

ATTACHMENT C. SAMPLE EAS RELEASE

I. INTRODUCTION

- A. Tsunamis are ocean waves caused by a large and sudden displacement of the ocean (e.g., from earthquakes, underwater landslides, etc.) and may occur at any time, day, or night.
- B. Tsunamis are often incorrectly referred to as tidal waves. A tsunami is actually a series of waves that can travel at speeds averaging 450 (and up to 600) miles per hour in the open ocean.
- C. There are two sources of tsunamis for coastal waters - a distant source and a local source.
 - 1. Distant Source: The source of the tsunami is more than 620 miles (1,000 km) away from the Tsunami Warning Center's Area of Responsibility (AOR).
 - 2. Local/Regional Source: Source of the tsunami is within 620 miles of the AOR. A local or near-field tsunami has a very short travel time (30 minutes or less), and mid-field or regional tsunami waves have travel times on the order of 30 minutes to 2 hours.
- D. Locally generated tsunamis generally cause more loss of life than distant tsunamis. Tsunamis generated from local sources are generally larger and arrive much sooner after the causative source event than tsunamis from distant sources. Though the impact is high, the probability for such an event is extremely low.
- E. Though seldom, tsunamis have been recorded along the U.S. Atlantic Coast as far back as 1755 and as recent as 1929. Landslides on the outer continental shelf and slope along the Mid-Atlantic ridge have the potential to trigger tsunamis that may affect populated coastal areas.
- F. Withdrawal of the sea is not always a precursor to arrival of the wave. The first wave may not be the largest. The largest wave usually occurs among the first three waves.
- G. The National Oceanic and Atmospheric Administration (NOAA)'s National Tsunami Warning Center (NTWC) in Palmer, Alaska, is responsible for the preparation and dissemination of Tsunami Warnings, Watches, Advisories, and Information Statements for the coastal regions of Canada and all States except Hawaii. These regions are defined as the NTWC's AOR.
 - 1. The NTWC uses earthquake information, tide gauges, and DART (Deep-ocean Assessment and Reporting of Tsunamis) buoys located in the Atlantic Ocean, the Gulf of Mexico, and the Caribbean Sea to predict tsunami arrival times, predict coastal run-up when possible, and disseminate appropriate warning and informational products based on this information.

2. The following products are issued by the NTWC. Each has a distinct meaning relating to local emergency response.

| Product | Potential Hazard(s) | Public Action |
|-----------------------|--|---|
| Information Statement | No threat or very distant event for which hazard has not yet been determined | No action suggested at this time |
| Watch | Not yet known | Stay alert for more information. Be prepared to act |
| Advisory | Strong currents and waves dangerous to those in or very near water | Stay out of water, away from beaches and waterways |
| Warning | Dangerous coastal flooding and powerful currents | Move to high ground or inland |

a. Tsunami Information Statement

- (1) A Tsunami Information Statement is issued to inform emergency management officials and the public an earthquake has occurred, or a tsunami warning, watch, or advisory has been issued for another section of the ocean.
- (2) In most cases, Information Statements are issued to indicate there is no threat of a destructive tsunami and to prevent unnecessary evacuations as the earthquake may have been felt in coastal areas.
- (3) An Information Statement may, in appropriate situations, caution about the possibility of destructive local tsunamis.
- (4) Information Statements may be re-issued with additional information, though normally these messages are not updated. However, a watch, advisory, or warning may be issued for the area, if necessary, after analysis and/or when updated information becomes available.

b. Tsunami Watch

- (1) A Tsunami Watch is issued to alert emergency management officials and the public of an event which may later impact the watch area.
- (2) The watch area may be upgraded to a warning or advisory or be canceled based on updated information and analysis.

- (3) Watches are normally issued based on seismic information without confirmation that a destructive tsunami is underway.
- (4) Citizens should use a NOAA Weather Radio or stay tuned to a local radio or television station for updated emergency information.

c. Tsunami Advisory

- (1) A Tsunami Advisory is issued due to the threat of a potential tsunami which may produce strong currents or waves dangerous to those in or near the water.
- (2) 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.
- (3) Appropriate actions to be taken by local officials may include closing and/or evacuating beaches, evacuating harbors and marinas, and repositioning ships to deep waters when there is time to do so. Local tsunami plans should be referenced for more information.
- (4) Advisories are normally updated to continue the advisory, expand/contract affected areas, upgrade to a warning, or cancel the advisory.

d. Tsunami Warning

- (1) A Tsunami Warning is issued when a potential tsunami with significant widespread inundation is imminent or expected.
- (2) 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.
- (3) 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 when there is time to safely do so. Reference local tsunami plans for more information.
- (4) Warnings may be updated, adjusted geographically, downgraded, or canceled. To provide the earliest possible alert, initial warnings are normally based only on seismic information.

3. The geographic extent of a tsunami product is based on the size of the earthquake, the tsunami travel times throughout the AOR, and expected impact zones.
4. Tsunami products are generally issued within 10 minutes after earthquake occurrence.
5. Below is the U.S. East Coast criterion for issuance of tsunami products:

| Earthquake Magnitude | Area | Product |
|-----------------------------|---|-------------------------------|
| 4.0-4.9 | Within 150 km (93 miles) of coast | Tsunami Information Statement |
| 5.0-5.9 | Within 100 km (62 miles) onshore | Tsunami Information Statement |
| 6.0-6.4 | No geographic criterion | Tsunami Information Statement |
| 6.5-7.5 | Deeper than 100 km (62 miles) or far offshore | Tsunami Information Statement |
| | Within 250 km (155 miles) from source | Tsunami Warning |
| 7.6-7.8 | Deeper than 100 km (62 miles) or far offshore | Tsunami Information Statement |
| | Within 500 km (310 miles) from source | Tsunami Warning |
| | Within 1000 km (621 miles) from source | Tsunami Advisory |
| >7.8 | Within 1000 km (621 miles) from source | Tsunami Warning |
| | Elsewhere | Tsunami Watch |

II. PURPOSE

- A. Plan and coordinate the operational procedures South Carolina will use in the event of a tsunami.
- B. Identify roles and responsibilities of local, state, and federal agencies when responding to a tsunami.
- C. Provide resources to assist local governments in preventing and minimizing injury or death to people resulting from a tsunami.

III. SCOPE

- A. The South Carolina Tsunami Response Plan addresses operations to be conducted in coordination and mutual support with the South Carolina Emergency Operations Plan (SCEOP).
- B. This plan complements the SCEOP and addresses responsibilities, processes, and actions specific to tsunami events.

IV. ASSUMPTIONS

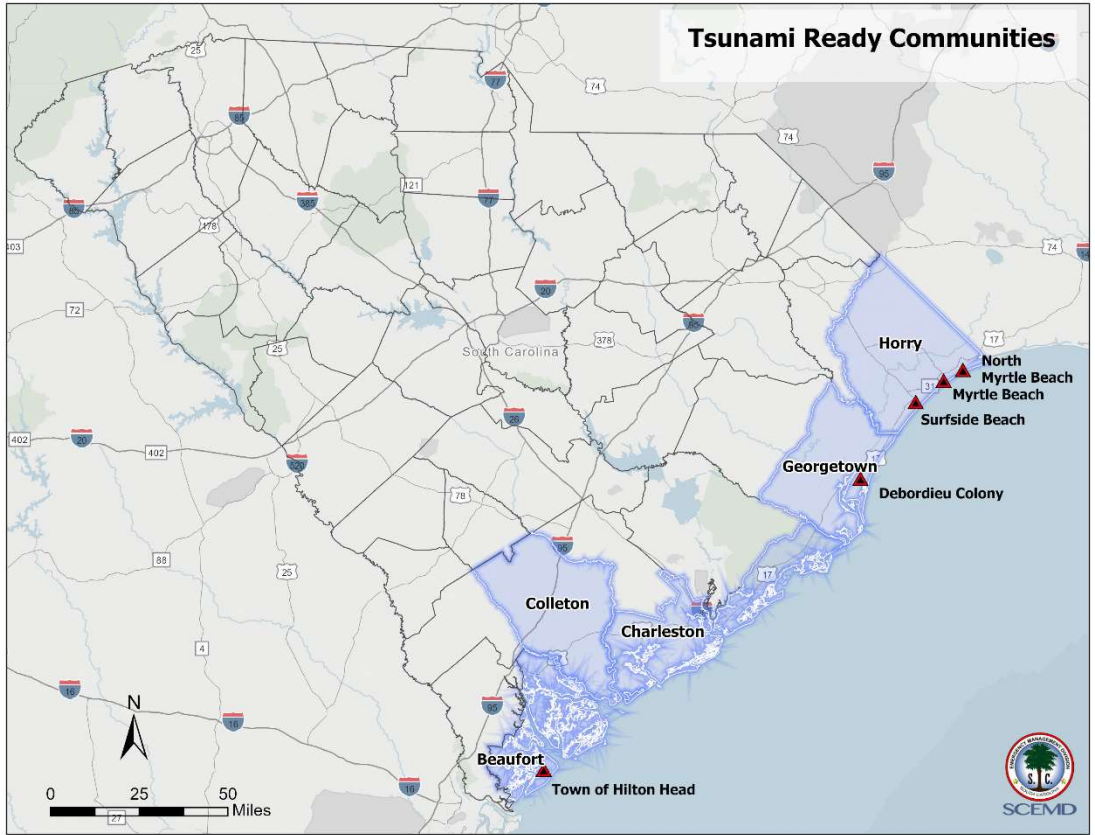
- A. A damaging tsunami wave reaching South Carolina would likely force between a couple of inches and 3 feet of water onshore, with a worst-case scenario of 16 feet. Depending on source location, the anticipated lead time is 2-18 hours.
- B. Communications and critical infrastructure services will be disrupted or destroyed.
- C. The maximum possible tourist and workforce populations will be present in affected areas.
- D. Damage will be widespread and will vary widely (i.e., concentrations of significant damage in some areas with slight damage in others).
- E. Access to damaged areas will be restricted and some low-lying areas will be inundated.

V. SITUATION

- A. Though the potential impact is high, the tsunami threat for South Carolina is extremely low, and any tsunamis would likely be small and inundate mostly the beaches.
- B. The tsunami threat in South Carolina will likely result from a distant seismic source and provide at least 2-4 hours lead time.
- C. The National Weather Service has identified four main sources of concern that pose a tsunami risk for South Carolina and other portions of the East Coast of the United States, travel times for these hypothetical sources are described in the table below:

| Hypothetical Tsunami Travel Times from SC Sources of Concern | | | | | |
|---|--|---------------------------|-------------------------|-----------------------|---------------------|
| Hours: Minutes | | | | | |
| Location | East Coast Submarine Landslide (40N/-70W) | Puerto Rico Trench | Azores Gibraltar | Canary Islands | Scotia Plate |
| Atlantic City, NJ | 2:31 | 4:45 | 9:36 | 8:54 | 17:05 |
| Cape Hatteras NC | 1:53 | 3:05 | 8:38 | 7:47 | 15:34 |
| Charleston, SC | 4:44 | 5:13 | 11:15 | 10:19 | 17:49 |
| Jacksonville FL | 4:41 | 4:55 | 11:11 | 10:19 | 17:49 |
| San Juan, PR | 3:11 | 0:05 | 7:47 | 6:21 | 12:57 |

- D. South Carolina has six coastal counties bordering the Atlantic Ocean with more than 200 miles of general coastline. The SC Coastal Counties are Beaufort, Charleston, Colleton, Georgetown, Horry, and Jasper. For tsunami hazards, Berkeley and Dorchester County are also considered in this list because of the potential for a tsunami to affect tidal zones.
- E. A Tsunami Watch, Warning, or Advisory will be transmitted by National Weather Service (NWS) offices for all tsunamis forecasted to impact South Carolina.
- F. NOAA's NWS Offices promote the TsunamiReady Program.
1. The TsunamiReady Program is designed to help states, counties, municipalities, universities, and other population centers in coastal areas reduce the potential for deadly tsunami-related consequences.
 2. The program helps community leaders and emergency managers strengthen their local operations. TsunamiReady communities are better prepared to save lives through improved planning, education, and awareness.
 3. Communities have fewer fatalities and property damage if they effectively plan before a tsunami arrives. No community is tsunami proof, but the TsunamiReady Program can help minimize loss to vulnerable communities.
 4. SC TsunamiReady Counties and Communities:



| Counties | Communities |
|---|---|
| <ul style="list-style-type: none"> • Beaufort • Charleston • Colleton • Georgetown • Horry | <ul style="list-style-type: none"> • Deboardieu Colony • Town of Hilton Head Island • Myrtle Beach • North Myrtle Beach • Surfside Beach |

National Weather Service (June 2022)

VI. CONCEPT OF OPERATIONS

A. Notification

1. In the event of a Tsunami Warning, Watch, Advisory, or Information Statement, the NTWC issues the tsunami message to the NWS offices in the affected states. The local NWS forecast offices have the primary responsibility to process the information and rebroadcast the tsunami message or product through the civil emergency system which activates the Emergency Alert System (EAS).

a. EAS

- (1) The decision to activate EAS for a tsunami product is the sole responsibility of the local NWS Forecast Offices.
 - (2) If NWS activates EAS, state and local officials can follow-up with another activation of EAS to warn the public and/or issue safety messages.
 - (3) Tsunamis with minimal impacts (rough surf and currents) may not result in EAS activation.
2. Upon receipt of a Tsunami Warning, Watch, Advisory, or Information Statement, the State Warning Point (SWP) will confirm receipt of the tsunami message with the NTWC and relay to coastal counties and appropriate SC Emergency Management Division (SCEMD) staff. For redundancy, the SWP has several communications systems to receive tsunami messages when issued by NOAA:
 - a. Internet (i.e., weather.gov)
 - b. NOAA All Hazards Weather Radio
 - c. iNWS text/email
 - d. EMnet
 - e. Fax machine
3. In the event a Tsunami Warning is issued for the South Carolina coast by the NTWC, the State Emergency Operations Center (SEOC) will activate at OPCON 1 and staff accordingly.
4. In the event a Watch or Advisory is issued for the South Carolina coast by the NTWC, the SEOC will activate at OPCON 2 and will be staffed accordingly.

B. Public Information

1. See Annex 15 (Public Information) of the SCEOP.
2. The NWS Forecast Offices have the authority and responsibility to warn of a tsunami. The NWS Forecast Offices activate EAS and other systems. State and local officials may follow with a rebroadcast of the initial EAS message.
3. A Tsunami Warning and any accompanying evacuation will be disseminated to cover the affected areas by one or all of the following systems:

- a. EAS
- b. IPAWS
- c. NOAA All Hazards Weather Radio
- d. Local Warning System (e.g., Reverse 911, Code Red, Everbridge, etc.)
- e. Local TV Stations
- f. Local Radio Stations
- g. Loudspeakers (if available)
- h. Route Alerting
- i. Social Media
- j. County Apps (if available)

4. See Attachment D for a Sample News Release and Attachment E for a Sample EAS Statement.

C. Evacuation

1. Types of Evacuation

- a. Clearing of beaches – For tsunamis with wave heights less than one (1) foot, evacuating beaches, low-lying areas, and waterways provides sufficient protection from the tsunami wave.
- b. Inland evacuation – Evacuating inland is the preferred method to evacuate low-lying coastal areas in advance of the initial tsunami wave. Because current tsunami inundation modeling is still in its infancy for the U.S. East Coast, South Carolina will use the recommended NWS Forecast Zone for tsunami evacuation, which is the evacuation one (1) mile inland away from coastal water. Attachment A includes the one (1) mile inland tsunami evacuation map for reference.
- c. Vertical evacuation – Vertical evacuation is the act of moving to the highest floor in a multiple-story building in order to avoid the tsunami wave. Vertical evacuation should be used when tsunami lead time, wave height, and/or reliable transportation is limited.

2. The decision to evacuate the coast will depend on the forecasted tsunami height and the forecasted lead time ahead of the first wave. The following table can be used as a guide for decision-making:

| | Lead Time < 4 hours | Lead Time > 4 hours |
|------------------------------|-------------------------------|-------------------------------|
| Wave Height < 1 ft | Clear beaches | Clear beaches |
| Wave Height 1-3 ft | Vertical evacuation | Vertical evacuation |
| Wave Height > 3 ft | Vertical evacuation | Inland evacuation |

3. Upon activation of the SCEOP, the Governor may issue an evacuation order for the general public and/or medical facilities in specific coastal areas.
4. SCEMD and local emergency managers will maintain communication with local NWS Forecast Offices on all notification and evacuation decisions. Telephone numbers of the NWS Forecast offices are maintained in SCEMD and the county emergency managers' telephone directories.
5. If required, shelters will be identified outside the tsunami risk areas and coordinated by ESF-6 (Mass Care).
6. If required or requested, Traffic Control Points (TCP) will be identified for the areas and implemented by local law enforcement with assistance by ESF-16 (Emergency Traffic Management). Access control after the event is essential.
7. If the need arises to implement evacuation routes, the routes currently identified for hurricane evacuation will be implemented along with their respective traffic management operations. Local officials will be responsible for coordinating local evacuation efforts and requesting implementation of the hurricane traffic management plan.

D. "ALL CLEAR" Determination and Post-Event Operations

1. After the arrival of the first wave, additional waves may continue at varying intervals for several hours. The first wave may not be the largest.
2. Any evacuation ordered should be maintained until a minimum of two hours has passed since the arrival of the last damaging wave. The evacuation order will be rescinded based upon an "ALL CLEAR" signal from the NTWC. The "ALL CLEAR" determination is the responsibility of local officials in consultation with NWS Forecast Offices and SERT officials.
3. Reentry is the responsibility of local officials.

4. Primary post-event operations include ensuring the safety of citizens, recovery efforts, and health inspections to prevent the spreading of communicable diseases and the contamination of food and water supplies.
- E. See Attachments B & C for Tsunami Response Timelines.
- F. Recovery
- See Appendix 6 (South Carolina Recovery Plan) to the SCEOP.

VI. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

- A. South Carolina Emergency Management Division
1. Update and review biannually this Annex and coordinate plan review with applicable state agencies, local NWS Weather Forecast Offices, and county emergency management offices.
 2. Provide assistance to county emergency management offices in support of tsunami planning and the TsunamiReady Program.
 3. Coordinate with local emergency management offices and local NWS Weather Forecast Offices to review procedures for disseminating tsunami products to local jurisdictions.
 4. Coordinate and implement procedures to relay and/or verify receipt of tsunami products notifications to affected counties.
 5. Coordinate with NOAA and local emergency management offices to determine tsunami inundation areas within the State and develop tsunami inundation maps.
 6. In conjunction with county emergency management offices and local NWS Forecast Offices, develop public education tools for tsunami public education program.
 7. Coordinate with local NWS Weather Forecast Offices to prepare EAS tsunami messages to include “ALL CLEAR” messages.
 8. Coordinate with local NWS Offices to participate in the monthly EAS test and provide information to coastal counties.
- B. Emergency Support Functions. Coordinating agencies will conduct a biannual review of their ESF-specific tsunami responsibilities with primary and supporting agencies.
1. ESF-1 (Transportation)
 - a. South Carolina Department of Transportation

- (1) Review plans and procedures and be prepared to implement plans to transport evacuated persons from tsunami threatened areas to designated shelters.
- (2) In coordination with the South Carolina Department of Education's Office of Transportation, identify school buses for evacuation of coastal communities.
- (3) In coordination with the South Carolina National Guard, identify bus drivers for evacuation missions.
- (4) Activate the Air Operations Branch.
- (5) Identify roadways requiring post-impact debris removal.
- (6) Inspect tsunami-impacted roadways and bridges.
- (7) In coordination with SCDNR, develop plans and procedures to support requests for assistance transporting persons and resources post tsunami using boats and other watercraft.

2. ESF-2 (Communications)

a. South Carolina Department of Administration, Division of Technology Operations

- (1) Issue pre-planned radio/cell phone equipment in support of SCDPS transportation management and evacuation operations (Note: May be insufficient time to distribute equipment per plan; prioritized distribution scheme may be employed).
- (2) As required, coordinate alternate communication systems to augment damaged or inoperative systems.
- (3) Gather post-impact communication damage assessment information (including telephone/cellular, broadcast and commercial radio stations, and cyber related outages) for integration into recovery plans.

3. ESF-6 (Mass Care)

a. South Carolina Department of Social Services

- (1) In coordination with the American Red Cross and local emergency managers, identify shelters to support evacuations from tsunami risk areas. Shelter locations should be outside the tsunami risk areas.

- (2) Provide SCDSS staff to support shelter operations, as required.
 - b. American Red Cross
 - (1) In coordination with local emergency managers and SCDSS, identify shelters to support evacuations from tsunami risk areas. Shelters should be located outside tsunami risk areas.
 - (2) Red Cross and/or other organizations may open general population mass care shelters.
 - (3) Support local government TsunamiReady Programs.
 - c. South Carolina Department of Health and Environmental Control
 - (1) Open, manage, and operate Medical Needs Shelters as required post-event.
 - d. The Salvation Army
 - (1) Coordinate with SCDSS and ESF-6 organizations (State and County) to identify and address immediate unmet needs of the evacuated population.
4. ESF-8 (Health and Medical Services)
 - a. South Carolina Department of Health and Environmental Control
 - (1) Assess operational status of licensed healthcare facilities in impacted areas.
 - b. South Carolina Department on Aging
 - (1) Coordinate and implement procedures to relay Tsunami Warning and Watch notifications to Area Agencies on Aging, who are serving senior population groups in inundation areas.
 - c. South Carolina Coroners Association
 - (1) Provide additional fatality management resources to affected county coroner(s) as needed.
5. ESF-9 (Search and Rescue)
 - a. South Carolina Department of Labor, Licensing, and Regulation

- (1) Coordinate the mobilization of Search and Rescue (SAR) resources to support local requests for SAR operations in anticipated impact areas.
 - b. South Carolina Department of Natural Resources
 - (1) In coordination with SCDOT, develop plans and procedures to support requests for assistance post-tsunami using boats and other watercraft.
6. ESF-10 (Environmental and Hazardous Materials Operations)
 - a. South Carolina Department of Health and Environmental Control
 - (1) Assess health and environmental concerns that may affect the public following a tsunami.
7. ESF-11 (Food Services)
 - a. South Carolina Department of Social Services
 - (1) In coordination with The Salvation Army (TSA) and the American Red Cross, be prepared to feed evacuated persons from tsunami threatened areas.
 - b. American Red Cross
 - (1) In coordination with SCDSS, TSA, and local emergency managers, be prepared to feed evacuated persons from tsunami threatened areas to include populations with access and functional needs (nursing homes, health care facilities, foster care group homes, vulnerable adult population groups).
 - c. The Salvation Army
 - (1) In coordination with SCDSS and the American Red Cross, be prepared to provide mass feeding and/or hydration support to evacuated persons from tsunami threatened areas in accordance with SCEOP Annex 6 and SOP.
8. ESF-13 (Law Enforcement)
 - a. Coordinate law enforcement support operations in accordance with Annex 13 (Law Enforcement) of the SCEOP.

- b. Coordinate general law enforcement activities including, but not limited to, providing security for evacuated areas, shelters, and reception centers.
 - c. Coordinate clearance and security of waterways.
- 9. ESF-16 (Emergency Traffic Management)
 - a. South Carolina Department of Public Safety
 - (1) In conjunction with county law enforcement authorities, develop and coordinate traffic management plans to assist with evacuation of affected areas to include establishing local traffic control points/roadblocks and implementation of the hurricane traffic management planning if necessary.
 - (2) Support local government tsunami planning.
- 10. ESF-17 (Agriculture and Animals)
 - a. Clemson University Livestock-Poultry Health
 - (1) Maintain situational awareness in order to provide appropriate outreach and guidance to stakeholders.
 - (2) Work with supporting agencies to support agribusiness interests, mitigate risks, and coordinate resources as needed during a response.
 - (3) Coordinate resources to support local communities with animal related response activities as requested.
 - (4) Work with supporting agencies to support and coordinate resources to maintain appropriate public health standards for the food supply chain.
- 11. ESF-24 (Business and Industry)
 - a. South Carolina Department of Commerce
 - (1) Assess business impacts in affected communities as a result of the disaster.
 - (2) Conduct business registration for post-disaster reentry.
 - (3) Coordinate with the South Carolina Department of Insurance in monitoring the post-impact deployment/activities of insurance claims adjusters.

- (4) In case of a Small Business Administration (SBA) eligible disaster, assist in communicating eligibility criteria to affected businesses.
- (5) Facilitate donations from businesses through referral to the ESF-18 (Donated Goods and Volunteer Services) Donations Management Team.

VIII. FEDERAL ASSISTANCE

- A. NOAA assists through its subordinate agencies to include the NWS Weather Forecast Offices, the National Tsunami Warning Center (NTWC), the NOAA Center for Tsunami Research (NCTR), and the National Geophysical Data Center (NGDC).
- B. The Department of Homeland Security and the Federal Emergency Management Agency (FEMA) will implement the National Response Framework (NRF) to provide assistance.
- C. The United States Geological Survey (USGS) provides earthquake monitoring and analysis support.
- D. United States Coast Guard has Search and Rescue resources available under normal statutory authority that can be coordinated through ESF-9 and Air Branch without an emergency declaration.
- E. Other Federal agencies have collateral or coordinating responsibilities as identified in the SCEOP.

IX. ATTACHMENTS

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|--------------|---|
| Attachment A | South Carolina One Mile Inland Tsunami Evacuation Map |
| Attachment B | Tsunami Watch and Advisory Checklist |
| Attachment C | Tsunami Warning Checklist |
| Attachment D | Sample News Release |
| Attachment E | Sample Emergency Alert System (EAS) Messages for Tsunami Hazard |