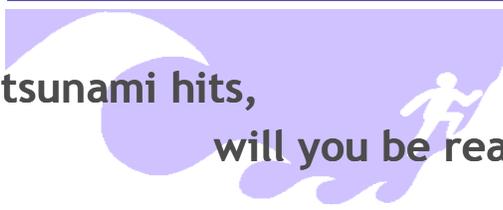


**EDUCATE AND PREPARE**

If a tsunami hits,  
will you be ready?



**IT WILL SAVE LIVES**

# **Are you tsunami prepared?**

## **A resource to help your family prepare**

If you feel an earthquake (potential indication of a local tsunami):

- **DROP, COVER, HOLD** until the earthquake is over
- **MOVE IMMEDIATELY** to high ground
- **GO ON FOOT**
- **DO NOT WAIT** for an official warning
- **DO NOT CALL 911**
- **DO NOT PACK** or delay
- **STAY ON HIGH GROUND** until local emergency officials give an “all clear”

Tsunami Awareness Program  
City of Seaside  
989 Broadway, Seaside, OR 97138  
[http://www.cityofseaside.us/html/tsunami\\_info.html](http://www.cityofseaside.us/html/tsunami_info.html)

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## **Guide to Tsunami Preparedness**

To respond quickly in a tsunami event, you must be prepared. The following is a checklist of things you can do to be prepared. Follow this checklist and evaluate your tsunami preparedness.

### **YOU SHOULD:**

- Have a copy of your community's Tsunami Evacuation map/brochure
- Know the tsunami hazard and safe areas in your community
- Make a family emergency plan for both a local and distant tsunami
- Decide evacuation routes given the different scenarios
- Know where each family member would go during each scenario
- Prearrange with family members to call designated friends or relatives outside the Pacific Northwest so the family can remain in contact, even if phone lines are saturated with calls.
- Practice your plan
- Re-educate you and your family on a regular basis
- Have a pre-packed emergency kit
- Be prepared to be self-sufficient for multiple days
- Talk, talk, talk to family, friends, neighbors and coworkers about planning and preparing

**REMEMBER: If you educate and prepare, you can save lives!**



If a tsunami hits, will you be ready?

# FAMILY TSUNAMI EMERGENCY PLAN

How we can prepare now

Natural disasters pose a threat to every town across the country. It is important to learn about the natural disasters that are likely to occur in your area. Such an event will probably never happen in your community but it is always better to be prepared! Here in Seaside, there is a probability that a tsunami may hit our coast. Set up a time to meet as a family and decide a plan of action for various scenarios. It is recommended that you have a plan for both a distant (4+ hours to reach high ground) and local (10- 30 minutes to get to high ground) tsunami. Each plan should identify what your family would do if an event occurred during the day, in the evening, or when you were away from home. Talking as a family about how to respond to different situations, ensures everyone knows what do in a real event. So sit down with your family, talk about tsunamis and make a plan for how your family will respond. Post this information in a common space, such as on the refrigerator. In addition, be sure to review your family's emergency plans on a regular basis to reeducate yourselves.

Family members' names: \_\_\_\_\_

Home address: \_\_\_\_\_

Out-of-town emergency contact person: \_\_\_\_\_ Contact number: \_\_\_\_\_

Location of "grab-n-go" emergency kit: \_\_\_\_\_

Emergency meeting place: \_\_\_\_\_

## DAYTIME

Where is our family during the day?

Family member	Location	Safety Place	Contact Info
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

## EVENING

What is our family's emergency plan when we are at home?

Safe places in our house during an earthquake: \_\_\_\_\_

Is our house in a tsunami hazard zone?  Yes  No

# SEASIDE TSUNAMI EVACUATION MAP



If so, where is the nearest safety zone?

What is our family walking route to that safety zone?

What will we do if we hear the tsunami siren? (3-minute siren blast)

What will we do if the ground shakes for 1-4 minutes?

## Test your knowledge

Over the last few months, there has been a lot of talk in the news about tsunamis. Living on the Oregon coast, we are exposed to this term on a regular basis. However, do you know the detailed information on tsunamis that will be critical for a quick response in a real event? Take a few minutes to test yourself on what you know. This may help direct you on what you need to learn.

- 1 What do you think a tsunami is?
  - a. One large wave
  - b. A series of large waves
- 2 What do you think most commonly causes a tsunami?
  - a. An earthquake under the ocean
  - b. An unusually high tide
- 3 When do tsunamis typically occur?
  - a. Winter
  - b. Early morning
  - c. Anytime of day or year
- 4 What is the difference between a local tsunami and a distant tsunami?  
\_\_\_\_\_  
\_\_\_\_\_
- 5 What is your first indication that a distant tsunami is approaching?
  - a. Ground shaking violently
  - b. 3-minute siren blast
  - c. Emergency personnel notifying you
- 6 What is your first indication that a local tsunami is approaching?
  - a. Ground shaking violently
  - b. 3-minute siren blast
  - c. Emergency personnel notifying you
- 7 For a distant tsunami, how much time will you likely have to reach high ground?
  - a. 10- 30 minutes
  - b. 1- 2 hours
  - c. 4+ hours
- 8 For a local tsunami, how much time will you likely have to reach high ground?
  - a. 10- 30 minutes
  - b. 1- 2 hours
  - c. 4+ hours
- 9 Indicate which of the following areas are outside the tsunami hazard zone?
  - a. City Hall
  - b. The Community Center
  - c. The Hospital
  - d. Seaside Heights Elementary School
  - e. Broadway Middle School
  - f. Sunset Hills neighborhood
  - g. Seaside aquarium
  - h. Tillamook Head
- 10 Is your house inside or outside the tsunami hazard area?
  - a. Inside the tsunami hazard area
  - b. Outside the tsunami hazard area
- 11 Where is the nearest community-designated assembly area for a tsunami event?  
\_\_\_\_\_

Answers for questions: 1: b, 2: a, 3: c, 5: b, 6: a, 7: c, 8: a, and 9: c, d, f, h.

4: A distant tsunami is generated by an undersea earthquake far from Oregon, while a local tsunami is generated by an earthquake off the Oregon coast.

# Tsunami 101

## What is a tsunami?

A tsunami is:

- A series of large waves
- Typically generated from an undersea earthquake

## Are there different types of tsunamis?

In Oregon, we face two potential tsunami scenarios. They are not exactly different types but it is important to understand the two scenarios because they require different responses.

2 DIFFERENT SCENERIOS ⇒ 2 DIFFERENT RESPONSES

Scenario	Local Tsunami	Distant Tsunami
<b>Earthquake location</b>	Along the Oregon coast	Far from the Oregon coast
<b>Time till arrival</b>	10-30 minutes	4+ hours
<b>Evacuation indicator</b>	Ground will shake violently for 1-4 minutes	Tsunami 3-minute siren and/or NOAA Weather Radio announcement
<b>How to respond</b>	<ul style="list-style-type: none"> <li>• Need to evacuate immediately</li> <li>• Move quickly to high ground</li> <li>• Go on foot</li> <li>• Do not delay</li> <li>• Bring pre-packed emergency kit</li> </ul>	<ul style="list-style-type: none"> <li>• Still move quickly to high ground</li> <li>• More time to prepare and get things together</li> <li>• May be able to drive but potential grid lock</li> </ul>
<b>Evacuation conditions</b>	<p>With the local earthquake, terrain may be difficult to traverse. You should expect:</p> <ul style="list-style-type: none"> <li>• Power lines down</li> <li>• Bridges collapsed (except: 12<sup>th</sup> Ave west and east, 1<sup>st</sup> Ave and Broadway east)</li> <li>• Road surface cracks or failures</li> <li>• Loss of power, water, &amp; sewer</li> </ul>	<p>Evacuation route will be much easier to traverse because the land has not experienced an earthquake.</p> <ul style="list-style-type: none"> <li>• Roads may be gridlocked</li> <li>• City emergency staff will provide assistance with traffic</li> </ul>
<b>Recent significant Seaside event</b>	1700 AD	1964

## **About the sirens**

There is a difference between the fire siren (Wednesday, 7 PM) and the tsunami siren. The fire siren is a series of low to high pitched siren blasts; whereas, the tsunami siren starts out low, rises to the highest pitch and **STAYS THERE FOR 3 FULL MINUTES**.

## **Important facts to know**

- Expect many waves over several hours, the first wave may not be the largest
- A wave will hit, then water will rush back out for several minutes followed by additional surges of water
- Tsunamis can move faster than a person can run
- Tsunami wave action can last up to 12 hours
- Events can occur any time of day or in any season; have evacuation plans for different scenarios
- Last distant tsunami to hit Seaside and cause significant damage was in 1964
- Local tsunami events occur at intervals of 200 to 1000 years averaging about 500-600 years along the Northwest West Coast of the US and Canada.
- There is ~15% chance of a magnitude 9 earthquake and tsunami striking Oregon in the next 50 years.

## **What will it be like during a tsunami event?**

Distant tsunamis and some local tsunamis cause the water near shore to initially recede, exposing the ocean floor. Some local tsunamis cause water to begin rising shortly after the earthquake. When the tsunami arrives, the event can last for many hours with large waves arriving every 10 to 60 minutes. Wave height could be as great as 10 meters (~33 feet) or more (30 m in extreme cases), flooding inland several hundred meters. Distant tsunamis will be smaller than a local tsunami, most only flooding the beaches and marshes, although rare ones can flood a meter or so above the boardwalk. A local tsunami is likely to flow at least a few meters above the boardwalk and will probably sweep away most of the wood frame buildings in town. Concrete and steel buildings, if they survive the earthquake, will probably survive the tsunami.

Tsunamis typically come in as surges or rolling walls of white water, so do not try to surf a tsunami! The tsunami will rush up the beach and travel up bays, rivers, and streams. In Seaside, the water will travel up the Necanicum River and Neawanna Creek.

The tsunami's force can be enormous. Wave activity can move logs, buildings, cars, boats, and other debris inland hundreds of meters. The moving material will injure or kill people. It is important to stay above or outside of inundation areas.

## **What if I cannot make it to high ground?**

If you cannot make it to high ground, seek refuge in the highest place possible. People have survived tsunami events by climbing trees and getting on rooftops. The upper floors of large concrete and steel buildings are frequently safe havens.

**How long can a tsunami last?**

Wait for an official “all clear” to return to low-lying areas. Tsunami wave action can last 12 or more hours with the most dangerous waves arriving in the first 5-6 hours. You should expect many waves. The first waves may not be the largest. Do not return to low-lying areas between waves.

**How long will it be before help arrives?**

Red Cross intends to set up shelters on high ground in Seaside. These plans are contingent upon the volunteers’ ability to access potential shelter areas. Currently there are not emergency supplies stored in Seaside’s high areas. Therefore; in both scenarios, local or distant, you should be prepared to be self-reliant for several days. If it is a local tsunami, it may take several weeks to get adequate relief from outside the coast.

**How can you become an emergency responder?**

Check with your local emergency management office to find out how to get CERT training. CERT volunteers organize emergency response in their neighborhood, making sure that people that need extra help evacuating get that help. They also get training in first aid and other emergency response skills.

## **For more information on tsunami preparedness:**

### **Local**

Seaside Tsunami Awareness Program  
989 Broadway  
Seaside, OR 97138  
(503) 738-7100  
[http://www.cityofseaside.us/html/tsunami\\_info.html](http://www.cityofseaside.us/html/tsunami_info.html)

Seaside Police Department  
1091 S. Holladay Dr.  
Seaside, OR 97138  
(503) 738-5511  
<http://www.seasidepd.org>

### **County**

Clatsop County Emergency Services  
PO Box 658  
Astoria, OR 97103  
(503) 325-8635  
<http://www.co.clatsop.or.us/default.asp?deptid=5&pageid=172>

### **State**

Oregon Emergency Management  
Earthquake and Tsunami Program  
3225 State Street  
P. O. Box 14370  
Salem, OR 97309-5062  
<http://www.osp.state.or.us/oem/programs/earthquake/tsuino9.htm>

Oregon Department of Geology and Mineral Industries (DOGAMI)  
800 NE Oregon Street #28, Suite 965  
Portland, OR 97232  
(503) 731-4100  
<http://sarvis.dogami.state.or.us/earthquakes/Coastal/TsunamiIntro.htm>

### **Other**

American Red Cross, Clatsop County Chapter  
(503) 325-4721  
[www.redcross-pdx.org](http://www.redcross-pdx.org)

International Tsunami Information Center  
<http://www.prh.noaa.gov/itic/index.html>

West Coast and Alaska Tsunami Warning Center  
<http://wcatwc.gov/>

National Tsunami Hazard Mitigation Program  
<http://www.pmel.noaa.gov/tsunami-hazard/>