

Tsunami Annex

August 2021

State of Hawai`i
Emergency
Management
Agency (HI-EMA)



RECORD OF CHANGES

The HI-EMA Operations Branch Chief is responsible for *HI-EMA Tsunami Annex* and is authorized to make changes. All maintenance to the *HI-EMA Tsunami Annex* will be tracked and recorded in the following table to ensure the most recent version is disseminated and implemented. The *HI-EMA Tsunami Annex* is required to be evaluated, revised, and signed annually.

Maintenance that is administrative in nature may be approved by the HI-EMA Operations Branch Chief with notification of the Administrator of Emergency Management. Substantial revisions must be approved by the Administrator of Emergency Management.

Change Number	Date of Change	Section Changed	Summary of Change
1			
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7			

Luke Meyers

HI-EMA Administrator

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Date: Sep 3, 2021

David Lopez

HI-EMA Executive Officer

David Lopez

Date: Sep 3, 2021

Lalo Medina

Operations Branch Chief

Eulalio Medina

Date: Aug 22, 2021

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1. INTRODUCTION

1.1 ANNEX PURPOSE

1. This document is an Annex to the *State of Hawaiʻi Emergency Operations Plan (HI-EOP)*, the state's all-hazards plan that establishes the framework for the response to, and initial recovery from, emergencies and disasters.
2. The primary purpose of this Annex is to establish and define HI-EMA's initial internal emergency management procedures, organizational response, and coordination related to the receipt of a Pacific Tsunami Warning Center (PTWC) notification of a Distant earthquake with potential of actual tsunami threat that will impact the State of Hawaiʻi. The first priorities are the health and safety of the public and emergency workers and the protection of property.
3. This Annex will address unique planning and response requirements for tsunamis, including hazard impacts and vulnerabilities, operational coordination, and responsibilities. It is not intended to duplicate or alter the response concepts outlined in the *HI-EOP*.

1.2 SCOPE

1. This Annex will be implemented upon notification of a Tsunami Watch, Advisory, or Warning issued by the National Oceanic and Atmospheric Administration's (NOAA) Pacific Tsunami Warning Center (PTWC).
2. The Annex applies to all state departments and agencies, as well as non-governmental partners tasked to State Emergency Support Functions (SESFs), even if they are not specifically mentioned in this document.
3. While coordination with counties is addressed, this document is only intended to direct state actions. Tsunami plans should be maintained by each county that describe local actions.

1.3 SITUATION OVERVIEW

This section provides a brief overview of Hawaiʻi's vulnerability to tsunamis. For a more complete hazard analysis, refer to section 4 of the *State of Hawaiʻi Hazard Mitigation Plan (2018)*.

1.3.1 HAZARD ANALYSIS

1. Tsunamis are a series of waves created by a sudden large displacement of water, usually caused by an earthquake but also potentially triggered by coastal or submarine landslides or volcanic eruptions. A tsunami can move hundreds of miles per hour in the open ocean and can crash ashore with devastating force with waves as high as 30 meters (100 feet) or more.



2. While tsunamis are not common, they are a significant threat to all people and property along or near Hawai'i's coastlines. Tsunamis have been responsible for some of the worst disasters in the state's history and account for more deaths than all other natural disasters combined. Destructive tsunamis affected the state eight (8) times in the last century, killing 222 people. Most of these fatalities occurred on Hawai'i Island following the 1946 and 1960 tsunamis.

3. The first tsunami wave is generally not the largest or most dangerous. Inundation (flooding) may occur in inland areas that are hundreds of feet, or even miles, past the normal high tide level. Surges may arrive hours after the initial wave.

4. Tsunamis are described as distant or local depending on the originating source. Hawai'i is at risk of experiencing both types.

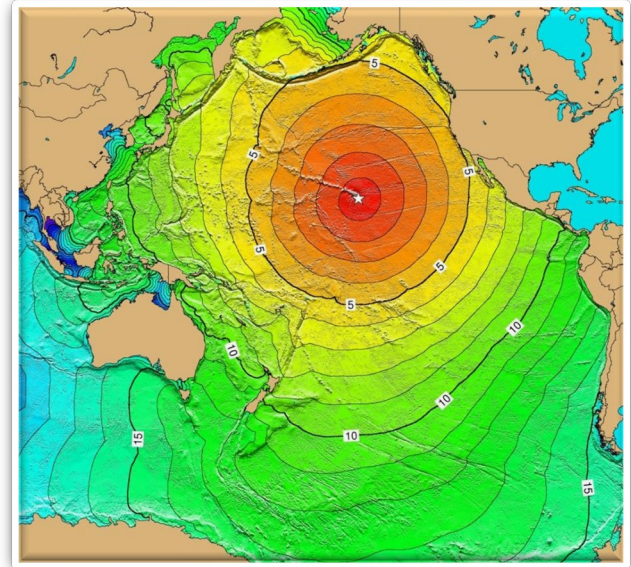


Figure 1: Tsunami travel times to Hawai'i

a. **DISTANT SOURCE TSUNAMIS** originate from a faraway source, usually over 600 miles away, with the first wave arriving more than three (3) hours later.

Distant-source tsunamis may be generated by an incident along the Pacific 'Ring of Fire.' Earthquakes originating from the coasts of Alaska's mainland and Aleutian Islands, the U.S. West Coast, Chile, Japan, and Russia's Kamchatka Peninsula, have generated tsunamis that impacted Hawai'i.

Incident Location	Travel Time to Hawaii
Alaska	4.5 hours
U.S. West Coast	5 hours
Japan	7 hours
South Pacific	7 hours
Chile	14 hours

b. **LOCAL SOURCE TSUNAMIS** originate from a nearby source, with waves arriving within minutes or within an hour. While destructive local tsunamis are rare, there is little time to react, and local tsunamis generally result in more deaths than distant tsunamis.

Local-source incidents are most likely to be generated near the County of Hawai'i, primarily from earthquakes and large-scale collapse incidents along the south flank of Kilauea volcano. The southeast coast of the island, from Cape Kumukahi to South Point, is the region most likely to suffer a large basal-slip earthquake capable of generating a tsunami.

Origin: Hawai'i Island	Travel Time
Hawai'i island	Imminent
Maui County	~15 Minutes
O'ahu	~27 Minutes
Kaua'i	~45 Minutes

The west coast of Hawai'i Island, from South Point to Keahole Point, could also suffer a major earthquake; however, the probability is much lower.



5. **TSUNAMI INUNDATION ZONES** are mapped for each county. These zones represent the total area of land beyond the immediate shoreline that has been flooded by historical tsunamis, as well as additional areas where tsunami flooding is deemed likely to occur. To see inundation zone maps for the state of Hawai'i, visit the [NOAA: Tsunami Zone Evacuation Map](#) webpage.
6. **EXTREME TSUNAMI INUNDATION ZONES** are also mapped and are the extended inundation zones for rare, more extreme tsunami incidents that would result in much more extensive flooding throughout the state. The worst-case scenario that would produce an extreme tsunami threat is an earthquake in the Eastern Aleutian Islands with a magnitude 9.0 or greater. To see inundation zone maps for the state of Hawai'i, visit the [NOAA: Tsunami Zone Evacuation Map](#) webpage.

1.3.2 VULNERABILITY ANALYSIS

1. A significant tsunami would be a simultaneous multi-county disaster with damage affecting all shorelines. Most of the state's hotels, business districts, transportation networks, critical resources, and critical infrastructure are exposed to tsunami impacts.
2. **POPULATION**
 - a. Due to the topography of the islands, most of the people in the state either live, work, or commute through low-lying tsunami evacuation zones. Many communities are accessible via a single route and are likely to be isolated if the road is impassible due to tsunami damage or debris.
 - b. Over 17% of the state's population and 55% of total households are in the extreme tsunami inundation zone. The extreme tsunami-inundation zone also contains 37% of state's businesses and 42% of the state's labor force.¹
3. **TRANSPORTATION**
 - a. Potential damage to key highways, airports, harbors, and their surrounding facilities may limit inter-island and mainland support capabilities until transportation infrastructure is restored.
 - b. Scientific models show significant impacts to ports, particularly Honolulu Harbor, which is the state's only deep-water port capable of offloading the large cargo ships that bring in 90% of the commodities required to sustain the state.
 - c. Except for Lihue Airport (LIH) on Kauai, all Hawai'i's main commercial airports have runways located in inundation zones.

¹ Community Exposure to Tsunami Hazards in Hawai'i, USGS Scientific Investigations Report 2016-5053, <https://pubs.usgs.gov/sir/2016/5053/sir20165053.pdf>



4. INFRASTRUCTURE

- a. Significant critical infrastructure is in inundation zones, including sewage treatment plants, fuel storage facilities, and 60% of the state's power plants, which creates hazardous materials concerns in addition to the potential disruption of essential services.

1.4 ASSUMPTIONS

This Annex was developed with the following assumptions:

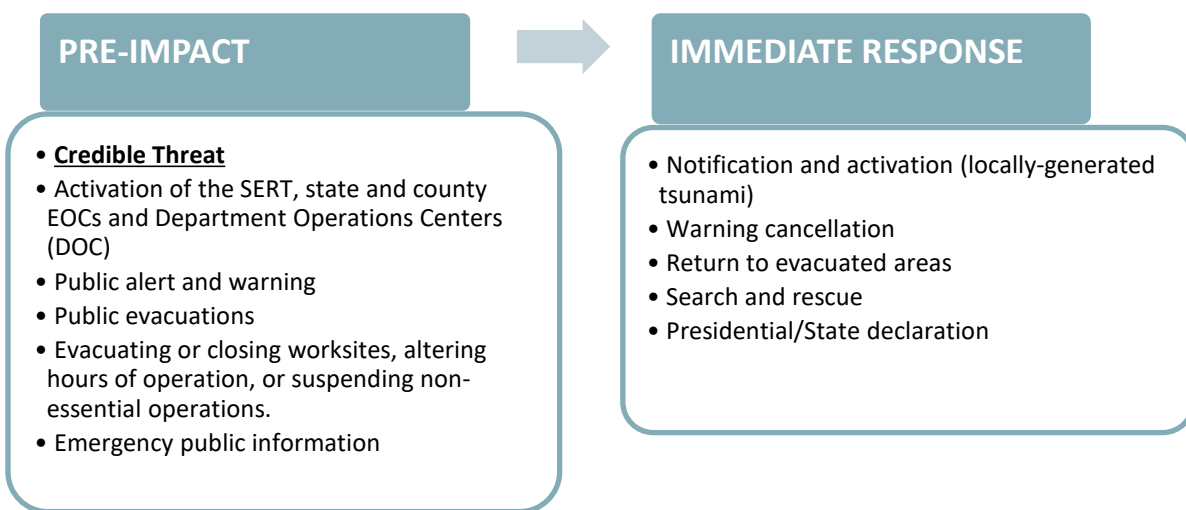
1. A tsunami-generating incident can occur at any time with little or no warning.
2. The Pacific Tsunami Warning Center (PTWC) will alert county and state warning points of a tsunami threat.
3. Emergency warning systems will be operational and used to alert the public and issue safety instructions.
4. A significant tsunami will cause massive critical infrastructure damage.
5. A significant tsunami will disrupt the state's transportation network and supply chain, affecting sea, air, and ground transportation.
6. Vessels moored in commercial harbors may not have time to evacuate and are likely to become debris blocking waterways post incident.
7. Vessels that do evacuate may not be able to return quickly to resupply due to damage to commercial and small boat harbors
8. Hawai'i County will experience the greatest impacts from a locally generated tsunami.
9. Counties have current and executable evacuation plans and will issue evacuation orders using mapped tsunami evacuation zones.
10. Vertical evacuation in high rise buildings will be advised in some areas.
11. The number of people located in inundation areas will vary by time of day.
12. Visitors are less likely than residents to understand the threat and know how to react, and they are more likely to be in inundation areas.
13. State Emergency Response Team (SERT) members may be delayed in responding to the State Emergency Operations Center (SEOC) due to safety concerns and roadblocks.
14. Access to and from damaged areas may be restricted and some areas may be isolated.
15. Phone networks may be overwhelmed during and after a tsunami incident, requiring the use of back-up communication among responding agencies.



2. CONCEPT OF OPERATIONS

2.1 GENERAL

1. This annex provides an overview of alert, activation, and other response actions unique to tsunami incidents. It covers HI-EMA activities from pre-impact to immediate response. Other response and initial recovery activities will commence as outlined in the **HI-EOP** and related Annexes.



2. Where appropriate, distinctions between actions taken for distant versus local tsunami incidents are noted.

2.2 MONITORING, DETECTION AND ALERT OF WARNING POINTS

2.2.1 MONITORING BY TSUNAMI WARNING CENTERS

1. The National Oceanic and Atmospheric Administration (NOAA) operates the U.S. Tsunami Warning System, which was implemented to reduce the loss of life and property from a tsunami incident.
2. NOAA has two Tsunami Warning Centers (TWCs) that monitor for earthquakes and tsunamis in the Pacific and Atlantic Oceans and issue early warning of a tsunami threat.
 - a. The Pacific Tsunami Warning Center (PTWC), located on Ford Island on Oahu, is the regional warning center for the state of Hawai'i.
 - b. The National Tsunami Warning Center (NTWC) in Palmer Alaska serves as a Hawai'i's back-up warning center.



2.2.2 DETECTION SYSTEMS

1. PTWC provides around the clock monitoring through a tsunami detection system consisting of seismic, coastal sea-level, and Deep Ocean Assessment and Report of Tsunami (DART) networks.
 - a. **SEISMIC NETWORKS:** Seismometers positioned around the world are the initial detection tool used to evaluate earthquake occurrences, locations, and magnitudes, and identify potential tsunami threats.
 - b. **COASTAL SEA-LEVEL NETWORKS:** Nine (9) tide gauges around the state measure the ocean height, allowing PTWC to both detect a tsunami and estimate its impact at the coast.
 - c. **DART NETWORKS:** DART stations, which consist of a pressure sensor on the sea floor and a data transmission buoy on the sea surface, are positioned at strategic locations throughout the ocean. As a tsunami wave passes over a DART station, the buoy transmits water level changes, which are used by PTWC to determine whether a tsunami was generated and help forecast arrival times and wave heights.
 - d. **RUNUP DETECTORS:** The state's tidal gauges and DART stations will not provide data fast enough in the event a local tsunami is generated from a source other than an earthquake, such as a landslide. As a 'fail-safe', a runup detector system is installed on the southwest and southeast shorelines of Hawai'i Island. Six (6) sensor devices located on land within 50 yards of the ocean will sound an alarm at PTWC if the sensors get wet. If two adjacent sensors are flooded within a few minutes of each other, regardless of whether there is an earthquake, PTWC issues a local tsunami warning.
 - e. **NATURAL SIGNS:** Public outreach efforts focus on educating the public to recognize the natural signs that a tsunami may be imminent, including feeling an earthquake or observing the ocean receding unusually rapidly. These natural signs may be the public's first or only alert for locally generated tsunamis.

2.2.3 TSUNAMI ALERT PRODUCTS

1. To provide the earliest possible alert, initial messages are issued based solely on seismic information – earthquake magnitude, location, and depth. Products are updated, adjusted geographically, downgraded, or canceled as additional information from tide gauges and DARTs is received. During an active tsunami threat, forecasts are generally updated hourly and may include wave height, arrival time, and inundation estimates.
2. Once an earthquake or tsunami is detected, PTWC issues one of the following forecast products to convey the anticipated wave action and recommended actions.

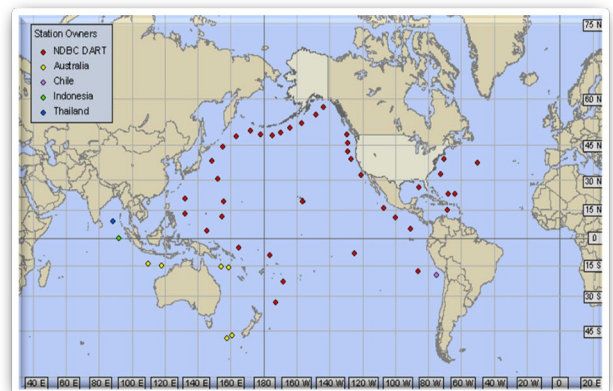






Figure 2: Deep-Ocean Assessment and Reporting of Tsunami (DART)

Forecast Product	Likely Wave Action	Recommended Actions
 INFORMATION STATEMENT	No destructive tsunami threat May be upgraded as data is gathered	No action suggested at this time
<p>Issued to inform emergency management officials and the public that an earthquake has occurred, but there is no threat of a destructive tsunami in Hawai'i.</p> <p>For earthquakes within the state, information statements are issued to prevent unnecessary evacuations as the earthquake may have been felt. Information statements may be re-issued with additional information, though normally these messages are not updated.</p>		
 WATCH	Danger level not yet known	Stay tuned for more info Be prepared to act
<p>Issued when a potentially dangerous, distant seismic incident has occurred which may have generated a tsunami that may later impact the watch area. A watch is an alert to management officials and the public to monitor the situation and prepare to act.</p> <p>A tsunami watch is issued when an earthquake of 7.9 magnitude or greater has occurred and a potential tsunami is more than three (3) hours away. Watches are not issued for local source incidents.</p>		
 ADVISORY	Strong currents and waves likely Runup ≥ 0.3 meters (1 ft.) but ≤ 1 meter (3 ft.)	Stay out of water, away from beaches and waterways
<p>Issued when the tsunami will be too small to require evacuation but expected to be large enough to produce strong currents or dangerous waves that make beaches and near shore waters dangerous. The threat may continue for several hours after the arrival of the initial wave, but significant widespread inundation is not expected for areas under an advisory. Generally, this means that tsunami runup is expected to exceed 0.3 meters (1 foot) somewhere in the state but will not exceed 1.0 meters (3 feet) anywhere.</p> <p>Appropriate actions to be taken by local officials may include closing beaches, evacuating harbors and marinas, and the repositioning of ships to deep waters when there is time to safely do so.</p>		
 WARNING	Inundating wave possible Runup ≥ 1 meter (3 ft.)	Full evacuation suggested. Move to high ground or inland.
<p>Issued when a potential tsunami with significant widespread inundation is imminent or expected. Generally, this means that the tsunami is expected to run up more than 1.0 meter (3 feet) above sea level somewhere in the state.</p> <p>Warnings alert the public that widespread, dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after arrival of the initial wave. Warnings also alert emergency management officials to take action for the entire tsunami hazard zone. Appropriate actions to be taken by local officials may include the evacuation of low-lying coastal areas, and the repositioning of ships to deep waters if there is time to safely do so.</p>		



3. The triggers for the initial issuance of tsunami messages are shown in the chart below.

INFORMATION STATEMENTS		
	Magnitude	PTWC Message Type
Local incident	4.0-6.8	Local Tsunami Information Statement
Distant incident	6.5-7.8	Tsunami Information Statement

TSUNAMI WATCH		
	Magnitude	PTWC Message Type
Distant incident	≥ 7.9 and ETA 3-6 hrs.	Tsunami Watch Tsunami Watch Supplement Tsunami Watch Cancellation

TSUNAMI ADVISORY MESSAGES		
	Magnitude	PTWC Message Type
Local incident	≥ 6.9	Local Tsunami Advisory
	Runup ≥ 0.3m (1 ft.)	Local Tsunami Advisory Supplement
	and ≤ 1m (3 ft.)	Local Tsunami Advisory Cancellation
Distant incident	≥ 7.9 and ETA > 6 hrs.	Tsunami Advisory Tsunami Advisory Supplement Final Tsunami Advisory

TSUNAMI WARNING		
	Magnitude	PTWC Message Type
Local incident	≥ 6.9	Urgent Local TSUNAMI WARNING
		Urgent Local TSUNAMI WARNING Supplement
		Urgent Local TSUNAMI WARNING Cancellation
Distant incident	≥ 7.9 and ETA < 3 hrs.	TSUNAMI WARNING TSUNAMI WARNING Supplement TSUNAMI WARNING Cancellation

- a. An Urgent Local Tsunami Warning can be downgraded to a Local Tsunami Advisory if the tsunami wave amplitudes in all warned counties never exceeded 1 meter (3 feet), or because those amplitudes have now fallen below 1 meter but remain above 0.3 meters (1 foot).
- b. In the most likely island of Hawai'i earthquake preliminary 6.9 magnitude or greater scenario, only the Counties of Hawai'i and Maui will initially be placed in a Warning. The Warning may or may not be expanded to include all counties in the State of Hawai'i. Any earthquake with a preliminary 7.6 or greater magnitude will automatically initiate a siren sounding in all counties.



2.2.4 PTWC ALERT TO STATE AND LOCAL GOVERNMENTS

1. The Hawai'i Alert and Warning System (HAWAS) is a notification system that provides state and local governments with the capability to receive warning information and instructions.
2. In the event of an Information Statement, Tsunami Watch, Advisory, or Warning, PTWC immediately contacts the following over HAWAS and provides incident details and an initial assessment of the seismic information:
 - a. State Warning Point (SWP)
 - b. County Emergency Operations Centers (EOCs) and County Warning Points (CWPs)
 - c. National Weather Service (NWS)
 - d. FEMA Pacific Area Watch
3. SWP, CWPs and county EOCs confirm receipt of PTWC messages per standard procedures. The HAWAS message is followed by electronic messages from PTWC via NWS Chat Live to all EOCs and warning points.
4. County EOCs are responsible for ensuring their emergency management Administrator receives the message per local protocols. After hours this responsibility falls to the CWPs.
5. SWP will continue to monitor HAWAS for updates from PTWC.

2.3 RESPONSE ACTIONS – CREDIBLE THREAT

1. The issuance of a Watch, Advisory, or Warning indicates a Credible Threat. The **HI-EOP** establishes general priorities at this time. This section details which are applicable to a tsunami threat and how and related actions will be executed.
 - a. Activation of the SERT, state and county EOCs, and Department Operations Centers (DOC)
 - b. Public alert and warning
 - c. Public evacuations
 - d. Evacuating or closing worksites, altering hours of operation, or suspending non-essential operations.
 - e. Emergency public information
2. A condensed summary of actions described in this section is provided in **Enclosure 1: Tsunami Action Summary Sheet**, which is intended to be a quick reference tool during a tsunami threat.



2.3.1.1 NOTIFICATION OF HI-EMA OFFICIALS

1. If a Tsunami Watch, Advisory, or Warning is issued, SWP sends an automated alert to a pre-designated Command Group of HI-EMA officials (Director, HI-EMA Administrator, HI-EMA Executive Officer, all HI-EMA Branch Chiefs, HI-EMA Administrative Manager, HI-EMA PIO, all County Administrators) and other officials, as required by the Administrator. The Command Group immediately convenes, in-person or via conference call/VTC, to assess the situation and determine the need for additional stakeholder coordination.
 - a. **TSUNAMI WATCHES, DISTANT TSUNAMI WARNINGS AND ADVISORIES:** PTWC joins the Command Group via conference call or video teleconference (VTC) to discuss potential impacts. When the situation warrants an increased readiness posture, SWP will be directed to establish a statewide conference call/VTC with county emergency management agencies, the State Emergency Response Team (SERT) and key federal partners.
 - a. **LOCAL TSUNAMI WARNINGS:** Coordination prior to wave arrival will be limited. Time permitting, an open conference line may be established to facilitate discussion among Command Group members not present at the SEOC. However, coordination with PTWC will not occur until after wave arrival due to the urgency of their operations.

2.3.1.2 NOTIFICATION OF THE GOVERNOR

1. Per the **HI-EOP**, the Director of Emergency Management/HI-EMA Administrator, alerts the Governor's Office when a Tsunami Watch, Advisory, or Warning is issued. The Governor is also notified of threat level changes or when a statewide conference call/VTC is scheduled.

2.3.1.3 NOTIFICATION OF THE STATE EMERGENCY RESPONSE TEAM AND DEPARTMENT LEADERSHIP

1. SWP sends an automated alert to the SERT when a Watch, Advisory, or Warning is issued. This group includes all HI-EMA staff, Emergency Management Officers (EMOs), and State Emergency Support Function (SESF) Primary Agencies. Follow-on alerts are sent based on direction from the Command Group and to provide updates on threat level changes.
2. Upon notification of a tsunami threat, EMOs are responsible for notifying their department's leadership.



3. The following is a summary of initial and follow-up alerts to the SERT:

Alert Type	Initial SERT Alert	Follow-on SERT Alerts
SERT Alerts for Watches and Advisories	The initial alert states there is a tsunami threat that PTWC is evaluating. Recipients are directed to standby for more information and prepare for possible activation.	A follow-on alert is sent if the Command Group directs the initiation of a statewide conference call/VTC, or if the warning level changes.
SERT Alerts for Distant Tsunami Warnings	The initial notification states the SEOC is activated due to a Distant Tsunami Warning. Recipients are advised a statewide conference call/VTC is being scheduled and to standby for details.	A follow-on alert provides details on the statewide conference call/VTC. Additional alerts are sent if the warning level changes.
SERT Alerts for Local Tsunami Warnings	The initial alert states a Local Tsunami Warning has been issued and instructs Primary SESF representative and HI-EMA staff to report to the SEOC when they can safely do so. SERT members are advised to listen to local media for safety instructions.	After wave arrival, SWP sends a follow-on alert with statewide conference call/VTC details.

2.3.1.4 NOTIFICATION OF RESPONSE FEDERAL PARTNERS

1. Federal partners, including FEMA Region IX, the U.S. Coast Guard (USCG), U.S. Indo-Pacific Command (USINDOPACOM) and the Defense Coordinating Element, are notified if a statewide conference call/VTC is established.

2.3.2 ACTIVATION OF THE STATE EMERGENCY OPERATIONS CENTER

1. When a Tsunami Warning is issued, the SEOC automatically activates at **LEVEL 1 – FULL ACTIVATION**. All SESF Primary Agencies must send a representative; critical Command and General Staff positions are filled.
2. For Tsunami Watches and Advisories, the level of activation is determined by the Command Group. In most cases the initial SEOC activation will be at **LEVEL 2 – PARTIAL ACTIVATION** and an Operations Cell (Ops Cell) will be directed to report.
 - a. Ideally, the Ops Cell will consist of one (1) Operations staff, one (1) Planning Section staff, one (1) Logistics staff, one (1) I.T. person and one (1) Public Information Officer (PIO), and SWP staff.



2.3.3 PUBLIC ALERT AND WARNING

1. The public must be rapidly notified of significant tsunami threats and provided safety and evacuation instructions. Multiple communication methods will be used to ensure redundancy and that all segments of the affected population are reached.
2. Counties have the lead role in public alert and warning for their jurisdiction. However, the state provides backup capability and technical support for the Emergency Alert System (EAS), Wireless Emergency Alerts system (WEA) and outdoor sirens.
3. Public alert and warning protocols and methods vary based on whether the tsunami is distant or local.

Method	Local Source Tsunami	Distant Source Tsunami
Emergency Alert System (EAS)	<p>The local National Weather Service (NWS) Office in Honolulu sends the initial EAS tsunami message.</p> <p>Time permitting, counties send an additional EAS message that provides safety instructions.</p> <p>EAS messages may also be issued by counties when tsunami watches or warnings are canceled.</p> <p>If a magnitude of 5.0 or higher earthquake occurs in the Hawaiian Islands, and PTWC determines a damaging tsunami is not expected, NWS activates the EAS to notify the public there is no threat.</p>	<p>NWS issues an initial EAS message for a Tsunami Watch or Warning.</p> <p>Additional EAS messages are sent by the counties to provide specific guidance on protective actions to coincide with the siren sounding.</p> <p>EAS messages may also be issued by counties when tsunami watches or warnings are canceled.</p>
Wireless Emergency Alert (WEA)	<p>NWS activates the initial WEA message to provide notification of the Local Tsunami Warning.</p> <p>Time permitting, counties may issue an additional alert with more specific messaging.</p>	<p>NWS services activates the initial WEA message for a Tsunami Warning only.</p> <p>Counties may issue additional alerts with more specific messaging to coincide with siren soundings.</p>
County Mass Notification Systems	<p>Each county has a mass notification system the public can subscribe to. These systems may be used by counties to disseminate additional public alerts and emergency instructions to subscribers.</p>	



Method	Local Source Tsunami	Distant Source Tsunami
Outdoor Siren Warning System	<p>The SWP immediately sounds sirens in counties designated by the warning.</p> <p>For a local earthquake magnitude >7.5, SWP immediately sounds sirens in all counties.</p> <p>SWP has capability to sound subsequent sirens at request of counties.</p> <p>The HI-EMA Logistics Branch confirms sirens sounded.</p>	<p>State and county EOCs coordinate siren sounding when a Distant Tsunami Warning is issued. The intent is to use the protocol below, however, it may be modified at the time of the incident. Sirens sound a three (3) minute steady tone that is the attention alert signal.</p> <p>1ST SIREN SOUNDING: Sounded simultaneously by all counties a minimum of three (3) hours prior to first wave arrival. Sirens may sound earlier based on discussions and time permitting.</p> <p>SUBSEQUENT SIREN SOUNDINGS: Done at the discretion of each county based on local wave arrival forecasts. Generally, counties plan to sound sirens hourly, with the final siren sounding 30 minutes prior to wave arrival.</p> <p>The HI-EMA Logistics Branch confirms sirens sounded.</p>
Civil Air Patrol (CAP)	CAP does not deploy to make notifications pre-impact as there is insufficient time to mobilize.	The HI-EMA Operations Section notifies CAP to begin coordinating with counties on tsunami warning flight routes. CAP conducts overflights to notify beachgoers, residents, campers, people in remote areas and near-shore boaters of the tsunami warning. CAP aircraft have a loudspeaker and may fly as low as 500 feet (152 meters).
Ground Patrols	Not utilized due to the limited time available.	Counties may deploy law enforcement, county workers or community groups to conduct notifications in neighborhoods and at beaches, parks, and campgrounds.

2.3.4 EVACUATION

1. Tsunami evacuation is a county responsibility and counties will determine if evacuation orders are issued. PTWC can be consulted to provide input on evacuation requirements.
2. All counties have mapped tsunami evacuation zones and will execute evacuation operations in accordance with local plans.



a. **TSUNAMI EVACUATION ZONES:**

Evacuation zones are comprised of the inundation zone plus an additional buffer area for safety.

b. **EXTREME TSUNAMI EVACUATION**

ZONES: Extreme tsunami evacuation zones do not replace existing tsunami evacuation zones. They are expanded evacuation zones that will be used during a 'worst case' inundation scenario, which is a tsunami generated by an earthquake with a magnitude 9.0 or greater in Alaska's Aleutian Islands.

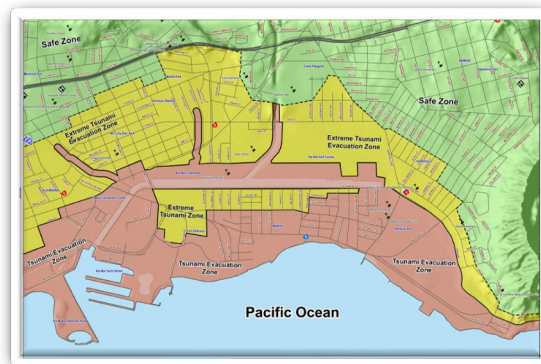


Figure 3: Color coded tsunami maps indicate tsunami evacuation zones and safe areas.

3. In areas with high-rise buildings, county evacuation plans may advise vertical evacuation to 4th level or higher in reinforced concrete buildings that are ten (10) stories or taller.
4. Counties do not plan to open shelters prior to wave arrival due to the limited time available to safely open and logistically support shelter sites. Counties may designate assembly areas where evacuees can park and access restroom facilities. If counties choose to establish these sites, counties will publicize their locations, purpose, and available services.



Figure 4: Evacuate to the 4th floor or higher in a high-rise.

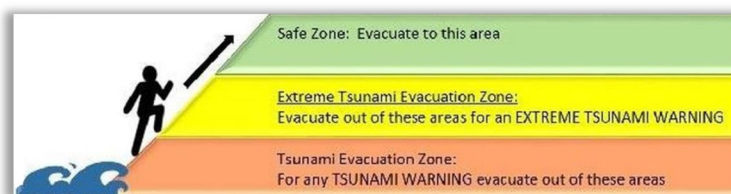


Figure 5: Evacuate to high ground, uphill from evacuation zones.

2.3.5 CLOSURE OF WORKSITES AND SUSPENSION OF OPERATIONS

2.3.5.1 CLOSURE OF STATE OFFICES

1. Safety will be the primary driver of decisions regarding the status of state worksites. A secondary consideration will be the need to limit vehicular traffic on surface roads to facilitate coastal evacuations.
2. Release of state personnel is determined by the Governor and communicated via an Administrative Leave Memorandum setting forth the parameters of administrative leave. In situations where there is insufficient

forewarning, the official memo may be issued post-event, though notice may be given informally via email or verbally to department heads.

3. **WORKSITES IN TSUNAMI EVACUATION ZONES** should immediately heed county evacuation orders, regardless if Administrative Leave has been granted, and initiate evacuation procedures as specified in department emergency plans. Evacuation may include vertical evacuation at some worksites.
4. In general, for **WORKSITES OUTSIDE TSUNAMI EVACUATION ZONES**, the following guidelines will be applied by the Governor when granting Administrative Leave during a Tsunami Warning. This information is not policy and all decisions will be made at the time of the incident at the Governor's discretion.
 - a. During non-working hours, Administrative Leave will be granted for all non-essential state workers.
 - b. During working hours, if the early release of workers prevents traffic congestion during peak evacuation times, the Governor may allow for early dismissal. Otherwise, state employees at worksites outside of evacuation zones will remain at work until their normal dismissal time. Exceptions may be made for workers who live or have family in evacuation zones or for other special circumstances.

2.3.5.2 CLOSURE OF SCHOOLS

1. Fifty-eight (58) schools are in the regular tsunami evacuation zone and 164 are in the extreme tsunami evacuation zone. When a county issues an evacuation order, schools in evacuation zones will immediately execute their plans and move to higher ground until official notification is received that re-entry is safe.
2. During a tsunami warning, schools not in the tsunami evacuation zone will remain open during the school day unless early release reduces traffic during peak evacuation times.
3. If a tsunami warning is issued on weekends, holidays, or if the school day has not yet started, schools will remain closed, and activities will be canceled.

2.3.6 EMERGENCY PUBLIC INFORMATION

1. Immediately, SESF #15 – External Relations agencies, led by HI-EMA and the Governor's Office, will begin coordinating public information.
2. The SEOC will focus on amplifying county evacuation and safety messages and PTWC updates via news releases and social media.
3. During a Distant Tsunami Warning, periodic briefings with the news media may be held.

2.4 RESPONSE ACTIONS - IMMEDIATE RESPONSE

1. **NOTIFICATION AND ACTIVATION:** For a locally generated tsunami, activation of the SERT and the SEOC will occur during immediate response. As the scope of the incident becomes known, additional SERT members and SESFs may be activated.

2. **SEARCH AND RESCUE (SAR) OPERATIONS:** First responders will begin searching for people in distress or imminent danger and provide aid as soon as it is safe to do so. Depending on the type of disaster, SAR operations may include ground, air, air-sea (over water) or urban (in cities) search and rescue missions.
3. **PRESIDENTIAL DECLARATION:** Depending on the scale of the incident, the Governor may request federal assistance. Upon indication of the credible threat of a tsunami impacting the State of Hawai`i, the HI-EMA Administrator will work with the Governor to declare a State of Emergency. In response, the President may issue an emergency or major disaster declaration.
4. Other response and recovery activities will commence/continue as outlined in the *HI-EOP*.
5. When there is no longer a threat of a damaging tsunami, PTWC issues a **TSUNAMI WARNING CANCELLATION**. A cancellation is usually issued after an evaluation of sea level data confirms that a destructive tsunami is no longer a threat to the warned area.
 - a. Transmission of the tsunami warning cancellation message **does not** indicate it is safe to return to evacuated areas. Each county will independently announce a cancellation message following cancellation of the Tsunami Warning when the county determines it is safe for the public to re-enter tsunami evacuation zones. A phased re-entry may be needed if locations within the evacuation area remain unsafe for the public. Separate cancellation messages may be given for when it is safe to return to evacuated areas and when it is safe to return to the water. The ocean is likely to remain unsafe for a longer period.

3. ROLES AND RESPONSIBILITIES

3.1 COUNTY GOVERNMENTS

1. Counties are responsible for the development of tsunami evacuation maps, with assistance from HI-EMA and NOAA, and developing evacuation plans and routes.
2. Local authorities are responsible for alerting residents of a tsunami threat, which may include activating the EAS and WEA to relay emergency instructions, sounding sirens, and issuing messages through subscription based alert systems and various media channels.
3. Counties are also responsible for directing and managing evacuations, determining when re-entry is safe, and issuing cancellation messages when it is safe to re-enter evacuation zones and/or the water.
4. Other emergency response and recovery actions carried out by counties in accordance with county plans are not listed but are implied.

3.2 STATE GOVERNMENT

3.2.1 RESPONSIBILITIES OF ALL STATE AGENCIES

1. State agencies with personnel or property in tsunami evacuation zones are responsible for ensuring their emergency plans contain procedures to notify, evacuate, and account for staff before and during a tsunami incident, and identify actions to protect facilities and equipment. Continuity plans should address potential tsunami impacts to the department's essential functions.
2. All state agencies are responsible for executing duties assigned by the **HI-EOP**, including this Annex, **SESF Annexes** and **Support Annexes**. Those duties are not repeated here but are implied.

3.2.2 AGENCY SPECIFIC RESPONSIBILITIES

The following are agency responsibilities that are specific to the tsunami threat. Some duties listed are time permitting and may not be possible in the event of a Local Tsunami Warning.



Agency	Functions
Hawaiʻi Emergency Management Agency (HI-EMA)	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> 1. Maintain communications with PTWC, NWS, federal, state, and county response partners; maintain procedures for disseminating tsunami products. 2. Coordinate with NOAA and county emergency management agencies to determine tsunami inundation areas within the state and develop tsunami inundation maps. 3. Manage and promote projects that support the National Tsunami Hazard Mitigation Program. 4. Conduct outreach and develop education programs to familiarize the public with the tsunami threat and safety measures to take when Tsunami messages are issued. 5. Assist county emergency management agencies with tsunami planning and the implementation of the NWS TsunamiReady® Program. 6. Update and review this Annex annually in coordination with applicable state agencies, the local NWS Weather Forecast Office, and county emergency management offices. <p>DURING AN INCIDENT</p> <ol style="list-style-type: none"> 1. Acknowledge PTWC tsunami messages and confirm receipt by county EOCs and CWP. 2. Conduct conference calls/VTCs to coordinate emergency activities with PTWC, county, state, federal partners, non-governmental organizations, and the private sector. 3. Activate the SEOC and the SERT as outlined in the HI-EOP and this Annex. 4. Coordinate the initial sounding of warning sirens. Provide confirmation of siren soundings and technical support to counties. For local tsunamis, immediately sound sirens on behalf of affected counties. 5. Support counties with the activation of the Emergency Alert System (EAS) and Wireless Emergency Alert (WEA) system, as requested. 6. Coordinate and disseminate public messaging in partnership with county Public Information Officers (PIOs) and SESF #15 – External Relations agencies. 7. Execute and coordinate other response and recovery activities as described in the HI-EOP and SESF Annexes.
HI-EMA Public Information Officer (PIO) SESF #15 – External	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> 1. Participate in SESF #15 meetings, training, and exercises. Ensure readiness to execute SESF duties assigned in this Annex. 2. Disseminate public messaging via traditional media, press releases, and social media. Tsunami public messaging topics can include: <ol style="list-style-type: none"> a. What do I need to know about tsunamis in Hawaiʻi? b. How will I know a tsunami is coming? c. How do I prepare?



Agency	Functions
	<ul style="list-style-type: none"> d. Evacuation information, plans, and procedures. e. Traditional/social media channels to follow. f. Tsunami awareness month messages. g. Other messaging as appropriate. <p>DURING AN INCIDENT</p> <ol style="list-style-type: none"> 1. Coordinate a message to the public using the live EAS if required by, and coordinated with, the administrator. Include brief sitrep and measures the public can take to avoid injury. Coordinate message with counties and radio/television stations. 2. Coordinate, prepare and disseminate press release. Distribute to HI-EMA all, news outlets, state/county PIOs, and internal stakeholders such as CODEL. Update website and social media. 3. Monitor social media channels for rumor control and misinformation. 4. Activate the JIC if directed to do so. 5. Assign a media liaison/escort if the JIC is activated at the EOC. 6. Coordinate time and procedures for news conferences with HI-EMA and state leadership. 7. If the Watch/Advisory/Warning is canceled, coordinate and prepare tsunami Watch/Advisory/Warning cancelation and disseminate via Press Release and Social Media. 8. Prepare news releases reporting damage and disaster declarations/recovery assistance.
<p>Hawaiʻi Department of Transportation (HDOT)</p> <p>SESF #1 - Transportation</p>	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> 1. Participate in SESF #1 meetings, training, and exercises. Ensure internal agency readiness to execute SESF duties assigned in this Annex. 2. Identify contingency contracts with vendors for services or equipment that may be required to execute the department’s SESF #1 duties during and after a tsunami. <p>DURING AN INCIDENT</p> <p>Harbors Division</p> <ol style="list-style-type: none"> 1. Coordinate the closure and reopening of commercial ports and the execution of protective measures with the U.S. Coast Guard (USCG) and other maritime partners. 2. Issue public messaging and instructions to boat owners. Encourage boaters evacuating vessels to have enough emergency supplies and fuel to stay at sea for an extended period in the event harbors cannot reopen quickly. Coordinate messaging with the Department of Land and Resources Division of Boating and Ocean Recreation and USCG as appropriate. <p>Highways Division</p>



Agency	Functions
	<p>3. Support county ordered evacuations involving state roadways.</p> <p>Airports Division</p> <p>1. Implement protective measures at airports to safeguard personnel, passengers, and equipment.</p>
<p>Department of Land and Natural Resources (DLNR)</p> <p><i>SESF #1 – Transportation</i></p>	<p>BEFORE AN INCIDENT</p> <p>1. Participate in SESF #1 meetings, training, and exercises. Ensure internal agency readiness to execute SESF duties assigned in this Annex.</p> <p>Division of Boating and Ocean Recreation</p> <p>1. Maintain preparedness products to educate the marine community on the tsunami threat and provide guidance on developing an emergency plan.</p> <p>DURING AN INCIDENT</p> <p>Division of Boating and Ocean Recreation</p> <p>1. Upon notification of an impending tsunami, initiate procedures to close small boat harbors, which includes notifying tenants and live-aboard.</p> <p>2. Issue public messaging and instructions to boat owners. Encourage boaters evacuating vessels to have sufficient emergency supplies and fuel to stay at sea for an extended period in the event harbors cannot reopen quickly. Coordinate messaging with HDOT Highways Division and USCG as appropriate.</p> <p>3. Support the return of vessels that evacuated prior to the tsunami, including assisting boaters locate alternate ports if their departure port is damaged.</p> <p>Division of Conservation and Resources Enforcement (DOCARE)</p> <p>4. DOCARE will announce and execute the closure of parks and beaches in the effected tsunami zone(s).</p>
<p>SESF #13 – Public Safety Agencies</p>	<p>BEFORE AN INCIDENT</p> <p>1. Review tsunami plans and procedures and ensure that all law enforcement personnel are informed of existing or revised procedures.</p> <p>2. Ensure the availability of necessary equipment to support tsunami response activities.</p> <p>3. Participate in emergency management training and exercises.</p> <p>DURING AN INCIDENT</p> <p>1. Assist with the dissemination of warnings and notifications as time and resources allow.</p> <p>2. Alert or activate off-duty and auxiliary personnel as required by the emergency.</p> <p>3. Secure the prisoner population in County-owned correctional facilities during a disaster situation as time allows.</p>



Agency	Functions
	<ol style="list-style-type: none"> When requested, coordinate with county law enforcement to support traffic management plans during evacuations to include establishing local traffic control points/roadblocks.
Department of Education (DOE)	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> Ensure DOE school emergency plans address tsunami threats. Manage tsunami evacuation drills for all DOE schools in tsunami evacuation areas. Provide information to students, teachers, and parents on tsunami evacuation procedures. <p>DURING AN INCIDENT</p> <ol style="list-style-type: none"> Coordinate school closures with state and county emergency management agencies. When a county issues a tsunami evacuation notice, execute evacuation plans at schools within evacuation zones. Support SESF #6 – Mass Care, Emergency Assistance, Housing and Human Services if activated by the SEOC.
Department of Human Resources Development	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> Participate in agency tsunami meetings, training, and exercises as appropriate. Ensure internal agency readiness to execute duties assigned in this Annex. <p>DURING AN INCIDENT</p> <ol style="list-style-type: none"> When a tsunami warning is issued, provide guidance to the Governor’s Office regarding an Administrative Leave Memo.



3.3 FEDERAL AND INTERNATIONAL AGENCIES

Agency	Functions
Civil Air Patrol (CAP)	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> 1. Participate in CAP meetings, training, and exercises. Ensure internal agency readiness to execute support duties assigned in this Annex. 2. Maintain a list of tactical aviation capabilities that can be used to support emergency response operations. <p>DURING AN INCIDENT</p> <ol style="list-style-type: none"> 3. When activated by HI-EMA following the issuance of a Distant Tsunami Warning, coordinate with the SEOC and affected counties to conduct overflights to alert coastal areas via audio messages. This support is provided under the terms of a standby contract for services between the agencies. 4. Support damage assessment and search and rescue (SAR) efforts post-incident in coordination with affected counties.
National Oceanic & Atmospheric Administration (NOAA) National Weather Service (NWS) Weather Forecast Office Honolulu (HFO)	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> 1. Oversee the implementation and management of the NWS TsunamiReady® program. 2. Ensure readiness of office staff and systems through routine operational drills. <p>DURING AN INCIDENT</p> <ol style="list-style-type: none"> 3. Upon issuance of a tsunami Warning, Advisory, Watch, and/or Information Statement by the PTWC, issue a Tsunami Warning (TSW) that will activate the EAS, NOAA Weather Radio (NWR) and WEA per agency protocols to provide initial public alert and warning of tsunami threats. 4. Forward any additional Warnings, Advisories, Watches, and/or Information Statements issued by the PTWC over the NWR, EAS, and WEA per agency protocols. 5. For locally generated tsunamis, repeat EAS activation every five (5) minutes or as required.
National Oceanic & Atmospheric Administration (NOAA) Pacific Tsunami Warning Center (PTWC)	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> 1. Support the NWS TsunamiReady® program mission and conduct public outreach as time and budget allow. 2. Conduct regular dissemination tests and assist with exercises to ensure proper and efficient tsunami warning delivery. 3. Perform research and develop models to forecast tsunamis and create tsunami inundation and evacuation maps.



Agency	Functions
	<ol style="list-style-type: none"> 4. Monitor for tsunamis and earthquakes to provide early warning of potentially destructive tsunamis to the state of Hawai'i, U.S. Territories and interests in the Pacific. 5. Coordinate with partners to continually improve warning operations. <p>DURING AN INCIDENT</p> <ol style="list-style-type: none"> 1. Forecast tsunami impacts when possible, including tsunami arrival times and coastal run-up. 2. Disseminate appropriate warning and informational products including Watches, Warnings, Advisories, Information Statements, Seismic Information Statements, and Warning Cancellations. 3. Provide interpretive information to local emergency managers and other officials, news media, and the public. 4. Provide input on evacuation requirements to emergency officials based on threat assessment. 5. Provide a liaison to the SEOC to serve as a technical advisor as part of SESF #5 – Planning and Information. 6. In the event of an operational disruption, activate the National Tsunami Warning Center (NTWC) as a back-up.
<p>Pacific Disaster Center (PDC)</p> <p><i>SESF #5 – Information and Planning</i></p>	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> 1. Through DisasterAWARE™, provide access to Hawai'i-specific data layers (e.g., hazard risk areas, critical infrastructure, vulnerable populations, observations, and forecasts, etc.). Tsunami-specific data includes: <ol style="list-style-type: none"> a. Hawai'i Tsunami Evacuation Zones b. Tsunami Travel Times c. Tsunami Watch and Warning Zones d. Tsunami Estimated First Wave Arrival Times e. Tsunami Monitoring Stations (DART Buoys) f. Historical Tsunami Incidents and Run-ups <p>DURING AN INCIDENT</p> <ol style="list-style-type: none"> 1. Provide a representative to SESF #5 – Planning and Information.
<p>International Tsunami Information Center (ITIC)</p> <p><i>SESF #5 – Planning and Information</i></p>	<p>BEFORE AN INCIDENT</p> <ol style="list-style-type: none"> 1. Conduct regular dissemination tests and assist with exercises to ensure proper and efficient tsunami warning delivery. 2. Perform research and develop models to forecast tsunamis and create tsunami inundation and evacuation maps.



Agency	Functions
	<ol style="list-style-type: none"> 3. Monitor for tsunamis and earthquakes to provide early warning of potentially destructive tsunamis to the state of Hawai'i, U.S. Territories and interests in the Pacific. 4. Coordinate with partners to continually improve warning operations. <p>DURING AN INCIDENT</p> <ol style="list-style-type: none"> 1. Serve as a Support Agency to SESF #5 – Planning and Information and send a State Tsunami Advisor to the SEOC when activated during a tsunami threat. 2. Interpret data and provide scientific analysis pertaining to tsunami movement and potential impacts. 3. Provide subject matter expertise and situational awareness of tsunami movement to SEOC both before and during an incident to support operational decision-making.



4. AUTHORITIES AND REFERENCES

4.1 STATE LAWS, REGULATIONS AND DIRECTIVES

1. Hawai'i Revised Statutes Chapter 127A – Emergency Management
2. Administrative Directive No. 15-01, Emergency Management Preparedness Policies for Departments

4.2 FEDERAL LAWS, REGULATIONS AND DIRECTIVES

1. Executive Order 13407 (E.O. 13407)
2. Title 47 CFR, Part 11
3. 47 U.S.C. 151, 154(i) and (o), 303(r), 544(g), 606

4.3 REFERENCES

1. ***State of Hawai'i EAS Plan***
2. ***State of Hawai'i Emergency Operations Plan (HI-EOP)***
<https://dod.hawaii.gov/hiema/files/2020/02/Hawaii-State-EOP-Fall-2019-Published.pdf>
3. ***HI-EOP Air Coordination Annex***
https://dod.hawaii.gov/hiema/files/2018/02/Air-Coordination-Annex.December-2017.FINAL_.pdf
4. ***State of Hawai'i Hazard Mitigation Plan (2018)***
<https://dod.hawaii.gov/hiema/files/2018/11/State-of-Hawaii-2018-Mitigation-Plan.pdf>
5. ***State Joint Information Center (JIC) Standard Operating Procedures (SOP)***
6. ***Department of Education Emergency Procedures Guide, October 2009***
<https://www.hawaiipublicschools.org/DOE%20Forms/Emergency%20Procedures%20Guide.pdf>
7. ***Department of Land and Natural Resources, Division of Boating and Ocean Recreation Tsunami Emergency Plan, March 2013***
<https://files.hawaii.gov/dlnr/dobor/contacts/Plan-TSUNAMI.pdf>



8. **NOAA: Tsunami Zone Evacuation Map**

<https://tsunami.coast.noaa.gov/#/>

9. **NOAA's National Weather Service, Tsunami Warning System:**

<https://www.tsunami.gov/>

10. **NOAA NWS Directives System, Operations & Services:** 10-7, 10-701, 10-702, 10-704

<https://www.nws.noaa.gov/directives/010/010.php>

11. **Pacific Disaster Center**

<https://www.pdc.org/>

12. **U.S. Department of Interior and U.S. Geological Survey (2016), Scientific Investigations Report 2016–5053**

<https://pubs.usgs.gov/sir/2016/5053/sir20165053.pdf>

13. **NTHMP Tsunami Information Guide, March 2019**





<https://nws.weather.gov/nthmp/guide/nthmptsunamiinfoguide.pdf>







5. TSUNAMI ENCLOSURES



E1. ENCLOSURE 1: TSUNAMI ACTION SUMMARY SHEET

	 Tsunami Watch Danger not yet known	 Tsunami Advisory Strong Currents Likely	 Distant Tsunami Warning Inundating wave possible; Full evacuation recommended	 Local Tsunami Warning ≤1 hr.
I. Monitoring and Detection				
When Issued	Tsunami may impact state in 3+ hours. Based on seismic info only. Evaluation ongoing. Not issued for locally generated tsunamis.	Expected runup ≥0.3 meters (1 ft.) but <1.0 meters (3 ft.). Not issued for locally generated tsunamis.	Tsunami expected to run up 1+ meter above sea level somewhere in the state. <i>Or</i> Based on seismic info only, tsunami may impact state in less than 3 hours. Evaluation ongoing.	Issued within 3 minutes of the following: • 6.9+ magnitude earthquake occurs near coastline • Coastal tide stations detect tsunami waves. <i>Or</i> No earthquake, but 2 adjacent runup sensors flood within a few minutes of each other, indicating possible landslide.
II. Public Alert and Warning				
Emergency Alert System (EAS)	Initial alert sent by local NWS office. Counties/state can send follow-on alerts but generally do not.	EAS not activated by NWS Counties/state can send follow-on alerts.	Initial EAS alert sent by local NWS office. Continue every 5 minutes until warning canceled. Not timed with sirens. Additional EAS messages are generated by counties and/or state to give specific guidance on protective actions and to coincide with sirens sounding.	
WEA	Not Activated by NWS. Counties/state can send alerts.		NWS national office sends initial WEA. Not coordinated with siren sounding. For Urgent Local Tsunami Warnings, SWP issues WEA Civil Danger Warning (CDW) to affected counties. Follow-up WEAs sent by counties and/or state to give guidance on protective actions and to coincide with sirens.	
Outdoor Sirens	Not Activated		<ul style="list-style-type: none"> First Siren: Sounded simultaneously statewide at least 3 hours prior to first wave. Subsequent Sirens: At county discretion. Usually hourly and 30min before local impact. HI-EMA Logistics Branch confirms sirens sounded.	SWP immediately sounds sirens in counties designated by the warning. For a local earthquake magnitude >7.5, immediately sound sirens in all counties. SWP has capability to sound subsequent sirens at request of counties. HI-EMA Logistics Branch confirms sirens sounded.
County Mass Alert Systems	Activated at the discretion of the counties			
Civil Air Patrol (CAP)	If PTWC indicates Warning is likely, HI-EMA may ask CAP to start overflight notifications along coastlines.		HI-EMA notifies CAP to begin coordinating overflight notifications along warning routes with counties.	Not activated.
Cancellation Message	PTWC announces via HAWAS. Notifications follow protocols in Section IV.	PTWC announces via HAWAS. SWP confirms receipt by county EOCs/CWPs. Sends automated alert to SERT. Following cancellation, counties issue cancellation announcements when safe to return to coastal areas and water.		
Traditional Media	Traditional Media: Press release issued; Press brief may be held. Social Media/Web: County social media messages; Safety messages/PSAs; alert definitions		Traditional Media: Press release issued. Press brief time permitting. JIC may be activated. Social Media/Web: County/state social media messages; PSAs; alert definitions; evacuation zone links	Time Permitting Only: Social Media/Web: Link to tsunami evacuation zones; Share county social media messages

	 Tsunami Watch	 Tsunami Advisory	 Distant Tsunami Warning	 Local Tsunami Warning ≤1 hr.
III. Notification of State Leadership and State Emergency Response Team (SERT)				
SWP	SWP receives PTWC initial and updated tsunami messages via HAWAS.			
HI-EMA Leaders	SWP notifies Command Group (Director, Administrator, Executive Officer, all Branch Chiefs, PIO, all County Administrators) and other officials, as required by the Administrator, via automated alert/HAWAS with instructions to join internal conference call/VTC.			
Governor's Office	Director of Emergency Management/HI-EMA Administrator notifies Governor's Office of tsunami threat, statewide conference calls/VTCs and threat level changes.			
Counties	SWP notifies county EOCs/CWPs via HAWAS and confirms receipt. County EOCs/CWPs share initial and follow-on HAWAS notifications with county Administrators.			
SERT: (HI-EMA Staff; EMOs; SESF Primary Agencies)	<u>Initial Automated Alert Sent by SWP</u> <ul style="list-style-type: none">Current threat level; PTWC still evaluatingActions to take:<ul style="list-style-type: none">All – Standby for additional updatesEMOs – Notify your dept leadershipSESF Primary Agencies – Notify Support Agencies<u>Additional Alerts by SWP</u>: Statewide conference call/VTC details, if scheduled; threat level changes or cancellations.	<u>Initial Automated Alert Sent by SWP</u> <ul style="list-style-type: none">Current threat levelSEOC and all SESFs are activatedConference call/VTC being scheduled; details to followActions to take:<ul style="list-style-type: none">EMOs – Notify your dept leadershipSESF Primary Agencies – Report to SEOC; Notify Support AgenciesHI-EMA – Chiefs report to SEOC. All others await notification of shift schedule <u>Additional Alerts by SWP</u> : Statewide conference call/VTC details; Threat level changes or cancellations.	<u>Initial Automated Alert Sent by SWP</u> <ul style="list-style-type: none">Current threat levelSEOC and all SESFs are activatedActions to take:<ul style="list-style-type: none">EMOs – Notify your dept leadershipHI-EMA staff and Primary SESFs report to SEOC when safe to do soStandby for additional EOC alertsListen to media for safety info <u>Additional Alerts by SWP</u> : Statewide conference call/VTC details (sent after wave arrival); Threat level changes or cancellations.	
IV. Emergency Management Coordination and State Emergency Operations Center (SEOC) Activation				
Command Conference Call	<ul style="list-style-type: none">Discuss severity of threat with PTWCDiscuss need for a statewide call/VTCConfirm SEOC activation level and initial staffing plans	<ul style="list-style-type: none">Discuss threat with PTWCEstablish time for statewide conference calls/VTCsConfirm SEOC activation level, staffing, shift times	Purpose is to facilitate initial coordination with any HI-EMA leadership in route to SEOC.	
Initial Statewide Operations Call	If directed by leadership, a state conference call/VTC is held to: <ul style="list-style-type: none">Analyze threat/receive updates from PTWCCoordinate state/county operationsRelay SEOC staffing plan/activation levelDetermine need for additional calls/VTCs	Statewide conference call/VTC established to: <ul style="list-style-type: none">Analyze threat/receive updates from PTWCCoordinate state/county operations and sirensCommunicate SEOC shift start/end timesConfirm SESFs/key EOC positions are present or in route to the SEOC Conference Call/VTC stays connected until cancellation issued.	SWP tells county EOCs/CWPs to join conference calls/VTCs. Conference call/VTC remain connected until cancellation is issued by counties.	
SEOC Activation	Determined by leadership; Likely Partial Activation - Ops Cell	Automatic Level 1: Full Activation: All SESF Primary Agencies, Command and General Staff positions staffed.		



E2. ENCLOSURE 2: MEETING SEQUENCE CHART

Meeting Name	Attendees	Method	Time	Purpose
Command Conference Call	Director, HI-EMA Administrator, HI-EMA Executive Officer, HI-EMA PIO, HI-EMA Administrative Manager, HI-EMA Branch Chiefs, County Administrators as required, and PTWC	Primary Notification: Alertsense INS Primary Platform: GoToMeeting Backup Notification: WebEOC Contact List Backup Platform: MS Teams	Determined by HI-EMA Administrator.	Inform state and county leadership of the current situation and forecasted impacts. Determine activation levels and priorities and objectives for the incident.
Initial Statewide Operations Call	PTWC, NWS, County Administrators, DOE, Private Schools, Charter Schools, US INDO-PACOM, Emergency Management Officers (EMOs), HI-EMA Staff	Primary Notification: Alertsense INS Primary Platform: GoToMeeting Backup Notification: WebEOC Contact List Backup Platform: MS Teams	Determined by Command Conference Call outcome.	Inform ERT staff and key state and county partners of the current situation, forecasted impacts, and outcomes of Command Conference Call. Plan for and begin execution of incident priorities and objectives.
2nd Statewide Operations Conference Call	State, County, and Federal EM partners	Primary Notification: Alertsense INS Primary Platform: GoToMeeting Backup Notification: WebEOC Contact List Backup Platform: MS Teams	Determined by Plans & Operations Chief.	Update key partners on current situation. Follow up on activation status, execution of priorities and objectives, coordination of response activities, and other topics as needed.
Subsequent (3rd, 4th, ...) Statewide Operations Conference Calls	State, County, and Federal EM partners, others as necessary	Primary Notification: Alertsense INS Primary Platform: GoToMeeting Backup Notification: WebEOC Contact List Backup Platform: MS Teams	Determined by Plans & Operations Chief.	Update key partners on current situation. Follow up on status of prior meeting agendas.



E3. ENCLOSURE 3: STATE WARNING POINT ALERT MESSAGES

The following messages will be sent by the State Warning Point using the automated notification system. Individual emergencies can vary, the scripts outlined below can be amended as necessary to meet situational needs.

INITIAL ALERT SCRIPTS: DISTANT TSUNAMI WATCHES, WARNINGS AND ADVISORIES

SCENARIO	DISTANT TSUNAMI WARNING: INITIAL ALERT – COMMAND GROUP
AUDIENCE	Administrator, Executive Officer, Branch Chiefs, PIO, and other officials, as required by the Administrator
PHONE AND EMAIL SCRIPT	<i>To Command Group: Distant tsunami WATCH/ADVISORY/WARNING issued. Upon receipt of this message, join the initial HI-EMA conference call/VTC with PTWC. (SWP will provide link to the meeting).</i>
TEXT MESSAGE SCRIPT	<i>Command Group: Distant tsunami WATCH/ADVISORY/WARNING issued. Join initial HI-EMA conference call/VTC with PTWC. (SWP will provide link to the meeting).</i>
SCENARIO	DISTANT TSUNAMI WARNING: INITIAL ALERT – SERT
AUDIENCE	All HI-EMA Staff, EMOs, Primary SESF Agencies
PHONE AND EMAIL SCRIPT	<i>Hawaii Emergency Management Agency alert to HI-EMA staff, EMOs, Primary ESFs. Distant tsunami warning issued. Conference call/VTC being scheduled; details to follow. HI-EMA Chiefs report to EOC. Other HI-EMA staff and primary ESFs prepare to report when directed. EMOs notify your agencies. ESF Primary Agencies notify Support Agencies.</i>
TEXT MESSAGE SCRIPT	<i>HI-EMA Alert: Staff/EMOs/ESFs. Distant tsunami WARNING. Conference call/VTC being scheduled; await details. ESFs/HI-EMA prepare to report to EOC.</i>
SCENARIO	DISTANT TSUNAMI WATCH/ADVISORY: INITIAL ALERT – SERT
AUDIENCE	All HI-EMA Staff, EMOs, Primary SESF Agencies
PHONE AND EMAIL SCRIPT	<i>Hawaii Emergency Management Agency alert to HI-EMA staff, EMOs, Primary ESFs. Tsunami WATCH/ADVISORY issued. Threat still being evaluated. EMOs notify your agencies. Primary ESFs notify Support Agencies. Standby for additional updates and instructions.</i>
TEXT MESSAGE SCRIPT	<i>HI-EMA Alert: Staff/EMOs/ESFs. Tsunami WATCH/ADVISORY. Threat being evaluated. EMOs/ESFs notify your agencies and Support ESFs.</i>



INITIAL ALERT SCRIPT: LOCAL TSUNAMI WARNING

SCENARIO	LOCAL TSUNAMI WARNING: INITIAL ALERT – COMMAND GROUP
AUDIENCE	Administrator, Executive Officer, Branch Chiefs, PIO, and other officials, as required by the Administrator
PHONE AND EMAIL SCRIPT	<i>To Command Group: LOCAL tsunami WARNING issued. Command group conference call/VTC set up for staff unable to get to the EOC. (SWP will provide link to the meeting).</i>
TEXT MESSAGE SCRIPT	<i>Command Group: LOCAL tsunami WARNING. Conference call/VTC set up if unable to get to the EOC. (SWP will provide link to the meeting).</i>
SCENARIO	LOCAL TSUNAMI WARNING: INITIAL ALERT – SERT
AUDIENCE	All HI-EMA Staff, EMOs, Primary SESF Agencies
PHONE AND EMAIL SCRIPT	<i>Hawaii Emergency Management Agency alert to HI-EMA staff, EMOs, Primary ESFs. LOCAL tsunami WARNING issued. State EOC and all ESFs activated. HI-EMA staff, ESFs report to EOC when safe to do so. Standby for additional EOC alerts. Listen to media for safety info.</i>
TEXT MESSAGE SCRIPT	<i>HI-EMA Alert: Staff/EMOs/ESFs. LOCAL tsunami WARNING. Go to EOC when safe. Standby for more EOC alerts. Listen to media for safety info.</i>

SECONDARY ALERT SCRIPT: CONFERENCE CALL/VTC SCHEDULED

SCENARIO	TSUNAMI UPDATE: CONFERENCE CALL/VTC SCHEDULED
AUDIENCE	All HI-EMA Staff, EMOs, Primary SESF Agencies
PHONE AND EMAIL SCRIPT	<i>Hawaii Emergency Management Agency alert to HI-EMA staff, EMOs, Primary ESFs. A conference call/VTC is being established for the current tsunami threat. Please call in or report to the EOC. Scheduled Time: XXX. Call Number: XXX-XXX-XXXX. Passcode: XXXXX</i>
TEXT MESSAGE SCRIPT	<i>HI-EMA Alert: Staff/EMOs/ESFs. Tsunami call/VTC at [XX:XX]. Call in or report to EOC. Call# & Passcode: XXX-XXX-XXXX XXXXXXXX#</i>

SECONDARY ALERT SCRIPT: CHANGE IN THREAT LEVEL

SCENARIO	TSUNAMI UPDATE: CHANGE IN THREAT LEVEL TO WATCH/ADVISORY
AUDIENCE	All HI-EMA Staff, EMOs, Primary SESF Agencies
PHONE AND EMAIL SCRIPT	<i>Hawaii Emergency Management Agency alert to HI-EMA staff, EMOs, Primary ESFs. The tsunami threat level has been updated. Hawaii is now under a tsunami WATCH/ADVISORY/WARNING.</i>
TEXT MESSAGE SCRIPT	<i>HI-EMA Alert: Staff/EMOs/ESFs. Change in tsunami threat level. Hawaii now under a tsunami WATCH/ADVISORY/WARNING.</i>



SCENARIO TSUNAMI UPDATE: CHANGE IN THREAT LEVEL TO WARNING	
AUDIENCE	All HI-EMA Staff, EMOs, Primary SESF Agencies
PHONE AND EMAIL SCRIPT	<i>Hawaii Emergency Management Agency alert to HI-EMA staff, EMOs, Primary ESFs. The tsunami threat level has been updated. Hawaii is now under a tsunami WARNING. Conference call/VTC being scheduled; details to follow. ESFs and HI-EMA staff prepare to report to EOC. EMOs notify your agencies. Primary ESFs notify Support Agencies.</i>
TEXT MESSAGE SCRIPT	<i>HI-EMA Alert: Staff/EMOs/ESFs. HI under a tsunami WARNING. Conference call/VTC being scheduled; await details. ESFs/HI-EMA prepare to report to EOC</i>

CANCELLATION MESSAGE

SCENARIO CANCELLATION OF TSUNAMI WATCH/ADVISORY/WARNING	
AUDIENCE	All HI-EMA Staff, EMOs, Primary SESF Agencies
PHONE AND EMAIL SCRIPT	<i>Hawaii Emergency Management Agency alert to HI-EMA staff, EMOs, Primary ESFs. TSUNAMI WATCH/ADVISORY/WARNING has been CANCELED. Repeat, TSUNAMI WATCH/ADVISORY/WARNING has been canceled.</i>
TEXT MESSAGE SCRIPT	<i>HI-EMA Alert: Staff/EMOs/ESFs. Tsunami WATCH/ADVISORY/WARNING has been CANCELED.</i>



E4. ENCLOSURE 4: PUBLIC INFORMATION TEMPLATES

KEY TSUNAMI PREPAREDNESS MESSAGES AND RESOURCES

HOW WILL I KNOW A TSUNAMI IS COMING?

Official Tsunami Warning: An *official tsunami warning* from the tsunami warning centers will be broadcast through local radio and television (e.g., through the Emergency Alert System), NOAA Weather Radio, wireless emergency alerts and marine radio. The outdoor sirens will also sound to alert the public to tune into local media for more information. Each county also has an emergency notification system you can sign up for to receive text messages when there is a threat.

Natural Warning Signs: There may not always be time to wait for an official tsunami warning, so it's important to understand natural warnings. A *natural tsunami warning* may be your first, best, or only warning that a tsunami is on its way. Natural tsunami warnings include a strong or long earthquake, a loud roar (like a train or an airplane) from the ocean, and unusual ocean behavior. The ocean could look like a fast-rising flood or a wall of water or it could drain away suddenly like a very low, low tide. If you experience any of these natural warnings, even just one, a tsunami could be coming. If you're on the beach or near water and feel an earthquake of any size and length, move quickly to high ground or inland (away from the water) as soon as you can move safely. Get more information from radio, television, or your mobile device (text or data).

HOW DO I PREPARE?

GET INFORMED

Get Emergency Information: Ensure you have multiple ways to receive warnings. Get a battery-operated NOAA Weather Radio, sign up for text message alerts from your county and make sure your mobile devices are set to receive wireless emergency alerts.

Know Your Zone: To better understand your risk, find out if your home, school, workplace, or other places you visit often are in tsunami hazard zones. Visit the [NOAA: Tsunami Zone Evacuation Map](#).

Know Your School's Plan: If you have children in school in a tsunami hazard zone, find out the school's plans for evacuating children and keeping them safe. Find out where the assembly area is and where to pick up your children after the danger has passed.

MAKE A PLAN

Make an emergency plan that includes plans for family communication and evacuation. Meet with your family to discuss the plan and the importance of preparing for disasters. Practice your plan and keep it up to date.

Evacuation Plan: Map out routes to safe places on high ground or inland (away from the water) and outside the tsunami hazard zone. Your community may already have identified evacuation routes and assembly areas. Plan to evacuate on foot if you can; roads may be impassable due to damage, closures, or traffic jams. Practice walking your routes, even in darkness and bad weather to make evacuation quicker and easier during an emergency.



If you think you won't be able to reach a safe place in time, ask your local emergency management office about vertical evacuation. Evacuation to the 4th floor or higher in some strong (e.g., reinforced concrete) and tall buildings may be able to provide protection if no other options are available. This type of evacuation is not available, or recommended, in all areas.

BUILD A KIT

Put together a **portable** disaster supplies kit with items you and your family (including pets) may need in an emergency. Since you do not know where you'll be when disaster strikes, prepare kits for work and cars too. Consider storing supplies with family or friends outside of the tsunami hazard zone.

WATCH, ADVISORY, AND WARNING MESSAGES AND RESOURCES

SOCIAL MEDIA ACCOUNTS TO MONITOR AND SHARE

AGENCY	TYPE	TWITTER	FACEBOOK
Hawai'i Emergency Management Agency	State	@Hawaii_EMA	@HawaiiEMA
Governor of Hawai'i	State	@GovHawaii	@GovernorDavidIge
Lieutenant Governor of Hawai'i	State	@LtGovJoshGreen	@LtGovJoshGreen
Department of Education	State	@HIDOE808	@HIDOE808
Department of Human Resources Development	State	@HawaiiDHRD	@HiDHRD
Department of Land and Natural Resources	State	@dlnr	@HawaiiDLNR
Hawai'i Department of Transportation	State	@DOTHawaii	@HawaiiDepartmentOfTransportation
U.S. Coast Guard Hawai'i Pacific	Federal	@USCGHawaiiPac	@USCGHawaiiPacific
Pacific Tsunami Warning Center	Federal	@NWS_PTWC	@UsNwsPacificTsunamiWarningCenter
City & County of Honolulu Department of Emergency Management	County	@Oahu_DEM	@OahuDEM
Hawai'i County Civil Defense	County	@CivilDefenseHI	@hawaiicountycivildefense
Kauai County	County		@CountyofKauai
Maui Emergency Management Agency	County	@Maui_EMA	@MauiEMA
Maui County	County	@CountyofMaui	@countyofmaui



PUBLIC MESSAGES

GENERAL MESSAGES

Follow instructions from local officials.

If you're outside of the tsunami hazard zone and receive a tsunami message, stay where you are unless local officials tell you otherwise.

Limit non-emergency phone calls to keep the lines open for emergency communications.

Continue to listen to your radio and monitor your local television broadcast stations for additional information.

TSUNAMI WATCH MESSAGES

A tsunami watch has been issued which means a tsunami is possible. The threat is being evaluated. Stay tuned to local radio or television or your mobile device (text or data). Prepare to take action if advised by county officials.

TSUNAMI WARNING MESSAGES

A tsunami warning has been issued. A tsunami with the potential to generate widespread inundation is likely. Listen to instructions from county officials via local radio or television or your mobile device (text or data).

If local officials ask you to evacuate, implement your emergency plan and move quickly to high or far inland (away from the water) as possible. If you are in a reinforced concrete building that is ten (10) stories or taller, vertically evacuate to the 4th floor or higher.

Stay out of the tsunami hazard zone until local officials say it's safe. Remember, the first wave may not be the last or the largest and the danger may last for hours or days.

Help a neighbor who may need assistance—infants, elderly, and people with disabilities.

TSUNAMI ADVISORY MESSAGES

A Tsunami Advisory has been issued. Sea level changes and strong currents may occur along all coasts and may be a hazard to swimmers and boaters. Streams and canals that feed into the ocean may also be affected by unusual currents. Stay out of the water and away from beaches. Follow instructions from county officials. Stay tuned for more information.



TSUNAMI WATCH, ADVISORY, WARNING PRESS RELEASE



DEPARTMENT OF DEFENSE

Hawai'i Emergency Management Agency

[GOVERNOR NAME]

GOVERNOR

[DIRECTOR OF EM NAME]

DIRECTOR OF EMERGENCY MANAGEMENT

[ADMINISTRATOR NAME]

ADMINISTRATOR OF EMERGENCY MANAGEMENT

For Immediate Release

[Date]

What: Tsunami [Level]

Who: Hawai'i Emergency Management Agency

When: [Day], [Date]

TSUNAMI [LEVEL] FOR [LOCATION]

HONOLULU — The Pacific Tsunami Warning Center has issued a tsunami advisory for the Hawaiian Islands effective on [Date] at [Time].

An earthquake occurred [location of earthquake] with a preliminary magnitude of [Number] on the Richter Scale.

According to the Pacific Tsunami Warning Center: [Details of alert including expected time to arrive and potential affected areas]. However, sea level changes have been recorded at [locations if appropriate] just above advisory level that could be a hazard to swimmers and boaters as well as to



persons near the shore at beaches and in harbors and marinas. The threat may continue for several hours after the initial wave arrival.

If tsunami waves impact [location], the estimated earliest arrival of the first wave is [Time] on [Day], [Date].

Persons in low-lying areas should begin emergency preparations. Prepare your “go kit,” including face masks and hand sanitizer, if you need to evacuate to higher ground. Be prepared to evacuate when advised/ordered by civil defense.

Further messages will be issued hourly or sooner as conditions warrant until the threat to Hawaii has passed.

Visit the Hawaii Emergency Management Agency’s website for [preparedness information](#) and [evacuation areas](#). [Sign up for emergency wireless alerts](#) from the emergency management webpages of your specific county.

#

Contact:

[Contact Name]

Public Information Specialist

[Contact Email]

[Contact Phone]

Hawaii Emergency Management Agency

HawaiiEMA@hawaii.gov





DEPARTMENT OF DEFENSE

Hawai'i Emergency Management Agency

[GOVERNOR NAME]

GOVERNOR

[DIRECTOR OF EM NAME]

DIRECTOR OF EMERGENCY MANAGEMENT

[ADMINISTRATOR NAME]

ADMINISTRATOR OF EMERGENCY MANAGEMENT

For Immediate Release

[Date]

What: Tsunami [Level] Canceled

Who: Hawai'i Emergency Management Agency

When: [Day], [Date]

TSUNAMI THREAT CANCELED

HONOLULU — The Pacific Tsunami Warning Center has CANCELED a TSUNAMI [LEVEL] for [LOCATION] effective [Day], [Date] at [Time]

Visit the Hawaii Emergency Management Agency's website for [preparedness information](#) and [evacuation areas](#). [Sign up for emergency wireless alerts](#) from the emergency management webpages of your specific county.

###

Contact:

[Contact Name]



Public Information Specialist
[Contact Email]
[Contact Phone]

Hawaii Emergency Management Agency
HawaiiEMA@hawaii.gov





DEPARTMENT OF DEFENSE

Hawai'i Emergency Management Agency

[GOVERNOR NAME]

GOVERNOR

[DIRECTOR OF EM NAME]

DIRECTOR OF EMERGENCY MANAGEMENT

[ADMINISTRATOR NAME]

ADMINISTRATOR OF EMERGENCY MANAGEMENT

For Immediate Release
[Date]

APRIL IS TSUNAMI AWARENESS MONTH

HONOLULU — The Hawaii Emergency Management Agency (HI-EMA) urges residents to take tsunami preparedness into their own hands this April during Tsunami Awareness Month.

Over seventy years ago, on April 1, 1946, one of the deadliest tsunamis to ever hit Hawaii caused widespread devastation on all islands. Generated by an earthquake in the Aleutian Islands, the massive tsunami took 159 lives and caused more than \$26 million in damage. April was chosen as Tsunami Awareness Month to honor and remember the lives lost in all tsunamis that hit the state.

Due to Hawaii's location in the middle of the Pacific Ocean, we are extremely vulnerable to the threat of tsunamis. Distantly generated tsunamis can reach Hawaii within several hours and are triggered by earthquakes that take place along the Ring of Fire, which circles the Pacific Rim. For distantly generated tsunamis, outdoor warning sirens will sound statewide.



For locally generated tsunamis, however, there may not be enough time to sound sirens. Locally generated tsunamis are caused by earthquakes or volcanic activity that occur in or near the Hawaiian Islands and can make landfall in a matter of minutes.

“It is extremely important that residents are prepared for a tsunami to strike at any time” said Luke Meyers, Administrator of HI-EMA. “Know the warning signs and have an evacuation plan in place because a tsunami cannot be outrun.”

Everyone should be able to recognize the natural warning signs that a tsunami may be imminent. Signs include rapidly rising or receding water from the ocean, the sound of a locomotive or jet plane coming from the ocean, and empty beaches.

If you are near the ocean when an earthquake takes place, immediately move to higher ground at least 100 feet above sea level, or inland. Upon hearing any warning sirens, the public should tune in immediately to a radio or television for updates and the latest information.

To find out if you live, work or play within a tsunami evacuation zone, enter your address into the [Tsunami Evacuation Zone Map Viewer on HI-EMA's website](#). The evacuation zone is a guideline and should be considered the minimum safe evacuation distance.

#

Contact:

[Contact Name]
Public Information Specialist
[Contact Email]
[Contact Phone]

Hawaii Emergency Management Agency
HawaiiEMA@hawaii.gov



Tsunami Preparedness:

- Due to Hawaii's location in the middle of the Pacific Ocean, we are extremely vulnerable to the threat of tsunamis.
- Distantly generated tsunamis can reach Hawaii within several hours and are triggered by earthquakes that take place along the Ring of Fire, which circles the Pacific Rim. For distantly generated tsunamis, outdoor warning sirens will sound statewide.
- For locally generated tsunamis, however, there may not be enough time to sound sirens.
- Everyone should be able to recognize the natural warning signs that a tsunami may be imminent. Signs include rapidly rising or receding water from the ocean, the sound of a locomotive or jet plane coming from the ocean, and empty beaches.
- If you live near, or regularly visit a coastal area, learn about the risk of tsunami in the area. Some at-risk communities have maps with evacuation zones and routes. If you are a visitor, ask about community plans.
- If you are near the ocean when an earthquake takes place, immediately move to higher ground at least 30 meters (100 feet) above sea level, or inland. Upon hearing any warning sirens, the public should tune in immediately to a radio or television for updates and the latest information.
- Create a family emergency communication plan that has an out-of-state contact. Plan where to meet if you get separated.
- Sign up for your community's warning system.
- Consider earthquake insurance and a flood insurance policy through the National Flood Insurance Program (NFIP). Standard homeowner's insurance does not cover flood or earthquake damage.

Tsunami Watch/Warning:

- Details
 - Location of earthquake and number on the Richter Scale
 - Expected time of arrival and potential affected areas
 - Estimated earliest arrival of the first wave
- Persons in low-lying areas should begin emergency preparations. Prepare your "go kit," including face masks and hand sanitizer, if you need to evacuate to higher ground.
- Be prepared to evacuate when advised/ordered by civil defense.
- If you are outside of the tsunami hazard zone and receive a warning, then stay where you are unless officials tell you otherwise.
- If you are in a boat, then face the direction of the waves and head out to sea. If you are in a harbor, then go inland.
- Further messages will be issued hourly or sooner as conditions warrant until the threat to Hawaii has passed

Post Tsunami:

- Storm Details
 - Extent of damage
 - Loss of life
 - Current status of utilities, ports, airports, etc.
 - Safety
- Working in collaboration with federal state agencies on recovery efforts.
 - Insert details on recovery efforts, if available
- Listen to local alerts and authorities for information on areas to avoid and shelter locations.

- Avoid wading in floodwater, which can contain dangerous debris. Water may be deeper than it appears.
- Be aware of the risk of electrocution. Underground or downed power lines can electrically charge water. Do not touch electrical equipment if it is wet or if you are standing in water.
- Stay away from damaged buildings, roads, and bridges.
- Document property damage with photographs. Conduct an inventory and contact your insurance company for assistance.
- Save phone calls for emergencies. Phone systems are often down or busy after a disaster. Use text messages or social media to communicate with family and friends.



E5. ENCLOSURE 5: DISTANT TSUNAMI CHECKLIST

Placeholder for updated checklist 8/02/21



E6. ENCLOSURE 6: NEW URGENT LOCAL TSUNAMI WARNING PROCEDURES MEMORANDUM

DAVID Y. IGE
GOVERNOR



MAJOR GENERAL KENNETH S. HARA
DIRECTOR OF EMERGENCY MANAGEMENT

LUKE P. MEYERS
ADMINISTRATOR OF EMERGENCY
MANAGEMENT

PHONE (808) 733-4300
FAX (808) 733-4287

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE DIRECTOR OF EMERGENCY MANAGEMENT
3949 DIAMOND HEAD ROAD HONOLULU, HAWAII 96816-4495

July 27, 2021

TO: DISTRIBUTION

FROM: Luke P. Meyers *LM*
Administrator, Hawaii Emergency Management Agency

SUBJECT: NEW URGENT LOCAL TSUNAMI WARNING PROCEDURES

A major earthquake in the Hawaiian Islands may generate local tsunami waves that can inundate shorelines within minutes. In the most likely island of Hawaii earthquake preliminary 6.9 magnitude or greater scenario, only the Counties of Hawaii and Maui will initially be placed in a warning. The warning may or may not be expanded to include all counties in the State of Hawaii. This incident requires a rapid and efficient response from both the Tsunami Warning and Emergency Management System.

To increase our emergency warning and response capabilities, appropriate Federal, State, and County agencies collaborated in establishing new procedures for an URGENT LOCAL TSUNAMI WARNING.





An URGENT LOCAL TSUNAMI WARNING is issued under one or more the following conditions
an earthquake occurs in the Hawaiian Islands with a preliminary 6.9 magnitude or greater, or
coastal tide stations and recorders detect tsunami waves.

Given the above, upon receipt of the PTWC HAWAS announcement the following agencies or organizations will implement these actions.

Pacific Tsunami Warning Center (PTWC)

- Issues an URGENT LOCAL TSUNAMI WARNING.
- Announces an URGENT LOCAL TSUNAMI WARNING over Hawaii Alert and Warning System (HAWAS). (Enclosure 1)

Designated counties placed in the warning will be named. A Tsunami Warning Message via NWS Chat or <https://www.weather.gov/hfo/watchwarn> will follow. The PTWC HAWAS announcement will direct the State Warning Point to immediately sound the County Siren Systems of the counties designated in the warning.

The PTWC HAWAS announcement will also prompt the National Weather Service Forecast Office to issue a Tsunami Warning (TSW) Message that will activate both the Emergency Alert System (EAS) and the NWS Wireless Emergency Alerts (WEA). The NWS WEA will be sent after PTWC issues a hardcopy message. (Enclosure 2)

State Warning Point

- Immediately sounds the County Siren Systems of the counties designated in the warning. Sound sirens for a continuous 3-minute period. (Note: a preliminary 7.6 magnitude or greater earthquake will automatically initiate a statewide [all counties] siren sounding.)
- Immediately conducts a roll call of all HAWAS stations to acknowledge receipt of the PTWC HAWAS announcement.
- Issues AlertSense IPAWS (WEA) Local Tsunami Civil Danger Warning (CDW) message for affected counties as indicated by PTWC. (Enclosure 3 and Enclosure 4)
- Stands by to initiate subsequent siren soundings at request of a County Emergency Management or Civil Defense Agency.





National Weather Service (NWS) Forecast Office

- Immediately issues a Tsunami Warning (TSW) Message that will activate both the Emergency Alert System (EAS) and Wireless Emergency Alerts (WEA).
- NWS will repeat transmitting the EAS TSW Message for TSUNAMI WARNING as needed.

County Emergency Management or Civil Defense Agency

- Amplifies warning information in respective counties as appropriate. These broadcasts are subject to preemption by EAS messages issued by NWS.

Urgent Local Tsunami Warning is downgraded to a Local Tsunami Advisory

Pacific Tsunami Warning Center (PTWC)

- Issues a LOCAL TSUNAMI ADVISORY because tsunami amplitudes in all warned counties never exceeded 1 meter (about 3 feet), or because those amplitudes have now fallen below a meter but remain above 0.3 meters (about 1 foot). (Enclosure 5)

State Warning Point and Hawaii Emergency Management PIO

- Immediately conducts a roll call of all HAWAS stations to acknowledge receipt of the PTWC HAWAS announcement.
- HI-EMA Public Information Officer issues a press release with Local Tsunami Advisory information and updates the HI-EMA website and social media accounts.

National Weather Service (NWS) Forecast Office

- Broadcasts the Tsunami Advisory message on NOAA Weather Radio. (Enclosure 6)
- Note: There is NO Emergency Alert System activation for an advisory.

County Emergency Management or Civil Defense Agency

- Amplifies advisory information in respective counties as appropriate.





Urgent Local Tsunami Warning or Advisory Cancellation

Pacific Tsunami Warning Center (PTWC)

- Issues an URGENT LOCAL TSUNAMI WARNING or LOCAL TSUNAMI ADVISORY CANCELLATION when tsunami amplitudes are below 0.3 meters in all counties put into an alert.
- Announces an URGENT LOCAL TSUNAMI WARNING or LOCAL TSUNAMI ADVISORY CANCELLATION over Hawaii Alert and Warning System (HAWAS). (Enclosure 7)

State Warning Point and Hawaii Emergency Management PIO

- Immediately conducts a roll call of all HAWAS stations to acknowledge receipt of the PTWC HAWAS announcement.
- Sends an AlertSense INS message to HI-EMA staff and State Department EMOs to inform them of the Urgent Local Tsunami Warning or Local Tsunami Advisory Cancellation.
- HI-EMA Public Information Officer issues a press release with cancellation information and updates the HI-EMA website and social media accounts. Will include statement that local emergency management agencies will determine when it is safe to reenter evacuated areas, and they will release that information.

County Emergency Management or Civil Defense Agency

- Amplifies cancellation information in respective counties as appropriate.

If you have any further questions, please contact Eulalio Medina, Hawaii Emergency Management Agency, at 733-5300 x523 or eulalio.medina@hawaii.gov.





Distribution

Director, National Weather Service, Pacific Region
Geophysicist in Charge, Pacific Tsunami Warning Center
Meteorologist in Charge, National Weather Service
Administrator, HCDA
Administrator, MEMA
Administrator, DEM
Administrator, KEMA
Hawaii County Warning Point
Maui County Warning Point
Honolulu City and County Warning Point
Kauai County Warning Point
State Warning Point

Enclosures (See Following Pages)





Enclosure 1

URGENT LOCAL TSUNAMI WARNING INITIAL

Attention all stations. Repeat. Attention all stations.
Standby for an Urgent Local Tsunami Warning.

This is the Pacific Tsunami Warning Center with an Urgent Local Tsunami Warning for:

select one

- ☐ Hawaii County. State Warning Point should immediately sound Hawaii County sirens for an Urgent Local Tsunami Warning
- ☐ Hawaii and Maui Counties. State Warning Point should immediately sound Hawaii and Maui County sirens for an Urgent Local Tsunami Warning
- ☐ Maui, Hawaii, and Oahu Counties. State Warning Point should immediately sound Maui, Hawaii, and Oahu County sirens for an Urgent Local Tsunami Warning
- ☐ Oahu, Maui, and Kauai Counties. State Warning Point should immediately sound Oahu, Maui, and Kauai County sirens for an Urgent Local Tsunami Warning
- ☐ Kauai and Oahu Counties. State Warning Point should immediately sound Kauai and Oahu County sirens for an Urgent Local Tsunami Warning
- ☐ All Four Counties in the State of Hawaii. State Warning Point should immediately sound sirens Statewide for an Urgent Local Tsunami Warning

This Tsunami Warning is based on: *choose one or both*

☐ the occurrence of a large local earthquake

_____ *epicenter location - for example, "on the southeast coast of the Big Island"*

☐ (and) the observation of significant water level changes

_____ *observation location(s) - for example, "on the southeast coast of the Big Island"*

ONCE AGAIN, *(REPEAT SECTION ABOVE)*

A hardcopy message with more detailed information will be transmitted shortly.

State Warning Point, Contact All County Warning Points. Please Acknowledge.

Time Read on HAWAS: _____ Initial: _____





URGENT LOCAL TSUNAMI WARNING EXPANSION

Attention all stations. Repeat. Attention all stations.
Standby for an Urgent Tsunami Warning.

The Urgent Local Tsunami Warning is now expanded statewide to ALSO INCLUDE:

choose one

- ☐ Maui, Oahu, and Kauai Counties. State Warning Point should immediately sound Maui, Oahu, and Kauai County sirens for an Urgent Local Tsunami Warning.
- ☐ Oahu and Kauai Counties. State Warning Point should immediately sound Oahu and Kauai County sirens for an Urgent Local Tsunami Warning.
- ☐ Kauai County. State Warning Point should immediately sound Kauai County sirens for an Urgent Local Tsunami Warning.
- ☐ Hawaii County. State Warning Point should immediately sound Hawaii County sirens for an Urgent Local Tsunami Warning.
- ☐ Maui and Hawaii Counties. State Warning Point should immediately sound Maui and Hawaii County sirens for an Urgent Local Tsunami Warning.

The expansion to a statewide warning is based upon Tsunami Warning is based on:

choose one or both

- ☐ further evaluation of the earthquake
- ☐ (and) the observation of significant tsunami waves

ONCE AGAIN, *(REPEAT SECTION ABOVE)*

A hardcopy message with more detailed information will be transmitted shortly.

State Warning Point, Contact All County Warning Points. Please Acknowledge.

Time Read on HAWAS: _____ Initial: _____

REPEAT THIS SECTION





Enclosure 2

EAS

message to broadcast over NOAA Weather Radio/Emergency Alert System:

ZCZC-WXR-TSW-015001-015003-015007-015009+0600-dddhmm-PHFO/NWS

Radio script to be read over NOAA Weather Radio/Emergency Alert System:

"THE PACIFIC TSUNAMI WARNING CENTER HAS ISSUED AN URGENT LOCAL TSUNAMI

WARNING EFFECTIVE IMMEDIATELY

- **FOR ALL ISLANDS IN THE STATE OF HAWAII**

OR

- **FOR THE ISLAND(S) OF**

Niihau____Kauai____Oahu____Molokai____Lanai____Maui____Kahoolawe____Big Island of Hawaii

A LOCAL TSUNAMI HAS BEEN GENERATED. IMMEDIATELY EVACUATE ALL BEACHES AND ALL LOW LYING COASTAL AREAS. MOVE TO HIGH GROUND OR INLAND NOW. STAY TUNED TO LOCAL TV OR RADIO FOR FURTHER UPDATES AND INSTRUCTIONS FROM EMERGENCY MANAGEMENT OFFICIALS.KEEP AWAY FROM THE COAST UNTIL LOCAL OFFICIALS SAY IT IS SAFE TO RETURN.

NWS Wireless Emergency Alert messages for Tsunami Warning:

Short message:

"NWS: TSUNAMI danger on the coast. Move to high ground or inland now."

Long message:

"The National Weather Service has issued a TSUNAMI WARNING. A series of powerful waves and strong currents may impact coasts near you. You are in danger. Get away from coastal waters. Move to high ground or inland now. Keep away from the coast until local officials say it is safe to return."

WEA notes:

- The same WEA text will be used for both local and distant tsunami warnings.
- The short message will be sent across cellular networks 3G or earlier. The long message will be sent across networks 4G or later.





Enclosure 3

WIRELESS EMERGENCY ALERTS (WEA) for LOCAL TSUNAMI CITY AND COUNTY OF HONOLULU

Local Tsunami Civil Danger Warning (CDW)

ISSUED BY/TEMPLATE	HI-EMA / <u>City and County of Honolulu</u> – Tsunami – LOCAL TSUNAMI WARNING
WEA - SHORT	LOCAL TSUNAMI WARNING. Go inland NOW or to 4th floor or above of 10 story building. HI-EMA
WEA - LONG	LOCAL TSUNAMI WARNING for Oahu. Tsunami waves will impact coastal and low-lying areas within minutes. EVACUATE NOW to high ground or inland or move to the 4th floor or higher of a building that is 10 stories or taller. Keep away from the coast until local officials say it is safe to return. HI-EMA

FIPS Codes:

015003 – Honolulu County

(excluded are 015000 – HAWAII – All State, 015001 – Hawaii County, 015005 – Kalawao County, 015007 – Kauai County, and 015009 – Maui County)



Enclosure 4

WIRELESS EMERGENCY ALERTS (WEA) for LOCAL TSUNAMI HAWAII, MAUI, OR KAUAI COUNTIES

Local Tsunami Civil Danger Warning (CDW)

ISSUED BY/TEMPLATE	HI-EMA / <u>Hawaii, Maui, Kauai Counties</u> – Tsunami – LOCAL TSUNAMI WARNING
WEA - SHORT	LOCAL TSUNAMI WARNING. Evacuate NOW inland, higher grounds, vertically 4th flr or higher. HI-EMA
WEA - LONG	LOCAL TSUNAMI. EVACUATE NOW to high grounds, inland, or vertically to the 4th floor and higher of a concrete building. Keep away from the coast. Monitor local media. HI-EMA

FIPS Codes:

015001 - Hawaii

County 015005 -

Kalawao County

015007 - Kauai County

015009 - Maui County

(excluded are 015000 - HAWAII - All State & 015003 - Honolulu County)



Enclosure 5

LOCAL TSUNAMI ADVISORY DOWNGRADE

Attention all stations. Repeat. Attention all stations.

This is the Pacific Tsunami Warning Center. The Urgent Local Tsunami Warning is now downgraded to a Local Tsunami Advisory for:

select all counties formerly in a warning

- ☐ Hawaii County
- ☐ Hawaii and Maui Counties
- ☐ Maui, Hawaii, and Oahu Counties
- ☐ Oahu, Maui, and Kauai Counties
- ☐ Kauai and Oahu Counties
- ☐ All Four Counties in the State of Hawaii

select one

- ☐ Tsunami wave amplitudes did not reach coastal flooding levels but there are still sea level fluctuations that could be a hazard for beaches and harbors and the coastal marine environment.
- ☐ Tsunami wave amplitudes have now fallen below levels that pose a further coastal flooding threat. But sea level fluctuations continue that could be a hazard for beaches and harbors and the coastal marine environment.

The Local Tsunami Advisory will continue until the threat has passed.

ONCE AGAIN, (REPEAT SECTION ABOVE)

A hardcopy message with more detailed information will be transmitted shortly.

State Warning Point, Contact All County Warning Points. Please Acknowledge.

Time Read on HAWAS: _____ Initial: _____

REPEAT THIS SECTION



Enclosure 6

**TSUNAMI ADVISORY
(HFOTSYHFO on BMH)
NO EAS (SAME/1050) Tones sent**

Tsunami Advisory

BROADCASTER ACTION: Fill in the blanks, then record and play the following message on BMH (HFOTSYHFO). Remove after 120 minutes if no other updates or changes are expected. BMH should be in normal weather programming mode.

**THIS IS THE NATIONAL WEATHER SERVICE WITH A BULLETIN FROM THE PACIFIC
TSUNAMI WARNING CENTER.**

A TSUNAMI ADVISORY IS IN EFFECT FOR THE STATE OF HAWAII

AN EARTHQUAKE OCCURRED AT **(AM / PM) HST**

WITH A MAGNITUDE OF

AND WAS LOCATED NEAR **North/South LATITUDE** **East/West LONGITUDE,**
OR IN THE VICINITY OF

Evaluation:

**THE PACIFIC TSUNAMI WARNING CENTER WILL CONTINUE TO MONITOR THE SITUATION.
AS CONDITIONS WARRANT
THE ADVISORY WILL BE CONTINUED, UPGRADED TO A WARNING OR WATCH, OR ENDED.**



Enclosure 7

LOCAL TSUNAMI ADVISORY CANCELLATION

Attention all stations. Repeat. Attention all stations.

This is the Pacific Tsunami Warning Center.

The tsunami advisory is now cancelled. Repeat. The tsunami advisory is now cancelled.

Tsunami wave amplitudes have now fallen below hazardous levels at all locations in Hawaii. However, some coastal areas may continue to experience small water level changes and strong or unusual currents.

ONCE AGAIN,

The tsunami warning is now cancelled. Repeat. The tsunami warning is now cancelled.

Tsunami wave amplitudes have now fallen below hazardous levels at all locations in Hawaii. However, some coastal areas may continue to experience small water level changes and strong or unusual currents.

This tsunami advisory cancellation does not mean it is safe to resume normal activities or reoccupy evacuated areas. Listen to local authorities for further information and instructions.

A hardcopy message with more detailed information will be transmitted shortly.

State Warning Point, Contact All County Warning Points. Please Acknowledge.

Time Read on HAWAS: _____ Initial: _____

Signature: 

Email: luke.p.meyers@hawaii.gov

E7. ENCLOSURE 7: ACRONYMS

AD	HI-EMA Administrator
ADS	Air Defense Squadron
C&C DEM	City & County of Honolulu Department of Emergency Management
CDW	Civil Danger Warning
CAP	Civil Air Patrol
CODEL	Congressional Delegation
CONT	Continuous
COP	Common Operating/Operational Picture
CWP	County Warning Point
DARC	Disaster Assistance and Recovery Center
DART	Deep Ocean Assessment and Report of Tsunami
DBEDT	Hawai'i Department of Business, Economic Development and Tourism
DCCA	Hawai'i Department of Commerce & Consumer Affairs
DHRD	Hawai'i Department of Human Resources Development
DHS	Department of Homeland Security
DLIR	Hawai'i Department of Labor & Industrial Relations
DLNR	Department of Land and Natural Resources
DOC	Department Operations Center
DOCL	Documentation Unit Leader
DOE	Hawai'i Department of Education
DOH	Hawai'i Department of Health
DOTAX	Hawai'i Department of Taxation
EAS	Emergency Alert System
EMO	Emergency Management Officer
EOC	Emergency Operating Center/Emergency Operations Center
ERT	Emergency Response Team
ESF	Emergency Support Function
FA	Finance and Administration Section
FEMA	Federal Emergency Management Agency
FEMA PAO	FEMA Pacific Area Office
GOB	Geographic Operations Branch
HAWAS	Hawaiian Alert System
HCDA	County of Hawai'i Civil Defense Agency
HDOT	Hawai'i Department of Transportation
HHS	Hawaiian Humane Society
HI-EMA	Hawai'i Emergency Management Agency
HI-EOP	State of Hawai'i Emergency Operations Plan
HING	Hawai'i National Guard
HING DOMS	Hawai'i National Guard Director of Military Support
HING JOC	Hawai'i National Guard Joint Operations Center
HNN	Hawai'i News Now
HRS	Hawai'i Revised Statutes
IAP	Incident Action Plan
IPAWS-OPEN	Integrated Public Alert and Warning System Open Platform for Emergency Network
ITIC	International Tsunami Warning Center
JIC	Joint Information Center
JPDA	Joint Preliminary Damage Assessment
JRCC	Joint Rescue Coordination Center



KEMA	Kauai Emergency Management Agency
KHON	KHON2 Hawai'i
KITV	KITV4 Island News
LABS	Live Audio Broadcast System
LIH	Lihue Airport
LNO	Liaison Officer
LOGS	Logistics Branch
MEMA	Maui Emergency Management Agency
NAWAS	National Warning System
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NTWC	National Tsunami Warning Center
NWS	National Weather Service
NWS HFO	National Weather Service Weather Forecast Office Honolulu
OPS	Operations Section
Ops Cell	Operations Cell
OSB	Operations Support Branch
OSC	Operations Section Chief
OSD	Deputy Operations Section Chief
OTS	Operations Threat Specialist
IDA	Initial Damage Assessments
PDC	Pacific Disaster Center
PIO	Public Information Officer
PIST	Problem, Impact, Solution, Time Chart
PS	Planning Section
PSA	Public Service Announcement
PSC	Planning Section Chief
PTWC	Pacific Tsunami Warning Center
RACES	Radio Amateur Civil Emergency Service
RB	Resilience Branch
RESL	Resource Unit Leader
RFA	Request for Assistance
RFI	Request for Information
RNA	Rapid Needs Assessments
SAR	Search and Rescue
SBA	Small Business Administration
SCD	Situational Awareness Unit – County Desk
SEOC	State Emergency Operations Center
SERT	State Emergency Response Team
SESF	State Emergency Support Function
SITL	Situation Unit Leader
SITREP	Situation Report
SOP	Standard Operating Procedures
SWP	State Warning Point
TAG	The Adjutant General
TC	Telecommunications Support Unit
TSW	Tsunami Warning
TWC	Tsunami Warning Center
USCG	United States Coast Guard
USINDOPACOM	U.S. Indo-Pacific Command



VTC	Video Tele-Conference
WEA	Wireless Emergency Alert
WEBEOC	Web-Based Emergency Operations Center
WO	Warning Point Officer
WP	Warning Point
XO	Executive Officer

