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
MHS Bldg.”I” South	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
OES Bldg.”A”	$0	no	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
OES Bldg.”B”	$0	yes	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
OES Bldg.”C”	$0	yes	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
OES Bldg.”D”	$0	yes	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
OES Bldg.”E”	$0	yes	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
OES Bldg.”F”	$0	yes	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
OES Bldg.”G”	$0	no	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Admin Office	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg “A”	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg “B”	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg “C”	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg “D”	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg “E”	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg “F”	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Bldg. “G” $0	$192,000	Kolblerville			0	1,920	2000	no	64	no	essential facility	concrete	metal	metal
Bldg. “H” $0	$160,000	Kolblerville			0	1,600	2000	no	53	no	essential facility	concrete	metal	metal
Bldg. “I” $0	$387,200	Kolblerville			0	3,872	2000	no	129	no	essential facility	concrete	metal	metal
Cafeteria” $0	$655,200	Kolblerville			0	6,552	2000	no	218	no	essential facility	concrete	metal	metal
Counselor’s Office $0	$240,000	Kolblerville			0	2,400	2000	no	118	no	essential facility	concrete	metal	metal
Library $0	$355,200	Kolblerville			0	3,552	2000	no	118	no	essential facility	concrete	metal	metal
San Antonio Elementary											Rommel Mostales	237-3009		
Admin $0	$112,500	San Antonio			0	1,125	0	no	37	no	essential facility	concrete	concrete	concrete
Cafeteria $0	$216,000	San Antonio			0	1,800	0	no	60	yes	essential facility	concrete	concrete	concrete
Library $0	$316,800	San Antonio			0	1,140	0	no	38	no	essential facility	concrete	concrete	concrete
Maintenance Shop $0	$80,000	San Antonio			0	800	0	no	26	no	essential facility	concrete	metal	concrete
SAES Bldg “A” $0	$450,000	San Antonio			0	4,500	1969	yes	150	no	N/A	concrete	metal	concrete
SAES Bldg “B” $0	$510,000	San Antonio			0	5,100	1969	yes	170	no	essential facility	concrete	metal	concrete
SAES Bldg “C” $0	$270,000	San Antonio			0	3,600	1969	yes	120	no	essential facility	concrete	concrete	& wood concrete
SAES Bldg “D” $0	$614,400	San Antonio			0	5,120	1992	no	170	yes	essential facility	concrete	metal	concrete
SAES Bldg “E” $0	$180,000	San Antonio			0	1,800	0	yes	60	no	essential facility	concrete	metal	concrete
San Vicente Elementary											Rommel Mostales	237-3009		
Admin Bldg $0	$265,600	San Vicente			0	2,130	1988	yes	71	yes	essential facility	concrete	concrete	concrete

Bldg A 1st Floor $0	$747,400	San Vicente	0	6,562	1998	no	218	yes	essential facility	concrete	concrete	concrete
Bldg A 2nd Floor $0	$656,200	San Vicente	0	6,562	1998	no	218	yes	essential facility	concrete	concrete	concrete
Bldg B $0	$288,000	San Vicente	0	2,880	1976	yes	96	no	essential facility	concrete	wood & metal	concrete
Bldg E $0	$390,000	San Vicente	0	3,900	1976	yes	130	no	essential facility	concrete	wood & metal	concrete
Bldg G $0	$1942000	San Vicente	0	1,920	1991	no	64	no	essential facility	concrete	metal	concrete
Bldg H $0	$591,600	San Vicente	0	4,930	1988	yes	164	no	essential facility	concrete	concrete	concrete

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
Bldg “G”	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg “H”	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg “I”	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Cafeteria	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Counselor’s Office	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Library	$0	no	no	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Admin	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Cafeteria	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Library	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Maintenance Shop	$0	yes	no	no	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
SAES Bldg “A”	$0	yes	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
SAES Bldg “B”	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
SAES Bldg “C”	$0	yes	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
SAES Bldg “D”	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
SAES Bldg “E”	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Admin Bldg	$0	yes	no	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg A 1st Floor	$0	no	yes	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg A 2nd Floor	$0	no	yes	no	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg B	$0	yes	yes	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg E	$0	yes	yes	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg G	$0	no	no	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg H	$0	no	no	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Bldg K $0	$0	San Vicente			0	7,950	1988	yes	265	no	essential facility	concrete	concrete	concrete
Library $0	$150,000	San Vicente			0	960	1976	yes	32	no	essential facility	concrete	wood & metal	concrete
Old Cafeteria $0	$150,000	San Vicente			0	1,500	1988	yes	50	no	essential facility	concrete	wood & metal	concrete
Storage $0	$99,000	San Vicente			0	990	1994	no	33	no	essential facility	concrete	wood & metal	concrete

Tanapag Elementary Rommel Mostales 237-3009

Admin Office $0	$297,600	Tanapag			0	2,480	1988	yes	82	yes	essential facility	concrete	concrete	concrete
Bldg A $0	$476,160	Tanapag			0	3,968	1988	yes	132	yes	essential facility	concrete	concrete	concrete
Bldg B $0	$360,000	Tanapag			0	3,600	1969	yes	120	no	essential facility	concrete	wood & metal	concrete
Bldg C $0	$186,000	Tanapag			0	1,860	1969	yes	22	no	essential facility	concrete	wood & metal	concrete
Bldg D $0	$267,840	Tanapag			0	2,232	1988	yes	74	yes	essential facility	concrete	concrete	concrete
Bldg E $0	$360,000	Tanapag			0	3,600	1998	no	120	no	essential facility	concrete	metal	concrete
Bldg F $0	$36,000	Tanapag			0	3,600		unknown	120	no	essential facility	concrete	wood & metal	concrete
Bldg I $0	$115,200	Tanapag			0	1,152	1969	yes	38	no	essential facility	concrete	wood & metal	concrete
Bldg J $0	$180,000	Tanapag			0	1,800		unknown	60	no	essential facility	concrete	metal	concrete
Bldg M $0	$96,000	Tanapag			0	960		unknown	32	no	essential facility	concrete	concrete	concrete
Cafeteria $0	$216,000	Tanapag			0	1,800	1988	yes	60	yes	essential facility	concrete	concrete	concrete
Headstart $0	$457,560	Tanapag			0	3,813	1988	yes	127	yes	essential facility	concrete	concrete	concrete

W.S. Reyes Elementary Rommel Mostales 237-3009

Bldg A		Chalan Kanoa	0	4,488	2000	no	149	yes	essential facility	concrete	concrete	concrete	
$0	$538,560												
Bldg B		Chalan Kanoa	0	7,650	1990	yes	255	yes	essential facility	concrete	concrete	concrete	
$0	$918,000												
Bldg C		Chalan Kanoa	0	6,882	1997	no	229	no	essential facility	concrete	wood & metal	concrete	
$0	$888,200												
Bldg D		Chalan Kanoa	0	5,184	1970	yes	1728	no	essential facility	concrete	wood & metal	concrete	
$0	$518,400												
Bldg E		Chalan Kanoa	0	4,488	1970	yes	149	no	essential facility	concrete	wood & metal	concrete	
$0	$448,800												
Bldg F		Chalan Kanoa	0	4,160	1970	yes	138	no	essential facility	concrete	wood & metal	concrete	
$0	$416,000												

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
Bldg K	$0	unknown	unknown	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Library	$0	no	no	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Old Cafeteria	$0	no	no	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Storage	$0	no	no	yes	hillside	yes	unknown	0	5/4/2010	Rommel Mostales	
Admin Office		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg A		no	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg B		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg C		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg D		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg E		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg F		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg I		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg J		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg M		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Cafeteria		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Headstart		no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg A	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg B	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg C	$0	yes	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg D	$0	yes	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg E	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg F	$0	no	no	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Bldg G $0	$506,000	Chalan Kanoa			0	4,224	1988	yes	281	no	essential facility	concrete	concrete	concrete
Bldg I $0	$888,000	Chalan Kanoa			0	8,880	1998	no	291	no	essential facility	concrete	metal	metal & other

Commonwealth Development Authority

CDA — Christi N. Kintol — 234-6245-7145

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
CDA Office $400,000		Gualo Rai			0	6,400	0	yes	291	no	N/A concrete	concrete	concrete	$6,000

Commonwealth Ports Authority

Francisco C. Ada/Saipan Int'l. Airport — Edward B. Mendiola — 664-3531

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Airport Terminal Bldg $0	$15,866,000	As Lito			210	214,542	2004	no	0	yes	transportation facility	concrete	wood & metal	concrete & wood
ARRF Bldg $0	$1,320,000	As Lito			210	9,637	1994	no	0	yes	essential transportation	concrete	wood & metal	metal
ATCT $0	$1,280,000	As Lito			210	7,503	1993	no	0	yes	Hazardous materials essential & transportation	concrete	wood & metal	wood & metal
Commuter Terminal $0	$1,280,000	As Lito			210	15,950	1978	yes	0	yes	transportation facility	concrete	metal	concrete & wood
Continental Bldg $0	$240,000	As Lito			210	4,800	0	yes	0	yes	transportation facility	concrete	metal	metal
Generator Bldg $0	$66,000	As Lito			210	7,690	1998	no	0	yes	essential facility	concrete	metal	concrete
Incinerator Bldg $0	$200,000	As Lito			210	1,792	1996	no	0	yes	utility system	concrete	metal	metal
Operations Bldg $0	$21,000	As Lito			210	3,340	1975	yes	0	yes	essential facility	concrete	wood & metal	concrete & wood

Commonwealth Utilities Corporation

GSwd – Saipan — Abe Malae – Dep. Dir. — 235-7025/32

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
GSWD $0	$25,000	Sadog Tasi			0	5,200	0	yes	5	yes	utility system	concrete	concrete	concrete

Laboratory – Saipan

Abe Malae – Dep. Dir. 235-7025/32

CUC Water Laboratory	Sadog Tasi			0	1,600	1991	no	8	yes	essential facility	concrete	concrete	concrete	$0	$104,000

Power Division – Saipan

Abe Malae – Dep. Dir. 235-7025/32

Chalan Kiya Sub	Chalan Kiya	49659	50641	0	0	1998	no	50	yes	essential facility	concrete	concrete	concrete	$66,667	$5,000,000
Feeder 1	Central			0	0	0	unknown	0	yes	essential facility	N/A	N/A	N/A	$16,667	$0
Feeder 2	Beach Road			0	0	1989	yes	0	yes	essential facility	N/A	N/A	N/A	$16,667	$4,500,000
Feeder 3	Central			0	0	0	unknown	0	yes	essential facility	N/A	N/A	N/A	$16,667	$0

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
Bldg G	$0	yes	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
Bldg I	$0	yes	yes	yes	coastal plain	yes	unknown	0	5/4/2010	Rommel Mostales	
CDA Office	$200,000	no	no	no	hillside	no	no	0	4/13/2013	Christy N. Kintol	
Airport Terminal Bldg	$21,000,000	no	yes	no	coastal plain	yes	yes	3,000	5/4/2010	Edward B. Mendiola	
ARFF Bldg	$3,000,000	no	no	no	coastal plain	yes	yes	0	5/4/2010	Edward B. Mendiola	
ATCT Bldg	$1,500,000	no	no	no	coastal plain	yes	yes	0	5/4/2010	Edward B. Mendiola	
Commuter Terminal	$2,000,000	no	yes	no	coastal plain	yes	no	2	5/4/2010	Edward B. Mendiola	
Continental Bldg	$240,000	yes	no	no	coastal plain	yes	yes	3,000	5/4/2010	Edward B. Mendiola	
Generator Bldg	$1,500,000	no	no	no	coastal plain	yes	yes	4,000	5/4/2010	Edward B. Mendiola	
Incinerator Bldg	$750,000	no	no	no	coastal plain	yes	yes	2,500	5/4/2010	Edward B. Mendiola	
Operations Bldg	$75,000	no	no	no	coastal plain	yes	yes	3,000	5/4/2010	Edward B. Mendiola	
GSWD	$25,000	no	yes	no	hillside	no	no	0	5/5/2010	Abe Malae – Dep. Dir.	
CUC Water Laboratory Building	$204,000	no	yes	no	hillside	no	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
Chalan Kiya SUB	$4,500,000	no	no	no	coastal plain	yes	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
Feeder 1	$4,500,000	no	no	no	coastal plain	yes	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
Feeder 2	$4,500,000	no	no	no	coastal plain	yes	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
Feeder 3	$4,500,000	no	no	no	coastal plain	yes	yes	0	5/5/2010	Abe Malae – Dep. Dir.	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall	Type
Feeder 4 $16,667	$0	Central East			0	0	1995	no	0	yes	essential facility	N/A	N/A	N/A	
Feeder 7 $16,667	$4,500,000	North			0	0	1993	no	0	yes	essential facility	N/A	N/A	N/A	
Kiya 1 Feeder $16,667	$4,500,000	South East			0	0	1990	yes	0	yes	essential facility	N/A	N/A	N/A	
Kiya 2 Feeder $16,667	$4,500,000	South West			0	0	1990	yes	0	yes	essential facility	N/A	N/A	N/A	
Kiya 4 Feeder $16,667	$4,500,000	South West			0	0	1988	yes	0	yes	essential facility	N/A	N/A	N/A	

Power Generation – Saipan

Abe Malae – Dep. Dir. 235-7025/32

CUC Power Plant I $136,966	$5,000,000	Lower Base			0	10,000	1980	yes	81	yes	essential facility	concrete	other	other
CUC Power Plant II $41,096	$150,000	Lower Base			0	0	1970	yes	4	yes	essential facility	concrete	other	other
CUC Power Plant IV $41,096	$250,000	Lower Base			0	4,000	1990	yes	12	yes	utility system	concrete	metal	other

Warehouse – Saipan

Abe Malae – Dep. Dir. 235-7025/32

CUC Warehouse $184	$1,000,000	Lower Base			6	12,000	1996	yes	25	yes	utility system	concrete	metal	wood

Wastewater – Saipan

Abe Malae – Dep. Dir. 235-7025/32

Agingan Wastewater $0 Treatment	$5,000,000	San Antonio				115,377	1992	no	10	yes	utility system	concrete	concrete	concrete
Electrical Shop at $0 Sadog Tasi	$700,000	Sadog Tasi			0	700	2000	no	20	yes	essential facility	concrete	concrete	concrete
Pumpl Shop at Sadog Tasi $0	$500,000	Sadog Tasi			0	500	2002	no	10	yes	essential facility	concrete	metal	concrete
Sadog Tasi Wastewater $0 Treatment	$5,000,000	Sadog Tasi			0	77,000	1993	no	15	yes	utility system	concrete	concrete	concrete
Wastewater Division $0	$58,650	Dandan			0	850	1998	no	34	yes	essential facility	concrete	concrete	concrete

Water Division – Saipan

Abe Malae – Dep. Dir. 235-7025/32

MQ 3		As Matuis		0	100	0	unknown	0	yes	utility system	concrete	N/A	N/A
$0	$100,000												
MQ 1		As Matuis		0	100	0	unknown	0	yes	utility system	concrete	N/A	N/A
$0	$100,000												
MQ 5		As Matuis		0	100	0	unknown	0	yes	utility system	concrete	N/A	N/A
$0	$100,000												
PR-163B		Puerto Rico		0	100	0	unknown	0	yes	utility system	concrete	N/A	N/A
$0	$100,000												

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
Feeder 4	$4,500,000	no	no	no	coastal plain	yes	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
Feeder 7	$4,500,000	no	no	no	coastal plain	yes	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
Kiya 1Feeder	$4,500,000	no	no	no	coastal plain	yes	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
Kiya 2Feeder	$4,500,000	no	no	no	coastal plain	yes	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
Kiya 4 Feeder	$4,500,000	no	no	no	coastal plain	yes	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
CUC Power Plant I	$110,000,000	no	yes	yes	coastal plain	no	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
CUC Power Plant II	$12,000,000	no	yes	yes	coastal plain	no	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
CUC Power Plant IV	$14,000,000	no	no	no	coastal plain	no	yes	0	5/5/2010	Abe Malae – Dep. Dir.	
CUC Warehouse	$12,000,000	no	yes	yes	coastal plain	no	yes	15	5/5/2010	Abe Malae – Dep. Dir.	
Agingan Wastewater Treatment	$1,500,000	no	no	no	coastal plain	yes	no	0	5/5/2010	Abe Malae – Dep. Dir.	
Electrical Shop at Sadog Tasi	$1,200,000	no	no	no	hillside	yes	no	0	5/5/2010	Abe Malae – Dep. Dir.	
Pump Shop at Sadog Tasi	$1,000,000	no	no	no	hillside	yes	no	0	5/5/2010	Abe Malae – Dep. Dir.	
Sadog Tasi Wastewater Treatment	$1,500,000	no	no	no	hillside	yes	no	0	5/5/2010	Abe Malae – Dep. Dir.	
Wastewater Division Office	$10,000	no	no	no	coastal plain	no	no	0	5/5/2010	Abe Malae – Dep. Dir.	
MQ 3	$50,000	no	no	no	hillside	no	no	0	5/5/2010	Abe Malae – Dep. Dir.	
MQ 1	$50,000	no	no	no	hillside	no	no	0	5/5/2010	Abe Malae – Dep. Dir.	
MQ 5	$50,000	no	no	no	hillside	no	no	0	5/5/2010	Abe Malae – Dep. Dir.	
PR-163B	$50,000	no	no	no	hillside	no	no	0	5/5/2010	Abe Malae – Dep. Dir.	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall	Type

Department of Finance

Division of Procurement & Supply

Frank DL Guerrero 664-2506/1500

CNMI Procurement & Supply		Lower Base			10	30,000	1968	yes	17	no	essential facility	concrete	metal	metal	
$0	$750,000														

Department of Lands & Natural Resources

DLNR Park & Recreation – Saipan

Eliceo Cabrera 234-7405/1791

DLNR Mechanic Shop		As Perdido			75	10,000	0	yes	100	no	N/A	concrete	metal	concrete	
$0	$80,000														
DLNR Office Building		As Perdido			75	2,000	0	yes	50	no	N/A	concrete	metal	concrete	
$0	$60,000														
Garapan Shoreline Pavilion		Garapan			10	1,000	1990	yes	50	no	N/A	concrete	concrete	concrete	
$0	$25,000														
Kilili Beach Park Pavilion		Oleai			10	12,000	1990	yes	50	no	N/A	concrete	concrete	concrete	
$0	$30,000														
Minachom Atdoa Pavilion		Oleai			10	2,000	1990	yes	100	no	N/A	concrete	concrete	concrete	
$0	$60,000														
Oleai Beach Pavilion		Oleai			10	1,200	2002	no	50	no	N/A	concrete	concrete	concrete	
$0	$30,000														
Round House Building		Garapan			200	10,000	1992	no	300	no	N/A	concrete	concrete	concrete	
$0	$500,000														
San Isdro Beach Pavilion		Chalan Kanoa			10	1,200	1990	yes	50	no	N/A	concrete	concrete	concrete	
$0	$30,000														
Susupe Park Pavilion		susupe			10	2,000	1989	yes	100	no	N/A	concrete	metal	concrete	
$0	$40,000														

DLNR Div. of Fish & Wildlofe – Saipan

Arnold Palacios

DFW Main office		Lower Base
$900,000		
Fisheries/Enforcement		
Smiling Cove Marina		Garapan
$3,500,000		
SC Marina Office		Garapan
$2,000,000		

BTS Kennel $100,000	Lower Base
Kagman $100,000	Kagman
Forestry $100,000	Kagman
Shop $120,000	Kagman
Forestry Nursery $20,000	Kagman
Local Nursery $15,000	Kagman
AHS $130,000	Kagman
Kennel $70,000	Lower Base

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
CNMI Procurement & Supply	$204,000	no	no	yes	coastal plain	yes	yes	20	4/13/2010	Frank DL Guerrero	
DLNR Mechanic Shop	$500,000	no	no	no	inland flats	yes	no	0	4/12/2010	Elieo Cabrera	
DLNR Office Building	$521,000	no	no	no	inland flats	yes	no	0	4/12/2010	Anthony T. Benavente	
Garapan Shoreline Pavilion	$400	no	no	yes	coastal plain	yes	no	0	4/12/2010	Anthony T. Benavente	
Kilii Beach Park Pavilion	$500	no	no	yes	coastal plain	yes	no	0	4/12/2010	Anthony T. Benavente	
Minachon Atdoa Pavilion	$2,500	no	no	yes	coastal plain	yes	no	0	4/12/2010	Anthony T. Benavente	
Oleai Beach Pavilion	$500	no	no	yes	coastal plain	yes	no	0	4/12/2010	Anthony T. Benavente	
Round House Building	$25,000	no	no	no	inland flats	yes	no	0	4/12/2010	Anthony T. Benavente	
San Isdro Beach Pavilion	$500	no	no	yes	coastal plain	yes	no	0	4/12/2010	Anthony T. Benavente	
Susupe Beach Pavilion	$1,000	no	no	yes	coastal plain	yes	no	0	4/12/2010	Anthony T. Benavente	
Div. of Fish & wildlife	$1,000,000			yes					6/27/2013	Arnold Palacios	
Fisheries/enforcement Smiling Cove marina									6/27/2013	Arnold Palacios	
SC Marina Office	$100,000								6/27/2013	Arnold Palacios	
BTS Kennel	$30,000								6/27/2013	Arnold Palacios	
Kagman	$10,000								6/27/2013	Arnold Palacios	
Forestry	$20,000								6/27/2013	Arnold Palacios	
Kagman Shop	$100,000								6/27/2013	Arnold Palacios	
Forestry Nusery	$15,000								6/27/2013	Arnold Palacios	
Local Nusery	$5,000								6/27/2013	Arnold Palacios	
AHS	$20,000								6/27/2013	Arnold Palacios	
Kennel	$10,000								6/27/2013	Arnold Palacios	

Department of Public Health

Commonwealth Health Center

Thomas S. Palacios 664-2371

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Commonwealth Health $0	 $45,000,000	Lower Navy Hill			25	110,000	1983	yes	600	yes	essential facility	concrete	concrete	concrete
Dr. Jose T.Villagomez $18,000,000 Building	 $18,000,000	Lower Navy Hill			25	46,000	2006	no	250	yes	essential facility	concrete	concrete	concrete

Department of Public Safety

DPS Fire Division – Saipan

Fire Chief Thomas Manglona 664-9137

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
COPS/SRO $0	 $212,000	Capitol Hill				1,680	1953	yes	17	no	essential facility	concrete	concrete	concrete
Fire Station I $0	 $400,000	Susupe			19	3,805	1999	no	38	yes	essential facility	concrete	metal	concrete
Fire Station II $0	 $300,000	Garapan			9	2,871	1984	yes	28	yes	essential facility	concrete	metal	concrete
Fire Station III $0	 $200,000	Capitol Hill				2,542	1953	yes	25	yes	essential facility	concrete	concrete	concrete
Fire Station IV $0	 $200,000	Koblerville			12	2,043	1984	yes	20	yes	essential facility	concrete	metal	concrete

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
Commonwealth Health Center	$15,000,000	yes	yes	yes	hillside	unknown	yes	0	5/6/2010	Thomas S. Palacios	
Dr. Jose T. Villagomez Bldg	$2,000,000	no	no	yes	hillside	yes	yes	0	5/6/2010	Thomas S. Palacios	
COPS/SRO	$10,000,000	yes	yes	no	mountaintop	yes	yes	0	6/27/2013	Fire Chief Thomas Manglona	
Fire Station l	$300,000	yes	yes	yes	coastal plain	yes	yes	0	6/27/2013	Fire Chief Thomas Manglona	
Fire Station ll	$200,000	yes	yes	yes	coastal plain	yes	yes	0	6/27/2013	Fire Chief Thomas Manglona	
Fire Station lll	$200,000	yes	yes	no	mountaintop	yes	yes	0	6/27/2013	fire chief Thomas Manglona	
Fire Station lV	$200,000	yes	yes	no	coastal plain	yes	yes	0	6/27/2013	fire Chief Thomas Manglona	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre- 1991? (ft)	Max- Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall	Type
Fire Station V $0	$400,000	Kagman				3,805	1999	no	38	yes	essential facility	concrete	metal	concrete	
Fire Station VI $0	$400,000	San Roque			9	3,806	1999	no	38	yes	essential facility	concrete	metal	concrete	

DPS Police Division – Saipan

Commissioner James Deleon Guerrero 6649022

Bureau of Motor Vehicle $0 (BMV)	$300,000	Susupe			10	3,900	1993	no	39	yes	essential facility	concrete	concrete	concrete
COPS House #1367 $0	$150,000	Capitol Hill			0	1,280	1953	yes	12	no	essential facility	concrete	concrete	concrete
DPS Main Building $0	$500,000	Susupe			10	6,466	1991	no	65	yes	essential facility	concrete	concrete	concrete
Evidence Room $0	$150,000	Susupe			10	2,640	1993	no	26	yes	essential facility	concrete	concrete	concrete
Human Smuggling Office $0 #1229	$200,000	Capitol Hill				2,100	1953	yes	21	no	essential facility	concrete	concrete	concrete
New Internal Affairs Office $0 #1204	$200,000	Capitol Hill				2,100	1953	yes	21	no	essential facility	concrete	concrete	concrete
Old Academy $0	$250,000	Susupe			10	3,872	1953	yes	38	no	essential facility	concrete	concrete	concrete & metal
Old CIB $0	$200,000	Susupe			10	3,520	1953	yes	35	no	essential facility	concrete	concrete	concrete & wood
Old Doc Bldg $0	$500,000	Susupe			10	13,432	1993	yes	134	no	essential facility	concrete	concrete	concrete
COPS?SRO $0 Office #1368	$150,000	Capitol Hill			0	1,280	1953	yes	12	no	essential facility	concrete	concrete	concrete
Old Internal Affairs $0 #1258	$200,000	Capitol Hill				2,100	1953	yes	21	no	essential facility	concrete	concrete	concrete
Special Investigation $0 Section #1238	$200,000	Capitol Hill			0	2,100	1953	yes	21	no	essential facility	concrete	concrete	concrete
SWAS/MCSAP $0	$350,000	Susupe			10	9,272	1993	yes	92	yes	essential facility	concrete	concrete	concrete & wood

Department of Public Works

Building Safety Code

Brian Smith

235-5827/9570

CNMI BSC Main Office $0 $618,585	Gualo Rai	106	8,965	1992	no	40	no	N/A	concrete	concrete & metal	concrete
Energy Division #1337								**Brian Smith**		**235-5827/9570**	
Energy Division $0 $1,800,000	Capitol Hill	525	1,565	1952	yes	6	no	N/A	concrete	concrete	concrete
Roads & Grounds/Operation & Maintenance								**Brian Smith**		**235-5827/9570**	
Central Repair Shop Building $0 $2,500,000	Lower Base	6	40,000	1970	yes	87	yes	transportation facility	concrete	metal	metal

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
Fire Station V	$300,000	yes	yes	no	hillside	yes	yes	0	6/27/2013	fire Chief Thomas Manglona	
Fire Station VI	$300,000	yes	yes	no	coastal plain	yes	yes	0	6/27/2013	Fire Chief Thomas Manglona	
Bureau of Motor Vehicles (BMV)	$500,000	yes	yes	yes	coastal plain	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
COPS House #1367	$100,000	yes	yes	no	mountaintop	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
DPS Main Building	$200,000	yes	yes	yes	coastal plain	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
Evidence Room	$200,000	yes	yes	yes	coastal plain	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
Human Smuggling Office #1229	$150,000	yes	yes	no	mountaintop	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
New Internal Affairs Office #1204	$150,000	yes	yes	no	mountaintop	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
Old Academy	$500,000	yes	yes	yes	coastal plain	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
Old CIB	$500,000	yes	yes	yes	coastal plain	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
Old Doc Building		yes	yes	yes	coastal plain	yes	unknown	0	6/27/2013	Commissioner Deleon Guerrero	
Old Fire Prevention Office #1368	$100,000	yes	yes	no	mountaintop	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
Old Internal Affairs #1258	$150,000	yes	yes	no	mountaintop	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
Special Investigation Section #1238	$150,000	yes	yes	no	mountaintop	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
SWAS/MCSAP	$30,000	yes	yes	yes	coastal plain	yes	yes	0	6/27/2013	Commissioner Deleon Guerrero	
CNMI BSC Main Office	$320,000	no	no	no	hillside	yes	no	0	4/13/2010	Brain Smith	
Energy Division #1337	$620,000	no	no	no	mountaintop	no	no	0	4/13/2010	Brain Smith	
Central Repair Shop	$3,600,000	yes	yes	yes	coastal plain	no	yes	0	4/13/2010	Brain Smith	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall	Type

Solid Waste Management Division — Steve Hiney — 322-2745/2760

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall	Type
Lower Base Refuse Transfer Station		Lower Base			20	0	2003	no	25	yes	essential & hazardous	concrete	metal	metal	
$0	$5,500,000														
Marpi Landfill		Marpi			80	0	2003	no	10	yes	essential & utility system	concrete	metal	metal	
$0	$15,300,000														

Department of Community and Cultural Affairs

Dept. of Community and Cultural Affairs — Tony Agulto/John Castro — 664-2576

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall	Type
DCCA LIHEAP		Capitol Hill			565	1,627	1957	yes	6	no	N/A	concrete	concrete	concrete	
$0	$235,915														
DCCA Aging		China town			120	14,000	1996	no	49	yes	essential facility	concrete	concrete	concrete	
$0	$2,030,000														
DCCA Arts Council		Capitol Hill			560	0	0	yes	4	no	unknown	concrete	concrete	concrete	
$0	$0														
DCCA CCLPC		Capitol Hill			565	1,627	1957	yes	6	no	N/A	concrete	concrete	concrete	
$0	$235,915														
DCCA Child Care Unit		Capitol Hill			565	1,627	1957	yes	6	no	N/A	concrete	concrete	concrete	
$0	$235,915														
DCCA DYS CPU ll		Capitol Hill			565	1,627	1957	yes	0	no	N/A	concrete	concrete	concrete	
$0	$235,915														
DCCA DYS Family		Capitol Hill			565	1,627	1957	yes	6	no	N/A	concrete	concrete	concrete	
$0	$235,915														
DCCA DYS/Admin		Capitol Hill			565	1,627	1957	yes	6	no	N/A	concrete	concrete	concrete	
$0	$235,915														
DCCA DYS/CPU l		Capitol Hill			565	1,627	1957	yes	6	no	N/A	concrete	concrete	concrete	
$0	$235,915														
DCCA DYS/JDU		Kagman			245	0	1995	no	0	yes	essential facility	concrete	metal	concrete & wood	
$0	$0														
DCCA DYS/JPU		Capitol Hill			565	1,627	1957	yes	6	no	N/A	concrete	concrete	concrete & metal	
$0	$235,915														
DCCA HPO		As perdido			170	4,596	1927	yes	10	no	N/A	concrete	concrete	concrete & metal	
$0	$666,420														
DCCA NAP		As Lito			120	800	1990	yes	21	no	N/A	concrete	concrete	concrete	
$0	$116,000														

DCCA OoS		Capitol Hill	565	1,627	1957	yes	6	no	N/A	concrete	concrete	concrete
$0	$235,915											
DCCA Sports		Susupe	10	26,400	1989	yes	8	yes	essential facility	concrete	concrete	concrete
$0	$3,828,000											

Fiesta Resort

Fiesta Resort

Fiesta Resort		Garapan	10	330,752	1986	yes	1200	yes	essential facility	concrete	concrete	concrete
$0	$35,000,000											

Hyatt Regency Hotel

Hyatt Regency Hotel 234-1234

Hyatt Regency Hotel		Garapan	0	338,120	1973	yes	850	no	N/A	concrete	concrete	concrete
$0	$34,488,240											

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
Lower Base Refuse Transfer Station	$2,000,000	no	yes	yes	coastal plain	no	no	0	4/13/2010	Steve Hiney	
Marpi Landfill	$4,000,000	no	yes	no	hillside	no	no	0	4/13/2010	Steve Hiney	
DCCA- LIHEAP		no	no	no	Mountaintop	yes	no	0	4/19/2010	Tony Agulto & John Castro	
DCCA- Aging	$0	no	no	yes	coastal plain	yes	yes		4/19/2010	Tony Agulto & John Castro	
DCCA- Arts Council	$0	no	no	no	Mountaintop	yes	no	0	4/19/2010	Tony Agulto & John Castro	
DCCA- CCLPC	$0	no	no	no	Mountaintop	yes	no	0	4/19/2010	Tony Agulto & John Castro	
DCCA- Child Care Unit	$0	no	no	no	Mountaintop	yes	no	0	4/19/201	Tony Agulto & John Castro	
DCCA- DYS CPU ll		no	no	no	Mountaintop	yes	yes	0	4/19/201	Tony Agulto & John Castro	
DCCADYS Family Office	$0	no	no	no	Mountaintop	yes	yes	0	4/19/201	Tony Agulto & John Castro	
DCCA- DYS/Admin	$0	no	no	no	Mountaintop	yes	yes	0	4/19/201	Tony Agulto & John Castro	
DCCA- DYS/CPU l	$0	no	no	no	Mountaintop	yes	yes	0	4/19/201	Tony Agulto & John Castro	
DCCA- DYS/JDU	$0	no	no	no	HILLSIDE	yes	yes	0	4/19/201	Tony Agulto & John Castro	
DCCA- DYS/JPU	$0	no	no	no	Mountaintop	yes	yes	0	4/19/201	Tony Agulto & John Castro	
DCCA- HPO	$0	no	no	no	hillside	no	yes	0	4/19/201	Tony Agulto & John Castro	
DCCA-NAP	$0	no	no	no	hillside	yes	yes	0	4/19/201	Tony Agulto & John Castro	
DCCA- OoS	$0	no	no	no	Mountaintop	yes	no	0	4/19/201	Tony Agulto & John Castro	
DCCA- Sports	$0	yes	no	yes	coastal plain	yes	yes	0	4/19/201	Tony Agulto & John Castro	
Fiesta Resort	$10,000,000	no	no	yes	coastal plain	yes	no	0	4/16/2010		
Hyatt Regency Hotel	$19,244,120	unknown	unknown	unknown	coastal plain	unknown	unknown	0	4/16/2010	Steve Palomero	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall	Type

Tinian
CNMI Public School System

Tinian Elementary School — Connie Manglona — 237-4103

B Building		San Jose			0	1,800	0	yes	60	no	essential facility	concrete	concrete	concrete	
$0	$0														
Building B Restroom		San Jose			0	145	0	yes	6	no	essential facility	concrete	wood	concrete	
$0	$0														
Building C		San Jose			0	5,400	1967	yes	180	yes	essential facility	concrete	metal	concrete	
$0	$500,000														
Building D		San Jose			0	3,600	1960	yes	120	yes	essential facility	concrete	metal	concrete	
$0	$350,000														
Building E		San Jose			0	900	1980	yes	30	yes	essential facility	concrete	metal	concrete	
$0	$100,000														
Building E Restroom		San Jose			0	600	0	yes	6	no	essential facility	concrete	wood	concrete	
$0	$0														
Building K-28		San Jose			0	900	2002	no	30	no	essential facility	concrete	concrete	concrete	
$0	$0														
Cafeteria		San Jose			0	3,200	0	yes	150	yes	essential facility	concrete	concrete	concrete	
$0	$0														
F Building		San Jose			0	900	0	yes	30	no	essential facility	concrete	wood	concrete	
$0	$0														
H Building		San Jose			0	5,400	2001	no	180	no	essential facility	concrete	concrete	concrete	
$0	$360,963														
I Building		San Jose			0	5,400	0	yes	180	yes	essential facility	concrete	concrete	concrete	
$0	$360,000														
K Building		San Jose			0	5,400	0	yes	180	yes	essential facility	concrete	concrete	concrete	
$0	$360,000														
Kitchen		San Jose			0	960	0	yes	15	yes	essential facility	concrete	concrete	concrete	
$0	$0														
Student Center		San Jose			0	2,000	1982	yes	50	yes	essential facility	concrete	metal	concrete	
$0	$150,000														
Student Center 2		San Jose			0	900	0	yes	25	no	essential facility	concrete	wood	concrete	
$0	$2,308														
TES Main Office Building		San Jose			0	3,240	0	no	0	yes	essential facility	concrete	concrete	concrete	
$0	$0														

Tinian Junior & Senior High School

Eric San Nicolas

TJSHS Admin Bldg	San Jose	0	0	1996	no	54	no	essential facility	concrete	concrete	concrete	
$0	$0											
TJSHS All Building	San Jose	0	0	0	no	3,684	yes	essential facility	concrete	concrete	concrete	
$0	$12,000,000											
TJSHS Bldg A	San Jose	0	5,400	1996	no	720	no	essential facility	concrete	concrete	concrete	
$0	$0											
TJSHS Bldg B	San Jose	0	5,400	1996	no	720	no	essential facility	concrete	concrete	concrete	
$0	$0											

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
B Building	$48,494	no	no	yes	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
Building B restroom	$0	no	no	no	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
Building C	$200,000	no	yes	no	coastal plain	no	no	500	4/14/2010	Julian U. Hofschneider	
Building D	$100,000	no	yes	no	coastal plain	no	no	400	4/14/2010	Julian U. Hofschneider	
Building E	$75,000	no	yes	no	coastal plain	no	no	400	4/14/2010	Julian U. Hofschneider	
Building E Restroom	$0	no	no	no	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
Building K-28	$6,963	no	no	no	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
Cafeteria	$0	no	no	no	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
F Building	$3,000	unknown	no	unknown	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
H Building	$62,051	no	no	no	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
I Building	$50,629	no	yes	no	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
K Building	$49,102	no	yes	no	coastal plain	unknown	no	0	4/14/2010	Julian U. Hofschneider	
Kitchen	$0	no	no	no	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
Student Center	$100,000	no	yes	no	coastal plain	no	no	50	4/14/2010	Julian U. Hofschneider	
Student Center 2	$0	no	no	no	coastal plain	yes	no	0	4/14/2010	Julian U. Hofschneider	
TES Main Office Building	$0	no	yes	no	coastal plain	unknown	no	0	4/14/2010	Julian U. Hofschneider	
TJSHS Admin Bldg	$0	no	no	no	inland flats	yes	yes	30	4/14/2010	Eric San Nicolas	
TJSHS All Buildings	$600,000	yes	yes	no	inland flats	yes	yes	0	4/14/2010	Eric San Nicolas	
TJSHS Bldg A	$0	yes	no	no	inland flats	yes	yes	30	4/14/2010	Eric San Nicolas	
TJSHS Bldg B	$0	yes	yes	no	inland flats	yes	yes	30	4/14/2010	Eric San Nicolas	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
TJSHS Bldg C		San Jose			0	5,400	1996	no	720	no	essential facility	concrete	concrete	concrete
$0	$0													
TJSHS Bldg D		San Jose			0	5,400	1996	no	720	no	essential facility	concrete	concrete	concrete
$0	$0													
TJSHS Bldg E		San Jose			0	2,700	2006	no	60	no	essential facility	concrete	concrete	concrete
$0	$0													
TJSHS Bldg V-1		San Jose			0	900	1996	no	60	no	essential facility	concrete	concrete	concrete
$0	$0													
TJSHS Cafeteria		San Jose			0	2,700	1996	no	300	no	essential facility	concrete	concrete	concrete
$0	$0													
TJSHS Library		San Jose			0	0	2006	no	150	no	essential facility	concrete	concrete	concrete
$0	$0													
TJSHS Bldg V-2 & 3		San Jose			0	2,700	1996	no	180	no	essential facility	concrete	concrete	concrete
$0	$0													

Commonwealth Ports Authority

Tinian Seaport — Joseph Mendiola 664-3531

Incinerator Bldg		San Jose			15	1,792	0	yes	0	yes	utility system	concrete	concrete	concrete
$0	$225,000													

Tinian Seaport — Joseph Mendiola 664-3531

ARRF Building					267	2,470	1993	no	0	yes	essential facility	concrete	concrete	concrete
$0	$228,000													
Canopy					267	5,040	2001	no	0	yes	utility system	concrete & other	Wood & metal concrete &metal	concrete
$0	$280,000													
Car Rental Office					267	480	2000	no	0	yes	transportation facility	concrete & other	concrete & metal	concrete
$0	$38,000													
Flight Service Office					267	477	1993	no	0	yes	transportation facility	concrete & other	concrete,wood,metal	concrete
$0	$29,000													
Generator House					267	672	1993	no	0	yes	utility system	concrete & other	concrete & metal	concrete
$0	$49,000													
New Cargo Building					267	875	2001	no	0	yes	transportation facility	concrete & other	concrete & metal	concrete
$0	$51,000													
Quonset Hanger					267	5,824	1989	yes	0	yes	utility system	concrete & other	concrete,wood,metal	concrete
$0	$58,000													

Departure Terminal	$3,700,000			267		2006	no	300	yes	essential facility			
Arrival Terminal	$2,600,000			267		2000	no	300	yes	essential facility			

Commonwealth Utilities Corp

Cha Cha Oceanview Jr. High School — Evelyn Manglona 237-3009

Fuel Storage Tank	$0	$0	San Jose	0	0	1998	no	0	yes	essential facility	concrete	N/A	N/A

Dan Dan Elementary School — Evelyn Manglona 237-3009

Power Plant	$12,000,000	$16,000,000	San Jose	15	20,000	1999	no	60	yes	essential facility	concrete	metal	metal
Lubrication Tank (EMD)	$0	$0	San Jose	0	0	1999	no	0	yes	utility system	concrete	N/A	N/A

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
TJSHS Bldg C	$0	yes	no	no	inland flats	yes	yes	30	4/14/2010	Eric San Nicolas	
TJSHS Bldg D	$0	no	no	no	inland flats	yes	yes	30	4/14/2010	Eric San Nicolas	
TJSHS Bldg E	$0	no	no	no	inland flats	yes	yes	30	4/14/2010	Eric San Nicolas	
TJSHS Bldg V-1	$0	no	no	no	inland flats	yes	yes	30	4/14/2010	Eric San Nicolas	
TJSHS Cafeteria	$0	no	no	no	inland flats	yes	yes	30	4/14/2010	Eric San Nicolas	
TJSHS Library	$0	no	no	no	inland flats	unknown	yes	30	4/14/2010	Eric San Nicolas	
TJSHS Bldg V-2 & 3	$0	no	no	no	inland flats	yes	yes	30	4/14/2010	Eric San Nicolas	
Incinerator Bldg	$150,000	unknown	unknown	yes	coastal plain	unknown	yes	0	5/4/2010	Edward B. Mendiola	
ARFF Building	$50,000	no	yes	no	coastal plain	no	yes	0	5/4/2010	Edward B. Mendiola	
Canopy	$280,000	no	yes	no	coastal plain	no	yes	500	5/4/2010	Edward B. Mendiola	
Car Rental Office	$38,000	no	yes	no	coastal plain	no	yes	500	5/4/2010	Edward B. Mendiola	
Flight Service Office	$29,000	no	yes	no	coastal plain	no	yes	0	5/4/2010	Edward B. Mendiola	
Generator House	$150,000	no	yes	no	coastal plain	no	yes	0	5/4/2010	Edward B. Mendiola	
New Cargo Building	$51,000	no	yes	no	coastal plain	no	yes	500	5/4/2010	Edward B. Mendiola	
Quonset Hanger	$58,000	no	yes	no	coastal plain	no	yes	100	5/4/2010	Edward B. Mendiola	
Departure Ternimal					coastal plain				6/25/2013	Joseph Mendiola	
Arrival Terminal					coastal plain				6/25/2013	Joseph Mendiola	
Fuel Storage Tank	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Power Plant	$16,000,000	no	yes	yes	coastal plain	unknown	yes		5/4/2010		
Lubrication Tank (EMD)	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre- 1991? (ft)	Max- Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Lubrication Tank ($0 (Wartsila)	$0	San Jose			0	0	1999	no	0	yes	utility system	concrete	N/A	N/A
Substation $0	$0	San Jose			0	0	1999	no	0	yes	essential facility	concrete	metal	metal

Environmental Quality 664-8500/01

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Clean Oil Tank 3 $0	$0	San Jose			0	0	1999	no	0	yes	utility system	concrete	N/A	N/A

Power Division - Tinian 433-2821/9265

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Clean Oil Tank 2 $0	$0	San Jose			0	0	1998	no	0	yes	utility system	concrete	N/A	N/A
Feeder 1 Power Dist $0	$0	SJ/Marpo Heights			0	0	1992	no	0	yes	essential facility	N/A	N/A	N/A
Feeder 2 Power Dist $0	$0	SJ/Subdivision Marpo Heights			0	0	1996	no	0	yes	essential facility	N/A	N/A	N/A
Feeder 3 Power Dist $0	$0	Casino/ Carolina Heights			0	0	1998	no	0	yes	essential facility	N/A	N/A	N/A
Feeder 4 Power Dist $0	$0	IBB Site			0	0	2000	no	0	yes	essential facility	N/A	N/A	N/A
Warehouse $0	$0	San Jose			0	0	1998	no	0	yes	utility system	concrete	metal	metal

Power Generation - Tinian 433-4501

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Clean Oil Tank 1 $0	$0	San Jose			0	0	1998	no	0	yes	utility system	concrete	N/A	N/A

Water Division - Tinian Eugene San Nicolas 433-9265

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Water Transmission $0 Line	$0	Marpo/Carolina Heights			0	0	1985	yes	0	yes	utility system	N/A	N/A	N/A
25 MG MDC Tank $0	$300,000				340	10,000	1985	yes	0	yes	utility system	concrete	metal	metal
50 MG Carolina Tank $0	$500,000				404	10,000	1985	yes	0	yes	utility system	concrete	metal	metal
Maui Well $0 (Office/Storage)	$0	Marpo			0	0	1995	no	0	yes	utility system	concrete	metal	concrete

Maui Well 1	Marpo	0	0	1945	yes	0	yes	utility system	concrete	concrete	concrete
$0	$0										

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
Lubrication Tank (Wartsila)	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Substation	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Clean Oil Tank 3	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Clean Oil Tank 2	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Feeder 1 Power Dist	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Feeder 2 Power Dist	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Feeder3 Power Dist	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Feeder 4 Power Dist	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Warehouse	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Clean Oil Tank 1	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010		
Water Transmission line	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	6/27/2013	Eugene San Nicolas	
25 MG MDC Tank	$10,000	no	no	no	coastal plain	yes	no	0	6/27/2013	Eugene San Nicolas	
50 MG Carolina Tank	$20,000	no	no	no	hillside	yes	no	0	6/27/2013	Eugene San Nicolas	
Maui Well (office/storage)	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	6/27/2013	Eugene San Nicolas	
Maui Well 1	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	6/27/2013	Eugene San Nicolas	

Facility	Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Maui Well ll $0	$0	Marpo			0	0	1999	no	0	yes	utility system	concrete	N/A	N/A
MWl l-Pump Station $0	$1,200,000	Marpo Valley			11	20,000	2001	no	2	yes	utility system	concrete	concrete	concrete
MW l-Pump house storage $0	$50,000	Marpo Valley			0	76	1945	yes	2	yes	utility system	concrete	concrete	concrete
MWI –Office $0	$1,200,000	Marpo Valley			9	10,000	1995	no	0	yes	utility system	concrete	concrete	concrete
Water Distribution Line $0	$0	Carolinas Heights San Jose			0	0	1996	no	0	yes	utility system	N/A	N/A	N/A

Department of Lands & Natural Resources

DLNR Tinian — Richard DLC Farrell — 433-1400/01/02

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
DLNR Main Office $0	$500,000	Marpo Heights			0	4,320	2003	no	50	yes	essential,transportation hazardous materials	concrete	metal	concrete
DLNR Mechanic Shop $0	$300,000	Marpo Valley			0	4,800	1983	yes	5	no	N/A	concrete	metal	other
Forestry Nursery $0	$50,000	Marpo Valley			0	7,700	1998	no	5	no	N/A	concrete	metal	metal

Department of Public Health

Tinian Health Center — William M. Cing — 433-9263/9233

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Tinian Health Center $0	$3,000,000	San Jose			0	5,000	1986	yes	60	yes	essential facility	concrete	concrete	concrete

Department of Public Lands

DPL – TinianTinian — Ray Cing

Facility	Critical	Village	GPS (Lat.)	GPS (Long.)	Site Elev.	Size (SF)	Year Built	Pre-1991?	Max-Imum	Critical Facility	critical facility type	foundation Type	Roof	Wall Type
Dept. of Public Lands $0	$55,200	San Jose			10	800	1991	no	80	yes	essential facility	concrete	concrete	concrete

Department of Public Safety

Tinian DPS — Ray Pangelinan — 433-9030

DPS police/Fire Building	San Jose	148	5,300	1980	yes	200	yes	essential facility	concrete	All	concrete	$0	$1,000,000

Department of Public Works

Public Works – Tinian | Ernie Hofschneider | 433-9255

DPW Main Office	San Jose	0	3,000	1985	yes	25	yes	essential facility	concrete	metal	metal	$0	$500,000
DPW Maintenance Shop	San Jose	0	6,000	1999	no	15	no	essential,transportation	concrete	metal	metal	$0	$500,000
DPW coral Roads	SW San Jose	0	0	0	yes	0	no	Hazardous materials transportation facility	other	N/A	N/A	$0	$0

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
Maui Well 11	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010	Edward Quichocho	
MWI – I Pump Station	$1,200,000	no	no	no	coastal plain	yes	no	0	5/4/2010	Edward Quichocho	
MW – Pump House Storage	$50,000	no	no	no	coastal plain	unknown	yes	30	5/4/2010	Edward Quichocho	
MWI Office	$1,200,000	no	no	no	coastal plain	yes	no	0	5/4/2010	Edward Quichocho	
Water Distribution Line	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	5/4/2010	Edward Quichocho	
DLNR Main Office	$300,000	yes	yes	no	inland flats	unknown	yes	0	4/14/2010	Richard DLC Farrell	
DLNR Mechanic Shop	$100,000	yes	yes	no	inland flats	unknown	yes	0	4/14/2010	Richard DLC Farrell	
Forestry Nursery	$20,000	yes	yes	no	inland flats	unknown	yes	0	4/14/2010	Richard DLC Farrell	
Tinian Health Center	$1,500,000	no	yes	no	inland flats	yes	yes	10	4/14/2010	Ray Dela Cruz	
Department of Public Lands	100,000	no	no	no	coastal plain	yes	no	0	5/4/2010	Planning Division	
DPS police/Fire Building	$1,183,700	yes	no	yes	hillside	no	yes	10	6/27/2013	Ray Pangelinan	
DPW Main Office	$100,000	yes	yes	no	inland flats	no	yes	0	4/16/2010	Gilbert Macaranas	
DPW Maintenance Shop	$1,000,000	yes	yes	no	inland flats	no	yes	0	4/16/2010	Gilbert Macaranas	
DPW Carol Roads	$0	yes	no	no	hillside	no	unknown	0	4/16/2010	Gilbert Macaranas	

Facility	Village	GPS (Lat.)	GPS (Long.)	Site Elev. (ft)	Size (SF)	Year Built	Pre-1991?	Max-Imum Cap.	Critical Facility	critical facility type	foundation Type	Roof	Wall Type	Critical Functional value of structure	Replacement Value (per Day)
DPW Coral Roads	Marpo			0	0	0	yes	0	yes	transportation facility	other	N/A	N/A	$0	$0
DPW coral Roads Carolinas	Heighta ll Carolinas			0	0	0	yes	0	no	transportation facility	other	N/A	N/A	$0	$0
DPW Euipment/Auto Repair Shop	San Jose			0	6,000	1999	no	15	no	essential transportation hazardous materials	concrete	metal	metal	$0	$0

Department of Community and Cultural Affairs

DCCA – Tinian — Marie San Nicolas

Facility	Village	GPS (Lat.)	GPS (Long.)	Site Elev. (ft)	Size (SF)	Year Built	Pre-1991?	Max-Imum Cap.	Critical Facility	critical facility type	foundation Type	Roof	Wall Type	Critical Functional value of structure	Replacement Value (per Day)
Tinian Baseball field State Poat	San Jose			80	320	1995	no	10	no	utility system	concrete	concrete	concrete	$0	$55,000
Tinian Little League State Poat	San Jose			80	120	1991	no	5	no	utility system	concrete	concrete	concrete	$0	$75,000
Tinian Municipality GYM	San Jose			80	14,000	1991	no	400	yes	essential facility	concrete	metal	concrete	$0	$350,000

Emergency Management Office

Emergency Management Office

Facility	Village	GPS (Lat.)	GPS (Long.)	Site Elev. (ft)	Size (SF)	Year Built	Pre-1991?	Max-Imum Cap.	Critical Facility	critical facility type	foundation Type	Roof	Wall Type	Critical Functional value of structure	Replacement Value (per Day)
M.U. Hofschneider Bldg	San Jose			0	3,000	1992	no	45	yes	essential facility	concrete	metal	concrete	$0	$300,000

Marianas Visitors Authority

MVA – Tinian — Benedicta Borja

Facility	Village	GPS (Lat.)	GPS (Long.)	Site Elev. (ft)	Size (SF)	Year Built	Pre-1991?	Max-Imum Cap.	Critical Facility	critical facility type	foundation Type	Roof	Wall Type	Critical Functional value of structure	Replacement Value (per Day)
MVA Nursery	San Jose			0	1,500	0	no	0	no	N/A	other	metal & other	other	$0	$10,000
MA Main Office	San Jose			0	468	1990	yes	2	no	N/A	concrete	concrete	concrete	$0	$80,000
MA Shop Bldg	San Jose			0	936	1990	yes	4	no	N/A	concrete	concrete	concrete	$0	$80,000
Tachogna Park Facilities	San Jose			0	0	0	no	300	no	N/A	concrete	concrete	concrete & wood	$0	$160,000

Office of the Governor

Coastal Resources Management Office — Edwin M. Hofschneider — 664-8300

CRMO - Tinian	San Jose	120	400	0	yes	2	no	N/A	concrete	concrete	concrete	$0	$0

Environmental Quality 664-8500/01

CMI DEQ Main Office	San Jose	0	788	0	no	30	no	N/A	concrete	concrete	concrete	$0	$0

Office of the Mayor (Tinian)

Administraive Services Nazario Borja

Aging Center	San Jose	18	0	0	0	0	unknown	unknown	N/A	N/A	N/A	$0	$0

Facility	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
feet											
DPW Carol Roads	$0	yes	no	no	hillside	no	unknown	0	4/16/2010	Gilbert Macaranas	
DPW Carol Roads Carolinas	$0	yes	no	no	hillside	no	unknown	0	4/16/2010	Gilbert Macaranas	
DPW Equipment /Auto Repair Sop	$0	no	yes	no	inland flats	no	yes	0	4/16/2010	Gilbert Macaranas	
Tinian Baseball Field State Post	$2,500	no	yes	no	hillside	no	no	0	4/16/2010	Joey Dela Cruz	
Tinian Little League State Post	$500	no	no	no	hillside	no	no	0	4/16/2010	Joey Dela Cruz	
Tinian Municipality Gym	$40,000	yes	yes	no	hillside	no	no	0	4/16/2010	Joey Dela Cruz	
M.U. Hofschneider Bldg	$22,000	no	no	yes	coastal plain	yes	yes	0	4/16/2010	Joseph Camacho	
MVA Nursery	$2,000	yes	yes	no	inland flats	unknown	no	0	4/16/2010	Benedicta Borja	
MVA Office Building	$10,000	yes	yes	no	inland flats	unknown	no	0	4/16/2010	Benedicta Borja	
MVA Shop Building	$30,000	yes	yes	no	inland flats	unknown	no	0	4/16/2010	Benedicta Borja	
Tachogna Park Facilities	$0	yes	yes	yes	coastal plain	unknown	no	0	4/16/2010	Benedicta Borja	
CRMO Tinian	$5,000	no	no	no	coastal plain	no	no	0	4/16/2010	Edwin M. Hofschneider	
CNMI DEQ Main Office	$100,000	no	no	no	hillside	no	no		4/7/2010		
Aging Center	$0	unknown	unknown	unknown	coastal plain	unknown	unknown	0	4/16/2010	Nazario Borja	

Facility		Critical	Village Replacement Functional	GPS (Lat.) value of	GPS (Long.) Value (per	Site Elev. structure	Size (SF) Day)	Year Built	Pre-1991? (ft)	Max-Imum	Critical Facility	critical facility type Cap.	foundation Type	Roof	Wall Type
Krammer Beach Main Pavilion	$0	$0	Krammer Beach			16	6,000	0	yes	120	no	essential facility	concrete	concrete	concrete
Suicide Cliff Memorial Structure	$0	$0	Suicide Cliff			150	0	0	unknown	0	unknown	unknown	N/A	N/A	N/A
Suicide Cliff Picnic Shelters	$0	$0	Suicide Cliff			150	0	0	unknown	0	unknown	unknown	N/A	N/A	N/A
Tachongna Beach Main Pavilion	$0	$0	Tachongna Beach			10	0	0	unknown	0	unknown	unknown	N/A	N/A	N/A
Taga Well Fiesta Grounds	$0	$0	San Jose			10	10,000	2003	no	150	no	essential facility	other	wood & metal	wood & metal
Tinian Community Youth Center	$0	$2,500,000	San Jose			0	7,000	2003	no	110	unknown	essential facility	concrete	concrete	concrete
Tinian Marina Mooring Dock	$0	$150,000	San Jose			2	360	2001	no	50	yes	essential facility	concrete & other	N/A	concrete & wood
Tinian Mayor's Office (KLH BLDG)	$0	$1,500,000	San Jose			0	4,000	2002	no	130	yes	essential facility	concrete	concrete	concrete
Tinian Public Market	$0	$100,000	San Jose			0	7,000	0	yes	20	no	essential facility	concrete	concrete & wood	concrete
White Cross Coast Guard Beacon	$0	$0	Putan Tagong			18	60	0	no	0	yes	essential transportation	N/A	concrete	N/A
YCC Beach Museum	$0	$95,000	YCC Beach Rd			23	1,500	2000	yes	13	yes	essential facility	concrete	concrete	concrete

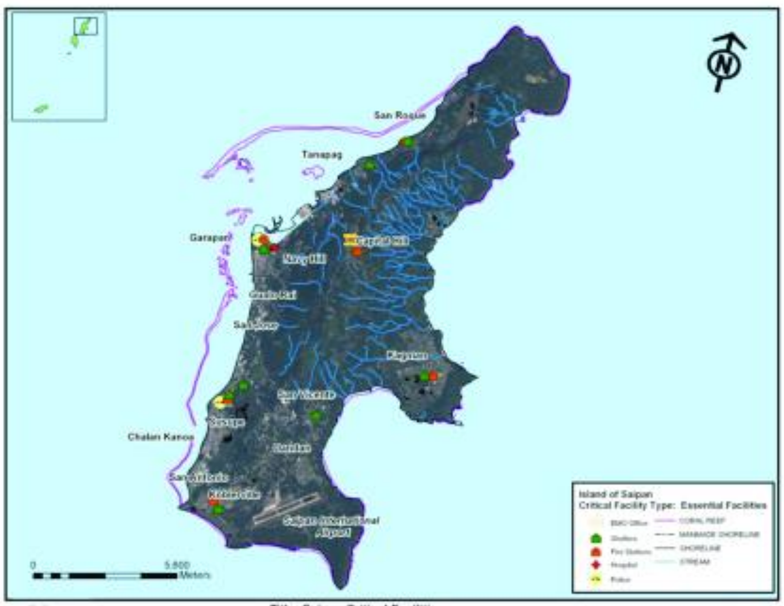
Tinian Dynasty Hotel & Casino

Dynasty Hotel Fire & Safety

Tnian Dynasty Hotel & Casino	$0	$0	San Jose			0	75,000	1996	no	2000	no	N/A	concrete	concrete & metal	concrete & metal

Facility feet	Value of contents	Historical Damage	Mitigation Plan	Flood Zone	Topography	Esisting	ERE in	Distance Map	Date Inventory	Assessment by ERE is from Reference	Primary Fac
Krammer Beach Main Pavilion	$0	no	no	yes	coastal plain	no	no	0	4/16/2010	Nazario Borja	
Suicide Cliff Memorial Structure	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	4/16/2010	Nazario Borja	
Suicide Cliff Picnic Shelters	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	4/16/2010	Nazario Borja	
Tachongna Beach Main Pavilion	$0	unknown	unknown	unknown	unknown	unknown	unknown	0	4/16/2010	Nazario Borja	
Taga Well Fiesta grounds	$80,000	no	no	yes	coastal plain	no	no	0	4/16/2010	Nazario Borja	
Tinian Community Youth Center	$95,000	yes	yes	yes	hillside	no	no	0	4/16/2010	Nazario Borja	
Tinian Marina ooring Dock	$0	yes	yes	yes	coastal plain	no	no	0	4/16/2010	Nazario Borja	
Tinian Mayor's Office (KLH BLDG)	$15,942	no	yes	yes	hillside	no	no	0	4/16/2010	Nazario Borja	
Tnian Public Market	$100,000	yes	yes	yes	coastal plain	no	no	0	4/16/2010	Nazario Borja	
White Cross Coast Guard Beacon	$0	no	yes	yes	coastal plain	no	no	0	4/16/2010	Nazario Borja	
Ycc Beach Museum	$5,000	no	yes	yes	coastal plain	no	no	0	4/16/2010	Nazario Borja	
Tinian Dynasty Hotel	$0	no	no	no	Coastal plain	unknown	yes	0	4/16/2010	Raymond Chan	

Appendix D – GIS Inventory Maps of Essential Facilities by Island

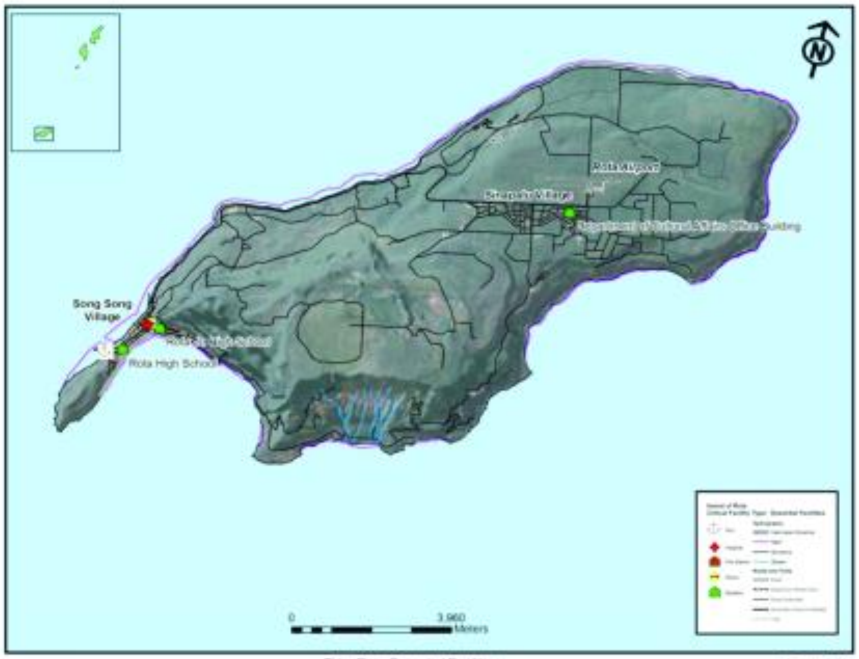


Title: Saipan Critical Facilities
Project: 2010 SSMP

Figure G-1

Title: Saipan Essential Facilities
Project: 2010 SSMP

Figure: G-2



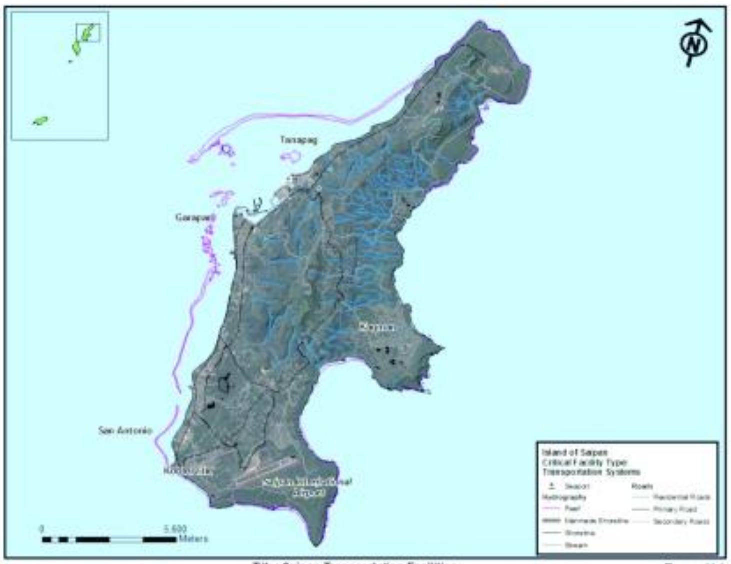
Title: Rota Essential Facilities
Project: 2010 SSMP

Figure: G-5

Title: Rota Songsong Essential Facilities Zoom
Project: 2010 SSMP

Figure: G-6

Appendix E – GIS Inventory of Transportation Systems by Island

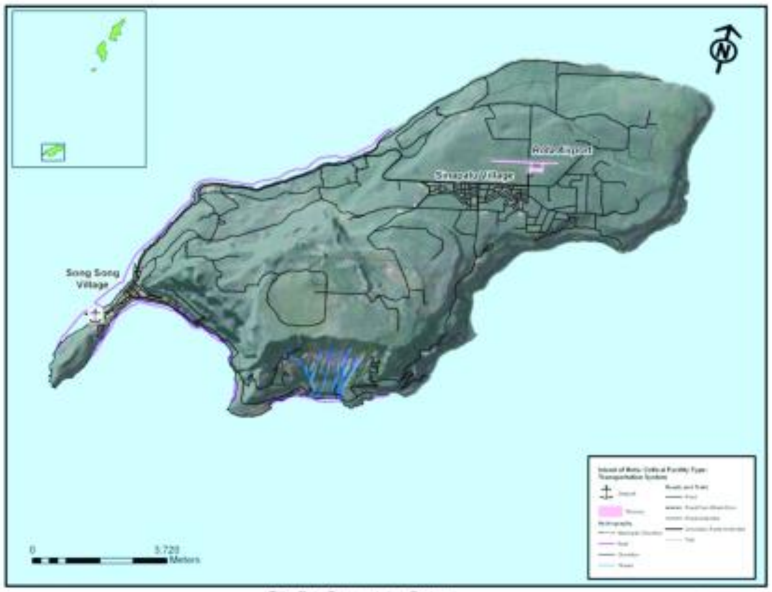


Title: Saipan Transportation Facilities
Project: 2010 SSMP

Figure: H-1

Title: Tinian Transporation System
Project: 2010 SSMP

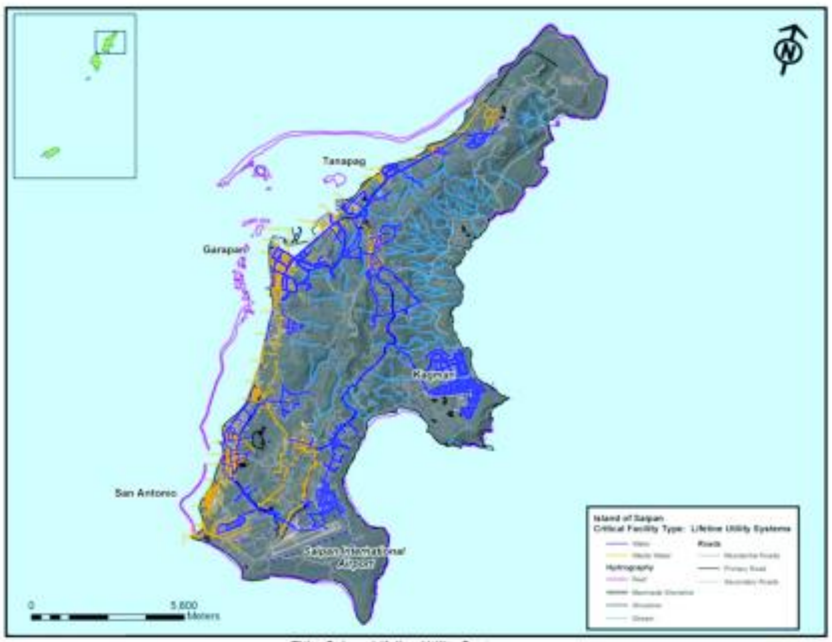
Figure: H-2



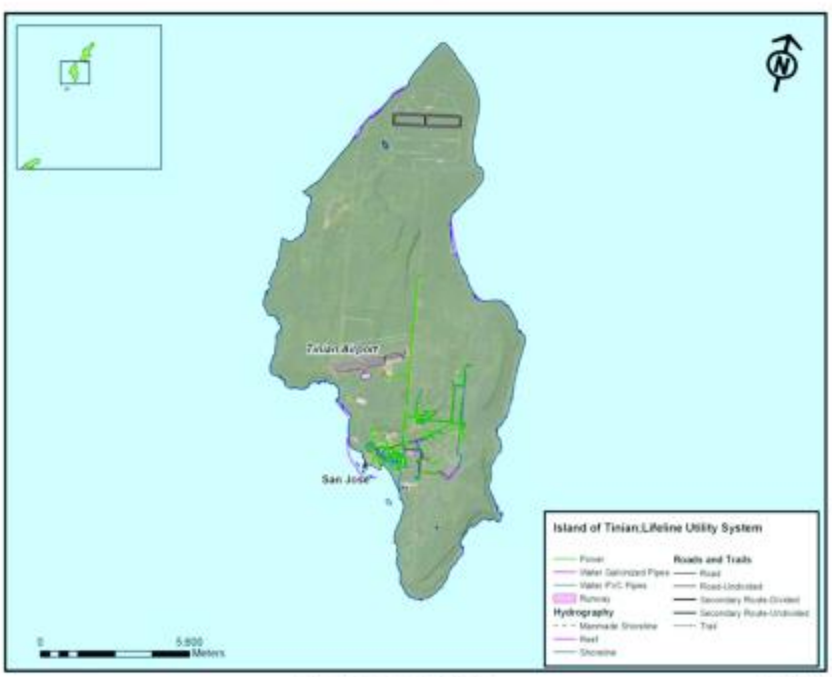
Title: Rota Transportation System
Projects: 2010 SSMP

Figure: H-3

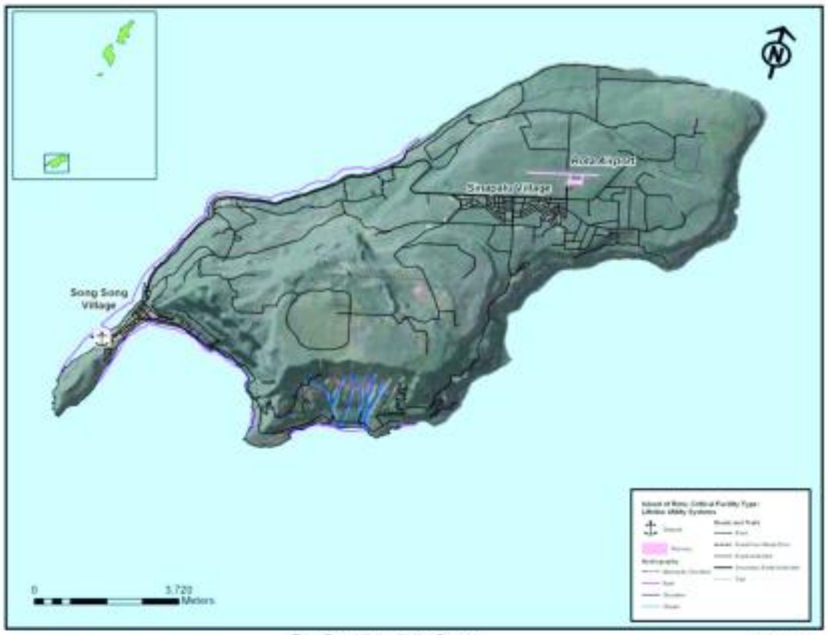
Appendix F – GIS Inventory Maps of Lifeline Utility Sytems by Island



Title: Saipan Lifeline Utility System
Project: 2010 SSMP
Figure: I-1



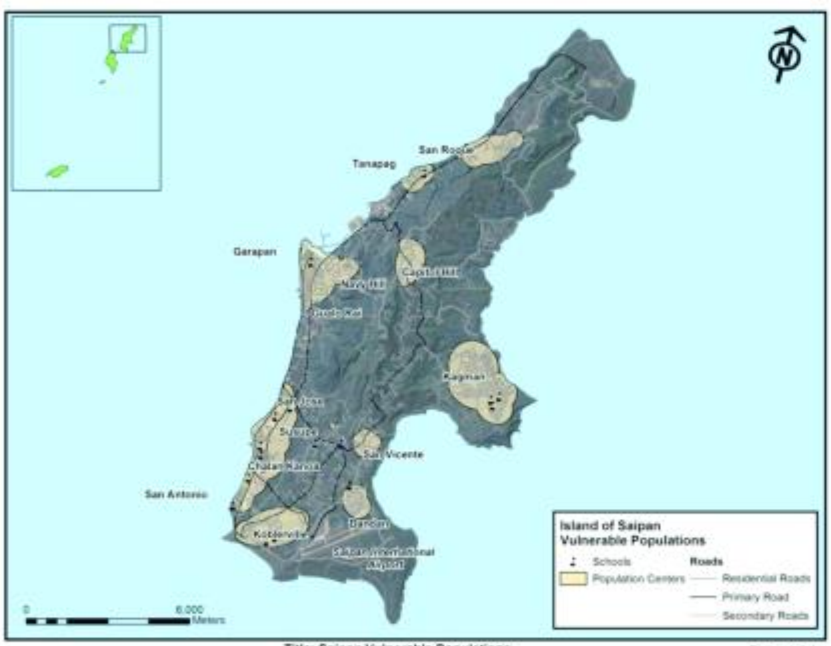
Title: Tinian Lifeline Utility System
Project: 2010 SSMP
Figure: I-2



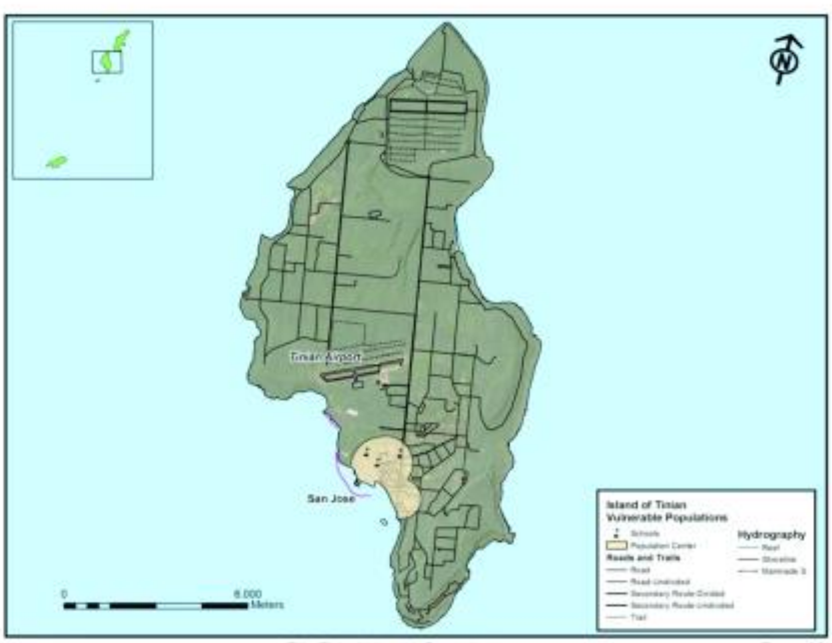
Title: Rota Lifeline Utility System
Projects: 2010 SSMP

Figure: I-3

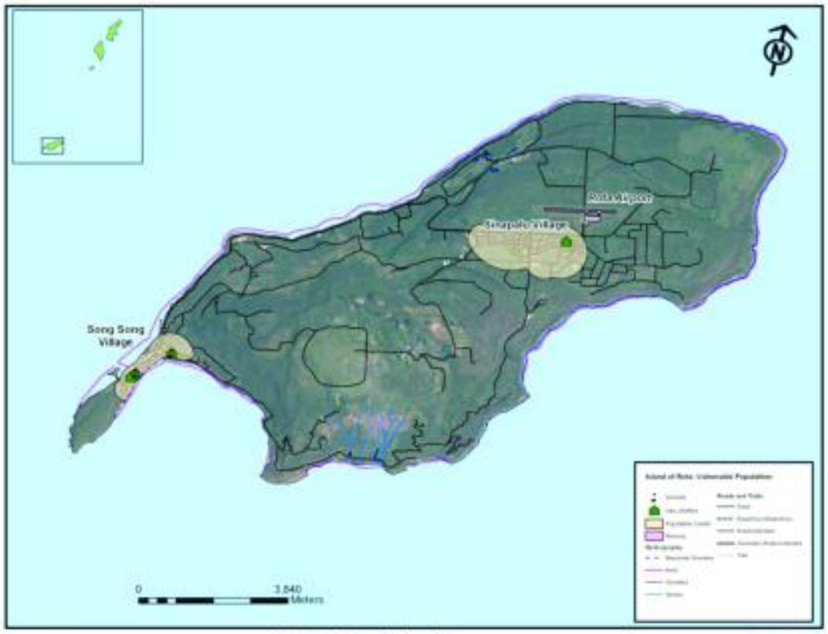
Appendix G – GIS Inventory Maps of Vulnerable Populations – Residential Population Centers by Island



Title: Saipan Vulnerable Populations
Project: 2010 SSMP
Figure: J-1



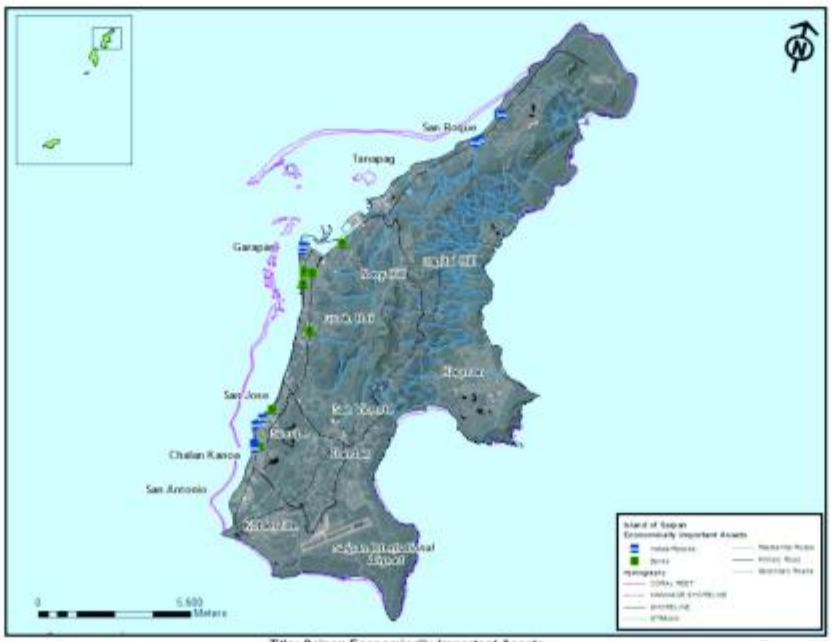
Title: Tinian Vulnerable Populations
Project: 2010 SSMP
Figure: J-2



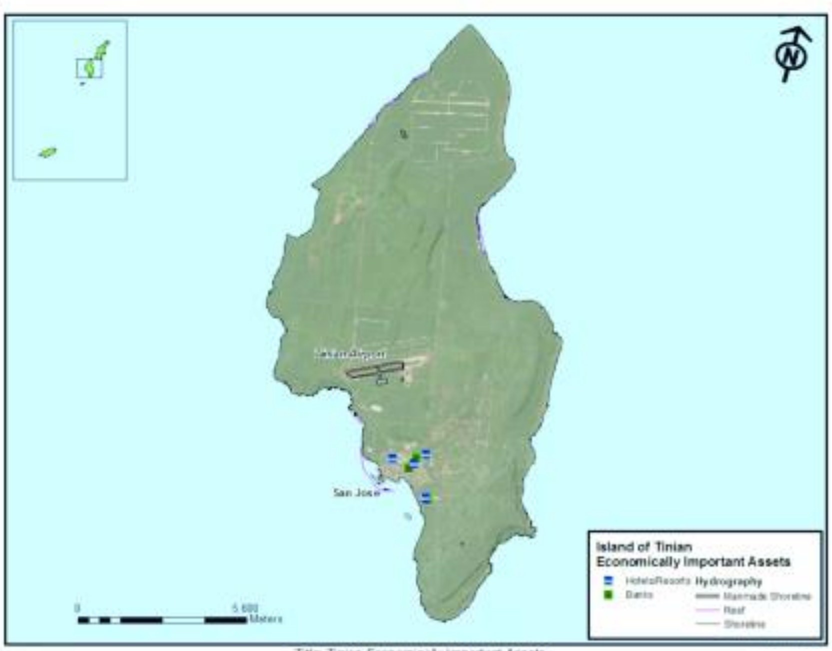
Title: Rota Vulnerable Population
Project: 2010 SSMP

Figure: J-3

Appendix H – GIS Inventory Maps of Economically Important Assets by Island



Title: Saipan Economically Important Assets
Project: 2010 SSMP

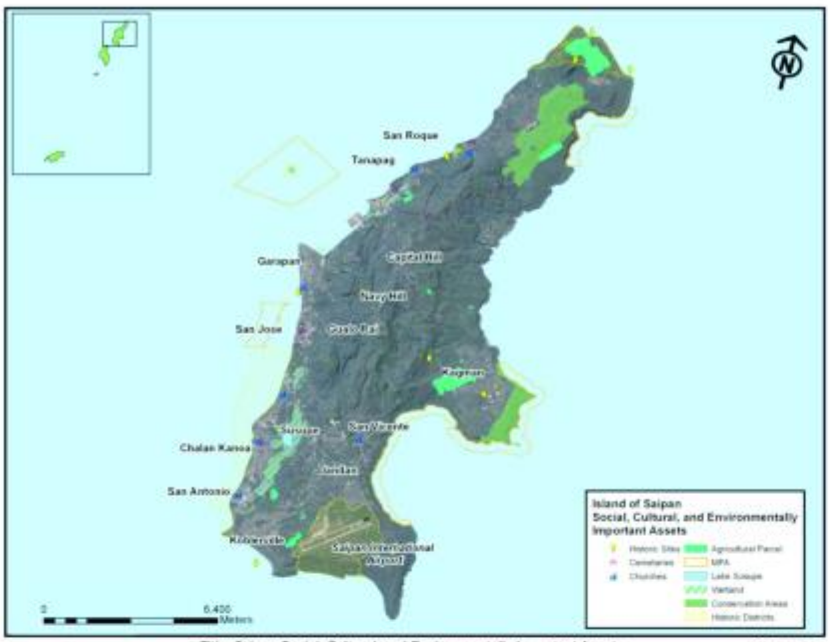


Title: Tinian Economically Important Assets
Project: 2010 SSMP

Title: Rota Economically Important Assets
Project: 2010 SSMP

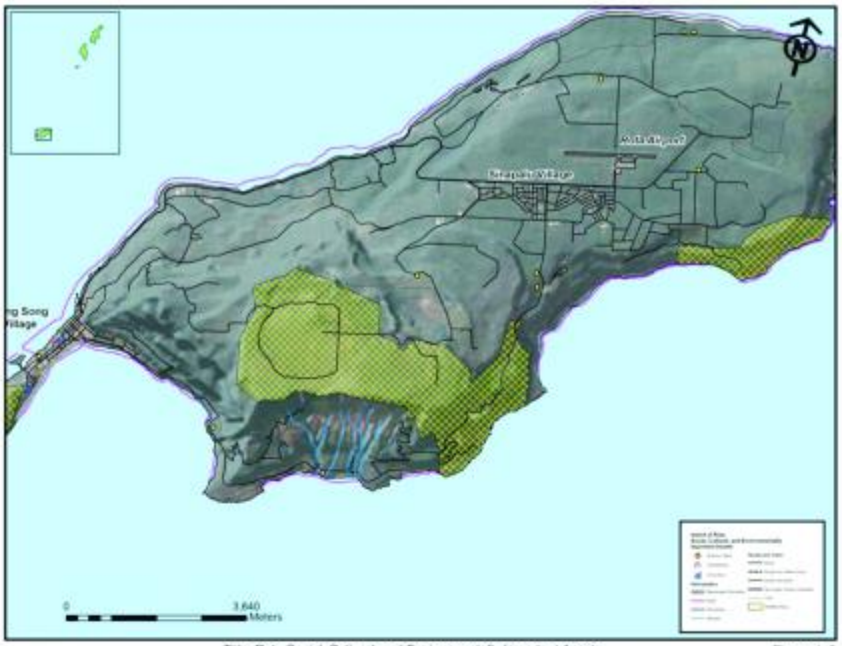
Figure: K-3

Appendix I – GIS Inventory Maps of Socially, Culturally, and Environmentally Important Assests by Island



Title: Saipan Social, Cultural, and Environmentally Important Assets Figure: L-1
Project: 2010 SSMP

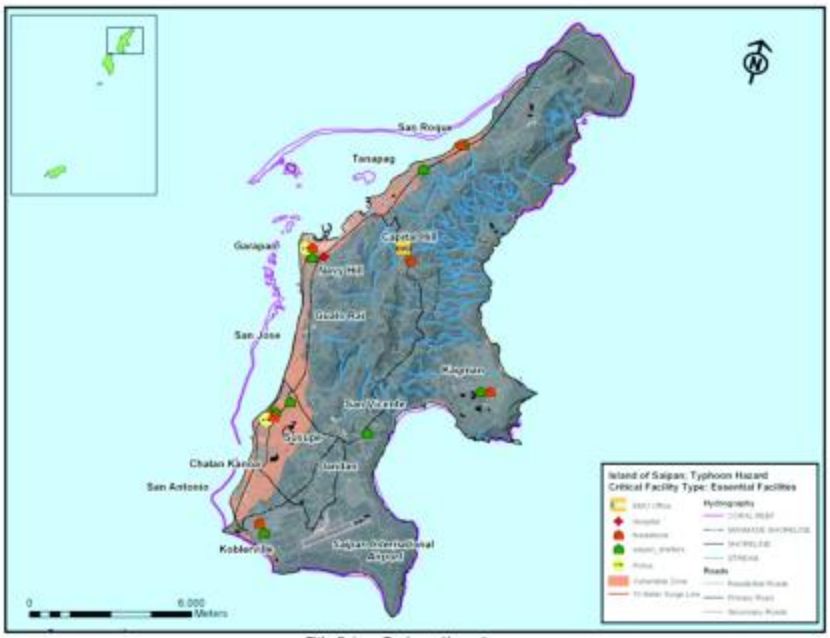
Title: Tinian Social, Cultural, and Environmentally Important Assets Figure: L-2
Project: 2010 SSMP



Title: Rota Social, Cultural, and Environmentally Important Assets
Project: 2010 SSMP

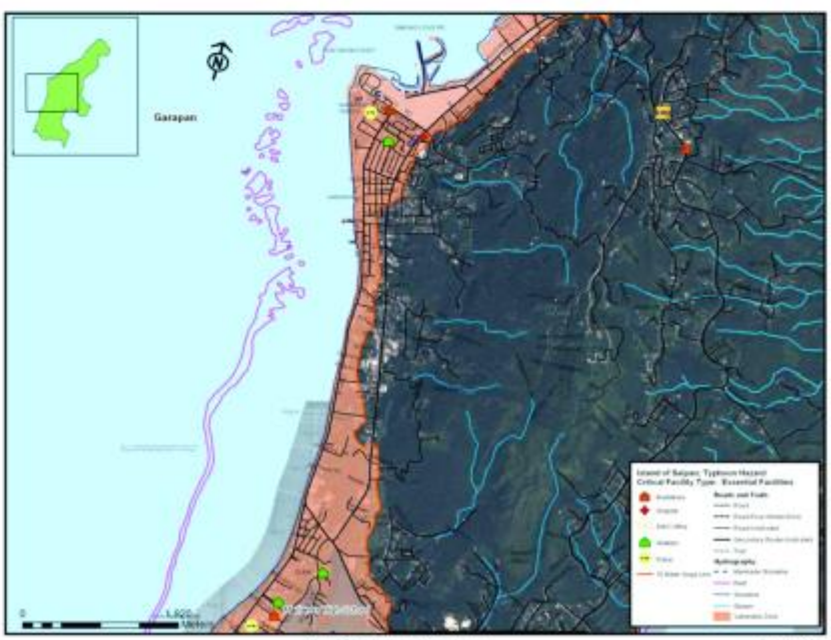
Figure: L-3

Appendix J – GIS Hazard Maps of Typhoon and Tropical Storm Profiles by Island



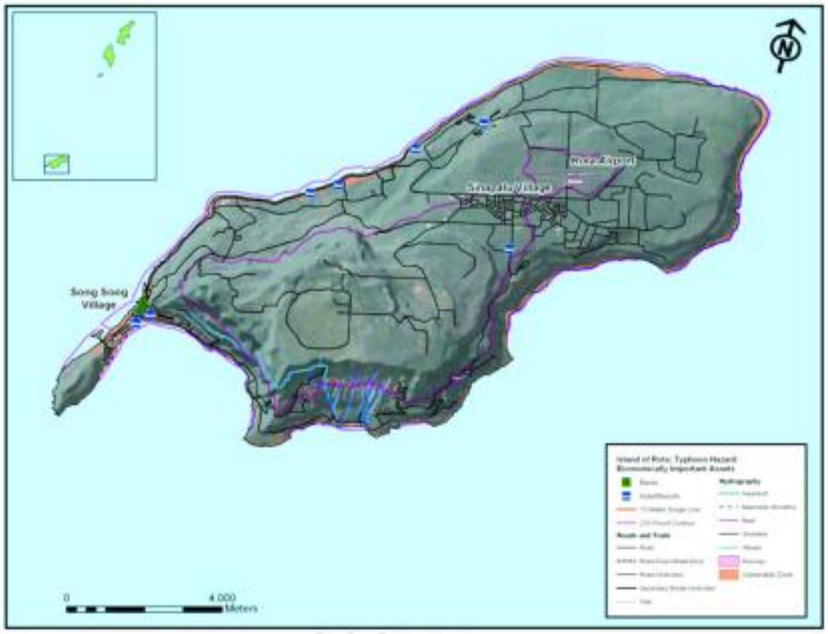
Title:Saipan Typhoon Hazards
Project: 2010 SSMP

Figure: M-1



Title: Saipan Typhoon Hazards
Project: 2010 SSMP

Figure: M-2

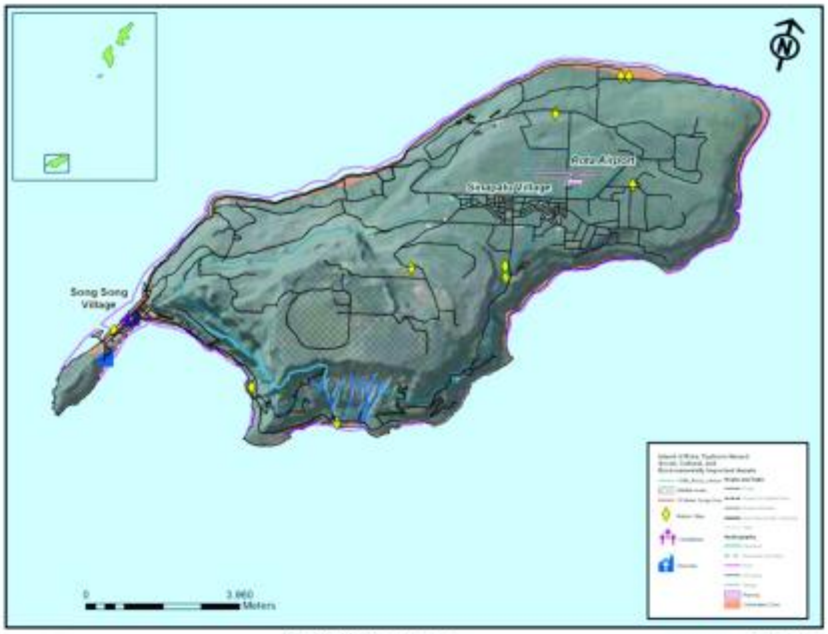


Title: Rota Typhhon Hazards
Project: 2010 SSMP

Figure: M-17

Title: Typhoon Flood Hazards
Project: 2010 SSMP

M-18



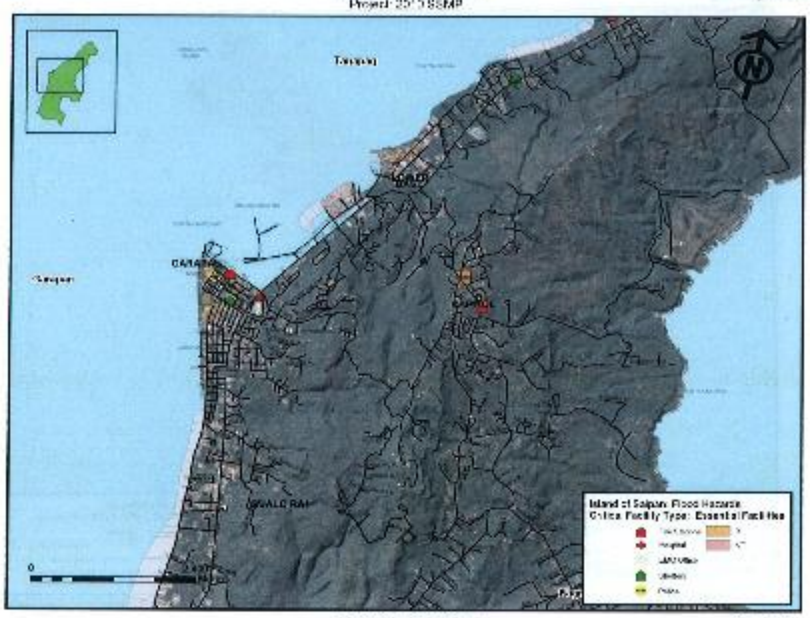
Title: Rota Typhhon Hazards
Project: 2010 SSMP

Figure: M-19

Appendix K – GIS Hazard Maps of Flooding Profile by Island

Title: Saipan Flood Hazards
Project: 2010 SSMP

Figure: N-1



Title: Saipan Flood Hazards
Project: 2010 SSMP

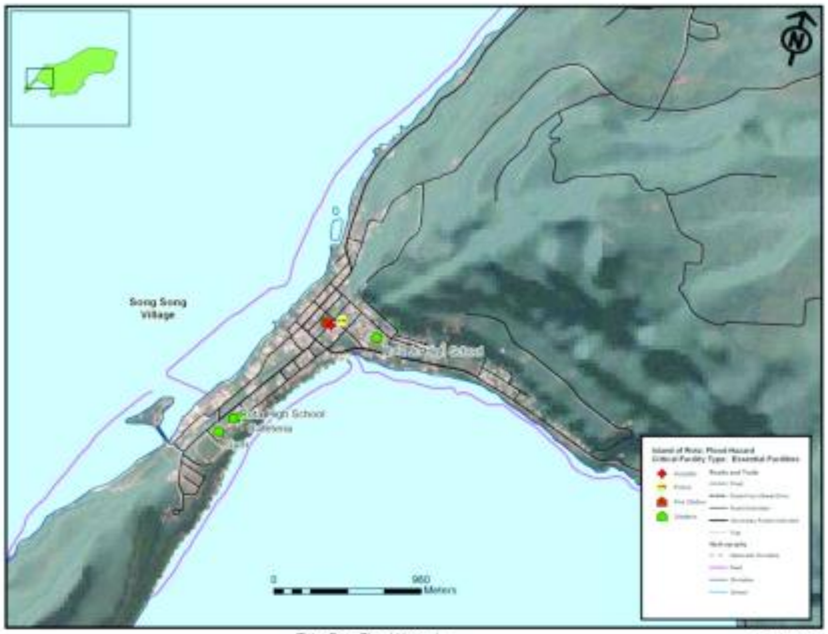
Figure: N-2

Title: Saipan Flood Hazards
Project: 2010 SSMP

Figure: N-5

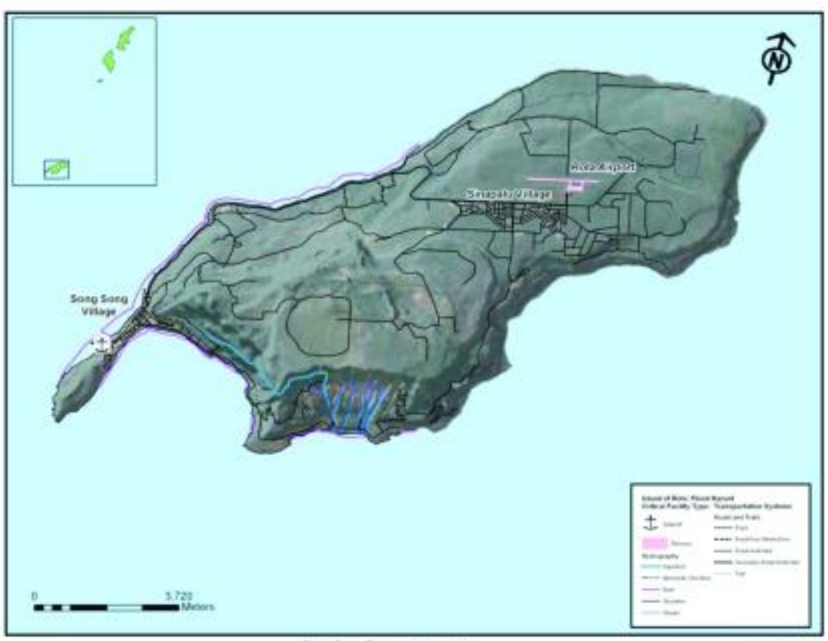
Title: Saipan Flood Hazards
Project: 2010 SSMP

Figure: N-6



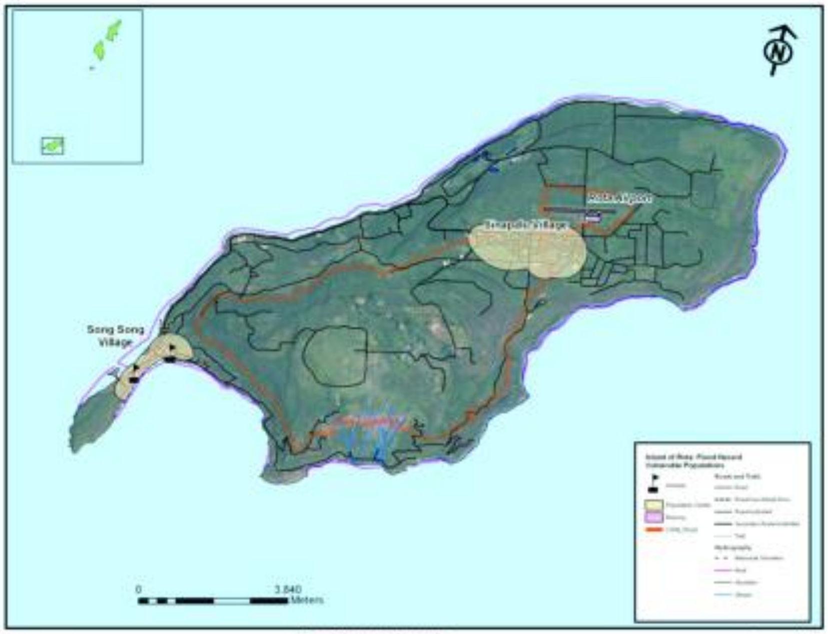
Title: Rota Flood Hazards
Project: 2010 SSMP

Figure: N-15



Title: Rota Typhoon Hazards
Projects: 2010 SSMP

Figure: N-16



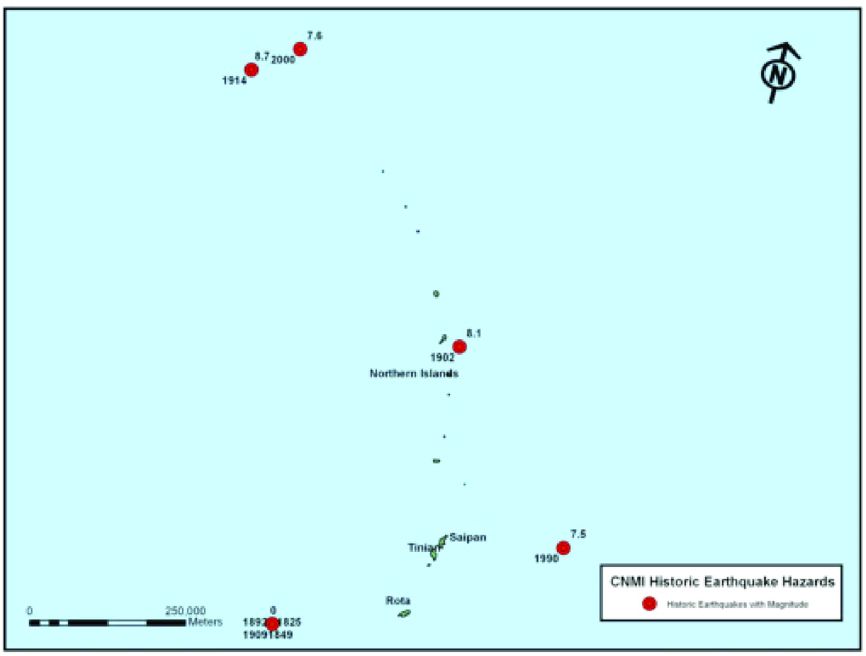
Title: Rota Flood Hazards
Project: 2010 SSMP

Figure: N-17

Title Rota Flood Hazards
Project: 2010 SSMP

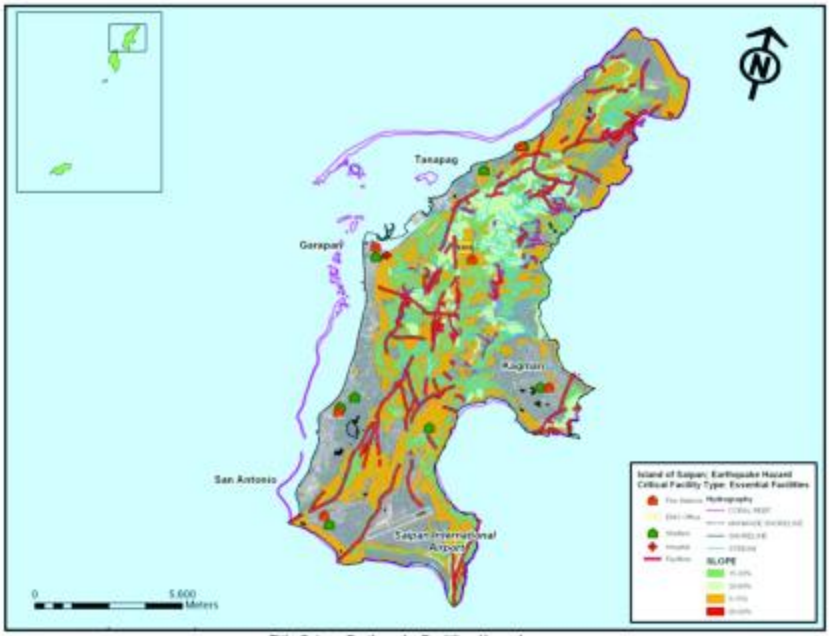
Figure: N-18

Appendix L – GIS Hazards Maps of Historic Earthquakes for CNMI Region, and GIS Hazard Maps of Earthquake Fault Line Hazards for Saipan



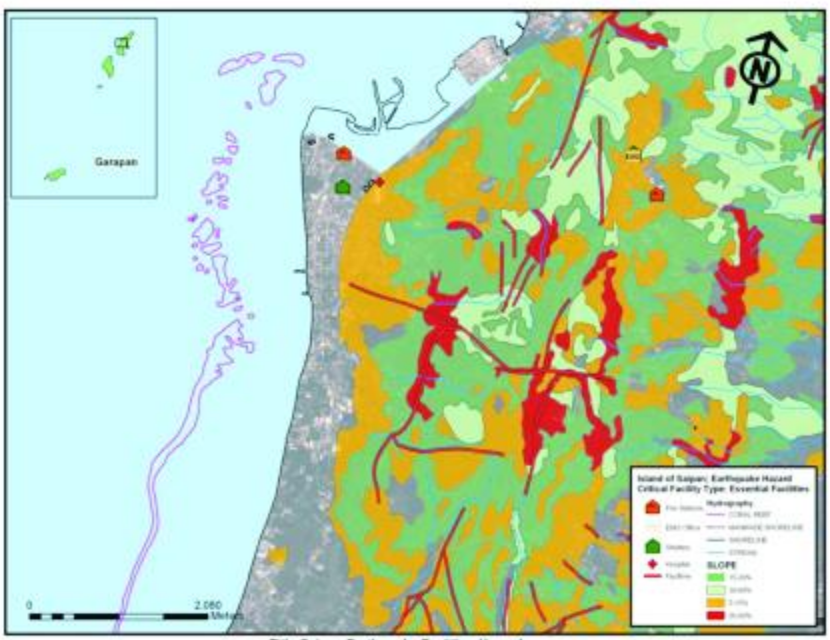
Title:CNMI Earthquake Hazards
Project: 2010 SSMP

Figure O-1



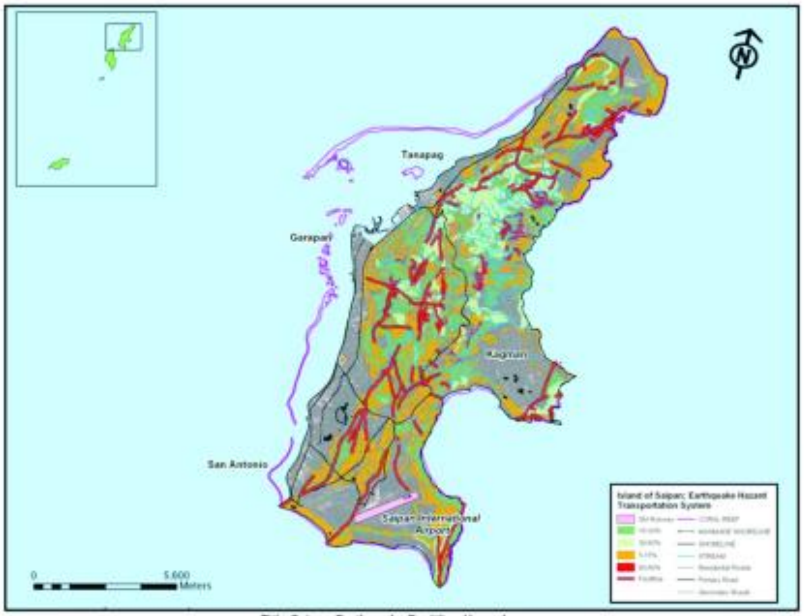
Title:Saipan Earthquake Faultline Hazards
Project: 2010 SSMP

Figure: O-2



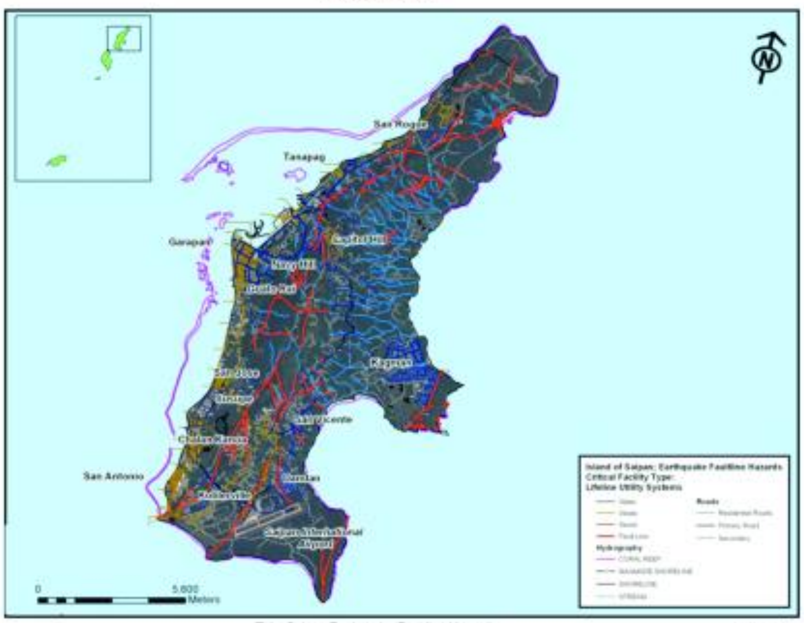
Title:Saipan Earthquake Faultline Hazards
Project: 2010 SSMP

Figure: O-3



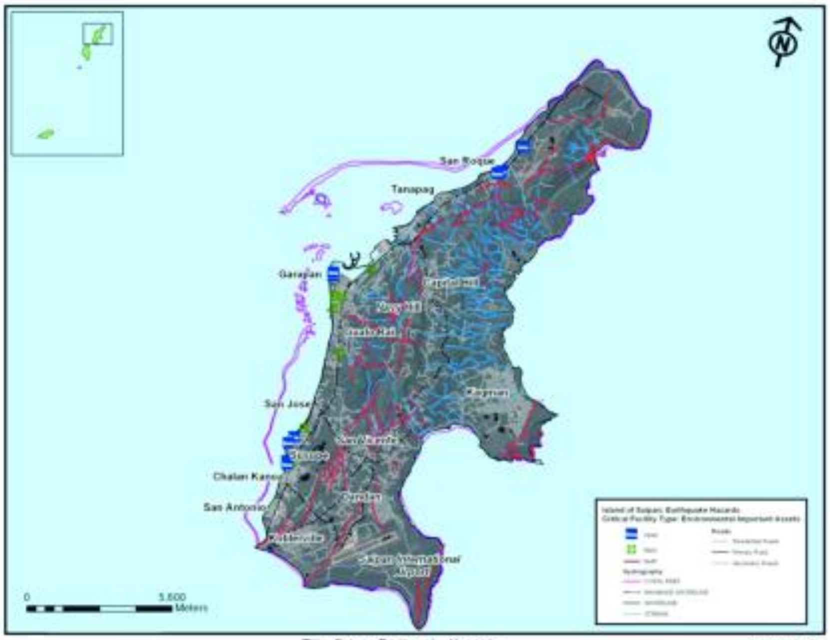
Title:Saipan Earthquake Faultline Hazards
Project: 2010 SSMP

Figure: O-4



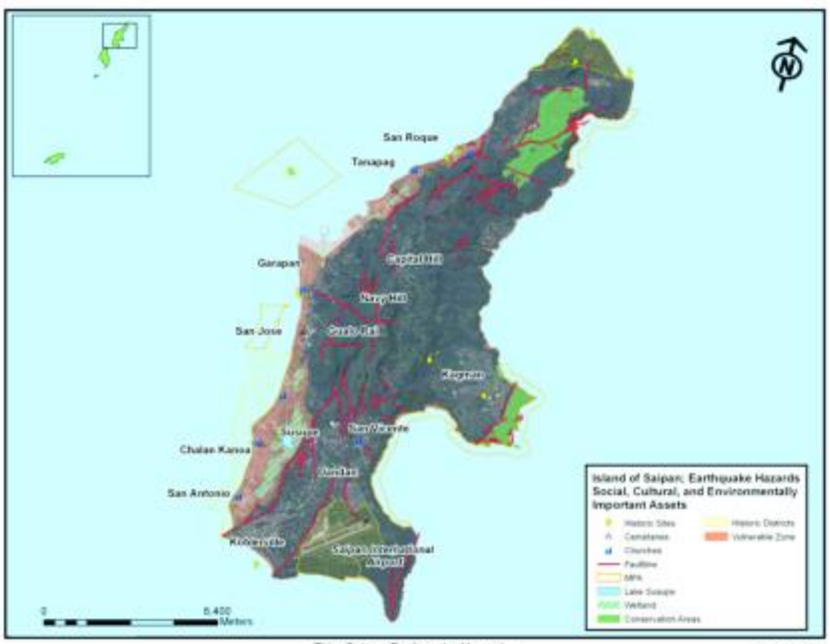
Title: Saipan Earthquake Faultline Hazards
Project: 2010 SSMP

Figure: O-5



Title: Saipan Earthquake Hazards
Project: 2010 SSMP

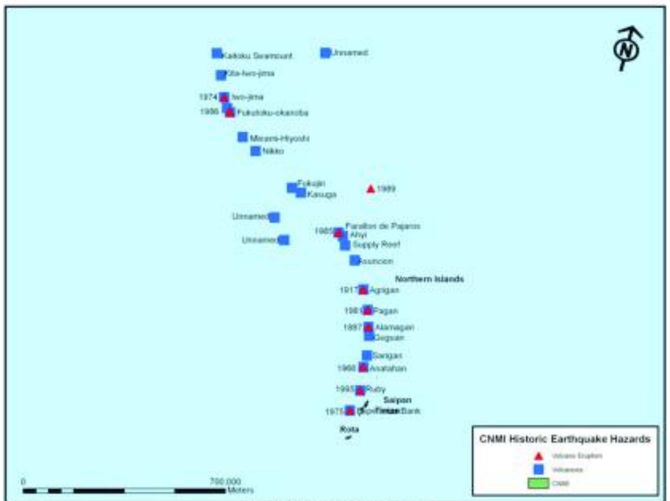
Figure: O-6



Title: Saipan Earthquake Hazards
Project: 2010 SSMP

Figure: O-7

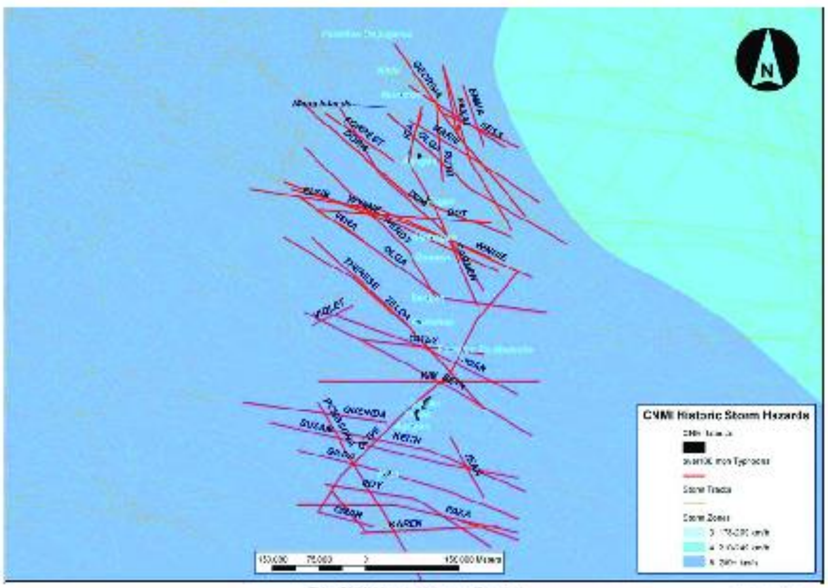
Appendix M – GIS Hazard of Volcanic Eruption Profile for CNMI Region



Title: CNMI Historic Volcanoe Eruption
Project: 2010 SSMP

Figure: P-1

Appendix N – GIS Hazard Maps of Past Typhoon Tracks for CNMI Region

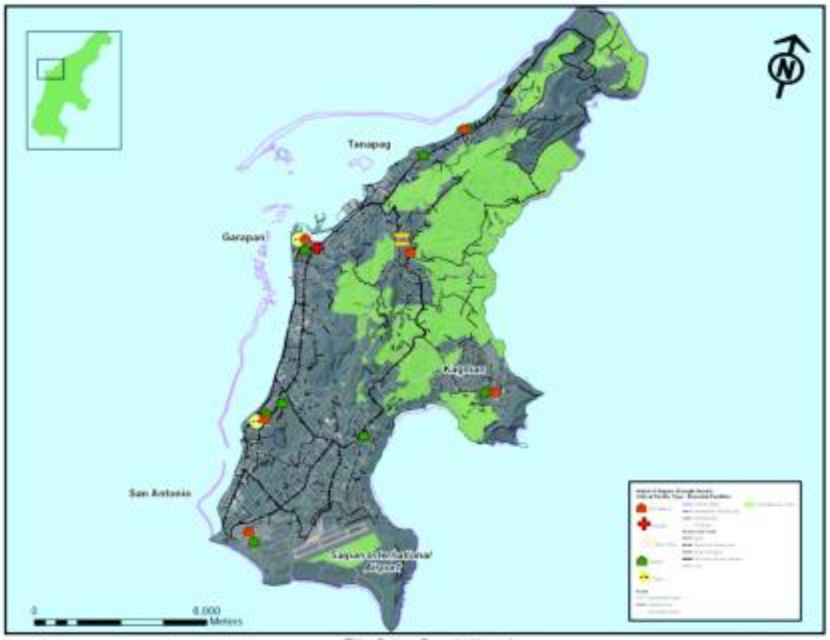


Title: CNMI Historic Volcanoe Eruption
Project: 2010 SSMP

Figure Q-1

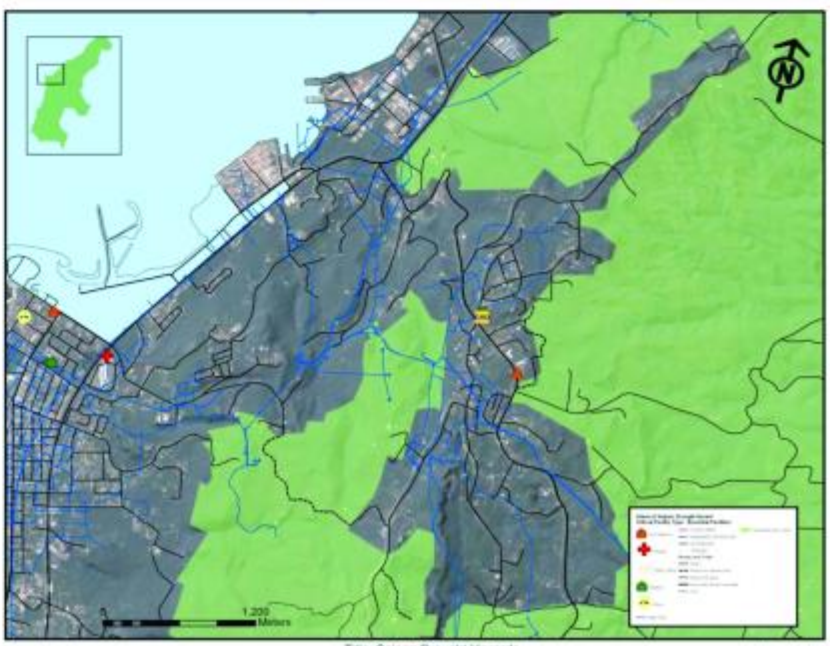
Appendix O – GIS Hazards Maps of Drought Profile by Island

Please see maps on next page



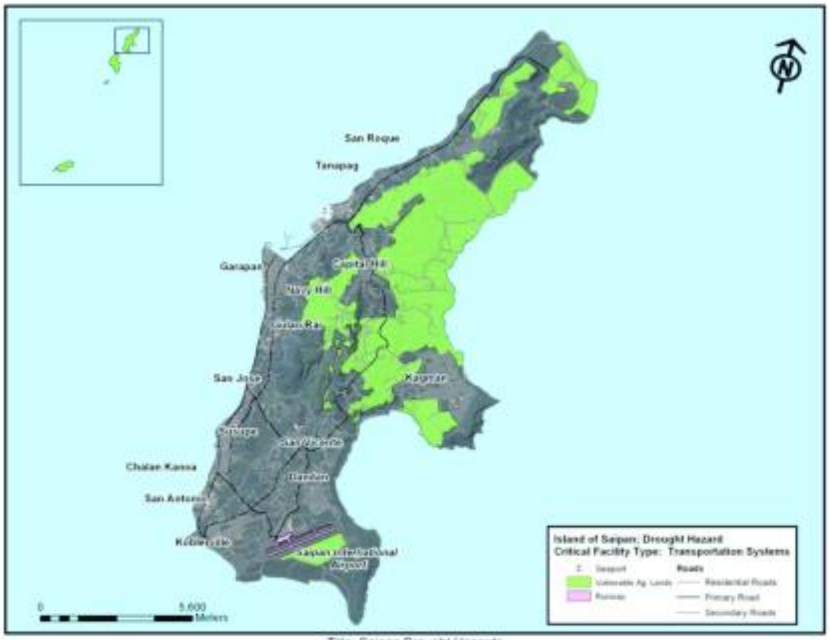
Title: Saipan Drought Hazards
Project: 2010 SSMP

Figure: R-1



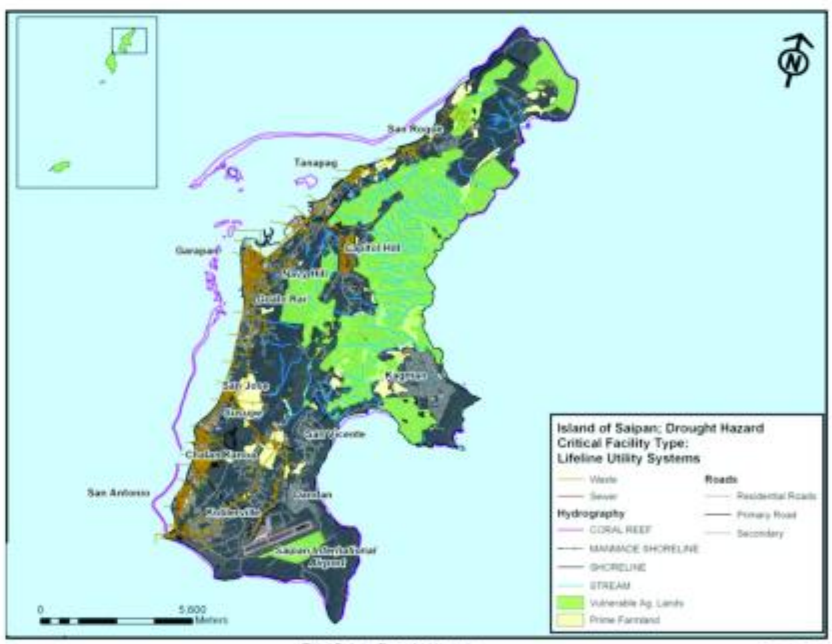
Title: Saipan Drought Hazards
Project: 2010 SSMP

Figure: R-2



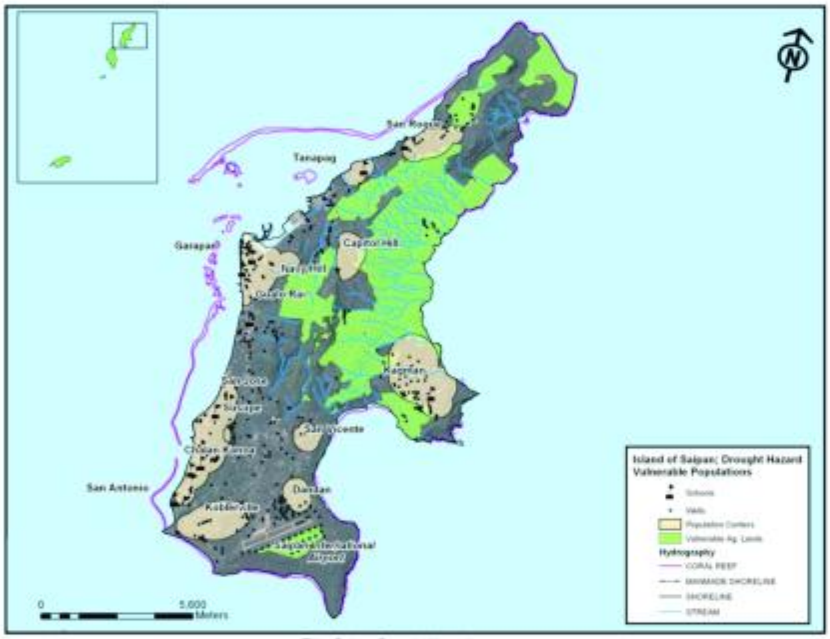
Title: Saipan Drought Hazards
Project: 2010 SSMP

Figure R-3



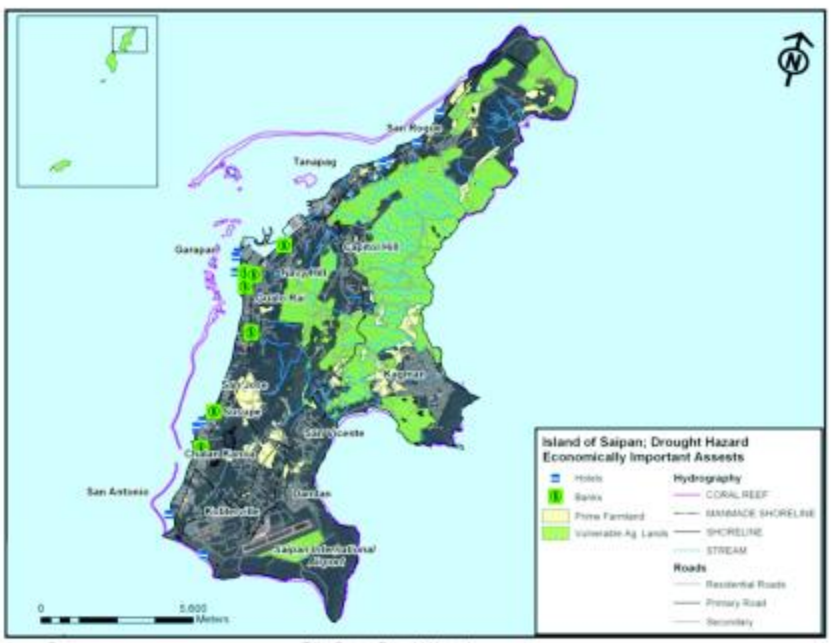
Title: Saipan Drought Hazards
Project: 2010 SSMP

Figure R-4



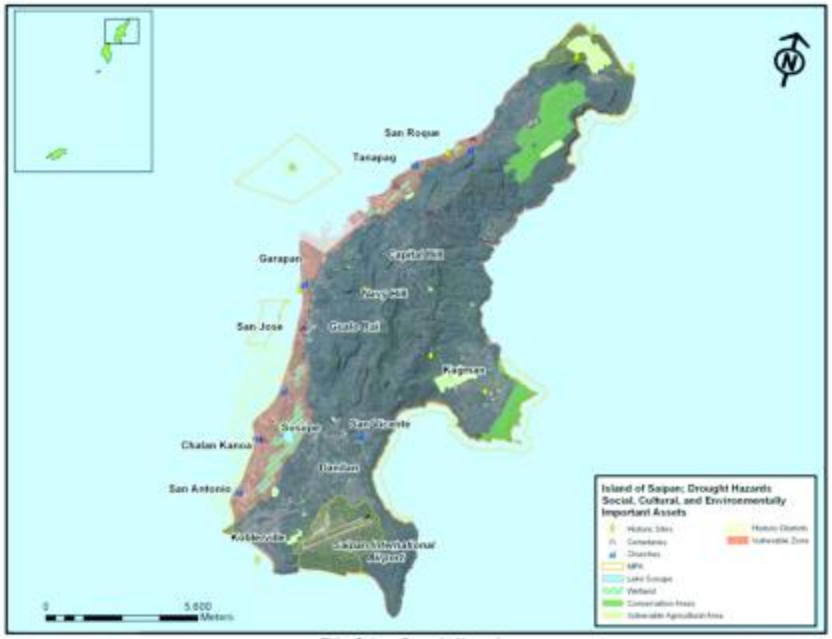
Title: Saipan Drought Hazards
Project: 2010 SSMP

Figure: R-5



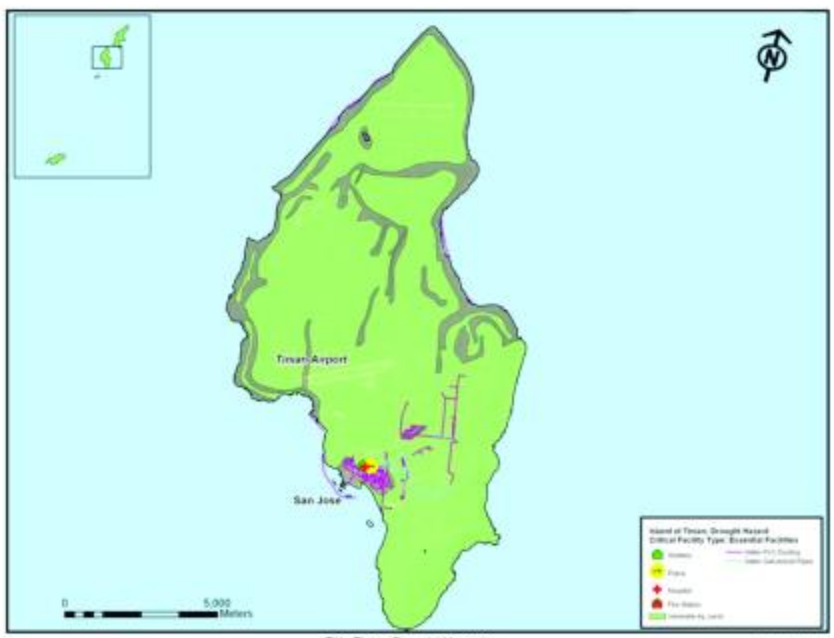
Title: Saipan Drought Hazards
Project: 2010 SSMP

Figure: R-6



Title: Saipan Drought Hazards
Project: 2010 SSMP

Figure: R-7



Title: Tinian Drought Hazards
Project: 2010 SSMP

Figure: R-8

Title: Tinian Drought Hazards
Ptoject: 2010 SSMP

Figure: R-9

Title: Tinian Drought Hazards
Ptoject: 2010 SSMP

Figure: R-10

Title: Tinian Drought Hazards
Project: 2010 SSMP

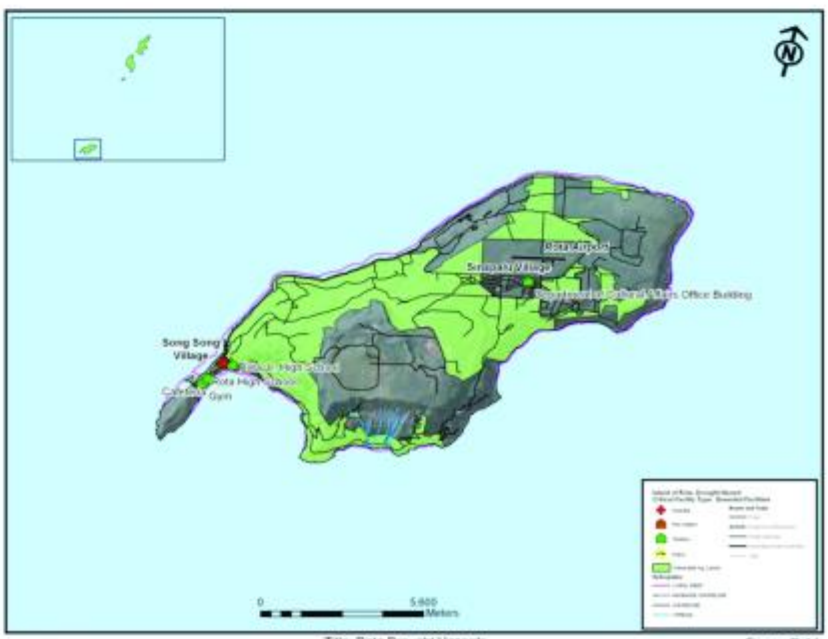
Figure R-11

Title: Tinian Drought Hazards
Project: 2010 SSMP

Figure R-12

Project: Tinian Drought Hazards
Project 2010 SSMP

Figure: R-13

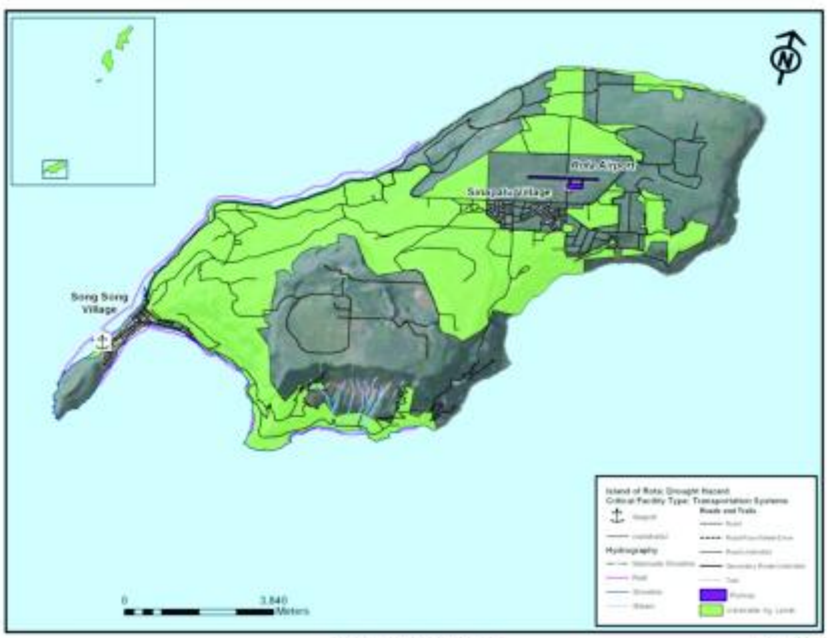


Title: Rota Drought Hazards
Project: 2010 SSMP

Figure: R-14

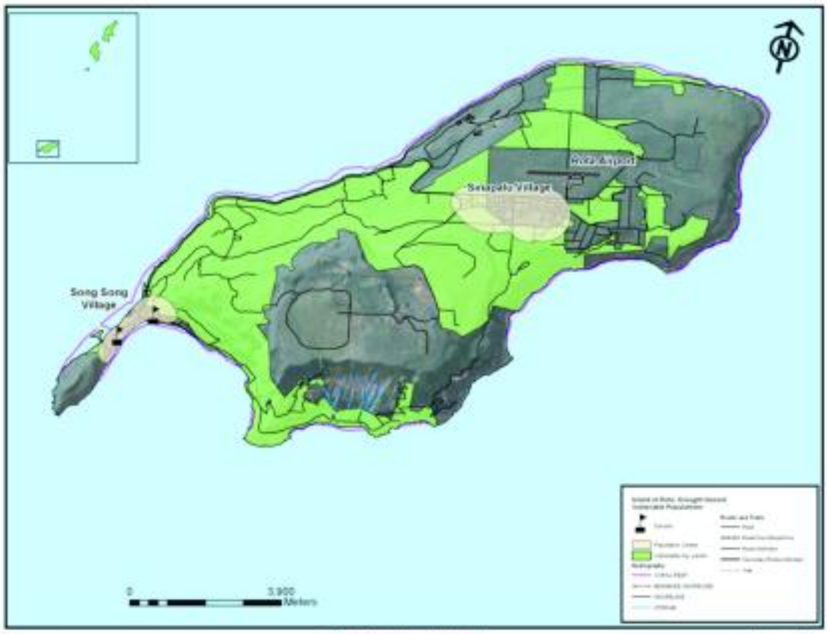
Title: Rota Drought Hazards
Project: 2010 SSMP

Figure: R-15



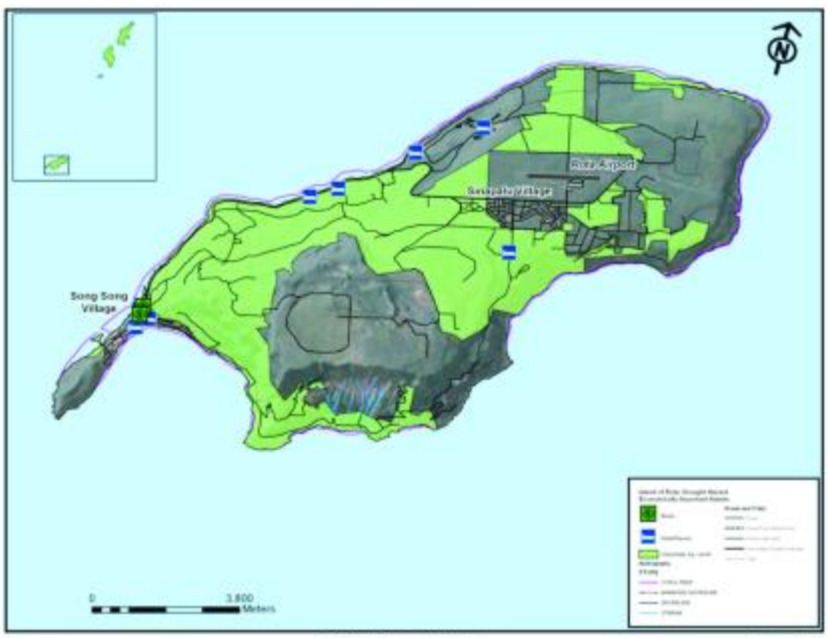
Title: Rota Drought Hazards
Project 2010 SSMP

Figure: R-16



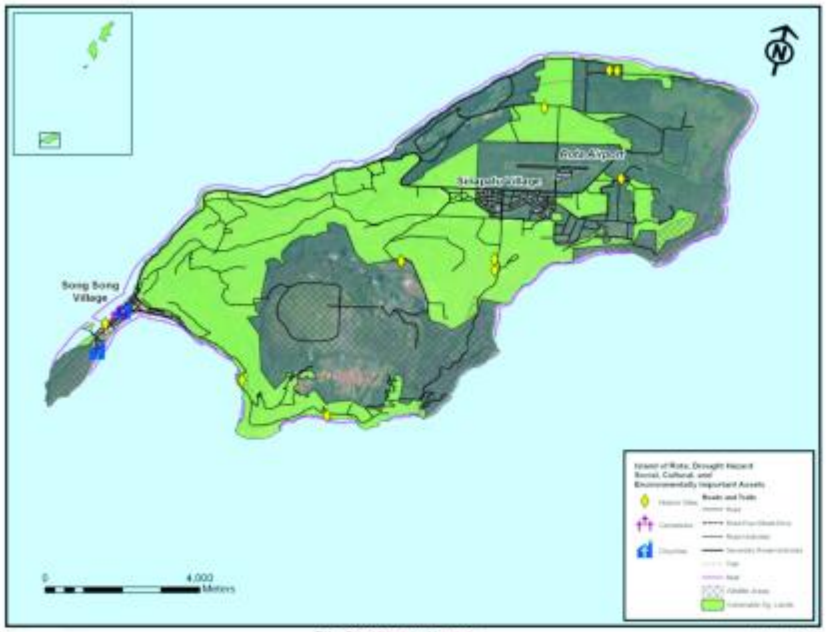
Title: Rota Drought Hazards
Project: 2010 SSMP

Figure: R-17



Title Rota Drought Hazards
Project: 2010

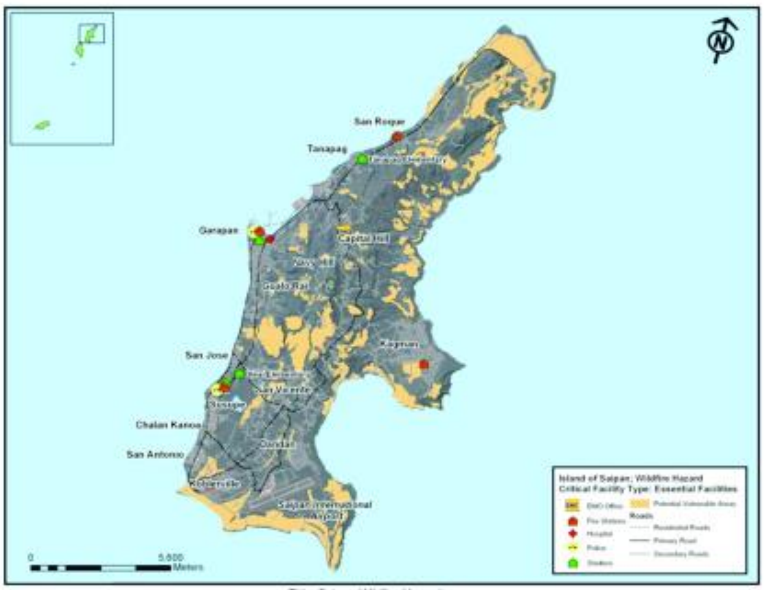
Figure: R-18



Title: Rota Drought Hazards
Project: 2010 SSMP

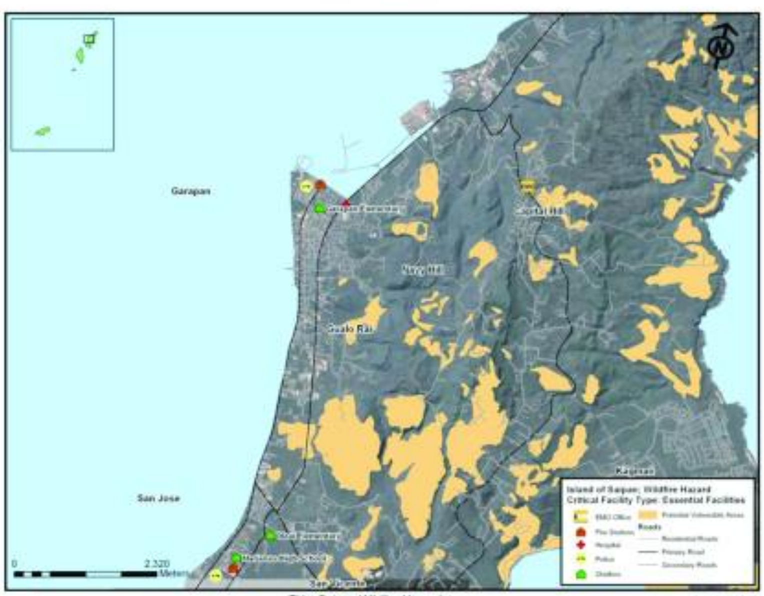
Figure R-19

Appendix P – GIS Hazard Maps of Wildfire Profile by Island



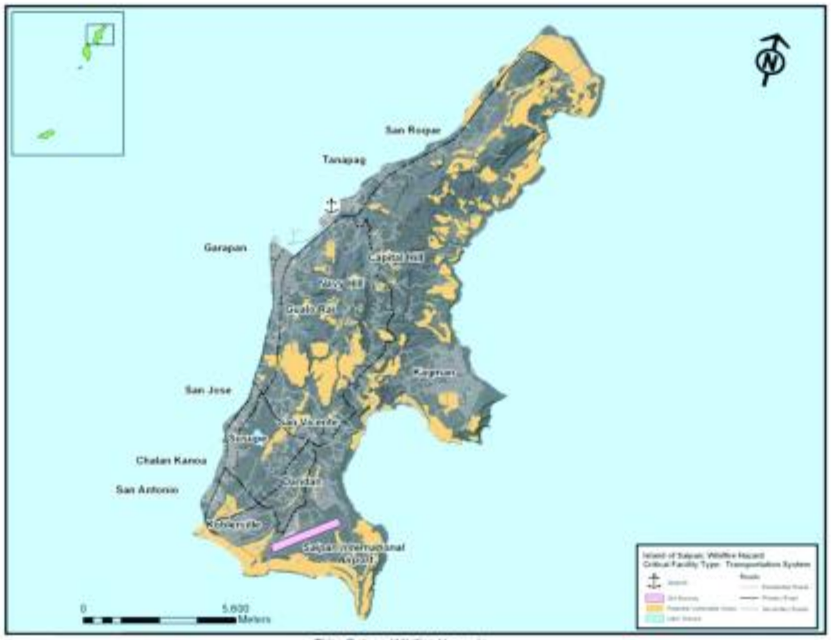
Title: Saipan Wildfire Hazards
Project: 2010 SSMP

Figure: S-1



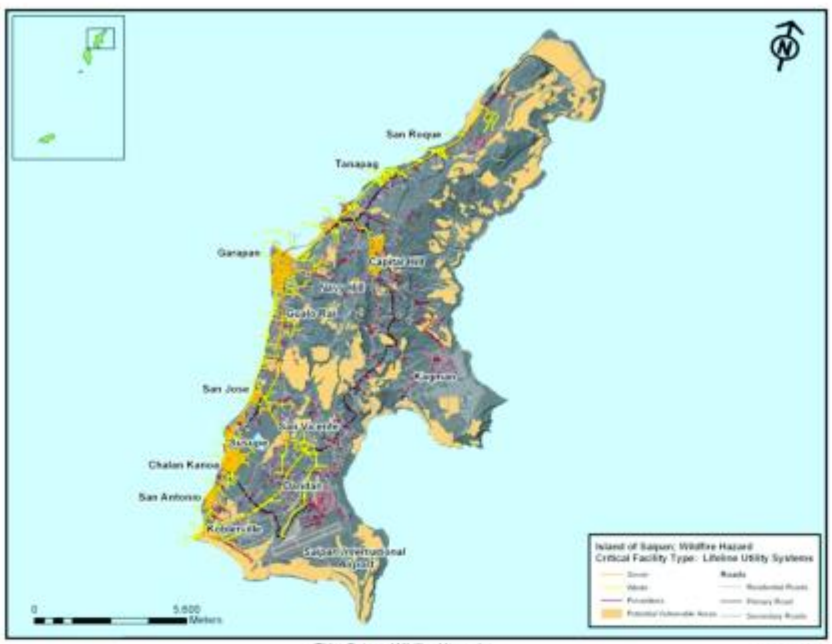
Title: Saipan Wildfire Hazards
Project: 2010 SSMP

Figure: S-2



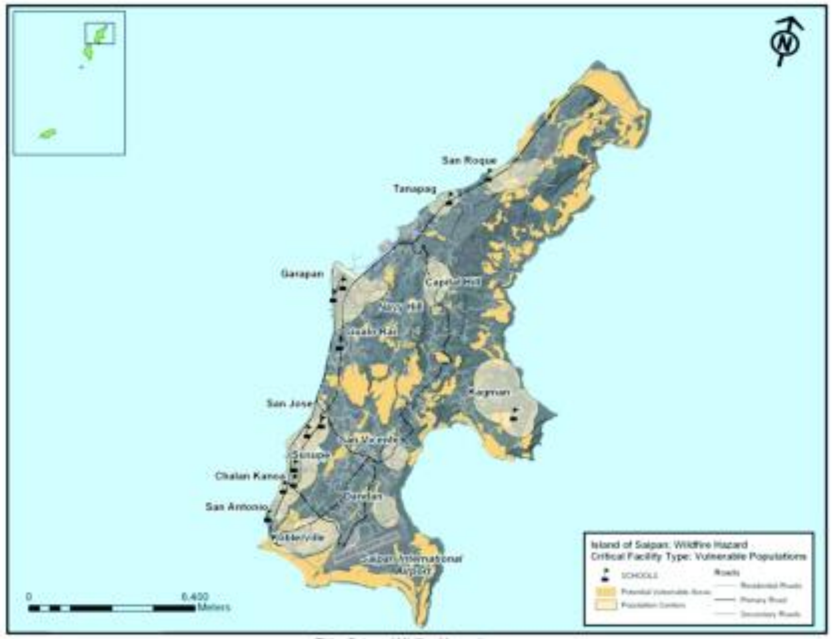
Title: Saipan Wildfire Hazards
Project: 2010 SSMP

Figure: S-3



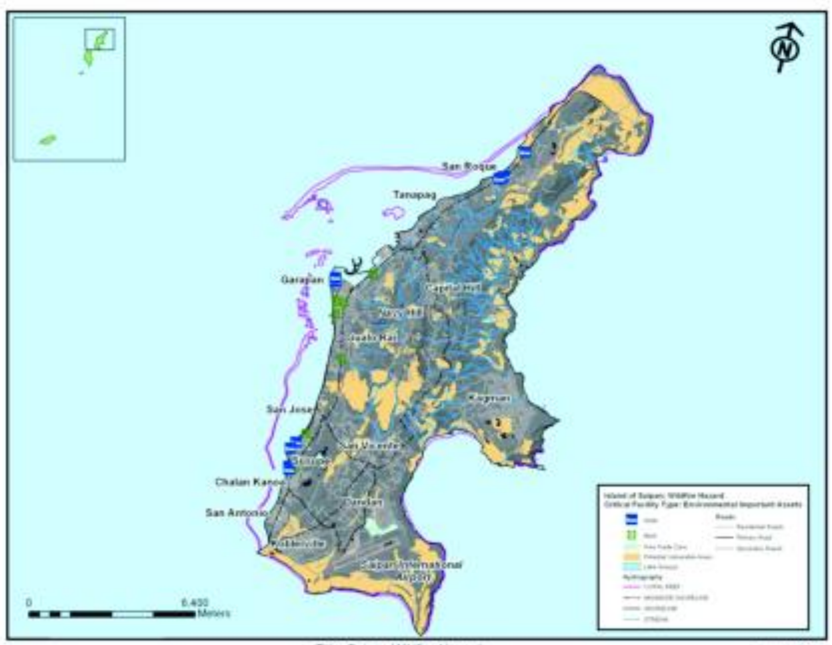
Title: Saipan Wildfire Hazards
Project: 2010 SSMP

Figure: S-4



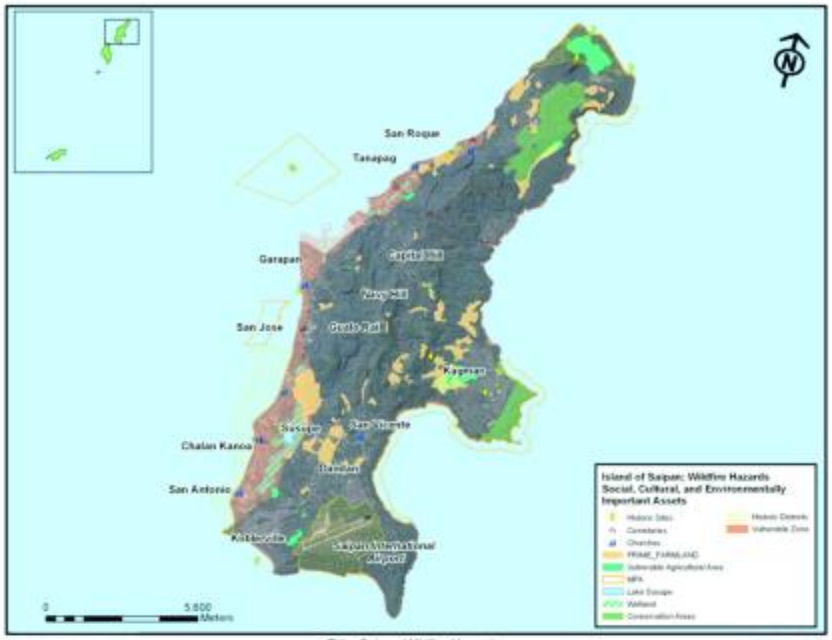
Title: Saipan Wildfire Hazards
Project: 2010 SSMP

Figure: S-5



Title: Saipan Wildfire Hazards
Project: 2010 SSMP

Figure: S-6

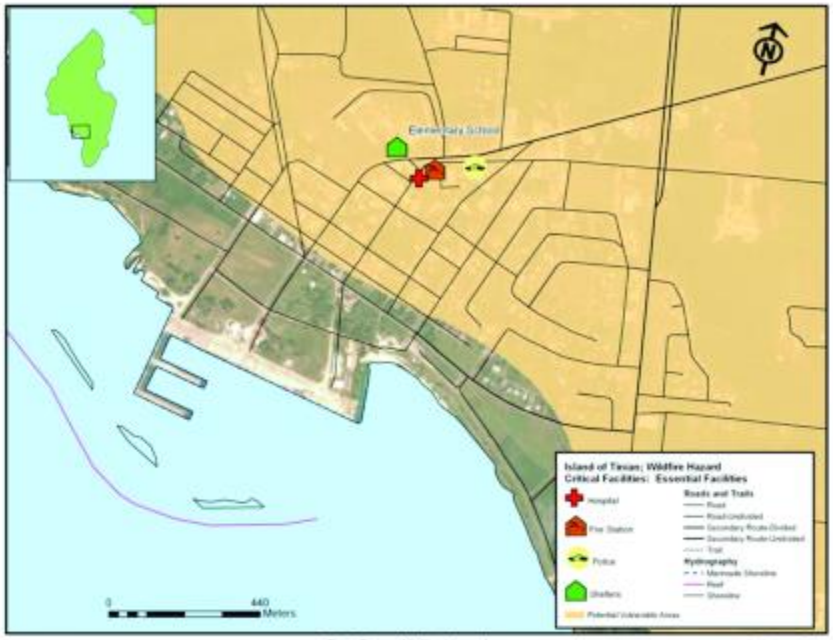


Title: Saipan Wildfire Hazards
Project: 2010 SSMP

Figure: S-7

Title: Tinian Wildfire Hazards
Project: 2010 SSMP

Figure S-8



Title: Tinian Wildfire Hazards
Project: 2010 SSMP

Figure: S-9

Title: Tinian Wildfire Hazards
Project: 2010 SSMP

Figure: S-10

Title: Tinian Wildfires
Project: 2010 SSMP

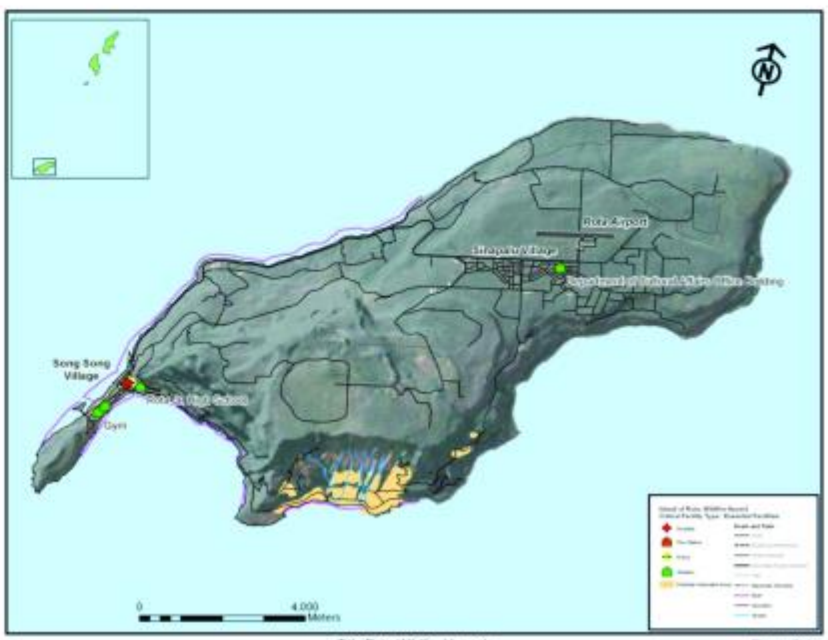
Figure: S-11

Title: Tinian Wildfire Hazards
Project: 2010 SSMP

Figure: S-12

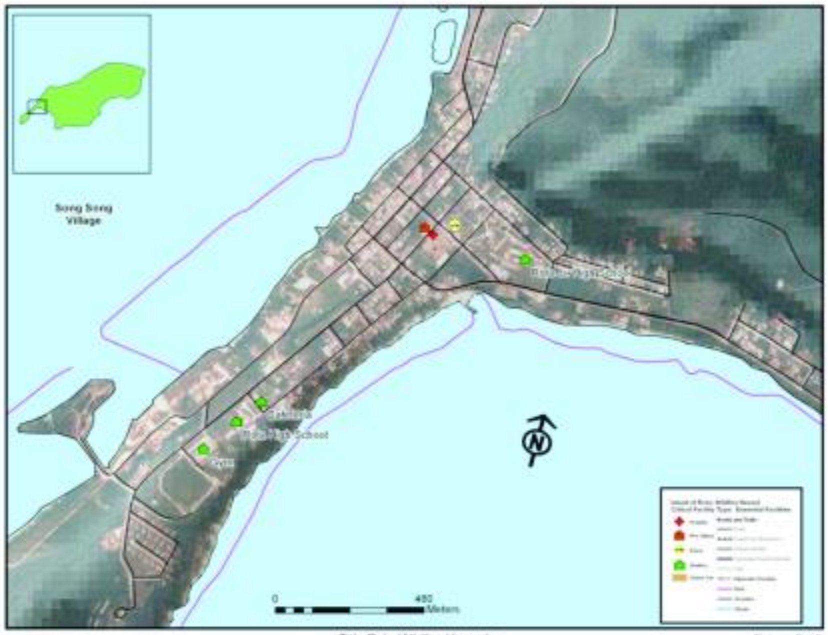
Title: Tinian Wildfire Hazards
Project: 2010 SSMP

Figure: S-13



Title: Rota Wildfire Hazards
Project: 2010 SSMP

Figure S-14

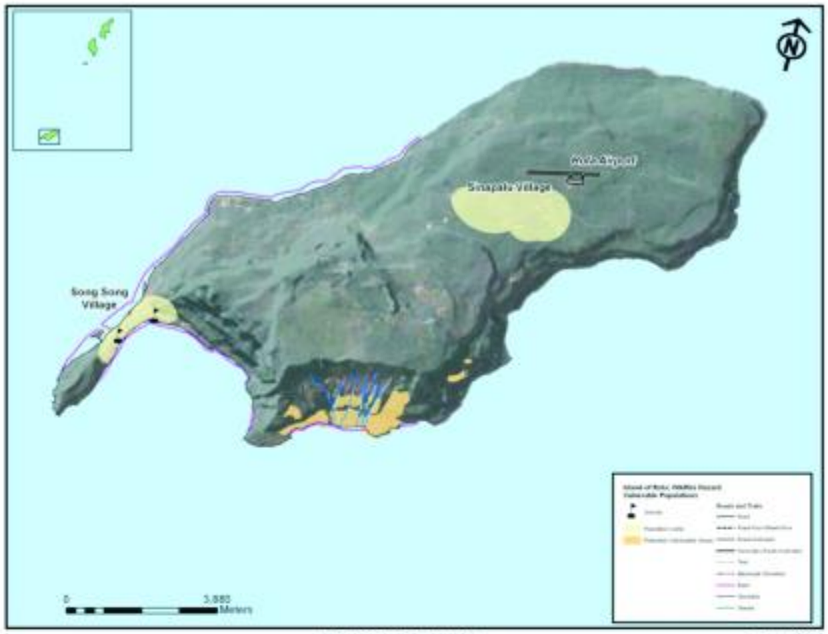


Title: Rota Wildfire Hazards
Project: 2010 SSMP

Figure S-15

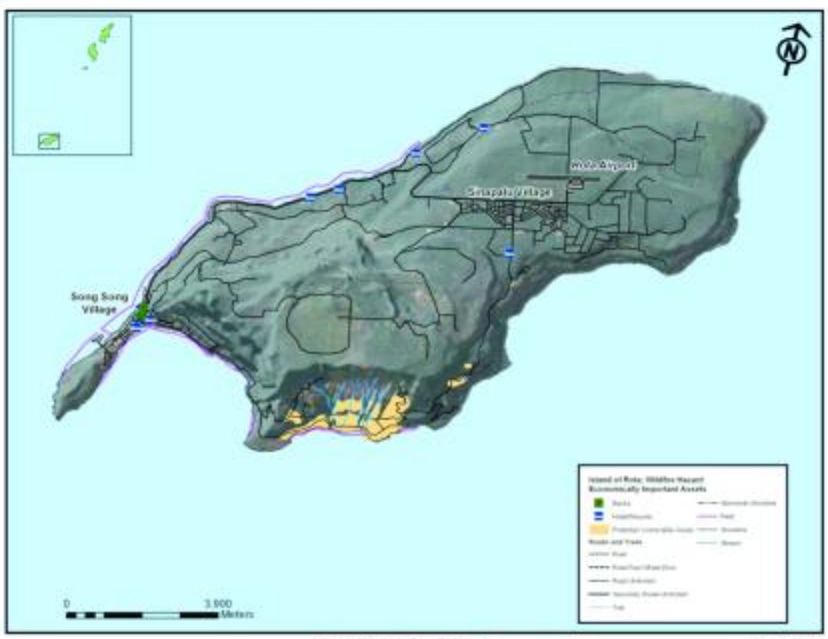
Title: Rota Wildfire Hazards
Project: 2010 SSMP

Figure S-16



Title: Rota Wildfire Hazards
Project: 2010 SSMP

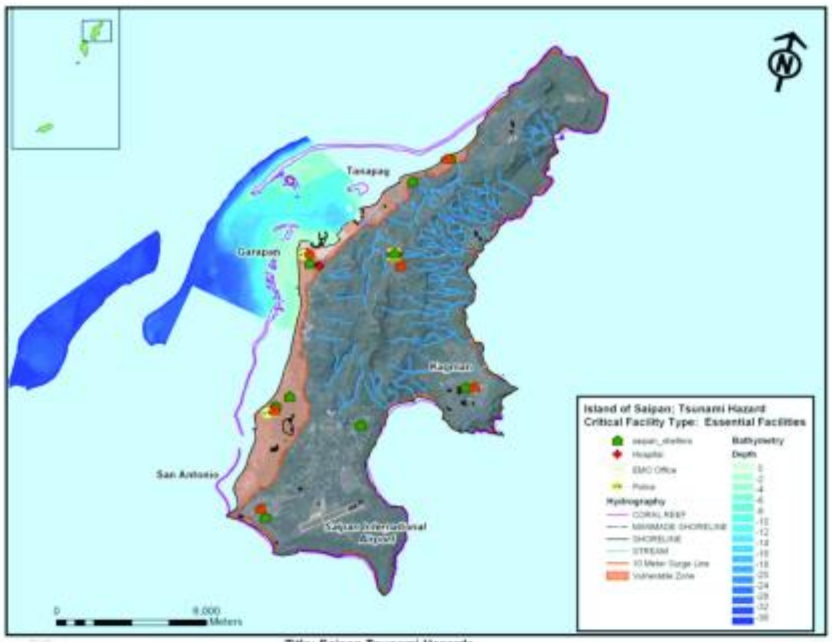
Figure S-17



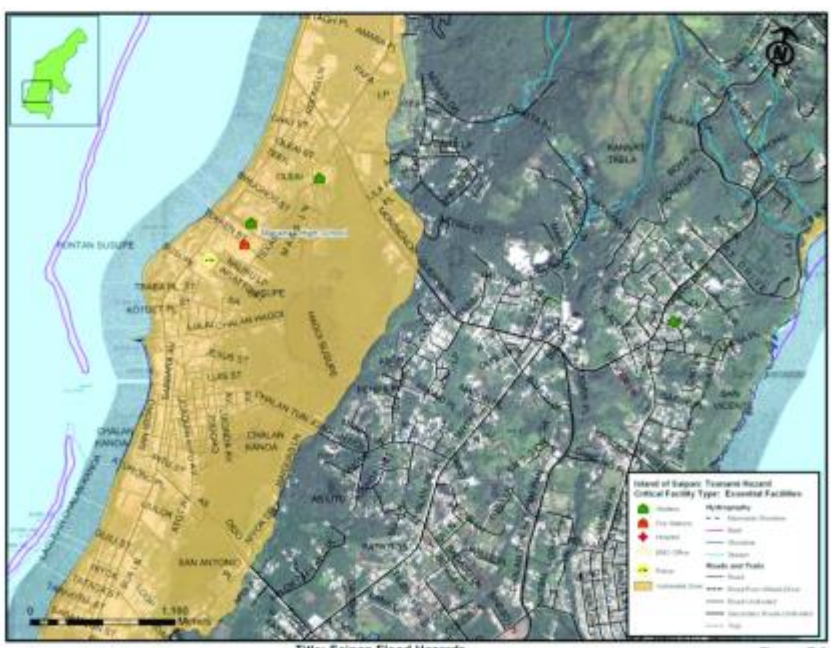
Title: Rota Wildfire Hazards
Project: 2010 SSMP

Figure S-18

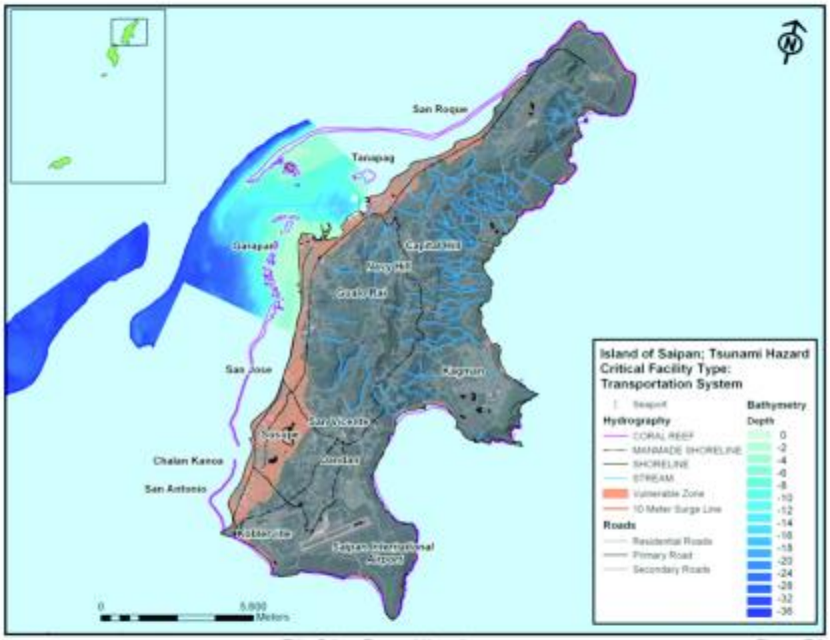
Appendix Q – GIS Hazard Maps of Tsunami Profile by Island



Title: Saipan Tsunami Hazards
Project: 2010 SSMP
Figure: T-1

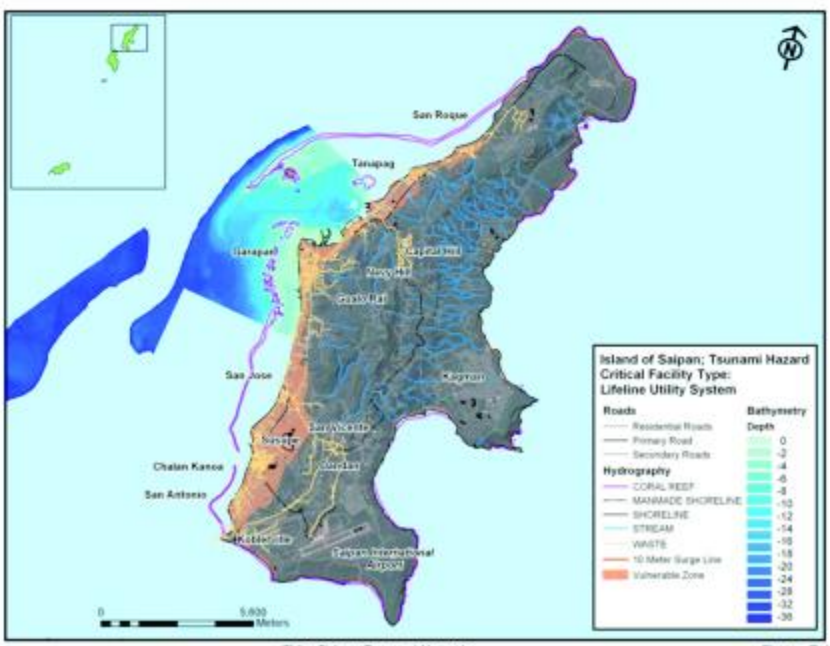


Title: Saipan Flood Hazards
Project: 2010 SSMP
Figure: T-2



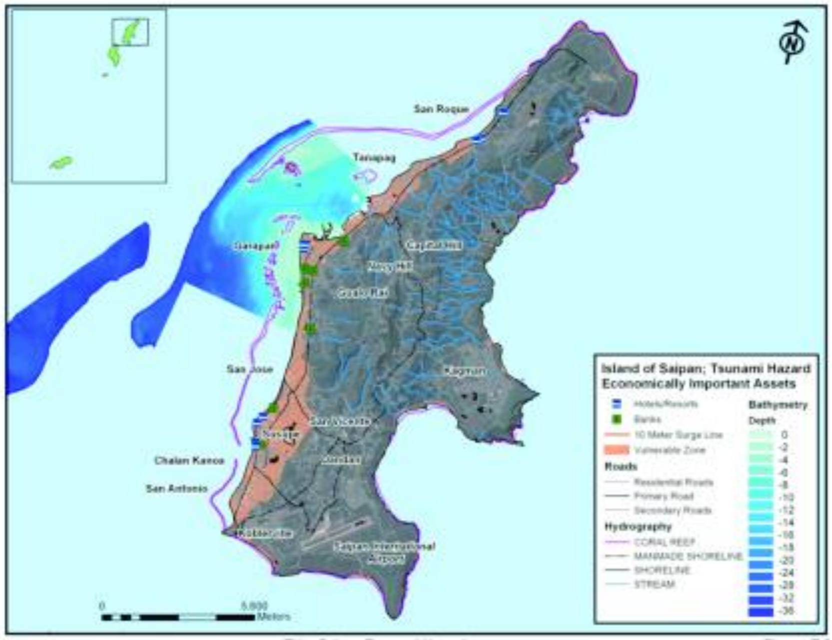
Title: Saipan Tsunami Hazards
Project: 2010 SSMP

Figure: T-3



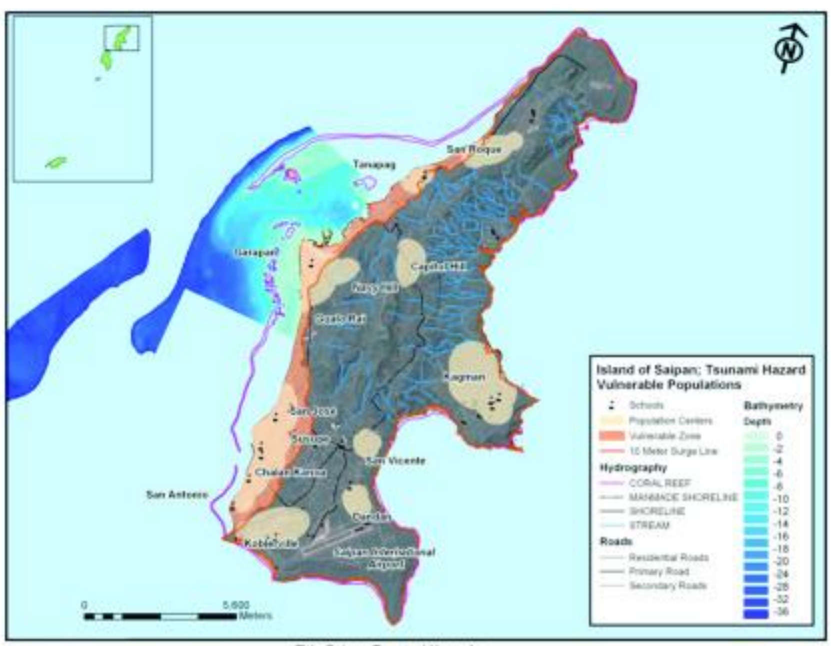
Title: Saipan Tsunami Hazards
Project: 2010 SSMP

Figure: T-4



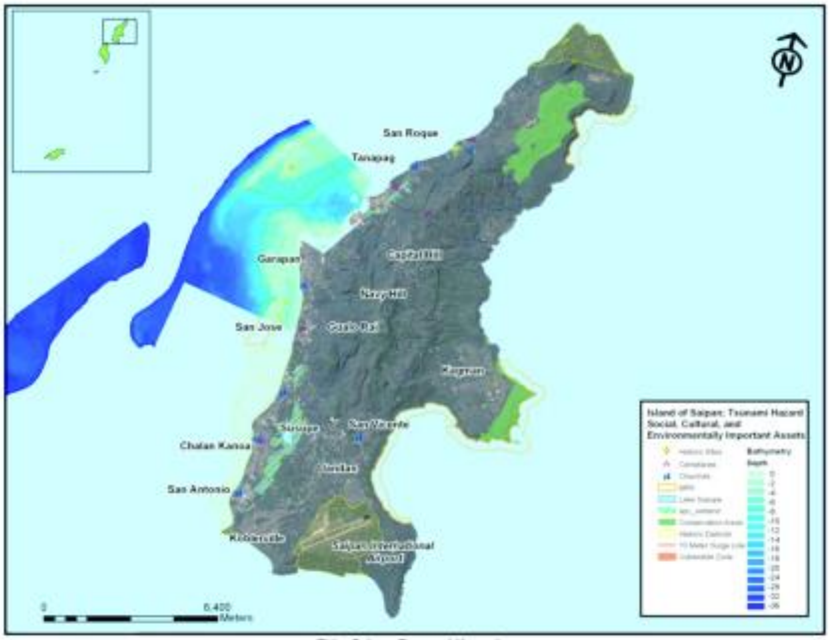
Title: Saipan Tsunami Hazards
Project: 2010 SSMP

Figure: T-5



Title:Saipan Tsunami Hazards
Project: 2010 SSMP

Figure:T-6



Title: Saipan Tsunami Hazards
Project: 2010 SSMP

Figure: T-7

Title: Tinian Tsunami Hazard
Project: 2010 SSMP

Figure: T-8

Title: Tinian Tsunami Hazards
Project: 2010 SSMP

Figure T-9

Title Tinian Tsunami Hazards
Project: 2010 SSMP

Figure T-10

Title: Tinian Tsunami Hazard
Project: 2010 SSMP

Figure: T-11

Title: Tinian Tsunami Hazards
Project: 2010 SSMP

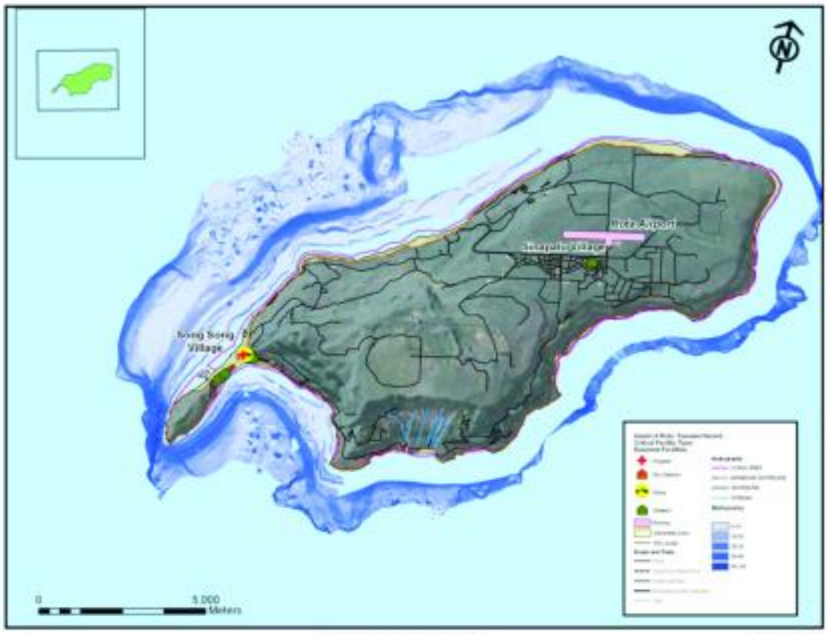
Figure: T-12

Title: Tinian Tsunami Hazards
Project: 2010 SSMP

Figure: T-13

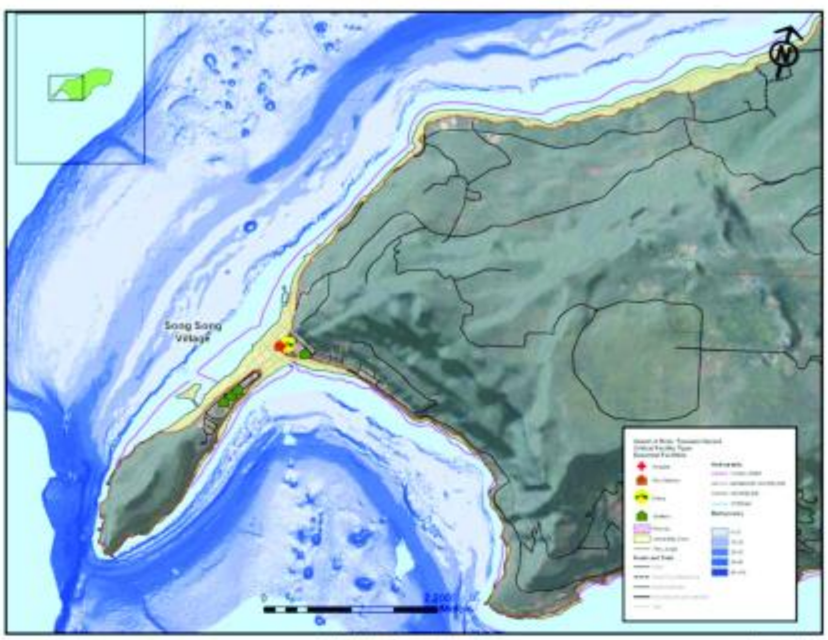
Title: Tinian Tsunami Hazards
Project: 2010 SSMP

Figure: T-14



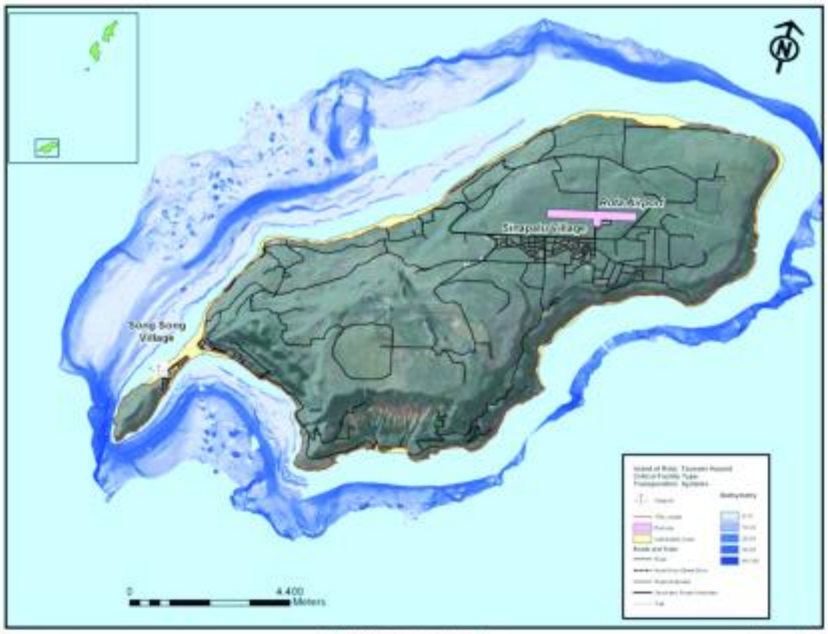
Title: Rota Tsunami Hazards
Project: 2010 SSMP

Figure: T-15



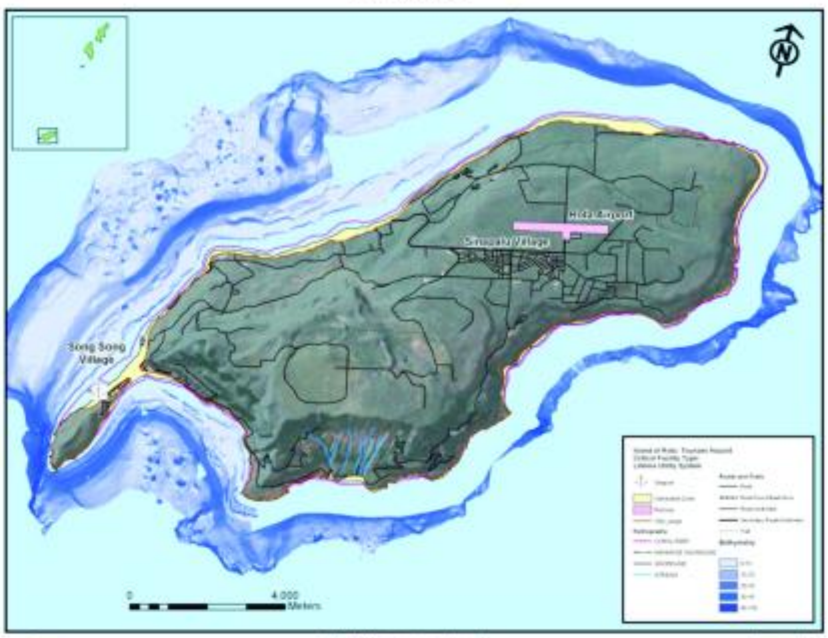
Title: Rota Tsunami Hazards
Project: 2010 SSMP

Figure: T-16



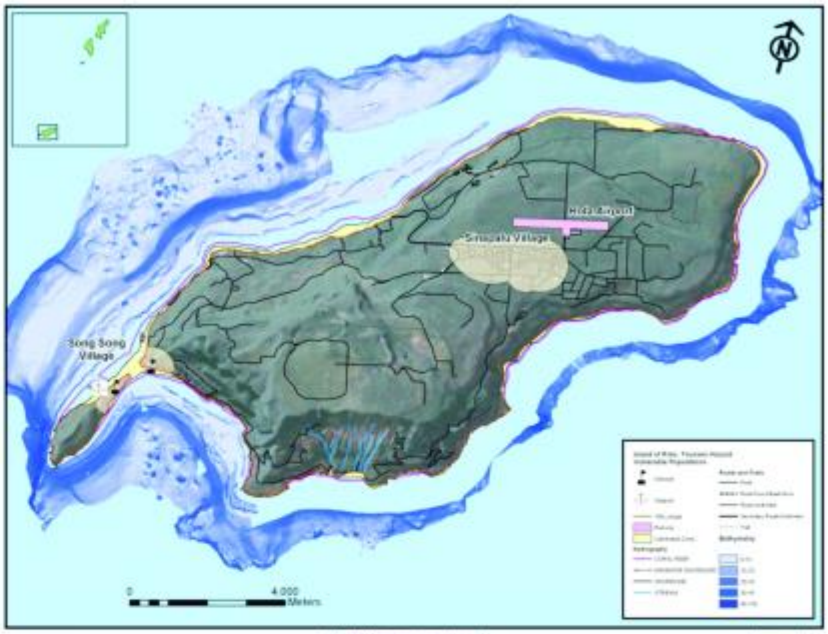
Title: Rota Tsunami Hazards
Project: 2010 SSMP

Figure: T-17



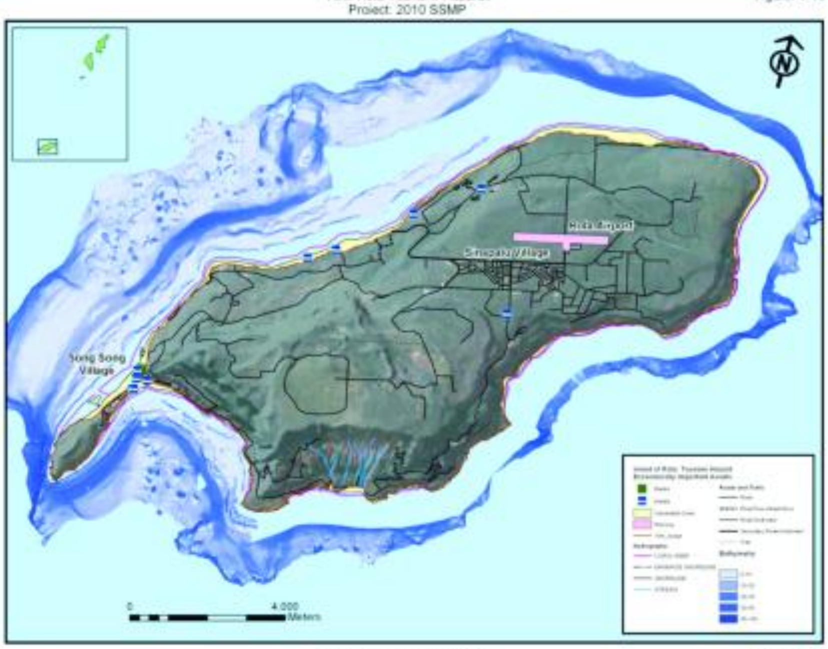
Title: Rota Tsunami Hazards
Project: 2010 SSMP

Figure: T-18



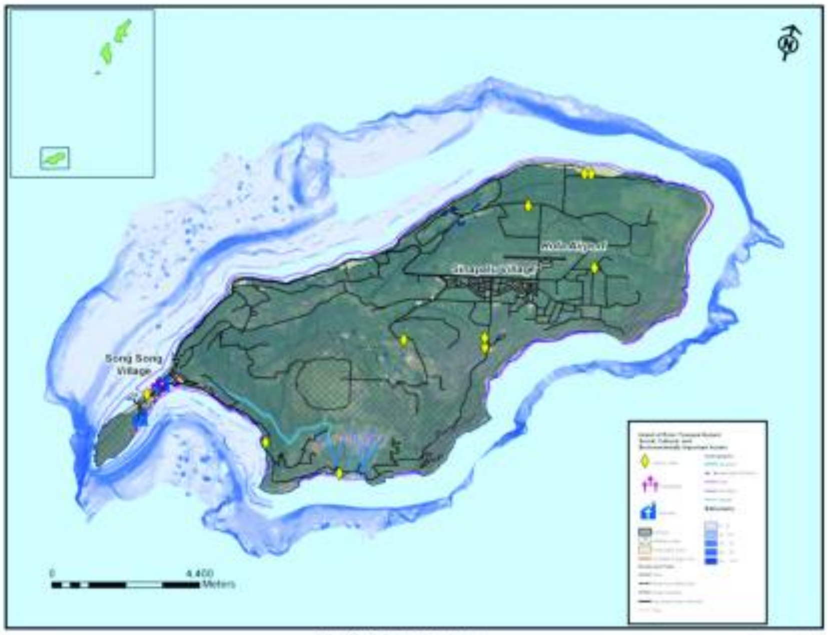
Title: Rota Tsunami Hazards
Project: 2010 SSMP

Figure: T-19



Title: Rota Tsunami Hazards
Project: 2010 SSMP

Figure: T-20



Title: Rota Tsunami Hazards
Project: 2010 SSMP

Figure: T-21

Appendix R – Methodology of Sea Level Rise Mapping

This appendix summarizes the regional sea level data used to develop inundation scenarios, and outlines the basic geospatial processing steps used to derive inundation layers

Introduction

The primary means of assessing Saipan's exposure to changes in sea level was through a simple inundation mapping approach. Inundation mapping required data processing and analysis using Geographic Information Systems (GIS). Geospatial data layers for nine sea level change (SLC) scenarios, in the form of raster and vector data types, were developed using ESRI ArcGIS 10.1 software and processing methods originally developed by NOAA Coastal Services Center (see document "Detailed Methodology for Mapping Sea Level Rise Inundation" NOAA CSC, 2011). The NOAA methods were modified and applied to sea level data specific to the Mariana Islands.

It should be noted that several elements of the mapping approach introduce significant limitations and caveats to exposure analysis. While these limitations present obstacles to visualizing accurate representations of future conditions, they also offer opportunities for enhanced modeling as inundation scenarios on Saipan continue to be studied. Enhanced efforts could integrate more detailed hydrologic features, updated elevation and shoreline positions, or adopt numerical models that incorporate wave run-up and other coastal processes.

For the Saipan VA, a modified bathtub model was utilized, which allows for mapping of changes in still-water levels over a high-resolution, conditioned digital elevation model. The bathtub approach does not consider future changes in shoreline due to coastal processes such as erosion and accretion, nor does it account for wave run-up or the influence of certain hydraulic features such as stormwater/sewer infrastructure. More information concerning the specifications of this approach can be found on the NOAA CSC website (www.csc.noaa.gov) in the FAQ for "Digital Coast Sea Level Rise and Coastal Flooding Impacts Viewer". A detailed comparison of the bathtub approach to a dynamic, numerical wave run-up model is provided in USGS Open Report 2013-1069 (Storlazzi, et al. 2013).

Sea Level Scenarios and Data Sources

Nine scenarios were used to map inundation depths on Saipan (see table), using both projected and observed changes in sea level. Each scenario is summarized below, along with references to source data.

Sea Level Scenarios for Saipan				
Scenario	**Rise (Ft.)**	**Rise (Meters)**	**Scenario Code**	**Sources**
10 year Storm; no Sea Level Change	4.89	1.49	**A1**	Chou, Lucia W. (1989). *Typhoon Water Surface Analysis for West Coast of Saipan, Mariana Islands*. U.S. Army Corps Paper CERC-89-12.
USACE Curve Intermediate - 50 yrs. + 10 yr. Storm	5.10	1.554	**A2**	- IPCC and modified NRC Curve 1 (http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf) - USACE Sea Level Change Curve Calculator (http://corpsclimate.us/ccaceslcurves.cfm)* - Chou, Lucia W. (1989). Typhoon Water Surface Analysis for West Coast of Saipan, Mariana Islands. U.S. Army Corps Paper CERC-89-12.

Continued on following page…

USACE Curve Intermediate - 100 yrs.	0.89	0.27	**B1**	- IPCC and modified NRC Curve 1 (http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf)
USACE Curve Intermediate - 100 yrs. + 10 yr. Storm	5.77	1.76	**B2**	- IPCC and modified NRC Curve 1 (http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf) - Chou, Lucia W. (1989). Typhoon Water Surface Analysis for West Coast of Saipan, Mariana Islands. U.S. Army Corps Paper CERC-89-12.
USACE Curve High - 50 yrs.	1.64	0.5	**C1**	- IPCC and modified NRC Curve 3 (http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf)
USACE Curve High - 50 yrs. + 10 yr. Storm	6.53	1.99	**C2**	- IPCC and modified NRC Curve 3 (http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf) - Chou, Lucia W. (1989). Typhoon Water Surface Analysis for West Coast of Saipan, Mariana Islands. U.S. Army Corps Paper CERC-89-12.
USACE Curve High - 100 yrs.	5.02	1.53	**D1**	- IPCC and modified NRC Curve 3 (http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf)
USACE Curve High - 100 yrs. + 10 yr. Storm	9.91	3.02	**D2**	- IPCC and modified NRC Curve 3 (http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf) - Chou, Lucia W. (1989). Typhoon Water Surface Analysis for West Coast of Saipan, Mariana Islands. U.S. Army Corps Paper CERC-89-12.
USACE Curve High - 100 yrs. + 50 yr. Storm	11.91	3.63	**D3**	- IPCC and modified NRC Curve 3 (http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf) - Chou, Lucia W. (1989). Typhoon Water Surface Analysis for West Coast of Saipan, Mariana Islands. U.S. Army Corps Paper CERC-89-12.
*Sea Level Curve Calculator used for all subsequent curve calculations				

CNMI Climate Change Working Group members expressed concern over both long-term SLC due to climate change, as well as short-term changes in response to large storm events. Accordingly, the SLC scenarios reflect sea levels resulting from these two independent drivers separately, and in combination.

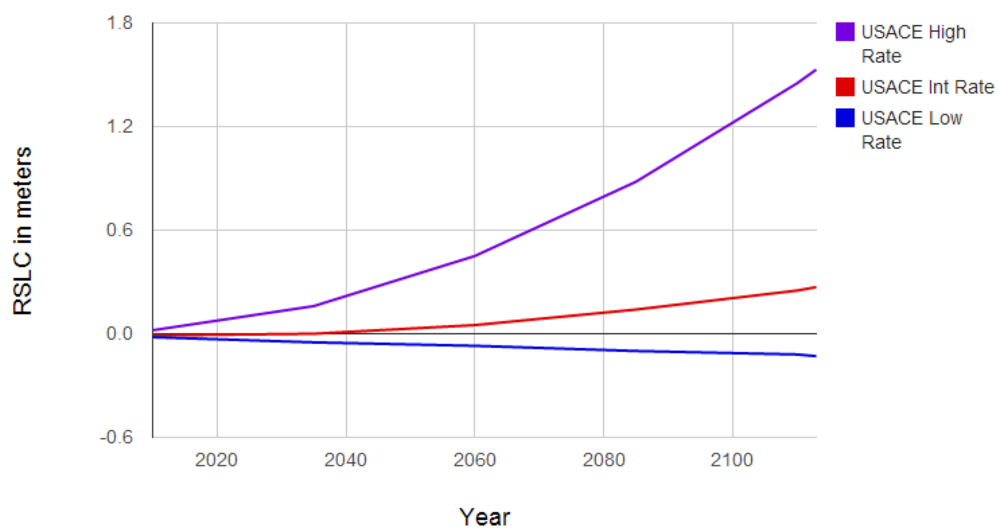
SLC Scenarios Due to Storm Events

SLC scenarios based on storm events were informed by the U.S. Army Corps of Engineers (USACE) analysis of water surfaces along Saipan's west coast for typhoons (Chou 1989). The study summarized still-water rise (not reflecting wave run-up or geographic tidal variation) for 10, 50 and 100 year storms. Because these modeled surfaces resulted in *still water rise* values, they were consistent with the Saipan VA's modified bathtub approach.

SLC Scenarios Due to Climate Change

SLC scenarios due to climate change were based on a curve calculator developed by the U.S. Army Corps of Engineers, in collaboration with NOAA's National Ocean Service and the USGS. This effort was driven by a 2011 mandate requiring the USACE to integrate SLC scenarios into its coastal civil works projects. The calculator uses an adjusted mean sea level (MSL) trend, based on differences between global eustatic MSL trends and a local MSL trend as measured by the closest NOAA tide gauge.

For the Saipan VA, the local MSL trend was established with the calculator using the NOAA tide gauge on Guam, adjusting for rates of vertical land movement. A lack of consistent and thorough sea level records at the Saipan Tanapag station inspired the use of the Guam station, and the vertical rate of land movement due to tectonic uplift on Guam (rising) is assumed for Saipan as well. Note that the factor of vertical land movement explains negative SLC scenarios where modified NRC Curves are not considered (i.e. “Low Rate”). Application of this rate of land movement to Saipan introduces a large amount of uncertainty, but does reflect the regional tectonic uplift.



The original NRC curves result in global SLC values, by the year 2100, of 0.5 meters, 1.0 meters, and 1.5 meters. The USACE SLC calculator modified these curves to include the historic global MSL change rate of 1.7 mm/year and the start date of 1992 (which is the midpoint of the current National Tidal Datum Epoch of 1983-2001), instead of 1986 (the start date used by the NRC). This resulted in updated values for the calculator coefficients.

The USACE “Intermediate Curve” and “High Curve” were used. The intermediate curve is computed from the modified NRC Curve I considering both the most recent IPCC projections and modified NRC projections with the local rate of vertical land movement added. The high curve is computed from the modified NRC Curve III, using the same considerations of NRC projections and vertical land movement as the intermediate curve.

Detailed documentation concerning these calculations can be found in USACE Circular 1165-2-2012 (http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf) and on the USACE Sea Level Change website: http://corpsclimate.us/ccacesl.cfm .

Mapping Methods

Inputs:

• Digital Elevation Model (DEM)

- The DEM for Saipan is based on 2007 USACE high-resolution lidar data. Hydrographic breaklines in the DEM were derived from lidar intensity images, and the DEM is hydro-flattened so that water elevations are set to 0 meters.
- Source lidar has a horizontal accuracy of 1 meter, and vertical accuracy root mean square error of 20 cm. DEM resolution is 2.69 meters. The source data meets FEMA standards for flood hazard mapping.
- DEM was conditioned and distributed by NOAA CSC. Metadata for the DEM, including process steps and software used is available upon request to CNMI Coastal Resources Management Office.

• Tidal surface in NAVD88 values

- NOAA methodology suggests the use of VDATUM software to develop a tidal surface that captures spatial variation in water levels. The VDATUM tool and associated data packages did not include coverage of the CNMI at the time that SLC layers were developed, and therefore was not used. The alternative recommended method for creating a tidal surface involves interpolation of sea level values at different tide gauges within the area of interest. Saipan has only one tide gauge, therefore a single value tidal surface was generated.

• Sea level change values

- Values (in meters) for each of the SLC scenarios listed in this appendix were used.

Workflow in ESRI ArcGIS Desktop (as detailed by NOAA CSC; all modifications to NOAA process are noted in *italics*)

1. Add SLC value to the tidal surface grid

Spatial Analyst > Math > Plus
- Input raster or constant value 1 = tidal surface
- Input raster or constant value 2 = SLC value for A1
- Output raster = **surface_A1**

2. Subtract DEM values from water surface to derive initial inundation depth grid

Spatial Analyst > Single Ouput Map Algebra
- Map Algebra expression: con(DEM <= surface_A1, surface_A1 – DEM)
- Output raster = **depth_A1**

3. In preparation for evaluating connectivity, create single value DEM to show inundation extent

Spatial Analyst > Single Output Map Algebra
- Map Algebra expression: con(DEM <= surface_A1, 1)
- Output raster = **single_A1**

4. Evaluate connectivity of extent raster

Spatial Analyst > Generalization > Region Group
- Input raster = single_A1
- Number of neighbors to use = 8
- Zone grouping method = Within
- Output raster = **clumped_A1**

5. Extract connected inundation surface to be used as a mask for the original depth grid

Spatial Analyst > Extraction > Extract by Attributes
- Input raster = clumped_A1
- Where clause: “Count” = maximum value
- Output raster = **connect_A1**

For Saipan

- The ‘Count’ values were manually identified due to presence of small islands (Managaha) and pocket beaches, which have smaller clump counts. These “pockets” of inundation would otherwise be eliminated from the “connected area” based on use of the maximum count value, per NOAA methods.
- The primary area of connected inundation will usually be the 2nd or 3rd largest ‘Count’ values, as the Lake Susupe-Wetland complex generally comprises the largest ‘count’ value.
- A second extraction of the max value and/or ‘Count’ values associated with surface water in the Susupe area was performed to create a connected Susupe-wetland surface (**Susupe_mask_A1**). This area, while not connected to the coast through surface flooding in most scenarios, is of major concern, and is hydrologically connected via groundwater and the island’s basal lens.

6. Derive low-lying areas greater than an acre

Spatial Analyst > Extraction > Extract by Attributes
- Input raster = clumped_A1
- Where clause: “Count” > 40
- Output raster = **lowlying_A1**

For Saipan
- The value of 40 is based on the use of 10 meter grid cells (1 acre = 4046.85m2, 4046.85 m2 / 100 m2 = 40.46).
- The DEM has ~3 meter cells, therefore ‘Count’ value was 450 (1 acre = 4046.85m2, 4046.85 m2 / 9 m2 = 449.65)

7. Create depth grid for connected areas

Spatial Analyst > Extraction > Extract by Mask
- Input raster = depth_A1
- Input raster or feature mask data = connect_A1
- Output raster = **con_depth_A1**
For Saipan – Additional Step
-Input raster = depth_A1
- Input raster or feature mask data = Susupe_mask_A1
*- Output raster = **Susupe_A1***

Additional steps in Saipan VA
To derive polygons with "con_depth_A1" values (for additional analysis using spatial queries, etc...)

Convert from floating point raster to polygon without losing significant figures (to the third decimal)

Spatial Analyst -> Map Algebra
- Int([con_depth_A1]*1000) *or* Int([Susupe_A1]*1000)
- New Raster has whole integer values that are 1000 times larger than original depths
- Output Raster = **integer_A1** (or **int_susupe_A1**)
Conversion Tools -> From Raster -> Raster to Polygon
- Input raster: integer_A1 *or* int_susupe_A1
- Field = 'value'
- New Polygon = **A1_Poly** (or **A1_susupe_poly**)

- In A1_Poly: Create new depth field to match original floating raster values
- In attribute table for A1_Poly, Create new field "depth", field type 'double'
- Field Calculator: "depth" = 'grid_code'/1000

To create single polygons for quick display of inundation extend, excluding flood depth values

Cartography Tools -> Generalization -> Aggregate Polygons
- Input: A1_Poly (or A1_susupe_poly)
- Distance: 0.5 meters (other search distances will work, but must be less than original raster cell resolution to avoid aggregation across areas that are not inundated)
- Output: **A1_aggregate (A1_susupe_agg)**

Appendix S – CVA Listing of Facilities Vulnerable to Typhoons

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Loss Estimate – Typhoon – Rota

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
CNMI Public School System				
	Rota High School			
	Summary of 'Department/Division' = Rota High School (1 detail record)			
	SUM	$2,080,000	$1,600,000	350
Summary for 'Agency/Organization' = CNMI Public School System (1 detail record)				
SUM		$2,080,000	$1,600,000	350
Commonwealth Ports Authority				
	Rota Int'l Airport			
	Summary of 'Department/Division' = Rota Int'l Airport (7 detail record)			
	SUM	$4,784,000	$4,800,000	0
Summary for 'Agency/Organization' = Commonwealth Ports Authority (7 detail record)				
SUM		$4,748,000	4,784,000	0
Commonwealth Utilities Corp				
	CUC Rota			
	Summary of 'Department/Division' = CUC Rota (7 detail record)			
	SUM	$2,307,000	$13,700,000	0
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (7 detail record)				
SUM		$2,307,000	$13,700,000	0
Department of Commerce				
	Department of Commerce			
	Summary of 'Department/Division' = Department of Commerce (1 detail record)			
	SUM	$150,000	$20,000	0

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
Summary for 'Agency/Organization' = Department of Commerce (1 detail record)				
SUM		$150,000	$20,000	50
Department Lands & Natural Resouces				
	DLNR Rota			
	Summary of 'Department/Division' = DLNR Rota (3 detail record)			
	SUM	$966,680	$150,000	300
Summary for 'Agency/Organization' = Department of Lands & Natural Resources (3 detail record)				
SUM		$966,680	$150,000	300
Department of Public Health				
	Rota Health Center			
	Summary of 'Department/Division' = Rota Health Center (2 detail record)			
	SUM	$255,000	$364,300	20
Summary for 'Agency/Organization' = Department of Public Health (2 detail record)				
SUM		$255,000	$364,300	20
Department of Public Works				
	Public Works Rota			
	Summary of 'Department/Division' = Public Works - Rota (1 detail record)			
	SUM	$40,000	$99,600	17
Summary for 'Agency/Organization' = Department of Public Works (1 detail record)				
SUM		$40,000	$99,600	17
Department of Community and Cultural Affairs				
	DCCA - Rota			
	Summary of 'Department/Division' = DCCA - Rota (2 detail record)			
	SUM	$100,000	$77,671	36
Summary for 'Agency/Organization' = Dept. of Community & Cultural Affairs (2 detail record)				
SUM		$100,000	$77,671	36

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
Marianas VisitorsAuthority				
	MVA - Rota			
Summary of 'Department/Division' = MVA - Rota (3 detail record)				
SUM		$20,000	$55,000	24
Summary for 'Agency/Organization' = Marianas Visitors Authority (3 detail record)				
SUM		$20,000	$55,000	24
Office of the Mayor				
	Office of the Mayor - Rota			
Summary of 'Department/Division' = Office of the Mayor (1 detail record)				
SUM		$460,000	$60,000	48
Summary for 'Agency/Organization' = Office of the Mayor (1 detail record)				
SUM		$460,000	$60,000	48
Grand Total		**$11,126,680**	**$20,926,571**	**895**
Total Number of Facility: 28				

Loss Estimate – Typhoon – Saipan

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
CNMI Public School System				
	Dan Dan Elementary School			
Summary of 'Department/Division' = Dan Dan Elementary School (5 detail record)				
SUM		$1,920,200	$0	640
	Garapan Elementary School			
Summary of 'Department/Division' = Garapan Elementary School (4 detail record)				
SUM		$1,578,600	$0	524
	GTC Elementary School			
Summary of 'Department/Division' = GTC Elementary School (8 detail record)				
SUM		$2,058,800	$0	685
	Hopwood Jr. High School			
Summary of 'Department/Division' = Hopwood Jr. High School (6 detail record)				
SUM		$2,947,500	$0	981
	Koblerville Elemmentary School			
Summary of 'Department/Division' = Koblerville Elemmentary School (1 detail record)				
SUM		$109,740	$0	121
	Marianas High School			
Summary of 'Department/Division' = Marianas High School (8 detail record)				
SUM		$3,901920	$0	1438
	Oleai Elementary School			
Summary of 'Department/Division' = Oleai Elementary School (4 detail record)				
SUM		$1,693,800	$0	564
	Saipan Southern High School			
Summary of 'Department/Division' = Saipan Southern High School (13 detail record)				
SUM		$5,156,000	$0	1739

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
	San Antonio Elementary School			
Summary of 'Department/Division' = San Antonio Elementary School (5 detail record)				
SUM		$1,490,000	$0	526
	San Vicente Elementary School			
Summary of 'Department/Division' = San Vicente Elementary School (7 detail record)				
SUM		$1,871,200	$0	623
	Tanapag Elementary School			
Summary of 'Department/Division' Tanapag Elementary School (6 detail record)				
SUM		$1,237,200	$0	480
	W.S. Reyes Elementary School			
Summary of 'Department/Division' W.S. Reyes Elementary School (5 detail record)				
SUM		$3,159,400	$0	2535
Summary for 'Agency/Organization' = CNMI Public School System (72 detail record)				
SUM		$27,124,360	$45,000	
Commonwealth Ports Authority				
	Francisco C. Ada/Saipan Int'l Airport			
Summary of 'Department/Division' = Francisco C. Ada/Saipan Int'l Airport (8 detail record)				
SUM		$20,723,000	$30,656,000	0
Summary for 'Agency/Organization' = Commonwealth Ports Authority (8 detail record)				
SUM		$20,723,000	$30,656,000	0
Commonwealth Utilities Corp				
	Power Division - Saipan			
Summary of 'Department/Division' = Power Division - Saipan (8 detail record)				
SUM		$22,500,000	$36,000,000	0

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
	Power Generation - Saipan			
	Summary of 'Department/Division' = Power Generation - Saipan (3 detail record)			
	SUM	$5,400,000	$136,000,000	97
	Warehouse - Saipan			
	Summary of 'Department/Division' = Warehouse - Saipan (1 detail record)			
	SUM	$1,000,000	$12,000,000	25
	Wastewater - Saipan			
	Summary of 'Department/Division' = Wastewater- Saipan (1 detail record)			
	SUM	$500,000	$1,000,000	10
	Water Division - Saipan			
	Summary of 'Department/Division' = Water Division- Saipan (4 detail record)			
	SUM	$400,000	$200,000	0
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (17 detail record)				
SUM		$29,800,000	$185,200,000	132
Department of Finance				
	Division of Procurement & Supply			
	Summary of 'Department/Division' = Division of Procurement & Supply (1 detail record)			
	SUM	$750,000	$204,000	17
Summary for 'Agency/Organization' = Department of Finance (1 detail record)				
SUM		$750,000	$204,000	17
Department of Finance				
	DLNR - Saipan			
	Summary of 'Department/Division' = DLNR - Saipan (3 detail record)			
	SUM	$180,000	$521,000	250
Summary for 'Agency/Organization' = Department of Lands & Natural Resources (3 detail record)				
SUM		$180,000	$521,000	250

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
Department of Public Safety				
	DPS Fire Division - saipan			
	Summary of 'Department/Division' = DPS Fire Division - Saipan (5 detail record)			
	SUM	$1,900,000	$1,300,000	162
Summary for 'Agency/Organization' = Department of Public Safety (5 detail record)				
SUM		$1,900,000	$1,300,000	162
Department of Public Works				
	Building Safety Code			
	Summary of 'Department/Division' = Building Safety code (1 detail record)			
	SUM	$618,585	$320,000	40
	Roads & Grounds/Operation & Maintenance			
	Summary of 'Department/Division' = Roads & Grounds/Operation & Maintenance (1 detail record)			
	SUM	$2,500,000	$3,600,000	87
	Solid Waste Management Division			
	Summary of 'Department/Division' = Solid Waste Management Division (2 detail record)			
	SUM	$20,800,000	$6,000,000	35
Summary for 'Agency/Organization' = Department of Public Works (4 detail record)				
SUM		$23,918,585	$9,920,000	162
Department of Community and Cultural Affairs				
	Dept. of Community and Cultural Affairs			
	Summary of 'Department/Division' = Dept. of Community and Cultural Affairs (1 detail record)			
	SUM	$0	$0	0
Summary for 'Agency/Organization' = Dept. of Community and Cultural Affairs (1 detail record)				
SUM		$0	$0	0
Grand Total		**$104,359,945**	**$227,855,000**	**11579**
Total Number of Facility: 111				

Loss Estimate – Typhoon – Tinian

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
CNMI Public School System				
	Tinian Elementary School			
	Summary of 'Department/Division' = Tinian Elementary School (8 detail record)			
	SUM	$1,102,308	$478,000	447
Summary for 'Agency/Organization' = Tinian Elementary School (8 detail record)				
SUM		$1,102,308	$478,000	447
Commonwealth Ports Authority				
	West Tinian Airport			
	Summary of 'Department/Division' = West Tinian Airport (7 detail record)			
	SUM	$733,000	$656,000	0
Summary for 'Agency/Organization' = Commonwealth Ports Authority (7 detail record)				
SUM		$733,000	$656,000	0
Commonwealth Utilities Corp				
	Cha Cha Oceanview Jr. High School			
	Summary of 'Department/Division' = (Cha Cha Oceanview Jr. High School (1 detail record)			
	SUM	$0	$0	0
	Dan Dan Elementary School			
	Summary of 'Department/Division' = Dan Dan Elementary School (4 detail record)			
	SUM	$16,000,000	$16,000,000	60
	Evironmental Quality			
	Summary of 'Department/Division' = Environmental Quality (1 detail record)			
	SUM	$0	$0	0
	Power Division - Tinian			
	Summary of 'Department/Division' = Power Division - Tinian (6 detail record)			
	SUM	$0	$0	0

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
	Power Generation - Tinian			
Summary of 'Department/Division' = Power Generation - Tinian (1 detail record)				
SUM		$0	$0	0
	Water Division – Tinian			
Summary of 'Department/Division' = Water Division – Tinian (1 detail record)				
SUM		$800,000	$30,000	0
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (23 detail record)				
SUM		$16,800,000	$16,030,000	0
Department of Lands and Natural Resources				
	DLNR - Tinian			
Summary of 'Department/Division' = DLNR - Tinian (3 detail record)				
SUM		$850,000	$520,000	60
Summary for 'Agency/Organization' = Department of lands and Natural Resources (3 detail record)				
SUM		$850,000	$520,000	60
Department of Public Safety				
	Tinian DPS			
Summary of 'Department/Division' = Tinian DPS (2 detail record)				
SUM		$2,000,000	$1,586,300	300
Summary for 'Agency/Organization' = Department of Public Safety (2 detail record)				
SUM		$2,000,000	$1,586,300	300
Department of Public Works				
	Public Works - Tinian			
Summary of 'Department/Division' = Public Works - Tinian (6 detail record)				
SUM		$1,000,000	$1,100,000	55
Summary for 'Agency/Organization' = Department of Public Safety (6 detail record)				
SUM		$1,000,000	$1,100,000	55

Agency/ Organization	Department/Division	Replacement Value	Value of Contents	Maximum Capacity
Department of Community and Cultural Affairs				
	DCCA - Tinian			
Summary of 'Department/Division' = DCCA - Tinian (1 detail record)				
SUM		$350,000	$40,000	400
Summary for 'Agency/Organization' = Department Community and Cultural Affairs (1 detail record)				
SUM		$350,000	$40,000	400
Emergency Management Office				
	Emergency Management Office			
Summary of 'Department/Division' = Emergency Management Office (1 detail record)				
SUM		$300,000	$22,000	45
Summary for 'Agency/Organization' = Department Community and Cultural Affairs (1 detail record)				
SUM		$300,000	$22,000	45
Marianas Visitors Authority				
	MVA - Tinian			
Summary of 'Department/Division' = MVA - Tinian (2 detail record)				
SUM		$170,000	$2,000	300
Summary for 'Agency/Organization' = Marianas Visitors Authority (2 detail record)				
SUM		$170,000	$2,000	300
Office of the Mayor (Tinian)				
	Administrative Services			
Summary of 'Department/Division' = Administrative Services (7 detail record)				
SUM		$250,000	$180,000	220
Summary for 'Agency/Organization' = Office of the Mayor (Tinian) (7 detail record)				
SUM		$250,000	$180,000	220

Agency/ Organization	Department/Division	Replacement Value		Value of Contents	Maximum Capacity
Tinian Dynasty Hotel & Casino					
	Dynasty Hotel Fire & Safety				
	Summary of 'Department/Division' = Dynasty Hotel Fire & Safety (1 detail record)				
	SUM	$0	$0	2000	
Summary for 'Agency/Organization' = Tinian Dynasty Hotel & Casino (1 detail record)					
SUM		$0	$0	2000	
Grand Total		**$23,555,308**		**$20,614,300**	**3887**
Total Number of Facility: 61					

Appendix T – CVA Listing of Facilities Vulnerable to Flooding

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Loss Estimate – Flood – Saipan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
CNMI Public School System			
GTC Elementary School			
Summary of 'Department/Division' = GTC Elementary School (3 detail record)			
SUM	$1,047,600	$0	349
Hopwood Jr. High School			
Summary of 'Department/Division' = Hopwood Jr. High School (2 detail record)			
SUM	$1,200,000	$0	399
Marianas High School			
Summary of 'Department/Division' = Marianas High School (3 detail record)			
SUM	$1,022,160	$0	840
San Antonio Elementary			
Summary of 'Department/Division' = San Antonio Elementary (2 detail record)			
SUM	$780,000	$0	290
Tanapag Elemmentary School			
Summary of 'Department/Division' = Tanapag Elemmentary School (1 detail record)			
SUM	$180,000	$0	60
W. S. Reyes Elementary School			
Summary of 'Department/Division' = W. S. Reyes Elementary School (1 detail record)			
SUM	$888,000	$0	291
Summary for 'Agency/Organization' = CNMI Public School System (12 detail record)			
SUM	$5,117,760	$0	2229
Commonwealth Utilities Corp			
Power Generation -Saipan			
Summary of 'Department/Division' = Power Generation-Saiapn (2 detail record)			
SUM	$5,150,000	$122,000,000	

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Warehouse -Saipan			
Summary of 'Department/Division' = Warehouse-Saiapn (1 detail record)			
SUM	$1,000,000	$12,000,000	25
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (3 detail record)			
SUM	$6,150,000	$134,000,000	110
Department of Finance			
Division of Procurement & Supply			
Summary of 'Department/Division' = Division of Procurement & Supply (1 detail record)			
SUM	$750,000	$204,000	17
Summary for 'Agency/Organization' = Department of Finance (1 detail record)			
SUM	$750,000	$204,000	17
Department of Public Safety			
DPS Police Division - Saiapn			
Summary of 'Department/Division' = DPS Police Division - Saiapn (3 detail record)			
SUM	$800,000	$1,030,000	165
DPS Fire Division - Saiapn			
Summary of 'Department/Division' = DPS Fire Division - Saiapn (3 detail record)			
SUM	$1,500,000	$1,000,000	
Summary for 'Agency/Organization' = Department of Public Safety (3 detail record)			
SUM	$2,300,000	$2,030,000	165
Department of Public Works			
Roads & Grounds/Operation & Maintenance			
Summary of 'Department/Division' = Roads & Grounds/Operation & Maintenance (1 detail record)			
SUM	$2,500,000	$3,600,000	87
Solid Waste Management Division			
Summary of 'Department/Division' = Solid Waste Management Division (1 detail record)			
SUM	$5,500,000	$2,000,000	25
Summary for 'Agency/Organization' = Department of Public Works (2 detail record)			
SUM	$8,000,000	$5,600,000	112
Grand Total	**$20,817,760**	**$140,834,000**	**2633**
Total Number of Facility: 21			

Loss Estimate – Flood – Tinian

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
CNMI Public School System			
Tinian Elementary School			
Summary of 'Department/Division' = Tinian Elementary School (16 detail record)			
SUM	$2,183,271	$695,239	1242
Tinian Junior & Senior High School			
Summary of 'Department/Division' = Tinian Junior & Senior High School (2 detail record)			
SUM	$12,000,000	$600,000	7368
Summary for 'Agency/Organization' = CNMI Public School System (27 detail record)			
SUM	$14,183,271	$1,295,239	8610
Commonwealth Ports Authority			
Tinian Seaport			
Summary of 'Department/Division' = Tinian Seaport (1 detail record)			
SUM	$225,000	$150,000	0
West Tinian Airport			
Summary of 'Department/Division' = West Tinian Airport (7 detail record)			
SUM	$733,000	$656,000	0
Summary for 'Agency/Organization' = Commonwealth Ports Authority (8 detail record)			
SUM	$958,000	$806,000	0
Commonwealth Utilities Corp			
Cha Cha Oceanview Jr. High School			
Summary of 'Department/Division' = Cha Cha Oceanview Jr. High School (1 detail record)			
SUM	$0	$0	0
Dan Dan Elementary School			
Summary of 'Department/Division' = Dan Dan Elementary School (4 detail record)			
SUM	$16,000,000	$16,000,000	60

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Environmental Quality			
Summary of 'Department/Division' = Environmental Quality (1 detail record)			
SUM	$0	$0	0
Power Division - Tinian			
Summary of 'Department/Division' = Power Division - Tinian (6 detail record)			
SUM	$0	$0	0
Power Generation - Tinian			
Summary of 'Department/Division' = Power Generation - Tinian (1 detail record)			
SUM	$0	$0	0
Water Division - Tinian			
Summary of 'Department/Division' = Water Division - Tinian (14 detail record)			
SUM	$3,250,000	$2,480,000	4
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (27 detail record)			
SUM	$19,250,000	$18,480,000	64
Department of Lands and Natural Resources			
DLNR Tinian			
Summary of 'Department/Division' = DLNR Tinian (3 detail record)			
SUM	$850,000	$520,000	60
Summary for 'Agency/Organization' = Department of Lands and Natural Resources (3 detail record)			
SUM	$850,000	$520,000	60
Department of Public Health			
Tinian Health Center			
Summary of 'Department/Division' = Tinian Health Center (1 detail record)			
SUM	$3,500,000	$1,500,000	60
Summary for 'Agency/Organization' = Department of Public Health (1 detail record)			
SUM	$3,500,000	$1,500,000	60

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Department of Public Lands			
DPL - Tinian			
Summary of 'Department/Division' = DPL - Tinian (1 detail record)			
SUM	$55,200	$100,000	80
Summary for 'Agency/Organization' = Department of Public Lands (1 detail record)			
SUM	$55,200	$100,000	80
Department of Public Safety			
Tinian DPS			
Summary of 'Department/Division' = Tinian DPS (2 detail record)			
SUM	$2,000,000	$1,586,300	300
Summary for 'Agency/Organization' = Department of Public Safety (2 detail record)			
SUM	$2,000,000	$1,586,300	300
Department of Public Works			
Public Works - Tinian			
Summary of 'Department/Division' = Public Works - Tinian (6 detail record)			
SUM	$1,000,000	$1,100,000	55
Summary for 'Agency/Organization' = Department of Public Works (6 detail record)			
SUM	$1,000,000	$1,100,000	55
Department of Community and Cultural Affairs			
DCCA - Tinian			
Summary of 'Department/Division' = DCCA - Tinian (3 detail record)			
SUM	$480,000	$43,000	415
Summary for 'Agency/Organization' = Department of Community Cultural Affairs (3 detail record)			
SUM	$480,000	$43,000	415
Emergency Management Office			
Emergency Management office			
Summary of 'Department/Division' = Emergency Management office (1 detail record)			
SUM	$300,000	$22,000	45
Summary for 'Agency/Organization' = Emergency Management office (1 detail record)			
SUM	$300,000	$22,000	45

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Marianas Visitors Authority			
MVA - Tinian			
Summary of 'Department/Division' = MVA Tinian (4 detail record)			
SUM	$330,000	$42,000	306
Summary for 'Agency/Organization' = MVA Tinian (4 detail record)			
SUM	$330,000	$42,000	306
Office of the Governor			
Coastal Resources Management office			
Summary of 'Department/Division' = Coastal Resources Management office (1 detail record)			
SUM	$0	$5,000	2
Environmental Quality			
Summary of 'Department/Division' = Environmental Quality (1 detail record)			
SUM	$0	$100,000	30
Summary for 'Agency/Organization' = Office of the Governor (2 detail record)			
SUM	$0	$5,000	32
Office of the Mayor (Tinian)			
Administrative Services			
Summary of 'Department/Division' = Administrative Services (12 detail record)			
SUM	$4,345,000	$295,942	593
Summary for 'Agency/Organization' = Office of the Mayor (Tinian) (12 detail record)			
SUM	$4,345,000	$295,942	593
Tinian Dynasty Hotel & Casino			
Dynasty Hotel Fire & Safety			
Summary of 'Department/Division' = Dynasty Hotel Fire & Safety (1 detail record)			
SUM	$0	$0	2000
Summary for 'Agency/Organization' = Tinian Dynasty Hotel & Casino (1 detail record)			
SUM	$0	$0	2000
Grand Total	**$47,251,471**	**$25,895,481**	**Total**

Number of Facility: 98

Loss Estimate – Flood – Rota

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Commonwealth Ports Authority			
Rota Seaport			
Summary of 'Department/Division' = Rota Seaport (1 detail record)			
SUM	$200,000	$100,000	20
Summary for 'Agency/Organization' = commonwealth Ports Authority (1 detail record)			
SUM	$200,000	$100,000	20
Commonwealth Utilities Corp			
CUC Rota			
Summary of 'Department/Division' = CUC Rota (2 detail record)			
SUM	$503,000	$12,000,000	50
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (2detail record)			
SUM	$503,000	$12,000,000	50
Department of Landsand & Natural Resources			
DLNR Rota			
Summary of 'Department/Division' = DLNR Rota (2 detail record)			
SUM	$692,000	$0	250
Summary for 'Agency/Organization' = Department of Natural Resources (2detail record)			
SUM	$692,000	$0	250
Department of Community and Cultural Affairs			
DCCA Rota			
Summary of 'Department/Division' = DCCA Rota (2 detail record)			
SUM	$100,000	$77,671	36
Summary for 'Agency/Organization' = Department of Community and Cultural Affairs (2detail record)			
SUM	$100,000	$77,671	36

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Emergency Management Office			
EMO Rota			
Summary of 'Department/Division' = EMO Rota (1 detail record)			
SUM	$300,000	$50,,000	20
Summary for 'Agency/Organization' = Emergency Management Office (1 detail record)			
SUM	$300,000	$50,,000	20
Northern Marianas College			
Northern Marianas College			
Summary of 'Department/Division' = Northern Marianas College (1 detail record)			
SUM	$2,000,000	$3,500,000	1000
Summary for 'Agency/Organization' = Northern Marianas College (1 detail record)			
SUM	$2,000,000	$3,500,000	1000
Office of the Governor			
Coastal Resources Management Office			
Summary of 'Department/Division' = Coastal Resources Management Office (1 detail record)			
SUM	$33,120	$33,120	2
Evironmental Quality			
Summary of 'Department/Division' = Environmental Quality (1 detail record)			
SUM	$0	$100,00	20
Summary for 'Agency/Organization' = Office of the Governor (2 detail record)			
SUM	$33,120	$133,120	22
Grand Total	**$3,828,120**	**$16,060,791**	**1398**

Number of Facility: 11

Appendix U – CVA Listing of Facilities Vulnerable to Earthquakes

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Loss Estimate – Earthquake – Rota

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
CNMI Public School System			
Rota High School			
Summary of 'Department/Division' = Rota High School (7 detail record)			
SUM	$6,064,500	$3,300,600	966
Rota Junior High School			
Summary of 'Department/Division' = Rota Junior High School (5 detail record)			
SUM	$2,275,000	$1,820,000	760
Sinapalo Elementary School			
Summary of 'Department/Division' = Sinapalo Elementary School (1 detail record)			
SUM	$5,000,000	$3,750,000	300
Summary for 'Agency/Organization' = CNMI Public School System (13 detail record)			
SUM	$13,339,500	$8,870,600	2026
Commonwealth Ports Authority			
Rota Int'l Airport			
Summary of 'Department/Division' = Rota Int'l Airport (6 detail record)			
SUM	$4,727,000	$4,779,000	0
Rota Seaport			
Summary of 'Department/Division' = Rota Seaport (1 detail record)			
SUM	$200,000	$100,000	20
Summary for 'Agency/Organization' = Emergency Management Office (1 detail record)			
SUM	$4,927,000	$4,879,000	20
Commonwealth Utilities Corp			
CUC Rota			
Summary of 'Department/Division' = CUC Rota (8 detail record)			
SUM	$2,332,000	$13,705,000	50
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (8 detail record)			
SUM	$2,332,000	$13,705,000	50

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Department of Commerce			
Department of Commerce			
Summary of 'Department/Division' = Department of Commerce (1 detail record)			
SUM	$150,000	$20,000	50
Summary for 'Agency/Organization' = Department of Commerce (1 detail record)			
SUM	$150,000	$20,000	50
Department of Labor			
Department of Labor Rota			
Summary of 'Department/Division' = Department of Labor - Rota (1 detail record)			
SUM	$0	$15,500	24
Summary for 'Agency/Organization' = Department of Labor (1 detail record)			
SUM	$0	$15,500	24
Department of Lands & Natural Resources			
DLNR Rota			
Summary of 'Department/Division' = DLNR - Rota (3 detail record)			
SUM	$966,680	$150,000	300
Summary for 'Agency/Organization' = Department of Lands & Natural Resources (3 detail record)			
SUM	$966,680	$150,000	300
Department of Public Health			
Rota Health Center			
Summary of 'Department/Division' = Rota Health Center (10 detail record)			
SUM	$17,954,520	$8,634,300	676
Summary for 'Agency/Organization' = Department of Public Health (10 detail record)			
SUM	$17,954,520	$8,634,300	676
Department of Public Lands			
DLNR Rota			
Summary of 'Department/Division' = DLNR - Rota (1 detail record)			
SUM	$110,540	$100,000	160
Summary for 'Agency/Organization' = Department of Public Lands (1 detail record)			
SUM	$110,540	$100,000	160

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Department of Public Safety			
Rota DPS			
Summary of 'Department/Division' = Rota DPS (2 detail record)			
SUM	$17,954,520	$8,634,300	676
Summary for 'Agency/Organization' = Department of Public Health (2 detail record)			
SUM	$17,954,520	$8,634,300	676
Department of Public works			
Environmental Quality			
Summary of 'Department/Division' = Environmental Quality (1 detail record)			
SUM	$0	$50,000	10
Public Works - Rota			
Summary of 'Department/Division' = Public Works - Rota (2 detail record)			
SUM	$120,000	$166,000	27
Summary for 'Agency/Organization' = Department of Public Works (3 detail record)			
SUM	$120,000	$216,000	37
Department of Community and Cultural Affairs			
Aging Center			
Summary of 'Department/Division' = Aging Center (2 detail record)			
SUM	$0	$0	230
DCCA - Rota			
Summary of 'Department/Division' = DCCA - Rota (3 detail record)			
SUM	$250,000	$252,671	136
Summary for 'Agency/Organization' = Department of Community and Cultural Affairs(5 detail record)			
SUM	$250,000	$252,671	366
Emergency Management Office			
EMO Rota			
Summary of 'Department/Division' = Rota DPS (1 detail record)			
SUM	$300,000	$50,000	20
Summary for 'Agency/Organization' = Emergency Management Office (1 detail record)			
SUM	$300,000	$50,000	20

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Marianas Visitors Authority			
MVA - Rota			
Summary of 'Department/Division' = MVA - Rota (5 detail record)			
SUM	$130,000	$95,000	40
Summary for 'Agency/Organization' = Marianas Visitors Authority (5 detail record)			
SUM	$130,000	$95,000	40
Northern Marianas College			
Northern Marianas College			
Summary of 'Department/Division' = Northern Marianas College (1 detail record)			
SUM	$2,000,000	$3,500,000	1000
Summary for 'Agency/Organization' = Northern Marianas College (1 detail record)			
SUM	$2,000,000	$3,500,000	1000
Office of the Governor			
Coastal Resources Management Office			
Summary of 'Department/Division' = Coastal Resources Management Office (1 detail record)			
SUM	$33,120	$33,120	2
Environmental Quality			
Summary of 'Department/Division' = Environmental Quality (1 detail record)			
SUM	$0	100,000	20
Summary for 'Agency/Organization' = Marianas Visitors Authority (5 detail record)			
SUM	$33,120	$133,120	22
Office of the Mayor			
Office of the Mayor (Rota)			
Summary of 'Department/Division' = Office of the Mayor (Rota) (3 detail record)			
SUM	$655,000	$85,000	83
Summary for 'Agency/Organization' = Office of the Mayor (Rota) (3 detail record)			
SUM	$655,000	$85,000	83
Grand Total	**$43,656,360**	**$40,943,191**	**4918**
Number of Facility: 66			

Loss Estimate – Earthquake – Saipan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
CNMI Attorney General's Office			
Civil Division			
Summary of 'Department/Division' = Civil Division (1 detail record)			
SUM	$300,000	$500,000	0
Criminal Division			
Summary of 'Department/Division' = Criminal Division (3 detail record)			
SUM	$600,000	$320,000	0
Summary for 'Agency/Organization' = CNMI Attorney General's Office (4 detail record)			
SUM	$900,000	$820,000	0
CNMI Public School System			
Cha Cha Oceanview Jr. High School			
Summary of 'Department/Division' = Cha Cha Oceanview Jr. High School (9 detail record)			
SUM	$3,834,080	$0	1606
Dan Dan Elementary School			
Summary of 'Department/Division' = Dan Dan Elementary School (7 detail record)			
SUM	$2,749,400	$0	869
Garapan Elementary School			
Summary of 'Department/Division' = Garapan Elementary School (8 detail record)			
SUM	$3,860,760	$0	1182
GTC Elementary School			
Summary of 'Department/Division' = GTC Elementary School (9 detail record)			
SUM	$2,505,200	$0	809
Hopwood Jr. High School			
Summary of 'Department/Division' = Hopwood Jr. High School (11 detail record)			
SUM	$5,195,940	$0	1604
Kagman Elementary School			
Summary of 'Department/Division' = Kagman Elementary School (6 detail record)			
SUM	$4,393,920	$0	1220
Kagman High School			
Summary of 'Department/Division' = Kagman High School (13 detail record)			
SUM	$5,039,160	$0	1399

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Koblerville Elementary School			
Summary of 'Department/Division' = Koblerville Elementary School (7 detail record)			
SUM	$2,685,780	$0	754
Marianas High School			
Summary of 'Department/Division' = Marianas High School (16 detail record)			
SUM	$7,749,600	$45,000	2394
Oleai Elementary School			
Summary of 'Department/Division' = Koblerville Elementary School (7 detail record)			
SUM	$4,012,200	$0	1208
Saipan Southern High School			
Summary of 'Department/Division' = Saipan Southern High School (13 detail record)			
SUM	$5,156,000	$0	1739
San Antonio Elementary School			
Summary of 'Department/Division' = San Antonio Elementary School (9 detail record)			
SUM	$2,749,700	$0	831
San Vicente Elementary School			
Summary of 'Department/Division' = San Vicente Elementary School 11 detail record)			
SUM	$3,505,840	$0	1341
Tanapag Elementary School			
Summary of 'Department/Division' = Tanapag Elementary School (9 detail record)			
SUM	$2,736,360	$0	775
W.S. Reyes Elementary School			
Summary of 'Department/Division' = W.S. Reyes Elementary School (8 detail record)			
SUM	$5,122,840	$0	3220
Summary for 'Agency/Organization' = CNMI Public School System (143 detail record)			
SUM	**$61,296,780**	**$45,000**	**20951**
Commonwealth Development Authority			
CDA			
Summary of 'Department/Division' = CDA (1 detail record)			
SUM	$400,000	$200,000	15
Summary for 'Agency/Organization' = Commonwealth Development Authority (1 detail record)			
SUM	$400,000	$200,000	15

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Commonwealth Ports Authority			
Francisco C. Ada/Saipan Int'l Airport			
Summary of 'Department/Division' = Francisco C. Ada/Saipan Int'l Airport (8 detail record)			
SUM	$20,723,000	$30,665,000	0
Summary for 'Agency/Organization' = Commonwealth Ports Authority (8 detail record)			
SUM	$20,723,000	$30,665,000	0
Commonwealth Utilities Corp			
GSWD - Saipan			
Summary of 'Department/Division' = GSWD - Saipan (1 detail record)			
SUM	$25,000	$25,000	5
Laboratory - Saipan			
Summary of 'Department/Division' = Laboratory - Saipan (1 detail record)			
SUM	$104,000	$204,000	8
Power Division - Saipan			
Summary of 'Department/Division' = Power Division - Saipan (9 detail record)			
SUM	$27,500,000	$40,500.000	50
Power Generation - Saipan			
Summary of 'Department/Division' = Power Generation - Saipan (3 detail record)			
SUM	$5,400,000	$136,000,000	97
Warehouse - Saipan			
Summary of 'Department/Division' = Warehouse - Saipan (1 detail record)			
SUM	$1,000,000	$12,000,000	25
Wastewater - Saipan			
Summary of 'Department/Division' = Wastewater - Saipan (5 detail record)			
SUM	$11,258,650	$5,210,000	89
Water Division - Saipan			
Summary of 'Department/Division' = Water Division - Saipan (4 detail record)			
SUM	$400,000	$200,000	0
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (24 detail record)			
SUM	**$45,687,650**	**$197,139,000**	**274**

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Department of Finance			
Division of Procurement & Supply			
Summary of 'Department/Division' = Division of Procurement & Supply (1 detail record)			
SUM	$750,000	$204,000	17
Summary for 'Agency/Organization' = Department of Finance (1 detail record)			
SUM	$750,000	$204,000	17
Department of Lands & Natural Resources			
DLNR - Saipan			
Summary of 'Department/Division' = DLNR - Saipan (9 detail record)			
SUM	$855,000	$550,400	850
Summary for 'Agency/Organization' = Department of Lands & Natural Resources (9 detail record)			
SUM	$855,000	$550,400	850
Department of Public Health			
Commonwealth Health Center			
Summary of 'Department/Division' = Commonwealth Health Center (2 detail record)			
SUM	$63,000,000	$17,000,000	850
Summary for 'Agency/Organization' = Department of Public Health (2 detail record)			
SUM	$63,000,000	$17,000,000	850
Department of Public Safety			
DPS Fire Division - Saipan			
Summary of 'Department/Division' = DPS Fire Division - Saipan (7 detail record)			
SUM	$1,900,000	$1,300,000	204
DPS Police Division - Saipan			
Summary of 'Department/Division' = DPS Police Division - Saipan (13 detail record)			
SUM	$3,100,000	$2,560,000	537
Summary for 'Agency/Organization' = Department of Public Safety (20 detail record)			
SUM	$5,272,000	$81,560,000	741

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Department of Public Works			
Building Safety Code			
Summary of 'Department/Division' = Building Safety Code (1 detail record)			
SUM	$618,585	$320,000	40
Energy Division			
Summary of 'Department/Division' = Energy Division (1 detail record)			
SUM	$1,800,000	$620,000	6
Roads & Grounds/Operation & Maintenance			
Summary of 'Department/Division' = Roads & Grounds/Operation & Maintenance (1 detail record)			
SUM	$2,500,000	$3,600,000	87
Solid Waste Management Division			
Summary of 'Department/Division' = Solid Waste Management Division (2 detail record)			
SUM	$20,800,000	$6,000,000	35
Summary for 'Agency/Organization' = Department of Public Works (5 detail record)			
SUM	$25,718,585	$10,540,000	168
Department of Community and Cultural Affairs			
Department of Community and Cultural Affairs			
Summary of 'Department/Division' = Department of Community and Cultural Affairs (15 detail record)			
SUM	$8,763,655	$0	140
Summary for 'Agency/Organization' = Department of Community and Cultural Affairs (15 detail record)			
SUM	$8,763,655	$0	140

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Fiesta Resort			
Fiesta Resort			
Summary of 'Department/Division' = Fiesta Resort (1 detail record)			
SUM	$35,000,000	$10,000,000	1200
Summary for 'Agency/Organization' = Fiesta Resort (1 detail record)			
SUM	$35,000,000	$10,000,000	1200
Hyatt Regency Hotel			
Hyatt Regency Hotel			
Summary of 'Department/Division' = Hyatt Regency Hotel (1 detail record)			
SUM	$34,488,240	$19,244,120	850
Summary for 'Agency/Organization' = Hyatt Regency Hotel (1 detail record)			
SUM	$34,488,240	$19,244,120	850
Grand Total	**$300,682,910**	**$285,967,520**	**26056**
Number of Facility: 234			

Loss Estimate – Earthquake – Tinian

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
CNMI Public School System			
Tinian Elementary School			
Summary of 'Department/Division' = Tinian Elementary School (16 detail record)			
SUM	$2,183,271	$695,239	1242
Tinian Junior & Senior High School			
Summary of 'Department/Division' = Tinian Junior & Senior High Schooll (11 detail record)			
SUM	$12,000,000	$600,000	7368
Summary for 'Agency/Organization' = CNMI Public School System (27 detail record)			
SUM	$14,183,271	$1,295,239	8610
Commonwealth Ports Authority			
Tinian Seaport			
Summary of 'Department/Division' = Tinian Seaport (1 detail record)			
SUM	$225,000	$150,000	0
West Tinian Airport			
Summary of 'Department/Division' = West Tinian Airport (7 detail record)			
SUM	$6,969,000	$656,000	0
Summary for 'Agency/Organization' = Commonwealth Ports Authority (8 detail record)			
SUM	$7,194,000	$806,000	0
Commonwealth Utilities Corp			
Cha Cha Oceanview Jr. High School			
Summary of 'Department/Division' = Cha Cha Oceanview Jr. High School (1 detail record)			
SUM	$0	$0	0
Dan Dan Elementary School			
Summary of 'Department/Division' = Dan Dan Elementary School (4 detail record)			
SUM	$16,000,000	$16,000,000	60
Environmental Quality			
Summary of 'Department/Division' = Environmental Quality (1 detail record)			
SUM	$0	$0	0

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Power Division - Tinian			
Summary of 'Department/Division' = Power Division - Tinian (6 detail record)			
SUM	$0	$0	0
Power Generation - Tinian			
Summary of 'Department/Division' = Power Generation - Tinian (1 detail record)			
SUM	$0	$0	0
Water Division - Tinian			
Summary of 'Department/Division' = Water Division - Tinian (14 detail record)			
SUM	$3,250,000	$2,480,000	4
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (27 detail record)			
SUM	$19,250,000	$18,480,000	64
Department of Lands & Natural Resources			
DLNR Tinian			
Summary of 'Department/Division' = DLNR Tinian (3 detail record)			
SUM	$850,000	$520,000	60
Summary for 'Agency/Organization' = Department of Lands & Natural Resources (3 detail record)			
SUM	$850,000	$520,000	60
Department of Public Health			
Tinian Health Center			
Summary of 'Department/Division' = Tinian Health Center (1 detail record)			
SUM	$3,500,000	$1,500,000	60
Summary for 'Agency/Organization' = Department of Public Health (1 detail record)			
SUM	$3,500,000	$1,500,000	60
Department of Public Lands			
DPL Tinian			
Summary of 'Department/Division' = DPL Tinian (1 detail record)			
SUM	$55,200	$55,200	80
Summary for 'Agency/Organization' = Department of Public Lands (1 detail record)			
SUM	$55,200	$55,200	80

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Department of Public Safety			
Tinian DPS			
Summary of 'Department/Division' = Tinian DPS (2 detail record)			
SUM	$2,000,000	$1,586,300	300
Summary for 'Agency/Organization' = Department of Public Safety (2 detail record)			
SUM	$2,000,000	$1,586,300	300
Department of Public Works			
Public Works - Tinian			
Summary of 'Department/Division' = Public Works - Tinian (6 detail record)			
SUM	$1,000,000	$1,100,000	55
Summary for 'Agency/Organization' = Department of Public Works (6 detail record)			
SUM	$1,000,000	$1,100,000	55
Department of Community and Cultural Affairs			
DCCA - Tinian			
Summary of 'Department/Division' = DCCA - Tinian (3 detail record)			
SUM	$480,000	$43,000	415
Summary for 'Agency/Organization' = Department of Community and Cultural Affairs (3 detail record)			
SUM	$480,000	$43,000	415
Emergency Management Office			
Emergency Management Office			
Summary of 'Department/Division' = Emergency Management Office (1 detail record)			
SUM	$300,000	$22,000	45
Summary for 'Agency/Organization' = Emergency Management Office (1 detail record)			
SUM	$300,000	$22,000	45
Marianas Visitors Authority			
MVA - Tinian			
Summary of 'Department/Division' = MVA - Tinian (4 detail record)			
SUM	$330,000	$42,000	306
Summary for 'Agency/Organization' = Marianas Visitors Authority (4 detail record)			
SUM	$330,000	$42,000	306

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Office of the Governor			
Coastal Resources Management			
Summary of 'Department/Division' = Coastal Resources Management (1 detail record)			
SUM	$0	$5,000	2
Environmental Quality			
Summary of 'Department/Division' = Environmental Quality (1 detail record)			
SUM	$0	$100,00	30
Summary for 'Agency/Organization' = Office of the Governor (2 detail record)			
SUM	$0	$105,000	32
Office of the Mayor (Tinian)			
Administrative Services			
Summary of 'Department/Division' = Administrative Services (12 detail record)			
SUM	$4,345,000	$295,942	593
Summary for 'Agency/Organization' = Office of the mayor (Tinian) (12 detail record)			
SUM	$4,345,000	$295,942	593
Tinian Dynasty Hotel & Casino			
Dynasty Hotel Fire & Safety			
Summary of 'Department/Division' = Dynasty Hotel Fire & Safety (1 detail record)			
SUM	$0	$0	2000
Summary for 'Agency/Organization' = Tinian Dynasty Hotel & Casino (1 detail record)			
SUM	$0	$0	2000
Grand Total	**$32,131,481**	**$47,251,471**	**12620**
Number of Facility: 98			

Appendix V- CVA Listing of Facilities Vulnerable to Tsunamis

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Loss Estimate – Tsunami – Rota

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Commonwealth Ports Authority			
Rota Seaport			
Summary of 'Department/Division' = Rota Seaport (1 detail record)			
SUM	$200,000	$100,000	20
Summary for 'Agency/Organization' = Commonwealth Ports Authority (1 detail record)			
SUM	$200,000	$100,000	20
Commonwealth Utilities Corp			
CUC Rota			
Summary of 'Department/Division' = CUC Rota (2 detail record)			
SUM	$503,000	$12,000,000	50
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (2 detail record)			
SUM	$503,000	$12,000,000	50
Department of Commerce			
Department of Commerce			
Summary of 'Department/Division' = Department of Commerce (1 detail record)			
SUM	$150,000	$20,000	50
Summary for 'Agency/Organization' = Department of Commerce (1 detail record)			
SUM	$150,000	$20,000	50
Department of Lands & Natural Resources			
DLNR Rota			
Summary of 'Department/Division' = DLNR Rota (1 detail record)			
SUM	$966,680	$150,000	300
Summary for 'Agency/Organization' = Department of Lands & Natural Resources (1 detail record)			
SUM	$966,680	$150,000	300
Department of Public Lands			
DPL Rota			
Summary of 'Department/Division' = DPL Rota (1 detail record)			
SUM	$110,540	$100,000	160
Summary for 'Agency/Organization' = Department of Public Lands (1 detail record)			
SUM	$110,540	$100,000	160

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Department of Public Works			
Environmental Quality			
Summary of 'Department/Division' = Environmental Quality (1 detail record)			
SUM	$0	$50,000	10
Summary for 'Agency/Organization' = Department of Public Works (1 detail record)			
SUM	$0	$50,000	10
Emergency Management Office			
EMO Rota			
Summary of 'Department/Division' = Emergency Management Office (1 detail record)			
SUM	$300,000	$50,000	20
Summary for 'Agency/Organization' = EMO Rota (1 detail record)			
SUM	$300,000	$50,000	20
Northern Marianas College			
Northern Marianas College			
Summary of 'Department/Division' = Northern Marianas College (1 detail record)			
SUM	$2,000,000	$3,500,000	1000
Summary for 'Agency/Organization' = Northern Marianas College (1 detail record)			
SUM	$2,000,000	$3,500,000	1000
Office of the Governor			
Coastal Resources Management			
Summary of 'Department/Division' = Coastal Resources Management (1 detail record)			
SUM	$33,120	$33,120	2
Environmental Quality			
Summary of 'Department/Division' = Environmental Quality (1 detail record)			
SUM	$0	$100,00	20
Summary for 'Agency/Organization' = Office of the Governor (2 detail record)			
SUM	$33,120	$133,120	22
Grand Total	**$4,263,340**	**$16,303,120**	**1632**
Number of Facility: 13			

Loss Estimate – Tsunami – Saipan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
CNMI Public School System			
Garapan Elementary School			
Summary of 'Department/Division' = Garapan Elementary School (8 detail record)			
SUM	$3,860,760	$0	1182
GTC Elementary School			
Summary of 'Department/Division' = GTC Elementary School (9 detail record)			
SUM	$2,505,200	$0	809
Hopwood Jr. High School			
Summary of 'Department/Division' = Hopwood Jr. High School (11 detail record)			
SUM	$5,195,940	$0	1604
Koblerville Elementary School			
Summary of 'Department/Division' = Koblerville Elementary School (7 detail record)			
SUM	$2,685,780	$0	754
Marianas High School			
Summary of 'Department/Division' = Marianas High School (16 detail record)			
SUM	$7,749,600	$45,000	2394
Oleai Elementary School			
Summary of 'Department/Division' = Koblerville Elementary School (7 detail record)			
SUM	$4,012,200	$0	1208
San Antonio Elementary School			
Summary of 'Department/Division' = San Antonio Elementary School (9 detail record)			
SUM	$2,749,700	$0	831
Tanapag Elementary School			
Summary of 'Department/Division' = Tanapag Elementary School (9 detail record)			
SUM	$2,736,360	$0	775
W.S. Reyes Elementary School			
Summary of 'Department/Division' = W.S. Reyes Elementary School (8 detail record)			
SUM	$5,122,840	$0	3220
Summary for 'Agency/Organization' = CNMI Public School System (87 detail record)			
SUM	**$36,930,380**	**$45,000**	**0**

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Commonwealth Utilities Corp			
Power Division - Saipan			
Summary of 'Department/Division' = Power Division - Saipan (1 detail record)			
SUM	$27,500,000	$40,500.000	50
Power Generation - Saipan			
Summary of 'Department/Division' = Power Generation - Saipan (2 detail record)			
SUM	$5,400,000	$136,000,000	97
Warehouse - Saipan			
Summary of 'Department/Division' = Warehouse - Saipan (1 detail record)			
SUM	$1,000,000	$12,000,000	25
Wastewater - Saipan			
Summary of 'Department/Division' = Wastewater - Saipan (2 detail record)			
SUM	$11,258,650	$5,210,000	89
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (6 detail record)			
SUM	**$16,208,650**	**$140,010,000**	**204**
Department of Finance			
Division of Procurement & Supply			
Summary of 'Department/Division' = Division of Procurement & Supply (1 detail record)			
SUM	$750,000	$204,000	17
Summary for 'Agency/Organization' = Department of Finance (1 detail record)			
SUM	$750,000	$204,000	17
Department of Lands & Natural Resources			
DLNR - Saipan			
Summary of 'Department/Division' = DLNR - Saipan (6 detail record)			
SUM	$215,000	$5,400	400
Summary for 'Agency/Organization' = Department of Lands & Natural Resources (6 detail record)			
SUM	$215,000	$5,400	400

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Department of Public Safety			
DPS Fire Division - Saipan			
Summary of 'Department/Division' = DPS Fire Division - Saipan (4 detail record)			
SUM	$1,500,000	$1,000,000	124
DPS Police Division - Saipan			
Summary of 'Department/Division' = DPS Police Division - Saipan (7 detail record)			
SUM	$2,000,000	$1,760,000	429
Summary for 'Agency/Organization' = Department of Public Safety (11 detail record)			
SUM	$3,500,000	$27,760,000	553
Department of Public Works			
Roads & Grounds/Operation & Maintenance			
Summary of 'Department/Division' = Roads & Grounds/Operation & Maintenance (1 detail record)			
SUM	$2,500,000	$3,600,000	87
Solid Waste Management Division			
Summary of 'Department/Division' = Solid Waste Management Division (detail record)			
SUM	$5,500,000	$2,000,000	25
Summary for 'Agency/Organization' = Department of Public Works (2 detail record)			
SUM	$8,000,000	$5,600,000	112
Department of Community and Cultural Affairs			
Department of Community and Cultural Affairs			
Summary of 'Department/Division' = Department of Community and Cultural Affairs (1 detail record)			
SUM	$3,828,000	$0	8
Summary for 'Agency/Organization' = Department of Finance (1 detail record)			
SUM	$3,828,000	$0	8

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Fiesta Resort			
Fiesta Resort			
Summary of 'Department/Division' = Fiesta Resort (1 detail record)			
SUM	$35,000,000	$10,000,000	1200
Summary for 'Agency/Organization' = Fiesta Resort (1 detail record)			
SUM	$35,000,000	$10,000,000	1200
Hyatt Regency Hotel			
Hyatt Regency Hotel			
Summary of 'Department/Division' = Hyatt Regency Hotel (1 detail record)			
SUM	$34,488,240	$19,244,120	850
Summary for 'Agency/Organization' = Hyatt Regency Hotel (1 detail record)			
SUM	$34,488,240	$19,244,120	850
Grand Total	**$138,920,270**	**$177,868,520**	**16333**
Number of Facility: 116			

Loss Estimate – Tsunami – Tinian

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
CNMI Public School System			
Tinian Elementary School			
Summary of 'Department/Division' = Tinian Elementary School (16 detail record)			
SUM	$2,183,271	$695,239	1242
Summary for 'Agency/Organization' = CNMI Public School System (16 detail record)			
SUM	$2,183,271	$695,239	1242
Commonwealth Ports Authority			
Tinian Seaport			
Summary of 'Department/Division' = Tinian Seaport (1 detail record)			
SUM	$225,000	$150,000	0
Summary for 'Agency/Organization' = Commonwealth Ports Authority (1 detail record)			
SUM	$225,000	$150,000	0
Commonwealth Utilities Corp			
Dan Dan Elementary School			
Summary of 'Department/Division' = Dan Dan Elementary School (1 detail record)			
SUM	$16,000,000	$16,000,000	60
Water Division - Tinian			
Summary of 'Department/Division' = Water Division - Tinian (3 detail record)			
SUM	$2,450,000	$2,450,000	4
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (4 detail record)			
SUM	$18,450.000	$18,450,000	64
Department of Public Lands			
DPL Tinian			
Summary of 'Department/Division' = DPL Tinian (1 detail record)			
SUM	$55,200	$100,000	80
Summary for 'Agency/Organization' = Department of Public Lands (1 detail record)			
SUM	$55,200	$100,000	80

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Agency/ Department/Division Organization	Replacement Value	Value of Contents	Maximum Capacity
Emergency Management Office			
Emergency Management Office			
Summary of 'Department/Division' = Emergency Management Office (1 detail record)			
SUM	$300,000	$22,000	45
Summary for 'Agency/Organization' = Emergency Management Office (1 detail record)			
SUM	$300,000	$22,000	45
Marianas Visitors Authority			
MVA - Tinian			
Summary of 'Department/Division' = MVA - Tinian (1 detail record)			
SUM	$160,000	$0	300
Summary for 'Agency/Organization' = Marianas Visitors Authority (1 detail record)			
SUM	$160,000	$0	300
Office of the Mayor (Tinian)			
Administrative Services			
Summary of 'Department/Division' = Administrative Services (6 detail record)			
SUM	$345,000	$185,000	353
Summary for 'Agency/Organization' = Office of the mayor (Tinian) (6 detail record)			
SUM	$345,000	$185,000	353
Tinian Dynasty Hotel & Casino			
Dynasty Hotel Fire & Safety			
Summary of 'Department/Division' = Dynasty Hotel Fire & Safety (1 detail record)			
SUM	$0	$0	2000
Summary for 'Agency/Organization' = Tinian Dynasty Hotel & Casino (1 detail record)			
SUM	$0	$0	2000
Grand Total	**$21,718,471**	**$19,602,239**	**4084**
Number of Facility: 31			

Appendix W – CVA Listing of Facilities Vulnerable to Wildfires

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Loss Estimate - Wildfire – Rota

Facility Name	Type	Topography	Roof	Foundation	Wall	Flood Zone	Replace't Value of Structure	Value of Contents	Year Built	Elevation (Ft)	Capacity
Commonwealth Ports Authority											
Rota Int'l Airport											
Car Rental Building	Transportation Facility	Coastal Plain	Concrete and Metal	Concrete & Other	Unknown	Unknow	$20,000	$20,000	1995	598	0
Fuel Enclosure	Hazardous Materials Stored	Coastal Plain	Concrete and Metal	Concrete and Other	Unknown	Unknow	$4,000	$4,000	0	598	0
Generator House	Utility System	Coastal Plain	Concrete and Metal	Concrete and Other	Unknown	Unknow	$21,000	$21,000	2010	598	0
Pump House	Essential Facility	Coastal Plain	Concrete and Metal	Concrete and Other	Unknown	Unknow	$31,000	$50,000	0	598	0
Roadway	Transportation Facility	Coastal Plain	Metal	Concrete and Other	Unknown	Unknow	$5,000	$5,000	0	598	0
Terminal Building	Transportation Facility	Coastal Plain	Concrete, Wood,metal	Concrete and Other	Unknown	Unknow	$3,950,000	$3,950,000	0	598	0
ARFF Building	Transportation Facility	Coastal Plain	Concrete, Wood,metal	Concrete and Other	Unknown	Unknow	$717,000	$750,000	1995	598	0
Summary for 'Department/Division' = Rota Int'l Airport (7 detail records)											
Sum							$4,748,000	$4,800,000			
Summary for 'Agency/Organization' = Commonwealth Ports Authority (7 detail records)											
Sum							$4,748,000	$4,800,000			
Commonwealth Utilities Corp											
CUC Rota											
Ka'an Reservoir	Utility System	Mountaintop	N/A	Concrete	N/A	No	$1,200,000	$600,000	1988	120	
Ginalangan Reservoir	Utility System	Mountaintop	N/A	Concrete	N/A	No	$600,000	$600,000	1992	600	
Power Plant	Utility System	Coastal Plain	Metal	Concrete	Metal	Yes	$500,000	$12,000,000	1986	6	50
Well SP-1	Utility System	Mountaintop	Metal	N/A	N/A	No	$2,000	$100,000	2000	580	
Well SP-2	Utility System	Mountaintop	Metal	N/A	N/A	No	$2,000	$100,000	2000	580	
Well SP-3	Utility System	Mountaintop	N/A	N/A	N/A	No	$0	$100,000	2000	580	
Feeder – 3 substation	Utility System	Coastal Plain	Metal	Concrete	N/A	Yes	$3,000	$200,000	1991	6	0
Summary for 'Department/Division' = CUC Rota (7 detail records)											
Sum							$2,307,000	$13,700,000			
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (7 detail records)											
Sum							$2,307,000	$13,700,000			

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Facility Name	Type	Topography	Roof	Foundation	Wall	Flood Zone	Replace't Value of Structure	Value of Contents	Year Built	Elevation (Ft)	Capacity
Department of Lands & Natural Resources											
DLNR Rota											
West Harbor Marina-Small Boats	Essential Facility	Coastal Plain	N/A	Concrete	N/A	Yes	$500,000	$0	2005	0	200
Summary for 'Department/Division' = DLNR Rota (1 detail record)											
Sum							$500,000	$0			
Summary for 'Agency/Organization' = Department of Lands & Natural Resources (1 detail record)											
Sum							$500,000	$0			
Department of Public Health											
Rota Health Center											
E.R.E Storage	Utility System	Hillside	Metal	Other	Metal	No	$5,000	$350,000	2006	90	0
Summary for 'Department/Division' = Rota Health Center (1 detail record)											
Sum							$5,000	$350,000			
Summary for 'Agency/Organization' = Department of Public Health (1 detail record)											
Sum							$5,000	$350,000			
Department of Public Works											
Public Works - Rota											
DPW MechanicE Shop	ssential Facility	Hillside	Metal	Concrete	Metal	No	$40,000	$99,600	2006	779	17
Summary for 'Department/Division' = Public Works - Rota (1 detail record)											
Sum							$40,000	$99,600			
Summary for 'Agency/Organization' = Department of Public Works (1 detail record)											
Sum							$40,000	$99,600			

Grand Total $7,600,000 $18,949,600 267

Total Number Of 17

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Loss Estimate - Wildfire – Saipan

Facility Name	Type	Topography	Roof	Foundation	Wall	Flood Zone	Replace't Value of Structure	Value of Contents	Year Built	Elevation (Ft)	Capacity
CNMI Public School System											
Dan Dan Elementary School											
Bldg A.	Essential Facility	Inland Flats	Metal	Concrete	Metal	No	$408,000	$0	1998	0	136
Bldg B.	Essential Facility	Inland Flats	Metal	Concrete	Metal	No	$360,000	$0	1998	0	120
Bldg C	Essential Facility	Inland Flats	Metal	Concrete	Metal	No	$405,000	$0	1998	0	135
Bldg D	Essential Facility	Inland Flats	Metal	Concrete	Metal	No	$360,000	$0	1998	0	120
Summary for 'Department/Division' = Dan Dan Elementary School (4 detail records)											
Sum							**$1,533,000**	**$0**			
GTC Elementary School											
Bilingual	Essential Facility	Coastal Plain	Wood and metal	Concrete	Wood and metal	Yes	$57,600	$0	0	0	19
Bldg. F	Essential Facility	Coastal Plain	Metal	Concrete	Concrete/metal	Yes	$450,000	$0	0	0	150
Bldg. G&H	Essential Facility	Coastal Plain	Wood and metal	Concrete	Wood and metal	Yes	$540,000	$0	0	0	180
Summary for 'Department/Division' = GTC Elementary School (3 detail records)											
Sum							**$1,047,600**	**$0**			
Hopwood Jr. High School											
LMA	Essential Facility	Coastal Plain	Metal	Concrete	Wood and metal	Yes	$400,000	$0	0	0	133
Bldg. V	Essential Facility	Coastal Plain	Wood and metal	Concrete	Wood and metal	Yes	$800,000	$0	0	0	266
Summary for 'Department/Division' = Hopwood Jr. High School (2 detail records)											
Sum							**$1,200,000**	**$0**			
Marianas High School											
MHS Bldg. "T" North	Essential and Utility System	Coastal Plain	Metal	Concrete	Metal	Yes	$38,400	$0	1969	0	333
MHS Bldg. "T" South	Essential, Transportation, Hazardous Materials	Coastal Plain	Metal	Concrete	Metal	Yes	$354,000	$0	1969	0	333
Summary for 'Department/Division' = Marianas High School (2 detail records)											
Sum							**$392,400**	**$0**			
Saipan Southern High											
Bldg. "G"	Essential Facility	Hillside	Metal	Concrete	Metal	No	$192,000	$0	2000	0	64
Library	Essential Facility	Hillside	Metal	Concrete	Metal	No	$355,200	$0	2000	0	118
Counselor's office	Essential Facility	Hillside	Metal	Concrete	Metal	No	$240,000	$0	2000	0	80
Cafeteria	Essential Facility	Hillside	Metal	Concrete	Metal	No	$655,200	$0	2000	0	218
Bldg. "I"	Essential Facility	Hillside	Metal	Concrete	Metal	No	$387,200	$0	2000	0	129
Bldg. "H"	Essential Facility	Hillside	Metal	Concrete	Metal	No	$160,000	$0	2000	0	53
Bldg. "F"	Essential Facility	Hillside	Metal	Concrete	Metal	No	$192,000	$0	2000	0	64
Bldg. "E"	Essential Facility	Hillside	Metal	Concrete	Metal	No	$160,000	$0	2000	0	53
Bldg. "C"	Essential Facility	Hillside	Metal	Concrete	Metal	No	$608,000	$0	2000	0	202

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Facility Name	Type	Topography	Roof	Foundation	Wall	Flood Zone	Replace't Value of Structure	Value of Contents	Year Built	Elevation (Ft)	Capacity
Bldg. "B"	Essential Facility	Hillside	Metal	Concrete	Metal	No	$608,000	$0	2000	0	226
Bldg. "A"	Essential Facility	Hillside	Metal	Concrete	Metal	No	$678,400	$0	2000	0	226
Admin. Office	Essential Facility	Hillside	Metal	Concrete	Metal	No	$216,000	$0	2000	0	72
Bldg. "D"	Essential Facility	Hillside	Metal	Concrete	Metal	No	$704,000	$0	2000	0	234
Summary for 'Department/Division' = Saipan Southern High (13 detail records)											
Sum							**$5,156,000**	**$0**			
San Antonio Elementary											
SAES Bldg. "B"	Essential Facility	Coastal Plain	Metal	Concrete	Concrete and wood	Yes	$510,000	$0	1969	0	170
SAES Bldg. "C"	Essential Facility	Coastal Plain	Metal	Concrete	Wood and wood	Yes	$270,000	$0	1969	0	120
Summary for 'Department/Division' = San Antonio Elementary (2 detail records)											
Sum							**$780,000**	**$0**			
San Vincente Elementary											
Bldg. G	Essential Facility	Hillside	Metal	Concrete	Metal	Yes	$192,000	$0	1991	0	64
Bldg. A 2nd Floo	Essential Facility	Hillside	Metal	Concrete	Metal	No	$656,200	$0	1998	0	218
Summary for 'Department/Division' = San Vincente Elementary (2 detail records)											
Sum							**$848,200**	**$0**			
Tanapag Elementary											
Bldg. J	Essential Facility	Coastal Plain	Metal	Concrete	Metal	Yes	$180,000			0	60
Summary for 'Department/Division' = Tanapag Elementary (1 detail record)											
Sum							**$180,000**				
W.S. Reyes Elementary											
Bldg. I	Essential Facility	Coastal Plain	Metal	Concrete	Metal and other	Yes	$888,000	$0	1998	0	291
Summary for 'Department/Division' = W.S. Reyes Elementary (1 detail record)											
Sum							**$888,000**	**$0**			
Summary for 'Agency/Organization' = CNMI Public School System (30 detail records)											
Sum							**$12,025,200**	**$0**			
Commonwealth Ports Authority											
Francisco C. Ada/Saipan Int'l Airport											
Airport Term'l Bldg	Transportation Facility	Coastal Plain	Wood and metal	Concrete	Concrete and wood	No	$15,866,000	$21,600,000	2004	210	0
ARFF Bldg	Essential, Transportation, Hazardous Materials	Coastal Plain	Wood and metal	Concrete	Metal	No	$1,320,000	$3,000,000	1994	210	0
ATCT	Essential and Transportation	Coastal Plain	Wood and metal	Concrete	Wood and metal	No	$1,280,000	$1,500,000	1993	210	0
Commuter Terminal	Transportation Facility	Coastal Plain	Meta	Concrete	Concrete and wood	No	$1,730,000	$2,000,000	1978	210	0

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Facility Name	Type	Topography	Roof	Foundation	Wall	Flood Zone	Replace't Value of Structure	Value of Contents	Year Built	Elevation (Ft)	Capacity
Continental Bldg	Transportation Facility	Coastal Plain	Metal	Concrete	Metal	No	$240,000	$240,000	0	210	0
Incinerator Bldg	Utility System	Coastal Plain	Metal	Concrete	Metal	No	$200,000	$750,000	1996	210	0
Operations Bldg	Essential Facility	Coastal Plain	Wood and metal	Concrete	Concrete and wood	No	$21,000	$75,000	1975	210	0
Summary for 'Department/Division' = Francisco C. Ada/Saipan Int'l Airport (7 detail records)											
Sum							**$20,657,000**	**$29,165,000**			
Summary for 'Agency/Organization' = Commonwealth Ports Authority (7 detail records)											
Sum							**$20,657,000**	**$29,165,000**			
Commonwealth Utilities Corp											
Power Division - Saipan											
Kiya 1 Feeder	Essential Facility	All	N/A	N/A	N/A	No	$4,500,000	$4,500,000	1990	0	0
Kiya 2 Feeder	Essential Facility	All	N/A	N/A	N/A	No	$4,500,000	$4,500,000	1990	0	0
Feeder 7	Essential Facility	All	N/A	N/A	N/A	No	$4,500,000	$4,500,000	1993	0	0
Feeder 3	Essential Facility	All	N/A	N/A	N/A	No	$0	$4,500,000	0	0	0
Feeder 2	Essential Facility	All	N/A	N/A	N/A	No	$4,500,000	$4,500,000	1989	0	0
Feeder 1	Essential Facility	All	N/A	N/A	N/A	No	$0	$4,500,000	0	0	0
Feeder 4	Essential Facility	All	N/A	N/A	N/A	No	$0	$4,500,000	1995	0	0
Kiya 4 Feeder	Essential Facility	All	N/A	N/A	N/A	No	$4,500,000	$4,500,000	1988	0	0
Summary for 'Department/Division' = Power Division - Saipan (8 detail records)											
Sum							**$22,500,000**	**$36,000,000**			
Power Generation-Saipan											
CUC Power Plant I	Essential Facility	Coastal Plain	Othe	Concrete	Other	Yes	$5,000,000	$110,000,000	1980	0	81
CUC Power Plant II	Essential Facility	Coastal Plain	Other	Concrete	Other	Yes	$150,000	$12,000,000	1970	0	4
CUC Power Plant IV	Utility System	Coastal Plain and Hillside	Metal	Concrete	Other	No	$250,000	$14,000,000	1990	80	12
Summary for 'Department/Division' = Power Generation-Saipan (3 detail records)											
Sum							**$5,400,000**	**$136,000,000**			
Warehouse-Saipan											
CUC Warehouse	Utility System	Coastal Plain	Metal	Concrete	Wood	Yes	$1,000,000	$12,000,000	1996	6	25
Summary for 'Department/Division' = Warehouse-Saipan (1 detail record)											
Sum							**$1,000,000**	**$12,000,000**			
Water Division-Saipan											
PR-163B	Utility System	Hillside	N/A	Concrete	N/A	No	$100,000	$50,000	0	0	0
MQ5	Utility System	Hillside	N/A	Concrete	N/A	No	$100,000	$50,000	0	0	0
MQ 3	Utility System	Hillside	N/A	Concrete	N/A	No	$100,000	$50,000	0	0	0
MQ-1	Utility System	Hillside	N/A	Concrete	N/A	No	$100,000	$50,000	0	0	0
Summary for 'Department/Division' = Water Division-Saipan (4 detail records)											
Sum							**$400,000**	**$200,000**			
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (16 detail records)											
Sum							**$29,300,000**	**$184,200,000**			

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Facility Name	Type	Topography	Roof	Foundation	Wall	Flood Zone	Replace't Value of Structure	Value of Contents	Year Built	Elevation (Ft)	Capacity
Department of Finance											
Division of Procurement & Supply											
CNMI Procurement & Supply	Essential Facility	Coastal Plain	Metal	Concrete	Metal	Yes	$750,000	$204,000	1968	10	17
Summary for 'Department/Division' = Division of Procurement & Supply (1 detail record)											
Sum							**$750,000**	**$204,000**			
Summary for 'Agency/Organization' = Department of Finance (1 detail record)											
Sum							**$750,000**	**$204,000**			
Department of Public Works											
Roads & Grounds/Operation &											
Central Repair Shop Building	Transportation Facility	Coastal Plain	Metal	Concrete	Metal	Yes	$2,500,000	$3,600,000	1970	6	87
Summary for 'Department/Division' = Roads & Grounds/Operation & Maintenance (1 detail record)											
Sum							**$2,500,000**	**$3,600,000**			
Solid Waste Management Division											
Marpi Landfill Marpi	Essential and Utility System	Hillside	Metal	Concrete	Metal	No	$15,300,000	$4,000,000	2003	80	10
Lower Base Refuse Transfers Station	Essential and Hazardous Materials Stored	Coastal Plain	Metal	Concrete	Metal	Yes	$5,500,000	$2,000,000	2003	20	25
Summary for 'Department/Division' = Solid Waste Management Division (2 detail records)											
Sum							**$20,800,000**	**$6,000,000**			
Summary for 'Agency/Organization' = Department of Public Works (3 detail records)											
Sum							**$23,300,000**	**$9,600,000**			
Dept. of Community and Cultural Affairs											
Dept. of Community and Cultural											
DCCA-DYS/JDU	Essential Facility	Hillside	Metal	Concrete	Concrete and metal	No	$0	$0	1995	245	0
Summary for 'Department/Division' = Dept. of Community and Cultural Affairs (1 detail record)											
Sum							**$0**	**$0**			
Summary for 'Agency/Organization' = Dept. of Community and Cultural Affairs (1 detail record)											
Sum							**$0**	**$0**			
Dept. of Public Public Safety											
Fire Division											
Fire Station IV	essential facility	hillside	concrete	concrete	concrete	no	$1,000,000	$200,000			
Fire Station V	essential facility	coastal plain	concrete	concrete	concrete	no	$1,000,000	$200,000			
Fire Station VI	essential facility	coastal plain	concrete	concrete	concrete	no	$1,000,000	$200,000			
Summary for 'Department/Division' = Fire Division (3 detail records											
Sum							**$3,000,000**	**$600,000**			

Grand Total $89,032,200 $223,769,000 4,848
Total Number Of 61

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Loss Estimate - Wildfire – Tinian

Facility Name	Type	Topography	Roof	Foundation	Wall	Flood Zone	Replace't Value of Structure	Value of Contents	Year Built	Elevation (Ft)	Capacity
Commonwealth Utilities Corp											
Cha Cha Oceanview Jr. High School											
Fuel Storage Tank	Essential Facility	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	1998	0	0
Summary for 'Department/Division' = Cha Cha Oceanview Jr. High School (1 detail record)											
Sum							**$0**	**$0**			
Dan Dan Elementary School											
Substation	Essential Facility	Unknown	Metal	Concrete	Metal	Unknown	$0	$0	1999	0	0
Power plant	Essential Facility	Coastal Plain	Metal	Concrete	Metal	Yes	$16,000,000	$16,000,000	1999	15	60
Lubrication Tank (EMD)	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	1999	0	0
Lubrication Tank (Wartsila)	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	1999	0	0
Summary for 'Department/Division' = Dan Dan Elementary School (4 detail records)											
Sum							**$16,000,000**	**$16,000,000**			
Environmental Quality											
Clean Oil Tank 3	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	1999	0	0
Summary for 'Department/Division' = Environmental Quality (1 detail record)											
Sum							**$0**	**$0**			
Power Division - Tinian											
Warehouse	Utility System	Unknown	Metal	Concrete	Metal	Unknown	$0	$0	1998	0	0
Clean Oil Tank 2	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	1998	0	0
Feeder 4 Pwr Dist.	Essential Facility	Unknown	N/A	N/A	N/A	Unknown	$0	$0	2000	0	0
Feeder 1 Pwr Dist	Essential Facility	Unknown	N/A	N/A	N/A	Unknown	$0	$0	1992	0	0
Feeder 3 Pwr Dist	Essential Facility	Unknown	N/A	N/A	N/A	Unknown	$0	$0	1998	0	0
Feeder 2 Pwr Dist	Essential Facility	Unknown	N/A	N/A	N/A	Unknown	$0	$0	1996	0	0
Summary for 'Department/Division' = Power Division - Tinian (6 detail records)											
Sum							**$0**	**$0**			
Power Generation- Tinian											
Clean Oil Tank 1	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	1998	0	0
Summary for 'Department/Division' = Power Generation- Tinian (1 detail record)											
Sum							**$0**	**$0**			
Water Division-Tinian											
Water Dist. Line	Utility System	Unknown	N/A	N/A	N/A	Unknown	$0	$0	1996	0	0
.25 MG MDC Tank	Utility System	Coastal Plain	Metal	Concrete	Metal	No	$300,000	$10,000	1985	340	0
.50 MG Carolina Tank	Utility System	Hillside	Meta l	Concrete	Metal	No	$500,000	$20,000	1985	404	0

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Facility Name	Type	Topography	Roof	Foundation	Wall	Flood Zone	Replace't Value of Structure	Value of Contents	Year Built	Elevation (Ft)	Capacity
Deep Well #1 Marpo	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	2001	0	0
Deep Well #4 Marpo	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	1999	0	0
Deep Well #5 Marpo	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	2001	0	0
Deep Well #6	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	1998	0	0
Water Trans Line	Utility System	Unknown	N/A	N/A	N/A	Unknown	$0	$0	1985	0	0
Maui Well II	Utility System	Unknown	N/A	Concrete	N/A	Unknown	$0	$0	1999	0	0
Summary for 'Department/Division' = Water Division-Tinian (9 detail records)											
Sum							**$800,000**	**$30,000**			
Summary for 'Agency/Organization' = Commonwealth Utilities Corp (22 detail records)											
Sum							**$16,800,000**	**$16,030,000**			
Department of Lands & Natural Resources											
DLNR Tinian											
DLNR Mechan Shop	N/A	Inland Flats	Metal	Concrete	Other	No	$300,000	$200,000	1983	0	5
Foresty Nursery	N/A	Inland Flats	Metal	Concrete	Metal	No	$50,000	$20,000	1998	0	5
Summary for 'Department/Division' = DLNR Tinian (2 detail records)											
Sum							**$350,000**	**$220,000**			
Summary for 'Agency/Organization' = Department of Lands & Natural Resources (2 detail records)											
Sum							**$350,000**	**$220,000**			
Department of Public Works											
Public Works - Tinian											
DPW, Main Office	Essential Facility	Inland Flats	Metal	Concrete	Metal	No	$500,000	$100,000	1985	0	25
DPW, Maintenance Shop	Essential, Transportation, Hazardous Materials	Inland Flats	Metal	Concrete	Metal	No	$500,000	$1,000,000	1999	0	15
DPW, Equipment/Auto Repair Shop	Essential, Transportation, Hazardous Materials	Inland Flats	Metal	Concrete	Metal	No	$0	$0	1999	0	15
DPW, Coral Roads	Transportation Facility	Hillside	N/A	Other	N/A	No	$0	$0	0	0	0
DPW, Coral Roads Carolinas	Transportation Facility	Hillside	N/A	Other	N/A	No	$0	$0	0	0	0
DPW, Coral Roads	Transportation Facility	Hillside	N/A	Other	N/A	No	$0	$0	0	0	0
Summary for 'Department/Division' = Public Works - Tinian (6 detail records)											
Sum							**$1,000,000**	**$1,100,000**			
Summary for 'Agency/Organization' = Department of Public Works (6 detail records)											
Sum							**$1,000,000**	**$1,100,000**			

Commonwealth of the Northern Marianas
Standard State Mitigation Plan

Facility Name	Type	Topography	Roof	Foundation	Wall	Flood Zone	Replace't Value of Structure	Value of Contents	Year Built	Elevation (Ft)	Capacity
Marianas Visitors Authority											
MVA - Tinian											
Tachogna Park Facilities	N/A	Coastal Plain	Metal	Concrete	Concrete and wood	Yes	$160,000	$0	0	0	300
MVA Nursery	N/A	Inland Flats	Metal and other	Other	Other	No	$10,000	$2,000	0	0	0
Summary for 'Department/Division' = MVA - Tinian (2 detail records)											
Sum							**$170,000**	**$2,000**			
Summary for 'Agency/Organization' = Marianas Visitors Authority (2 detail records)											
Sum							**$170,000**	**$2,000**			
Office of the Mayor (Tinian)											
Administrative Services											
Aging Center	Unknown	Unknown	N/A	N/A	N/A	Unknown	$0	$0	0	18	0
Suicide Cliff Memorial Structure	Unknown	Unknown	N/A	N/A	N/A	Unknown	$0	$0	0	150	0
Suicide Cliff Picnic Shelters	Unknown	Unknown	N/A	N/A	N/A	Unknown	$0	$0	0	150	0
Tachonga Beach Main Pavilion	Unknown	Unknown	N/A	N/A	N/A	Unknown	$0	$0	0	10	0
Taga Well Fiesta Grounds	Essential Facility	Coastal Plain	Wood and metal	Other	Wood and metal	Yes	$0	$80,000	2003	10	150
Tinian Marina Mooring Dock	Essential Facility	Coastal Plain	N/A	Concrete and other	Concrete and wood	Yes	$150,000	$0	2001	2	50
Summary for 'Department/Division' = Administrative Services (6 detail records)											
Sum							**$150,000**	**$80,000**			
Summary for 'Agency/Organization' = Office of the Mayor (Tinian) (6 detail records)											
Sum							**$150,000**	**$80,000**			
Tinian Dynasty Hotel & Casino											
Dynasty Hotel Fire & Safety											
Tinian Dynasty Hotel & Casino	N/A	Coastal Plain	Concrete and metal	Concrete	Concrete and metal	No	$0	$0	1996	0	2000
Summary for 'Department/Division' = Dynasty Hotel Fire & Safety (1 detail record)											
Sum							**$0**	**$0**			
Summary for 'Agency/Organization' = Tinian Dynasty Hotel & Casino (1 detail record)											
Sum							**$0**	**$0**			

Grand Total $18,470,000 $17,432,000 2,625
Total Number Of 39

Appendix X – Mitigation Action Rating Results

CNMI Objective and Mitigation Action Rating Results

#	Agency	Shelter	Critical Infrastructure and Key Resources	Facilities	Others
1	Northern Islands Mayor's Office	1	1	2	2
2	Municipality of Tinian	1	2	3	4
3	Municipality of Rota**	0	0	0	0
4	Public School System**	0	0	0	0
5	Department of Community and Cultural Affairs	1	2	3	4
6	Commonwealth Health Center Corporation	2	4	3	1
7	Department of Public Safety - Police	2	3	1	4
8	Department of Public Safety - Fire	1	2	3	4
9	Bureau of Environmental and Coastal Quality	1	2	3	4
10	Homeland Security and Emergency Management**	0	0	0	0
OVERALL TOTAL		**9**	**16**	**18**	**23**

** No submission of CNMI Objective and Mitigation Action Rating Worksheet. They agree with the majority.

In order of PRIORITY:

1 Shelter
2 Critical Infrastructure and Key Resources
3 Facilities
4 Others

Appendix Y – Mitigation Action Worksheets

Mitigation Action	Hazard(s) Addressed	Responsible Agency	Geography	Cost	Funding Source(s)	Priority (High, Medium, Low)	Status	2010	2013	Explanation/Justification of Status	Comments
Retrofit BECQ Facility to harden against Typhoon by installing storm shutters.	Preparedness	BECQ	Saipan	$75,000 estimated	FEMA	High	New			Harden against effect	
Build enclosed covered secure facility to house and protect boats and vehicles in the event of a disaster.	Preparedness	BECQ	Saipan	$300,000 estimated	FEMA	High	New			Harden against effect	
Obtain LiDAR mapping of all populated islands to increase effectiveness of CNMI response capabilities	Preparedness	BECQ	CNMI	$1.5 Million estimated	FEMA	High	On – Going		x	Ensure that maps used in decision making support represent reality	
Mitigate against coastal hazards in critical areas by implementing anti-erosion and anti-flood measures.	Preparedness	BECQ	CNMI	$5 Million estimated	FEMA	Medium	New			Ensure that critical coastal infrastructure is properly protected and hardened against effect	
Develop and conduct hazard mitigation outreach to the public.	Preparedness	BECQ	CNMI	$20,000 estimated	FEMA	Medium	On - Going		x	Ensure that the public knows and understands disaster preparedness and mitigation	

Mitigation Action	Hazard(s) Addressed	Responsible Agency	Geography	Cost	Funding Source(s)	Priority (High, Medium, Low)	Status	2010	2013	Explanation/ Justification of Status	Comments
Install Typhoon Rated Window and Door Shutters at Main parking booth	Typhoon	CPA	Saipan Airport	$5,000	FEMA, CPA, HSEM	High	New		X	Occupants and Structure are vulnerable to typhoon gust winds and events including strong storm wind-driven rains	
Install Typhoon Rated Window and Door Shutters at car rental facility	Typhoon	CPA	Saipan Airport	$15,000	FEMA, CPA, HSEM	High	New		X	Occupants and Structure are vulnerable to typhoon gust winds and events including strong storm wind-driven rains	
Install Typhoon Rated Window and Door Shutters at Commuter Terminal Facility	Typhoon	CPA	Saipan Airport	$120,000	FEMA, CPA, HSEM	High	New		X	Occupants and Structure are vulnerable to typhoon gust winds and events including strong storm wind-driven rains	
Install Typhoon Rated shutters at Terminal Facility	Typhoon	CPA	Tinian Airport	$500,000	FEMA, CPA, HSEM	High	New		X	Occupants and Structure are vulnerable to typhoon gust winds and events including strong storm wind-driven rains	High priority for CPA Tinian, presently being used as one of the shelters during tsunami and typhoons or other Natural disasters; Equipments Vulnerable during intense rain and high winds
Retrofit and Strengthening of existing Maintenance Equipment shelter	Typhoon	CPA	Tinian Airport	$100,000	FEMA, CPA, HSEM	High	New		X	Structure and equipment are vulnerable to typhoon gust winds and events including strong storm wind-driven rains	Equipments are used for the maintenance of Airport airfield critical to the safety of airlines and its passengers
Replace dilapidating typhoon shutters (due to rust) with New Typhoon Rated Window and Door Shutters	Typhoon	CPA	Rota Airport	$40,000	Army Corp., NOAA, USCG, FEMA, CPA, Seaport Grant	High	New		X	Existing typhoon shutter are beyond economical repair due to constant salt spray. Protection of assets ensures continuity of essential supplies for our people.	Municipal Planning Committee recommended to place this item on high priority.

Construct concrete wall to deflect wave action inundation into the Seaport warehouse and office facilities	Active wave action, Typhoon surge & Tsunami	CPA	Rota Airport	$170,000	Army Corp., NOAA, USCG, FEMA, CPA, Seaport Grant	High	New		X	Present seawall was built only 3 ft. high and during active wave action even at less than small craft warning the water spills over the wall. It has to be built at an arch to deflect wave action.	Municipal Planning Committee recommended to place this item on high priority.
Replace security fence with heavy duty materials with higher grade galvanize steel coating for greater rust protection	Multi-Hazard	CPA	Rota Airport	$70,000	Army Corp., NOAA, USCG, FEMA, CPA, Seaport Grant	High	New		X	Fence was built with inferior materials and over many years exposed to constant salt spray causing major rusting.	Port Safety and Security is paramount to our operations. There will be serious breach of security that will directly compromise the life line to our community
Back-up generator pumping unit is exposed and vulnerable to damage from rust and flying debris during inclement weather. To include protective cover for the fuel line from the storage tank to the pump.	Typhoon	CPA	Rota Airport	$50,000	FAA, CPA, FEMA, CIP	High	New		X	Construction of generator building did not come with a shelter. Serious vulnerability with the pump and fuel pipe if mitigation is not implemented.	Reviewed by the Core Planning Group; group recommended to place as high priority project.
Rota Airport perimeter fence existing fence was installed 26 years ago and many of the fence posts have rusted through at the base and the chainlinks are rusted.	Typhoon	CPA	Rota Airport	$800,000	FAA, CPA, FEMA, CIP	High	New		X	The TSA and FAA compliance of the perimeter fence. The rusting condition of the existing fence is vulnerable to collapse during heavy winds or typhoon conditions.	The perimeter fence is a required compliance issue with the TSA and FAA regulatory agencies and poses high risk for security breach.
Replace accordion shutters as the existing shutters were installed 11 years ago and over 90% are in serious disrepair.	Typhoon	CPA	Rota Airport	$450,000	FAA, CPA, FEMA, CIP	High	New		X	Existing typhoon shutters are beyond economical repair due to the weather elements. Protection of assets ensures continuity of essential services to our people.	Municipal Planning Committee recommends to place this item on high priority.

Construction of pipe frames to install rain screen to prevent water from getting to the ceramic tiles at the Arrival and Departure areas. Mitigation is urgent due to the unsafe conditions which is vulnerable to wind shift that comes from the east-west direction.	Multi-Hazard	CPA	Rota Airport	$80,000	FAA, CPA, FEMA, CIP	High	New		X	To prevent legal liabilities due to wet floor tiles at the passenger waiting areas in the Arrival and Departure.	Existing conditions at Departure and Arrival passenger waiting areas are directly exposed when wind direction changes from east-west direction and rendering high risk for the traveling public and airport employees.

2013 Standard State Mitigation Action Evaluation Worksheet

Mitigation Action	Facility Name	Hazard(s) Addressed	Responsible Agency	Geography (Island)	Funding Source	Comments/ Remarks
1) Upgrade water reservoir (tank) on Ka'an and Sinapalo	Sinapalo and Ka'an	CUC	CUC	Rota	Federal $75,000.00	
2) Install typhoon shutters on all windows and doors to prevent typhoon damages (Typhoon Shutters Site)	Aging Center	DCCA	DCCA	Rota	Federal $60,000.00	
3) Install backup generator at all critical facility (Typhoon Shelters)	Sinapalo Elemtary School & Aging Center	PSS & DCCA	PSS & DCCA	Rota	90,000.00	
4) Repair and Upgrade the early warning system	Mayor's Office	Mayor's Office	Mayor's Office	Rota	50,000.00	
5) Upgrade water reservoir (Holding Tank) at the Rota Health Center (RHC)	Rota Health Center (RHC)	Rota Health Center (RHC)	Rota Health Center (RHC)	Rota	50,000.00	

Prepared by: ______________________ Mr. Henry S. Atalig **Date:** 11-21-13

Submitted by: ______________________ Mayor Melchor A. Mendiola **Date:** 11-21-13

Mitigation Action	Hazard(s) Addressed	Responsible Agency	Geography	Cost	Funding Source(s)	Priority (High, Medium, Low)	Status	2010	2013	Explanation/ Justification of Status	Comments
Install a 13.8 kV underground transmission line from the Kiya Substation to the Saipan International Airport.	Multi-Hazard	CUC	Saipan	$3,800,000	FEMA, CUC	High	New		X	Repetitive damage to the overhead electrical primary system caused from typhoons. Ensure a lifetime for the Saipan International Airport and 45% of island power customers.	Essential for Power supply to major facilities International Airport/Fed. Water Wells/ 2000 plus res. and local Business
Install a 13.8 kV underground transmission line from the Power Plant 1 to the Commonwealth Health Center.	Multi-Hazard	CUC	Saipan	$2,800,000	FEMA, CUC	High	New		X	Repetitive damage to the overhead electrical primary system caused from typhoons. Ensure a lifeline to the hospital and businesses in Garapan.	The hospital must always have a consistent source of power supply to ensure all equipment at the facility operates efficiently through all conditions for the patients.
CUC Power Plant 1 replacement of existing Control Room Roof.	Multi-Hazard	CUC	Saipan	$400,000	FEMA, CUC	High	New		X	This Power Plant 1 Control Room Roof must be replaced with new material to harden the integrity of the roof and prevent catastrophic damage to the power plant control panel center.	Power Pant 1 is the power supplier on Saipan and any extensive damage to the facility control center would have detrimental impact to the islands health, security and economic sustainability.
Move all lift station control panel inside generator.	Typhoon	CUC	Saipan	$200,000	FEMA, CUC	High	New			Control panels are susceptible to water intrusion from wind and rain.	Panels are hazardous to troubleshoot in inclement weather
S3 lift station and Agingan Treatment plan mechanical screens.	Typhoon, Storm Surge	CUC	Terminal pumping stations for North and South of Island	$500,000	FEMA, CUC	High	New			Grit and debris washed into sewer cause blockages and pump failures.	Will protect north end terminal lift station and both WW treatment plants from trash and debris
Sadog Tasi office complex emergency power generation.	Typhoon, Fire, Earthquake	CUC	Island Wide	$150,000	FEMA, CUC	High	New			Supply power to Water and Wastewater operations center and offices.	Shelter Emergency staff during typhoon conditions

Mitigation Action	Hazard(s) Addressed	Responsible Agency	Geography	Cost	Funding Source(s)	Priority (High, Medium, Low)	Status	2010	2013	Explanation/ Justification of Status	Comments
Reinforcement of windows and doors with shutters	Typhoon, Tsunami	DCCA Shelter	Saipan (KCC)	$17,408	CIP, HSEM, PDM, DCCA	High	New	n	n	Repetative damages caused by recurring typhoons	HIGH priority project due to natural disasters
Purchase of a new generator and installation of a flip switch for shelter	Typhoon, Tsunami, Earth Quake	DCCA Shelter	Saipan (KCC)	$10,000	CIP, HSEM, PDM, DCCA	High	New	n	n	For power source during disaster	HIGH priority project due to natural disasters
Purchase and installation of a new water pump for shelter	Typhoon, Tsunami, Earthquake	DCCA Shelter	Saipan (KCC)	$1,000	CIP, HSEM, PDM, DCCA	High	New	n	n	For water source during disaster	HIGH priority project due to natural disasters
Reinforcement of windows and doors with shutters for 11 DCCA offices	Typhoon, Tsunami	DCCA Offices	Saipan	$110,000	CIP, HSEM, PDM, DCCA	High	New	n	n	Prevent damages of inventories in all DCCA offices	Protection of all DCCA assets
Purchase of a new generator and installation of a flip switch for DYS shelter	Typhoon/Tsunami/Earth Quake	DYS Shelter	Saipan (Youth Shelter)	$10,000	CIP, HSEM, PDM, DCCA, NMC	High	New	n	n	Power source for the DYS shelter	HIGH priority project due to natural disasters

Mitigation Action	Hazard(s) Addressed	Responsible Agency	Geography	Cost	Funding Source(s)	Priority (High, Medium, Low)	Status	2010	2013	Explanation/ Justification of Status	Comments
Replace, install roll-up doors for all five (6) Fire stations	All Hazards	DPS - Fire	Saipan	$100,000	FEMA	High	New		X	Structural/Assets are vulnerable to all hazards	Safety and protection of our personnel and assets
Install fences around all five (5) fire stations	All Hazards	DPS - Fire	Saipan	$30,000	FEMA	High	New		X	Personnel/Assets are vulnerable to all hazards and terrorist organization	First Responders are the primary target for all hazards response
Hardening existing structure at Kobler Fire Station-4	All Hazards	DPS - Fire	Saipan	$20,000	FEMA	High	New		X	Structural/Assets are vulnerable to any organize group that will affect fire response capabilities	High priority for our first responders assets to mitigate all hazards events

Mitigation Action	Hazard(s) Addressed	Responsible Agency	Geography	Cost	Funding Source(s)	Priority (High, Medium, Low)	Status	2010	2013	Explanation/ Justification of Status	Comments
Install window shutters for wind-driven and typhoon events for DPS facilities	Typhoon	DPS - Police	Saipan	$300,000	FEMA	High	New		X	Structural/Assets are vulnerable to all hazards	Safety and protection of our personnel and assets
Replace existing Generator	Typhoon	DPS – Police	Saipan	$200,000	FEMA	High	New		X	To maintain communications/dispatch before, during and after typhoon	Safety and protection of our personnel and the community as a whole
Install fences around DPS Compound	All Hazards	DPS - Police	Saipan	$30,000	FEMA	High	New		X	Personnel/Assets are vulnerable to all hazards and terrorist organization	First Responders are the primary target for all hazards response

Mitigation Action	Hazard(s) Addressed	Responsible Agency	Geography	Cost	Funding Source(s)	Priority (High, Medium, Low)	Status	2010	2013	Explanation/ Justification of Status	Comments
Guma Hustisia Window Caulking	Typhoon	Judiciary	Saipan	$44,640	PDM	High	New			The Guma Hustisia is vulnerable to high-wind and driven rain caused by typhoons.	High Priority, to mitigate water damage to the Guma Hustisia, (server, court files & computers, etc….)
Roof Hardening/Retrofit	Typhoon	Judiciary	Saipan	$150,00	PDM, OIA	High	New			The Guma Hustisia roof, alternate & off site server facilities is vulnerable to high-wind and driven rain caused by typhoons.	High Priority, to mitigate water damage to the Guma Hustisia, alternate and off site server facilities
Hardening/Retrofit	Typhoon	Judiciary	Saipan	$37,500	PDM, OIA	High	New			The Tinian Court House is vulnerable to high-wind and driven rain caused by typhoons.	High Priority, to mitigate water damage to the Tinian Court House, (server, court files & computers, etc….)
Hardening/Retrofit	Typhoon	Judiciary	Saipan	$53,600	PDM, OIA	High	New			The Rota Judicial Center is vulnerable to high-wind and driven rain caused by typhoons.	High Priority, to mitigate water damage to the Rota Judicial Center (server, court files & computers, etc….)

2013 Standard State Mitigation Action Evaluation Worksheet

Mitigation Action	Facility Name	Hazard(s) Addressed	Responsible Agency	Geography (Island)	Funding Source	Comments/ Remarks
Equipping the Northern Islands and the NIMO with up-to-date SSB Radios		Various Hazards	NIMO	Northern Islands		
Retrofitting the water well in Pagan	Pagan Water Well	Various Hazards	NIMO	Pagan	PDM, Local Delegation	
Construct a safe house in Alamagan	Safe House	Typhoon	NIMO	Alamagan	PDM, Local Delegation	
Retrofitting the Dispensary in Agrigan	Dispensary	Typhoon	NIMO	Agrigan	PDM, Local Delegation	

Mitigation Action	Hazard(s) Addressed	Responsible Agency	Geography	Cost	Funding Source(s)	Priority (High, Medium, Low)	Status	2010	2013	Explanation/ Justification of Status	Comments
Retrofit windows, walls and doors, harden roof and equip the dog shelter with a backup generator, water tank and water pump.	Multi Hazard	Office of the Mayor	Saipan	$300,000	FEMA, HSEM, MOS	High	New			The animal shelter structure is vulnerable to high Typhoon strength winds and ground shaking activities. The structure is located in a low lying area and susceptible to flooding.(flood zone)	High priority for life, health and safety of animals at the shelter.
Reconstruct metal infrastructure, roof, concrete flooring and new electrical wiring at the operations lower base shop.	Multi Hazard	Office of the Mayor	Saipan	$400,000	FEMA, HSEM, MOS	High	New			The structure is old, damaged and not safe. It needs reconstruction to protect property such as heavy equipment and materials needed to respond to secondary road repairs and maintenance, as well as respond to fallen trees and removal of debris. (flood zone)	High priority to protect capital assets that are used to respond to emergencies.

2013 Standard State Mitigation Action Evaluation Worksheet

Mitigation Action	Facility Name	Hazard(s) Addressed	Responsible Agency	Geography (Island)	Funding Source	Comments/ Remarks
Generator purchase and installation for the PSS (TES) (Shelter)	Tinian Elementary School	Typhoon	PSS	Tinian	CIP, PDM, Local Delegation	
Retrofit all obsolete aluminum louvers for PSS (TES) (Shelter)	Tinian Elementary School	Typhoon	PSS	Tinian	CIP, PDM, Local Delegation	
Purchase and installations of shutters for terminals	Tinian Airport	Typhoon	CPA	Tinian	FAA, FEMA, CPA, CIP	
Retrofit and Strengthening of existing Maintenance Building	Maintenance Building	Typhoon	Office of the Mayor – Tinian	Tinian	PDM, Local Delegation	
Purchase and installation of a Public Address system	Public Schools	Various Hazards	PSS	Tinian	CIP, PDM, Local Delegation	

2013 Standard State Mitigation Action Evaluation Worksheet

Mitigation Action	Facility Name	Hazard(s) Addressed	Responsible Agency	Geography (Island)	Funding Source	Comments / Remarks
Retrofit all wooden doors and frames with aluminum doors and frames to prevent flooding and termite infestation.	Marianas High School – Buildings A, C, D, E Garapan Elementary School – Building D Koblerville Elementary School – Building B	Typhoon	Public School System	Saipan	CIP; Pre-Disaster Mitigation Grant; Local Delegation	The indicated buildings are designated shelters and need to be hardened to ensure safety and prevent damage from typhoons.
Retrofit all obsolete aluminum louvers with typhoon rated windows (200 mph).	Tanapag Elementary School – Building A Garapan Elementary School – Building E (1st Floor) and D Marianas High School – Buildings A, C, D, E Koblerville Elementary School – Building B Tinian Elementary School – Buildings I and K	Typhoon	Public School System	Saipan and Tinian	CIP; Pre-Disaster Mitigation Grant; Local Delegation	The indicated buildings are designated shelters and need to be hardened to ensure safety and prevent damage from typhoons.
Provide typhoon shutters on designated shelters.	Marianas High School – Buildings A, C, D, E Garapan Elementary School – Building D	Typhoon	Public School System	Saipan	CIP; Pre-Disaster Mitigation Grant; Local Delegation	The indicated buildings are designated shelters and need to be hardened to ensure safety and prevent damage from typhoons.
Provide public address systems to use for communications.	All designated shelter schools	Various Hazards	Public School System	Saipan, Tinian and Rota		The public address systems can be used in the event of environmental hazards, but they will also be utilized by the PSS for school information, school lockdowns, active shooter drills and other non environmental emergencies.
Construct concrete covered walkways to provide secure circulation between shelter areas, restrooms, etc.	Tanapag Elementary School Marianas High School	Typhoon	Public School System	Saipan		The covered walkways will be needed in the event of environmental hazards, but they will also be utilized by the PSS students for protection against the sun, rain and inclement weather.

2013 Standard State Mitigation Action Evaluation Worksheet

Mitigation Action	Facility Name	Hazard(s) Addressed	Responsible Agency	Geography (Island)	Funding Source	Comments / Remarks
Install backup generators at all Critical Facilities (typhoon shelters).	All designated shelter schools	Typhoon	Public School System	Saipan, Tinian and Rota		The designated shelter schools need backup generators in order to power water pumps, lighting, etc.
Provide restrooms, showers and reserve water tanks.	All designated shelter schools.	Typhoon		Saipan, Tinian and Rota		In some cases the restrooms are not immediately accessible from the classroom accommodations. Additionally, showers are not typically available.

Prepared by: Rachel Fusco, PSS CIP Date: ________

Submitted by: Rachel Fusco, PSS CIP Date: ________

Mitigation Action	Hazard(s) Addressed	Responsible Agency/Party	Geography (Commonwealth-wide or Island)	Cost	Funding Source(s)	Priority (High, Medium, Low)	Status (Completed,In Process, Deleted, Deferred, On-going, New)	2010	2013	Disaster Lifecycle	Explanation/Justification of Status	Comments or Additional Inputs
1. Relocation of Medical Suppy Office (MSO) 2. 3. Retrofit 10 year old tin roof.	Typhoon	CHCC	Saipan	$2.5 Million	CHCC Local, State, Federal	High	On going	None	None	Every 5 to 10 years of tin roof repair and replacement for leaks and deterioration of metal sheet roof.	No funding has been identified.	MSO is located in a floodzone area and continues to be at high risk of flooding even during rainy seasons which could result in the total of Medical Supplies, including Emergency Disaster PPEs and other medical equipment
Construct a structure to house the Portable Generators to protect against damage from storms.	Typhoon	CHCC	Saipan	$65,000	Local/CHCC, Homeland Security, OIA, Other Federal	High	New	None	None		Generators (2) exposed to wind driven rain and flying objects during typhoons	
Retrofit Oxygen Generator Room by enclosing windows and installing HVAC system.	Typhoon	CHCC	Saipan	$120,000	Local/CHCC, Homeland Security, OIA, Federal	High	New	None	None		Wind driven rain and potentially contaminated air enters into the Oxygen Machine Room during typhoons increasing the risk of water damage, intake of contaminated air and electrical sourge	
Harden the hospital's RO water storage tanks by replacing with fiberglass tanks and relocating away from the maintenance building.	lcanic Erupt	CHCC	Saipan	$500,000.00	Local/CHCC, Homeland Security, OIA, Federal	High	New	None	None		The RO water storage tanks are located behind the Mechanical Building and tanks have had cracks repaired.	In an event of a severe earthquake the tanks may collapse and water is highly likely to enter the mechanical building and damage the hospital's electrical controls.
Install aluminum window shutters at the San Antonio Satellite Clinic	Typhoon	CHCC	Saipan	2,300	CHC, Homaland or FEMA	High	New	None	None		Installation of aluminum window shutters will protect dispensery from damages resulting from wind driven rain and flying objects/debris.	

Appendix Z – FEMA Region IX Crosswalk & Local Agency Review Comments

Instructions for Using the Plan Review Crosswalk for Review of Standard State Hazard Mitigation Plans

Attached is a Plan Review Crosswalk based on the ***Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000***, published by FEMA, with revisions dated November 2006. This Plan Review Crosswalk is consistent with the *Disaster Mitigation Act of 2000* (P.L. 106-390), enacted October 30, 2000 and *44 CFR Part 201 – Mitigation Planning, Interim Final Rule* (the Rule), published February 26, 2002.

SCORING SYSTEM

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Each requirement includes separate elements. All elements of a requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a summary score of "Satisfactory." A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing.

Optional matrices for assisting in the review of sections on profiling hazards and assessing vulnerability are found at the end of the Plan Review Crosswalk.

The example below illustrates how to fill in the Plan Review Crosswalk.

Example

Assessing Vulnerability by Jurisdiction

Requirement §201.4(c)(2)(ii): *[The State risk assessment **shall** include an] overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments … . The State **shall** describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard event.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan describe the State's vulnerability based on information from the local risk assessments?	Section III, pp. 12-28	The plan includes a description of local vulnerable structures. The plan presented a vulnerability summary by regions in the state. This information was collected from the approved plans on file.		✓
B. Does the plan present information on those jurisdictions that face the most risk?	Section III, pp. 30-36	The vulnerability description did not indicate which jurisdictions were the most vulnerable. **Required Revisions:** • Use the information provided in the summaries to determine which jurisdictions are most threatened by the identified hazards. • Identify which jurisdictions have suffered or are likely to suffer the most losses. • If data are not readily available, note these data limitations in the plan. Include actions in the mitigation strategy to obtain these data for the plan update.	✓	
		SUMMARY SCORE	✓	

Standard State Hazard Mitigation Plan Review and Approval Status

State Point of Contact: Ramon "Ray" C. Dela Cruz	**Address:** Commonwealth of the Northern Mariana Islands (CNMI) Office of the Governor 1313 Anatahan Drive, Capitol Hill Caller Box 10007 Saipan, MP 96950
Title: Planner	
Agency: CNMI Homeland Security and Emergency Management (HSEM)	
Phone Number: 1-670-664-2216	**E-Mail:** rdelacruz@cnmihomelandsecurity.gov.mp

FEMA Reviewer: Wynne Kwan	**Title:** Lead Planner	**Date:** 23 July 2013, **21 January 2014 (Resubmittal); 11 September 2014 (Final Draft)**
Date Received in FEMA Region [Insert #]	18 July 2013; **December 2013 (Resubmittal); 28 August 2014 (Final Draft)**	
Plan Not Approved	The Plan is Approved **PENDING** Adoption by CNMI, September 16, 2014	
Plan Approved	**Approved**	
Date Approved	**OCTOBER 8, 2014**	

STANDARD STATE HAZARD MITIGATION PLAN SUMMARY CROSSWALK

The plan cannot be approved if the plan has not been formally adopted.

Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a **"Needs Improvement"** score.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Prerequisite	NOT MET	MET
Adoption by the State: §201.4(c)(6) and §201.4(c)(7)		X

Planning Process	N	S
Documentation of the Planning Process: §201.4(c)(1)		X
Coordination Among Agencies: §201.4(b)		X
Program Integration: §201.4(b)	X	

Risk Assessment	N	S
Identifying Hazards: §201.4(c)(2)(i)		X
Profiling Hazards: §201.4(c)(2)(i)		X
Assessing Vulnerability by Jurisdiction: §201.4(c)(2)(ii)		X
Assessing Vulnerability of State Facilities: §201.4(c)(2)(ii)		X
Estimating Potential Losses by Jurisdiction: §201.4(c)(2)(iii)		X
Estimating Potential Losses of State Facilities: §201.4(c)(2)(iii)		X

Mitigation Strategy	N	S
Hazard Mitigation Goals: §201.4(c)(3)(i)		X
State Capability Assessment: §201.4(c)(3)(ii)		X
Local Capability Assessment: §201.4(c)(3)(ii)		X
Mitigation Actions: §201.4(c)(3)(iii)		X
Funding Sources: §201.4(c)(3)(iv)		X

Coordination of Local Mitigation Planning	N	S
Local Funding and Technical Assistance: §201.4(c)(4)(i)	N/A	N/A
Local Plan Integration: §201.4(c)(4)(ii)	N/A	N/A
Prioritizing Local Assistance: §201.4(c)(4)(iii)		X

Severe Repetitive Loss Mitigation Strategy
(only required for 90/10 under FMA & SRL)

	N	S
Repetitive Loss Mitigation Strategy: §201.4(c)(3)(v)	N/A	N/A
Coordination with Repetitive Loss Jurisdictions §201.4(c)(3)(v)	N/A	N/A

Plan Maintenance Process	N	S
Monitoring, Evaluating, and Updating the Plan: §201.4(c)(5)(i)		X
Monitoring Progress of Mitigation Activities: §201.4(c)(5)(ii) and (iii)		X

STANDARD STATE HAZARD MITIGATION PLAN APPROVAL STATUS

PLAN NOT APPROVED	
PLAN APPROVED	X

See Reviewer's Comments

PREREQUISITE

1. Adoption by the State

Requirement §201.4(c)(6): *The plan **must** be formally adopted by the State prior to submittal to [FEMA] for final review and approval.*

Requirement §201.4(c)(7): *The plan **must** include assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). The State will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d).*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Has the State formally adopted the **new or updated** plan?	Section 2.4			X
B. Does the plan provide assurances that the State will **continue to** comply with all applicable Federal statutes and regulations during the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c), and will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d)?	Page 9; Will also be included in text of Adoption Letter			X
		SUMMARY SCORE		X

PLANNING PROCESS: *§201.4(b): An effective planning process is essential in developing and maintaining a good plan.*

2. Documentation of the Planning Process

Requirement §201.4(c)(1): *[The State plan **must** include a] description of the planning process used to develop the plan, including how it was* *prepared, who was involved in the process, and how other agencies participated.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan provide a narrative description of how the **new or updated** plan was prepared?	Executive Summary; Sections 3.1, 3.2, 3.4, 3.5, 5.1, 6.0, 7.5, 8.0, 8.1, 8.2; Appendix E Section 3.0, 5.1, 6.0, 7.0, 8.0, 9.0 Appendix B			X
B. Does the **new or updated** plan indicate who was involved in the **current** planning process?	Table 3-1, Appendix E Section 3.0 Appendix B	Table 3-1 lists the agencies and organizations involved in the development of the Updated Plan. Appendix E also provides documentation of the outreach to participating agencies.		X
C. Does the **new or updated** plan indicate how other agencies participated in the **current** planning process?	Executive Summary; Sections 3.1, 3.2, 3.4, 3.5, 5.1, 6.0, 7.5, 8.0, 8.1, 8.2; Appendix E			X
D. Does the updated plan document how the planning team reviewed and analyzed each section of the plan?	Executive Summary; Section	**Final Draft: The Final Draft includes discussions throughout**		X

	3.2 Section 3.0, 5.1, 6.0, 7.0, 8.0, 9.0	**on how the Planning Team reviewed each section of the Plan and determined whether elements were still valid to CNMI.**		
E. Does the updated plan indicate for each section whether or not it was revised as part of the update process?	Executive Summary; Section 3.2 Section 3.0, 5.1, 6.0, 7.0, 8.0, 9.0	**Final Draft: The Final Draft includes a summary table of the changes made to each section. Additionally, each section includes text explaining changes made.**		**X**
		SUMMARY SCORE		**X**

3. Coordination Among Agencies

Requirement §201.4(b): *The [State] mitigation planning process* ***should*** *include coordination with other State agencies, appropriate Federal agencies, interested groups, and* ***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe how Federal and State agencies were involved in the **current** planning process?	Section 3.5; Appendix E	**Resubmittal: The Resubmittal document provides brief information on how FEMA Region IX was involved in the planning process.**		**X**

	Section 3.0 Appendix B	**It is recommended that the Final submittal provide a full accounting of events and coordination with FEMA and any other Federal or State agency during the CURRENT planning process for the 2013 Update plan.** **The planning process for future iterations of the Plan should start sooner rather than later to ensure sustained involvement by State Agencies throughout the planning process.**		
B. Does the **new or updated** plan describe how interested groups (e.g., businesses, non-profit organizations, and other interested parties) were involved in the **current** planning process?	Section 3.5, 7.7; Appendix E Section 3.0 Appendix B	**Final Draft: The Final Draft discusses why there was limited involvement of interested groups in the current planning process. Due to limited time, CNMI felt efforts should be more focused on working with State Agencies. The planning process did include the involvement of the Red Cross.** **Future iterations of the Plan should include various non-governmental entities in the planning process, such as businesses/business organizations, non-profits, academia, other interested parties, etc., at an early stage to obtain different perspectives, as well as to create partnerships for mitigation action implementation.**		X
C. Does the updated plan discuss how coordination among Federal and State agencies changed since approval of the previous plan?	Section 3.0 Appendix B	**Recommended Revisions:** • Discuss how coordination among Federal and State agencies changed since the approval of the 2010 Plan. If changes were made, discuss why CNMI made this decision. **Resubmittal: The above Recommended Revision is still valid. The Resubmittal document does not talk about why FEMA coordination was more intense during the 2013**		X

		Update planning process. **Final Draft: The Final Draft discusses changes in the coordination level among FEMA and State Agencies. FEMA coordination was incorporated into the plan as part of technical assistance to move forward. Coordination with State Agencies was more limited in the 2014 planning process due to time limitations, so a new committee was developed to assist with plan development.**		
		SUMMARY SCORE		X

4. Program Integration

Requirement §201.4(b): *[The State mitigation planning process **should**] be integrated to the extent possible with other ongoing State planning efforts as well as other FEMA mitigation programs and initiatives.* ***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe how the State mitigation planning process is integrated with other ongoing State planning efforts?	Section 3.3, 7.1, 7.2, 9.3 Section 3.0, 7.1	**Recommended Revisions:** • Describe how the State planning process is integrated with other ongoing State planning efforts. Suggestions include: ○ Review of existing plans/reports to identify opportunities to integrate mitigation actions. ○ Integrate mitigation planners/specialists on other program and planning teams. ○ Consolidate planning requirements for all mitigation programs (NFIP, HMGP, CRS, comprehensive plans, land use plans, etc.) ○ Identify overall goals/priorities common to other planning efforts		X

		○ Pass legislation/issue Executive Order mandating integration of mitigation actions into other planning initiatives ○ Outline CNMI's approach and provide timeline for action integration. • Discuss planning integration efforts and opportunities identified in the 2010 Plan and any successes or obstacles encountered with integration. Identify any changes to the 2013 Plan as a result. **Resubmittal: The above Recommended Revisions are still valid. The Resubmittal document does not include any changes that address this element.** **Final Draft: The Final Draft incorporates various current studies/processes CNMI is undertaking to address Climate Change. Additionally, the Planning Team review and incorporated goals/objectives from other planning efforts to validate the mitigation planning goals/objectives.** **Future iterations of the Plan should document and discuss how CNMI is integrating mitigation planning in other planning efforts and vice versa in the future planning process and plan maintenance process.**		
B. Does the new or updated plan describe how the State mitigation planning process is integrated with FEMA mitigation programs and initiatives?	Section 2.0 to 2.4, 7.8; Appendix AA	The Updated Plan describes laws that authorize the various FEMA mitigation programs and initiatives, as well as the various grant/funding sources. However, there is no discussion on how the mitigation planning process is integrated with FEMA mitigation programs and initiatives. **Recommended Revisions:** • Describe how the State planning process is integrated with		X

		FEMA mitigation programs and initiatives. Suggestions include: ○ Consolidate planning requirements for all mitigation programs (NFIP, HMGP, CRS, comprehensive plans, land use plans, etc.) ○ Identify overall goals/priorities common to other planning efforts • Discuss planning integration efforts and opportunities identified in the 2010 Plan and any successes or obstacles encountered with integration. Identify any changes to the 2013 Plan as a result. **Resubmittal: The above Recommended Revisions are still valid. The Resubmittal document does not include any changes that address this element.** **Final Draft: The above Recommended Revisions are still valid. Future iterations of the Plan should document and discuss how CNMI is integrating FEMA mitigation programs and initiatives in the planning process and plan maintenance process.**		
		SUMMARY SCORE		**X**

RISK ASSESSMENT: *§201.4(c)(2): [The State plan must include a risk assessment] that provides the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the State and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments.*

5. Identifying Hazards

Requirement §201.4(c)(2)(i): *[The State risk assessment **shall** include an] overview of the type … of all natural hazards that can affect the State … .*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan provide a description of the type of **all natural hazards** that can affect the State? If the hazard identification omits (without explanation) any hazards commonly recognized as threats to the State, this part of the plan cannot receive a Satisfactory score.	Section 5 Section 5	Seven hazards are identified to have potential to impact CNMI: Typhoon, flooding, earthquake, volcanic eruption, tsunami, drought, and wildfire. **Final Draft: The Final Draft includes a total of 8 identified hazards. CNMI has done quite a bit of work on the impacts of Climate Change, and the Planning Team decided to incorporate that information into the Plan.**		X
		SUMMARY SCORE		X

6. Profiling Hazards

Requirement §201.4(c)(2)(i): *[The State risk assessment **shall** include an overview of the] location of all natural hazards that can affect the State, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate … .*

Element	Location in the	SCORE

	Plan (section or annex and page #)	**Reviewer's Comments**	**N**	**S**
A. Does the risk assessment identify the **location** (i.e., geographic area affected) of each natural hazards addressed in the **new or updated** plan?	Section 5; Appendices M to T Section 5 Appendices J to R	**Recommended Revisions:** • The graphic maps provided in the Appendices (M to T, but others as well) are barely legible due their size. Suggest making these larger so that information presented in the graphic maps can be read. **Final Draft: The above Recommended Revision is still valid. The graphic maps in the Final Draft are not legible due to the size. These graphic maps should be made larger, as they can be used to convey lots of required information, helping to cut down on narrative.**		X
B. Does the **new or updated** plan provide information on **previous occurrences** of each hazard addressed in the plan?				X
C. Does the **new or updated** plan include the **probability of future events** (i.e., chance of occurrence) for each hazard addressed in the plan?	Section 5			X
		SUMMARY SCORE		X

Assessing Vulnerability

Requirement §201.4(c)(2)(ii): *[The State risk assessment* ***shall*** *include an] overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments as well as the State risk assessment. The State* ***shall*** *describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State owned critical or operated facilities located in the identified hazard areas shall also be addressed … .*

Requirement §201.4(d): Plan must be reviewed and revised to reflect changes in development…

7. Assessing Vulnerability by Jurisdiction

Element	**Location in the Plan** (section or annex and page #)	**Reviewer's Comments**	SCORE N	SCORE S
A. Does the **new or updated** plan describe the State's vulnerability based on estimates provided in local risk assessments as well as the State risk assessment?	Section 4, 5, 6; Appendices F to L, U to Y Section 3.0, 4.9 to 4.17, Section 6.0 Appendices to C to I, S to W	Rota, Saipan, and Tinian are the three major islands in CNMI that are populated. A full inventory of CNMI's assets are provided and maps along with vulnerability assessments for each Island are provided in table form, as well as in graphic maps, for each hazard. The inventory includes assets which environmental and cultural/ historical/spiritual in nature. Section 6 provides narrative of the community vulnerability assessment and potential total loss estimates and vulnerable populations. **Final Draft: The Final Draft provides potential loss estimates for each municipality. Future iterations of the Plan should include the distribution of affected structures by municipality as well as by use (residential, commercial, etc.) if the data is available.**		X

		The Final Draft version of the Plan includes an additional hazard, Climate Change. However, due to limitations in time, vulnerability of the local municipalities and State Facilities to Climate Change is not included in the Plan. The Plan states that CNMI will incorporate new data/information on vulnerability and potential loss estimates in the future as it becomes available. **Future iterations should incorporate more information on the impacts to vulnerable structures/populations and accompanying loss estimates from Climate Change.**		
B. Does the **new or updated** plan describe the State's vulnerability in terms of the jurisdictions most threatened and most vulnerable to damage and loss associated with hazard event(s)?	Section 4, 5, 6; Appendices F to L, U to Y Section 3.0, 4.9 to 4.17, Section 6.0 Appendices to C to I, S to W	See comment for Element 7A.		**X**
C. Does the updated plan explain the process used to analyze the information from the local risk assessments, as necessary?	Section 3.4, 4.2, 6; Appendix E Section 3.0, 4.9 to 4.17, Section 6.0 Appendices to C to I, S to W	**Final Draft: The Final Draft states that CVAs and FAMs were distributed to various State Agencies for review and update during the Planning Process post July-2013. Due to limited time and limited involvement, some updates were provided; however, very minimal new development has taken place on CNMI.** **Future iterations of the Plan should start the planning process earlier. CNMI should incorporate changes in development and updates to CNMI's built environmental/infrastructure inventory during the annual**		**X**

		review process to ensure that this information is then incorporated into the Updated Plan.		
D. Does the updated plan reflect changes in development for jurisdictions in hazard prone areas?	Section 6.0	**Final Draft: The Final Draft states that minimal new development occurred since the previously-approved plan due to continuing economic challenges in the public and private sector.** **Future iterations of the Plan should discuss land use and development trends as cited in future land use development planning, if these exists for the various island municipalities. For example, in the event of great economic growth and associated development, where does CNMI/Island Municipalities envision seeing this development take place? What are the impacts of this potential new development on vulnerability to hazards?**		X
		SUMMARY SCORE		X

8. Assessing Vulnerability of State Facilities

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe the types of State owned or operated critical facilities located in the identified hazard areas?	Section 4, 5, 6; Appendices F to L, U to Y Section 3.0, 4.9 to 4.17, Section 6.0	CNMI facilities located in identified hazards areas are described for each major island: Rota, Saipan, Tinian **Final Draft: The Final Draft version of the Plan includes an additional hazard, Climate Change. However, due to limitations in time, vulnerability of the local municipalities and State Facilities to Climate Change is not included in the Plan. The Plan states that CNMI will incorporate new**		X

	Appendices to C to I, S to W	**data/information on vulnerability and potential loss estimates in the future as it becomes available.**		
		SUMMARY SCORE		X

Estimating Potential Losses

Requirement §201.4(c)(2)(iii): *[The State risk assessment* ***shall*** *include an] overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessments as well as the State risk assessment. The State* ***shall*** *estimate the potential dollar losses to State owned or operated buildings, infrastructure, and critical facilities located in the identified hazard areas.*

Requirement §201.4(d): Plan must be reviewed and revised to reflect changes in development…

9. Estimating Potential Losses by Jurisdiction

Element	**Location in the Plan** (section or annex and page #)	**Reviewer's Comments**	SCORE N	SCORE S
A. Does the **new or updated** plan present an overview and analysis of the potential losses to the identified vulnerable structures?	Section 6; Appendices U to Y Section 6.0 Appendices to C to I, S to W	The methodology is discussed and estimated potential losses for each major island (Rota, Saipan, and Tinian) are provided/summarized for each identified hazard. Final Draft: See Element 7A.		X

B. Are the potential losses based on estimates provided in local risk assessments as well as the State risk assessment?	Section 6; Appendices U to Y Section 6.0 Appendices to C to I, S to W	Since Rota, Saipan, and Tinian are municipalities, rather than cities, and do not necessarily operate as separate jurisdictions, the risk assessment for CNMI is the same for local islands.		**X**
C. Does the updated plan reflect the effects of changes in development on loss estimates?	Section 6.0 Appendices to C to I, S to W	**Final Draft: The Final Draft states that minimal new development occurred since the previously-approved plan due to continuing economic challenges in the public and private sector. During the planning process after July 2013, State Agencies reviewed the CVAs and FAMs included in the 2010 Plan and updated it to reflect current conditions. However, due to time limitations and limited involvement by State Agencies, not all the CVAs and FAMs were updated. Loss estimates largely remained the same due to minimal development since the previously-approved plan.** **Future iterations of the Plan should include discussions on how the implementation of mitigation actions has reduced vulnerability. See also Element 7D.**		**X**
		SUMMARY SCORE		**X**

10. Estimating Potential Losses of State Facilities

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan present an estimate of the potential dollar losses to State owned or operated buildings, infrastructure, and critical facilities in the identified hazard areas?	Section 6; Appendices U to Y Section 6.0 Appendices to C to I, S to W	See comments for Elements 9A and 9B. **Final Draft: See Element 7A.**		X
		SUMMARY SCORE		X

MITIGATION STRATEGY: *§201.4(c)(3) [To be effective the plan must include a] Mitigation Strategy that provides the State's blueprint for reducing the losses identified in the risk assessment.*

11. Hazard Mitigation Goals

Requirement §201.4(c)(3)(i): *[The State mitigation strategy* ***shall*** *include a] description of State goals to guide the selection of activities to mitigate and reduce potential losses.*

Requirement §201.4(d): Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and

changes in priorities…

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan provide a description of State mitigation **goals** that guide the selection of mitigation activities?	Section 3.1, 7.6 Section 3.1, 7.1	The Updated Plan includes a description of State mitigation goals and objectives, as well as local jurisdiction goals and objectives.		X
B. Does the updated plan demonstrate that the goals were assessed and either remain valid or have been revised?	Section 3.4, 7.1	**Recommended Revisions:** • Identify which objectives from the 2010 Plan have been met and which objectives in the 2013 Update are new. **Resubmittal: The above Required and Recommended Revisions are still valid. The Resubmittal document provides a brief discussion of a review of goals and objectives as part of the 2010 Plan, but there is no distinction of what the planning activities were for the 2013 Update Plan. The Resubmittal document is too much of a mashup of the 2004, 2007, and 2010 plans that it's hard to distinguish what happened in the 2013 Update Plan.** **Final Draft: The Final Draft includes a discussion that demonstrates how the goals from the previously-approved plan was reviewed and validated. The goals/objectives/actions were assessed by stakeholders who were also involved with CNMI SHSS, THIRA, and SPR and determined that they were valid and aligned with these other efforts.**		X

SUMMARY SCORE		X

12. State Capability Assessment ***Requirement §201.4(c)(3)(ii):*** *[The State mitigation strategy* ***shall*** *include a] discussion of the State's pre-and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas [and] a discussion of State funding capabilities for hazard mitigation projects … .*

Element	**Location in the Plan** (section or annex and page #)	**Reviewer's Comments**	SCORE N	SCORE S
A. Does the **new or updated** plan include an evaluation of the State's **pre-disaster** hazard management policies, programs, and capabilities?	Section 3, 7.1, 7.2, 7.3, 7.8, 9.0; Appendix B Section 2.6, 3.23, 3.3, 7.4, 7.5	**Recommended Revisions:** • Discuss emerging policies/programs for pre- and post-disaster mitigation, including implementation opportunities and problems, opportunities for improving capabilities, conflicts created by public investment policies, and problems created by private development in hazard-prone areas • Highlight implementation tools, policies, and programs that have proven to be effective in achieving mitigation actions/objectives. • Identify laws, regulations, and policies that can be amended to integrate mitigation actions or to remove provisions that hinder mitigation efforts.		X
B. Does the **new or updated** plan include an evaluation of the State's **post-disaster** hazard management policies, programs, and capabilities?		See Recommended Revisions in Element 12A.		X
C. Does the **new or updated** plan include an evaluation of the State's policies related to **development in hazard prone areas**?	Section 2.6, 3.23, 3.3, 7.4, 7.5	See Recommended Revisions in Element 12A.		X
D. Does the **new or updated** plan include a discussion of State **funding capabilities** for hazard mitigation projects?	Section 7.8, Appendix AA Section 7.4	**Final Draft: The Final Draft includes information on State funding capabilities for hazard mitigation projects.**		X

E. Does the updated plan address any hazard management capabilities of the State that have changed since approval of the previous plan?	Throughout Plan	**Final Draft: Throughout the Final Draft, discussions about the changes in CNMI's organizational structure are provided. DHS and EMO were combined to create HSEM to ensure an all-hazards approach to emergency management.** **Future iterations of the Plan should provide a discussion of the difficulties of this merger to implement mitigation and what HSEM has done to address these difficulties to ensure future success.**		**X**
		SUMMARY SCORE		**X**

13. Local Capability Assessment

Requirement §201.4(c)(3)(ii): *[The State mitigation strategy* ***shall*** *include] a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.*

Element	**Location in the Plan** (section or annex and page #)	**Reviewer's Comments**	**SCORE** N	S
A. Does the **new or updated** plan present a general description of the local mitigation policies, programs, and capabilities?	Section 3, 7.1, 7.2, 7.3, 7.8, 9.0; Appendix B	Due to the nature of the government structure in the CNMI, local capabilities are the same as CNMI capabilities. See Element 12A to 12C for recommended revisions.		**X**
B. Does the **new or updated** plan provide a general analysis of the effectiveness of local mitigation policies, programs, and capabilities?	Section 3, 7.1, 7.2, 7.3, 7.8, 9.0; Appendix B	Due to the nature of the government structure in the CNMI, local capabilities are the same as CNMI capabilities. See Element 12A to 12C for recommended revisions.		**X**
		SUMMARY SCORE		**X**

14. Mitigation Actions

Requirement §201.4(c)(3)(iii): *[State plans **shall** include an] identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy. This section **should** be linked to local plans, where specific local actions and projects are identified.*

Requirement §201.4(d): Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities…

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan identify cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering?	Section 7 and 8 Section 7, 8 Appendices X and Y	**Final Draft: The Final Draft includes a new set of mitigation actions, down from the 200+ mitigation actions identified in the previously-approved plan. None of the mitigation actions were implemented fully, if at all. To make the Plan more manageable and realistic, State Agencies identified mitigation actions, and these were prioritized based on local municipality.**		X
B. Does the **new or updated** plan evaluate these actions and activities?	Section 7 and 8; Appendix Z	The Updated Plan provides a discussion on the process to establish baseline evaluation criteria and describes the prioritization process.		X
C. Does the **new or updated** plan prioritize these actions and activities?		**Final Draft: The Final Draft prioritizes mitigation actions**		X

	Section 7, 8 Appendix X	**per local municipality. A process is also described as to how each municipality prioritized the mitigation actions.**		
D. Does the **new or updated** plan explain how each activity contributes to the overall State mitigation strategy?		The Updated Plan identifies 4 mitigation plan goals and a number of objectives. Each objective includes a number of recommended actions to obtain that objective.		X
E. Does the mitigation strategy **in the new or updated** section reflect actions and projects identified in local plans?		***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.*** Due to the nature of the government structure in the CNMI, mitigation actions in CNMI are based on actions for each of the major islands (Rota, Saipan, and Tinian).		X
		SUMMARY SCORE		X

15. Funding Sources

Requirement §201.4(c)(3)(iv): *[The State mitigation strategy* ***shall*** *include an] identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities.*

Element	**Location in the Plan** (section or annex and page #)	**Reviewer's Comments**	SCORE	
			N	**S**
A. Does the **new or updated** plan identify **current** sources of Federal, State, local, or private funding to implement mitigation activities?	Section 7.2, 7.8; Appendix AA Section 7	The Updated Plan identifies some mitigation activities/efforts that have been undertaken and the funding resources for some these. Additionally, the Updated Plan identifies various pre-disaster, post-disaster, disaster applicable programs, and a listing of Federal Domestic Assistance programs as sources of funding for mitigation projects. **Recommended Revisions:**		X

		• Identify associated current and potential funding with identified mitigation actions in the mitigation strategy.		
B. Does the **new or updated** plan identify **potential** sources of Federal, State, local, or private funding to implement mitigation activities?	Section 7.2, 7.8; Appendix AA Section 7	See comments in Element 15A.		**X**
C. Does the updated plan identify the sources of mitigation funding used to implement activities in the mitigation strategy since approval of the previous plan?	Section 3.2, 7, 9.1	**Final Draft: The Final Draft lists a number of mitigation activities and their funding sources.**		**X**
		SUMMARY SCORE		**X**

16. COORDINATION OF LOCAL MITIGATION PLANNING

Local Funding and Technical Assistance

Requirement §201.4(c)(4)(i): *[The section on the Coordination of Local Mitigation Planning* ***must*** *include a] description of the State process to support, through funding and technical assistance, the development of local mitigation plans.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the **new or updated** plan provide a description of the State process to support, through funding and technical assistance, the development of local mitigation plans?	N/A	Due to the nature of the CNMI government structure, the three major islands (Rota, Saipan, and Tinian) are municipalities, but are not incorporated as with normal cities or counties on the mainland. Each island does not have its own local mitigation plan. Representatives from Rota, Saipan, and Tinian participate in the CNMI SSMP planning process and the mitigation strategy identifies activities/actions for each of the three major islands.	N/A	N/A

B. Does the updated plan describe the funding and technical assistance the State has provided in the past three years to assist local jurisdictions in completing approvable mitigation plans?	N/A	See comment for Element 16A.	N/A	N/A
		SUMMARY SCORE	N/A	N/A

17. Local Plan Integration

Requirement §201.4(c)(4)(ii): *[The section on the Coordination of Local Mitigation Planning* ***must*** *include a] description of the State process and timeframe by which the local plans will be reviewed, coordinated, and linked to the State Mitigation Plan.*

Requirement §201.4(d): Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities…

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan provide a description of the **process and timeframe** the State established to **review** local plans?	N/A	See comment for Element 16A.	N/A	N/A
B. Does the **new or updated** plan provide a description of the **process and timeframe** the State established to **coordinate and link** local plans to the State Mitigation Plan?	N/A	See comment for Element 16A.	N/A	N/A
		SUMMARY SCORE	N/A	N/A

18.Prioritizing Local Assistance

Requirement §201.4(c)(4)(iii): *[The section on the Coordination of Local Mitigation Planning **must** include] criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which **should** include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures.*

*Further, that for non-planning grants, a principal criterion for prioritizing grants **shall** be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs.*

Requirement §201.4(d): Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities…

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan provide a description of the criteria for prioritizing those communities and local jurisdictions that would receive planning and project grants under available mitigation funding programs?	Section 3.3, 8; Appendix Z Section 2.6, 7.3, 8 Appendix X	**Recommended Revisions:** • Identify successes and challenges encountered in the prioritization approach. • Criteria should include consideration for communities that are at highest risk, have repetitive loss properties, or are facing intense development pressure. • Describe how assisting communities with their mitigation projects will achieve CNMI's plan's goals and objectives. **Final Draft: The Final Draft includes criteria for prioritized funding of mitigation actions.**		X
B. **For the new or updated plan, do** the prioritization criteria	Section 3.3, 8;			X

include, for non-planning grants, the consideration of the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated cost?	Appendix Z Section 2.6, 7.3, 8 Appendix X	**Final Draft: The Final Draft includes criteria such that projects must benefit multiple agencies/address multiple hazards; preserve environmental, cultural, and historical resources; and provides economic benefit.**		
C. **For the new or updated plan, do** the criteria include considerations for communities with the highest risk?	Section 3.3, 8; Appendix Z Section 2.6, 7.3, 8 Appendix X	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.*** See comment and required and recommended revisions for Element 18A. **Resubmittal: The above comment is still valid.** **Final Draft: This is not included as part of the prioritization criteria in the Final Draft. Future iterations of the Plan should include this criteria.**	**X**	
D. **For the new or updated plan, do** the criteria include considerations for repetitive loss properties?	Section 3.3, 8; Appendix Z Section 2.6, 7.3, 8 Appendix X	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.*** See comment and required and recommended revisions for Element 18A. **Resubmittal: The above comment is still valid.** **Final Draft: This is not included as part of the prioritization**	**X**	

		criteria in the Final Draft. Future iterations of the Plan should include this criteria.		
E. **For the new or updated plan, do** the criteria include considerations for communities with the most intense development pressures?	Section 3.3, 8; Appendix Z Section 2.6, 7.3, 8 Appendix X	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.*** See comment and required and recommended revisions for Element 18A. **Resubmittal: The above comment is still valid.** **Final Draft: This is not included as part of the prioritization criteria in the Final Draft. Future iterations of the Plan should include this criteria.**	**X**	
		SUMMARY SCORE		**X**

PLAN MAINTENANCE PROCESS

19. Monitoring, Evaluating, and Updating the Plan ***Requirement §201.4(c)(5)(i):*** *[The Standard State Plan Maintenance Process* ***must*** *include an] established method and schedule for monitoring, evaluating, and updating the plan.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe the method and schedule for monitoring the plan? (e.g., identifies the party responsible for **monitoring**, includes schedule for reports, site visits, phone calls, and/or meetings)	Section 9.1 Section 9.2			X
B. Does the **new or updated** plan describe the method and schedule for **evaluating** the plan? (e.g., identifies the party responsible for evaluating the plan, includes the criteria used to evaluate the plan)		**Recommended Revisions:** • Include criteria used to evaluate the plan. Some to consider include whether: o The goals and objectives still address current and expected conditions. o The nature and magnitude of hazard problems and/or development have changed. o The current resources are appropriate for implementing the plan. o There are implementation problems, such as technical, political, legal, or coordination with other agencies. o The outcomes of actions have been as expected. o The agencies participated as originally proposed. • Include documentation of annual reviews and committee involvement.		X
C. Does the **new or updated** plan describe the method and schedule for **updating** the plan?				X
D. Does the updated plan include an analysis of whether the previously approved plan's method and schedule worked, and what elements or processes, if any, were changed?	Section 9.1	**Final Draft: Section 9.1 of the Final Draft is a discussion of a review of the plan maintenance methodology described in the 2010 Plan in light of the events that took place since its**		X

		approval. The Section highlights challenges and changes that were made to address these challenges.		
		SUMMARY SCORE		X

20. Monitoring Progress of Mitigation Activities ***Requirement §201.4(c)(5)(ii):*** *[The Standard State Plan Maintenance Process* ***must*** *include a] system for monitoring implementation of mitigation measures and project closeouts.* ***Requirement §201.4(c)(5)(iii):*** *[The Standard State Plan Maintenance Process* ***must*** *include a] system for reviewing progress on achieving goals as well as activities and projects in the Mitigation Strategy.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe how mitigation measures and project closeouts will be monitored?	Section 9.1			X
B. Does the **new or updated** plan identify a system for reviewing progress on achieving goals in the Mitigation Strategy?	Section 9.3, 9.4			X
C. Does the updated plan describe any modifications, if any, to the system identified in the previously approved plan to track the initiation, status, and completion of mitigation activities?	Section 9.3, 9.4	**Final Draft: The Final Draft includes a discussion of the process to monitor/evaluate mitigation actions and track progress for mitigation goals/objectives. Although the planning structures have been updated, the process remains largely unchanged from that of the 2010 Plan.**		X
D. Does the **new or updated** plan identify a system for reviewing progress on implementing activities and projects of the Mitigation Strategy?	Section 9.1 Section 9.3, 9.4			X
E. Does the updated plan discuss if mitigation actions were implemented as planned?	Section 7, 8	***Note: Related to §201.4 (c)(3)(iii)***		X

		Recommended Revisions: • Describe any challenges that hindered implementation of mitigation measures and project close-outs and how these will be dealt with in the future. • Describe any factors that contributed to the successful implementation of mitigation measures. **Final Draft: The Final Draft includes a new set of mitigation actions, down from the 200+ mitigation actions identified in the previously-approved plan. None of the mitigation actions were implemented fully, if at all, due to limited funds and reorganization. Some mitigation actions were implemented, but may not have been identified as mitigation actions in the 2010 Plan To make the Plan more manageable and realistic, State Agencies identified mitigation actions, and these were prioritized based on local municipality.**		
		SUMMARY SCORE		X

SEVERE REPETITIVE LOSS STRATEGY *(only required for 90/10 under FMA & SRL)*

21. Repetitive Loss Mitigation Strategy

Requirement §201.4(c)(3)(v): *A State may request the reduced cost share authorized under §79.4(c)(2) of this chapter for the FMA and SRL programs, if it has an approved State Mitigation Plan … that also identifies specific actions the State has taken to reduce the number of repetitive loss properties (which* ***must*** *include severe repetitive loss properties), and specifies how the State intends to reduce the number of such repetitive loss properties.* ***[Note: Only required for SRL 90/10 under FMA & SRL]***

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET

A. Does the new or updated plan describe State mitigation goals that support the selection of mitigation activities for repetitive loss properties (see also Part 201.4(c)(3)(i))?				
B. Does the new or updated plan consider repetitive loss properties in its evaluation of the State's hazard management policies, programs, and capabilities and its general description of the local mitigation capabilities (see also Part 201.4(c)(3)(ii))?				
C. Does the new or updated plan address repetitive loss properties in its risk assessment (see also Part 201.4(c)(2))?				
D. Does the new or updated plan identify, evaluate and prioritize cost-effective, environmentally sound, and technically feasible mitigation actions for repetitive loss properties (see also Part 201.4(c)(3)(iii))?				
E. Does the new or updated plan describe specific actions that have been implemented to mitigate repetitive loss properties, including actions taken to reduce the number of severe repetitive loss properties?				
F. Does the new or updated plan identify current and potential sources of Federal, State, local, or private funding to implement mitigation activities for repetitive loss properties (see also Part 201.4(c)(3)(iv))?				
		SUMMARY SCORE		

22. Coordination with Repetitive Loss Jurisdictions

Requirement §201.4(c)(3(v): *In addition, the plan* ***must*** *describe the strategy the State has to ensure that local jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties, including the development of local mitigation plans.* ***[Note: Only required for SRL 90/10 under FMA & SRL]***

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan provide a description of the State process to support, through funding and technical assistance, the development of local mitigation plans in communities with severe repetitive loss properties (see also Part 201.4(c)(4)(i))?				
B. Does the new or updated plan include considerations for repetitive loss properties in its criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available mitigation funding programs (see also Part 201.4(c)(3)(iii))?				
		SUMMARY SCORE		

Matrix A: Profiling Hazards

This matrix can assist FEMA in scoring each hazard. States may find the matrix useful to ensure that their plan addresses each natural hazard that can affect the State. **Completing the matrix is not required.**

*Note: First, check which hazards are identified in requirement §201.4(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Hazard Type	Hazards Identified Per Requirement §201.4(c)(2)(i)	A. Location		B. Previous Occurrences		C. Probability of Future Events	
	Yes	N	S	N	S	N	S
Avalanche	☐	☐	☐	☐	☐	☐	☐
Coastal Erosion	☐	☐	☐	☐	☐	☐	☐
Coastal Storm	☐	☐	☐	☐	☐	☐	☐
Dam Failure	☐	☐	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐	☐	☐
Expansive Soils	☐	☐	☐	☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐	☐	☐	☐
Flood	☐	☐	☐	☐	☐	☐	☐
Hailstorm	☐	☐	☐	☐	☐	☐	☐
Hurricane	☐	☐	☐	☐	☐	☐	☐
Land Subsidence	☐	☐	☐	☐	☐	☐	☐
Landslide	☐	☐	☐	☐	☐	☐	☐

To check boxes, double click on the box and change the default value to "checked."

Levee Failure	☐	☐	☐	☐	☐	☐	☐
Severe Winter Storm	☐	☐	☐	☐	☐	☐	☐
Tornado	☐	☐	☐	☐	☐	☐	☐
Tsunami	☐	☐	☐	☐	☐	☐	☐
Volcano	☐	☐	☐	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐	☐	☐
Windstorm	☐	☐	☐	☐	☐	☐	☐
Other ___________________	☐	☐	☐	☐	☐	☐	☐
Other ___________________	☐	☐	☐	☐	☐	☐	☐
Other ___________________	☐	☐	☐	☐	☐	☐	☐

Legend:
§201.4(c)(2)(i) Profiling Hazards
A. Does the risk assessment identify the location (i.e., geographic area affected) of each natural hazard addressed in the **new or updated** plan?
B. Does the plan provide information on previous occurrences of each hazard addressed in the **new or updated** plan?
C. Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the **new or updated** plan?

Matrix B: Assessing Vulnerability

This matrix can assist FEMA in scoring each hazard. States may find the matrix useful to ensure that their plan addresses each requirement. Note that this matrix only includes items for Requirements §201.4(c)(2)(ii) and §201.4(c)(2)(iii) that are related to specific natural hazards that can affect the State. **Completing the matrix is not required**.

*Note: First, check which hazards are identified in requirement §201.4(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

To check boxes, double click on the box and change the default value to "checked."

Hazard Type	Hazards Identified Per Requirement §201.4(c)(2)(i)	§201.4(c)(2)(ii) Assessing Vulnerability	1. Vulnerability by Jurisdiction		2. Vulnerability to State Facilities		§201.4(c)(2)(iii) Estimating Potential Losses	3. Loss Estimate by Jurisdiction		4. Loss Estimate of State Facilities	
	Yes		N	S	N	S		N	S	N	S
Avalanche	☐		☐	☐	☐	☐		☐	☐	☐	☐
Coastal Erosion	☐		☐	☐	☐	☐		☐	☐	☐	☐
Coastal Storm	☐		☐	☐	☐	☐		☐	☐	☐	☐
Dam Failure	☐		☐	☐	☐	☐		☐	☐	☐	☐
Drought	☐		☐	☐	☐	☐		☐	☐	☐	☐
Earthquake	☐		☐	☐	☐	☐		☐	☐	☐	☐
Expansive Soils	☐		☐	☐	☐	☐		☐	☐	☐	☐
Extreme Heat	☐		☐	☐	☐	☐		☐	☐	☐	☐
Flood	☐		☐	☐	☐	☐		☐	☐	☐	☐
Hailstorm	☐		☐	☐	☐	☐		☐	☐	☐	☐
Hurricane	☐		☐	☐	☐	☐		☐	☐	☐	☐
Land Subsidence	☐		☐	☐	☐	☐		☐	☐	☐	☐

Landslide	☐		☐	☐	☐	☐		☐	☐	☐	☐
Levee Failure	☐		☐	☐	☐	☐		☐	☐	☐	☐
Severe Winter Storm	☐		☐	☐	☐	☐		☐	☐	☐	☐
Tornado	☐		☐	☐	☐	☐		☐	☐	☐	☐
Tsunami	☐		☐	☐	☐	☐		☐	☐	☐	☐
Volcano	☐		☐	☐	☐	☐		☐	☐	☐	☐
Wildfire	☐		☐	☐	☐	☐		☐	☐	☐	☐
Windstorm	☐		☐	☐	☐	☐		☐	☐	☐	☐
Other ________________	☐		☐	☐	☐	☐		☐	☐	☐	☐
Other ________________	☐		☐	☐	☐	☐		☐	☐	☐	☐
Other ________________	☐		☐	☐	☐	☐		☐	☐	☐	☐

Legend

§201.4(c)(2)(ii) Assessing Vulnerability by Jurisdiction (see element B)

1. Does the **new or updated** plan describe the State's vulnerability in terms of the jurisdictions most threatened and most vulnerable to damage and loss associated with hazard event(s)?

§201.4(c)(2)(ii) Assessing Vulnerability to State Facilities (see element A)

2. Does the **new or updated** plan describe the types of State owned or operated critical facilities located in the identified hazard areas?

§201.4(c)(2)(iii) Estimating Potential Losses by Jurisdiction (see element A)

3. Does the **new or updated** plan present an overview and analysis of the potential losses to the identified vulnerable structures?

§201.4(c)(2)(iii) Estimating Potential Losses of State Facilities (see element A)

4. Does the **new or updated** plan present an estimate of the potential dollar losses to State owned or operated buildings, infrastructure, and critical facilities in the identified hazard areas?