



## HAZARD-SPECIFIC ANNEX C TSUNAMIS

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Primary Agency: OCD, Mayors Council, GPD, GFD, DPW  
Supporting Agency: ARC, DOE, DHPSS, GNG

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### *I. Nature of the Hazard*

A tsunami (pronounced "soo-nahm'ee") is a series of waves generated by an undersea disturbance such as an earthquake. From the area of the disturbance, the waves will travel outward in all directions, much like the ripples caused by throwing a rock into a pond. The time between wave crests may be from 5 to 90 minutes, and the wave speed in the open ocean will average 450 miles per hour.

Tsunamis reaching heights of more than 100 feet have been recorded. As the waves approach the shallow coastal waters, they appear normal and the speed decreases. Then as the tsunami nears the coastline, it may grow to great height and smash into the shore, causing much destruction.

1. Tsunamis are caused by an underwater disturbance — usually an undersea earthquake. Landslides, volcanic eruptions, and even meteorites can also generate a tsunami.
2. Tsunamis can originate hundreds or even thousands of miles away from coastal areas. Local geography may intensify the effect of a tsunami. Areas at greatest risk are less than 50 feet above sea level and within one mile of the shoreline.
3. People who are near the seashore during a strong earthquake should listen to a radio for a tsunami warning and be ready to evacuate at once to higher ground.
4. Rapid changes in the water level are an indication of an approaching tsunami.

Tsunamis arrive as a series of successive "crests" (high water levels) and "troughs" (low water levels). These successive crests and troughs can occur anywhere from 5 to 90 minutes apart. They usually occur 10 to 45 minutes apart.

### *II. Purpose*

The purpose of this annex is to provide an outline of activities that would be implemented in response to a tsunami alert or emergency. This annex establishes a format that identifies actions to be taken before, during and immediately following the flood emergency.

### *III. Situation and Assumptions*

#### *A. Situation*

Most often an earthquake or undersea landslide will generate a tsunami. The emergency waves produced by seismic activity will travel along the ocean floor eventually reaching a landmass. When the energy wave reach shallow waters, a greater then normal sea wave results. The wave, or series of waves, because of its height and energy, travels further inland and at greater velocity.

Damage from the wave penetration is greater as the waters recede or "down draw" back to the ocean. The continued pounding of wave penetration and down draw will destroy structures not designed to withstand the repeated force of the tsunami.

#### *B. Assumptions*

The greatest threat of a tsunami disaster is along the entire Guam shoreline not protected by natural cliffs. However, given the size of the wave, inland properties are equally at risk. The people and property in vulnerable areas when a Tsunami alert is issued is at danger not only from the wave but the flooding that precedes.

### *IV. Concept of Operations*

When a general condition of flooding occurs, the Office of Civil Defense (OCD) will activate the Emergency Operations Center (EOC) to coordinate response actions. Initial actions would be taken, in an Incident Command structure, by the lead response agencies, the Guam Police Department and the Department of Public Works.

As conditions worsen and property is affected, additional Response Agencies would be activated by the Office of Civil Defense to establish a Unified Command structure at the EOC supporting the Incident Commander.

### *V. Organization and Assignment of Responsibilities*

#### *A. Organization*

The Office of Civil Defense (OCD) will receive initial notification via the National Weather Station of the probability of a seismic generated wave. (It is working towards direct Pacific Tsunami Warning Center-notification.) The OCD will then notify the Governor's Office and the Mayors Council while primary response agencies are activated.

The EOC will be activated and Response Agencies will report to coordinate activities, receive initial instructions and report forms from the OCD. The EOC Director will then coordinate all agency tasking and action items.

#### B. Assignment of Responsibilities

The activities required to address all emergencies or disasters have been identified as either primary or support functions. The assignment of Response Agency functions has been identified in Functional Annex Section.

*Not all the Response Agencies will be activated to coordinate response and preparation activities. Only primary response agencies will be required to include GPD, GFD, Mayors Council, GNG, and DPW*

*In the event that Guam is struck by a Tsunami and shelters are required, DOE, DPHSS, ARC, SA, DOA/GSA, and DoD will also be activated.*

#### VI. Administration and Logistics

Upon the activation of Response Agencies, the Department of Administration (DOA) will manage and track all emergency/disaster related expenses. When activated the Administration and Logistics function of the Unified Command System will be initiated.

DOA will establish emergency accounts for all response agencies to accommodate pre-event preparedness expenditures and activities up to deactivation of the response effort following the emergency or disaster.

The General Services Administration (GSA) will provide the logistics to source, acquire and distribute all response related materials and resources. Along with the Office of Civil Defense, GSA will receive, inventory and manage all response related resources and request for materials by establishing areas to collect, stage and distribute all requests for response materials and resources.

#### VII. Plan Development and Maintenance

The Administrator of the Office of Civil Defense will be responsible for the maintenance and revision of this annex.

The Office of Civil Defense will review and exercise this Annex on annually. Updates and revisions to the Annex will be made accordingly.

An exercise will be conducted in conjunction with all scheduled earthquake exercises.

### *VIII. Direction and Control*

All issues of policy, coordination of operations and the direction and control of preparation and response efforts rests with the Office of Civil Defense. All Response Agencies will, by their activation, coordinate activities within the structure and organization of the Operations Section.

### *IX. Authorities and References*

#### A. Authorities

This plan is issued under the authority of, and in accordance with the provisions of the Guam Civil Defense Act of 1951, and supersedes the Territorial Emergency Plan of October 1978. References governing the enactment and implementation of this are:

- The Organic Act of Guam, as amended and related statutes, Chapter 8A-Guam-Title-48 U.S.C.A. 1422
- Public Law 93-288, Disaster Relief Act of 1974
- Guam Government Code 8501-8515, (Public Law 1-21)
- Guam Government Code 62020
- Executive Order of the Governor 91-09, dated March 25, 1991.
- Guam Government Code 40400

#### B. References

The following publications/planning documents were utilized in formulating this Plan:

- The Federal Response Plan (9230.1 PL, FEMA)
- Guide for All-Hazard Emergency Operations Planning (SLG 101, FEMA)

### *X. Appendices*

- A. Tsunami Evacuation Staging Areas
- B. Functional Annex D — Emergency Notification & Warning
- C. Functional Annex G —Evacuation Procedures, Evacuation Routes
- D. Functional Annex K — Sheltering & Mass Care, Shelter Locations

### *XI. Tabs*

- A. Tsunami Checklist