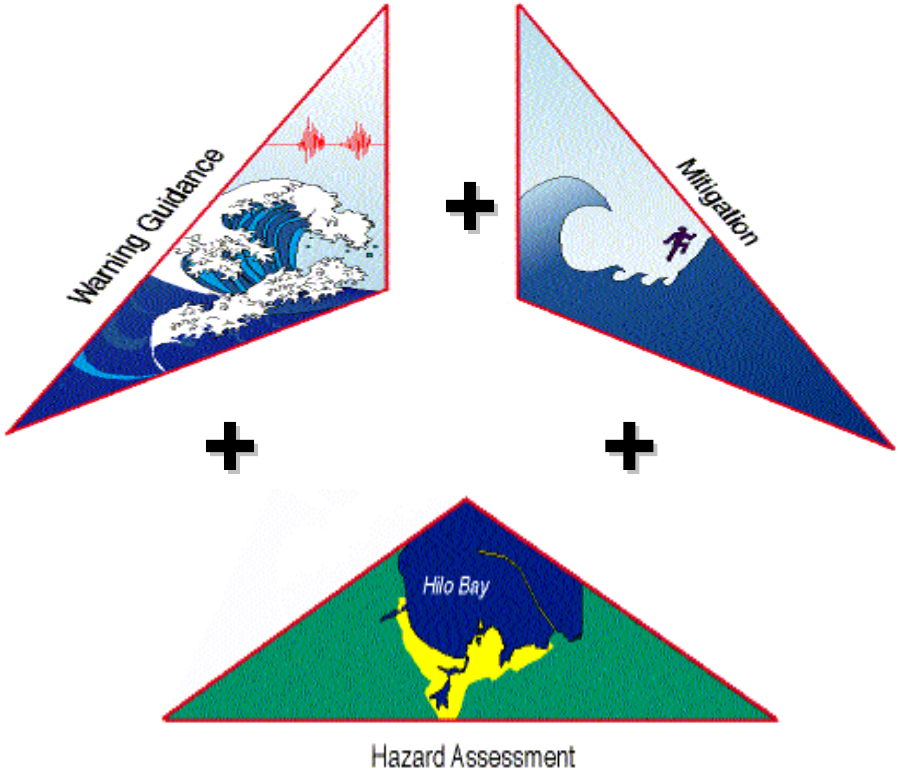
Tsunami Preparedness in Communities (Roles and Responsibilities)

George Crawford, Washington Emergency Management Division

National Tsunami Hazard Mitigation Program



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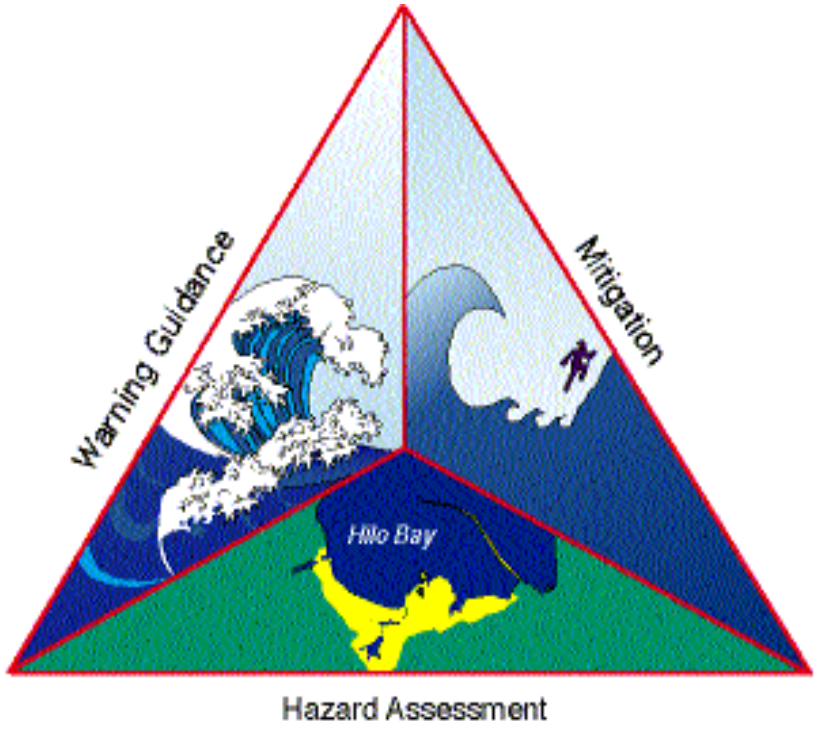
Required Community Products

State of Washington Tsunami Program

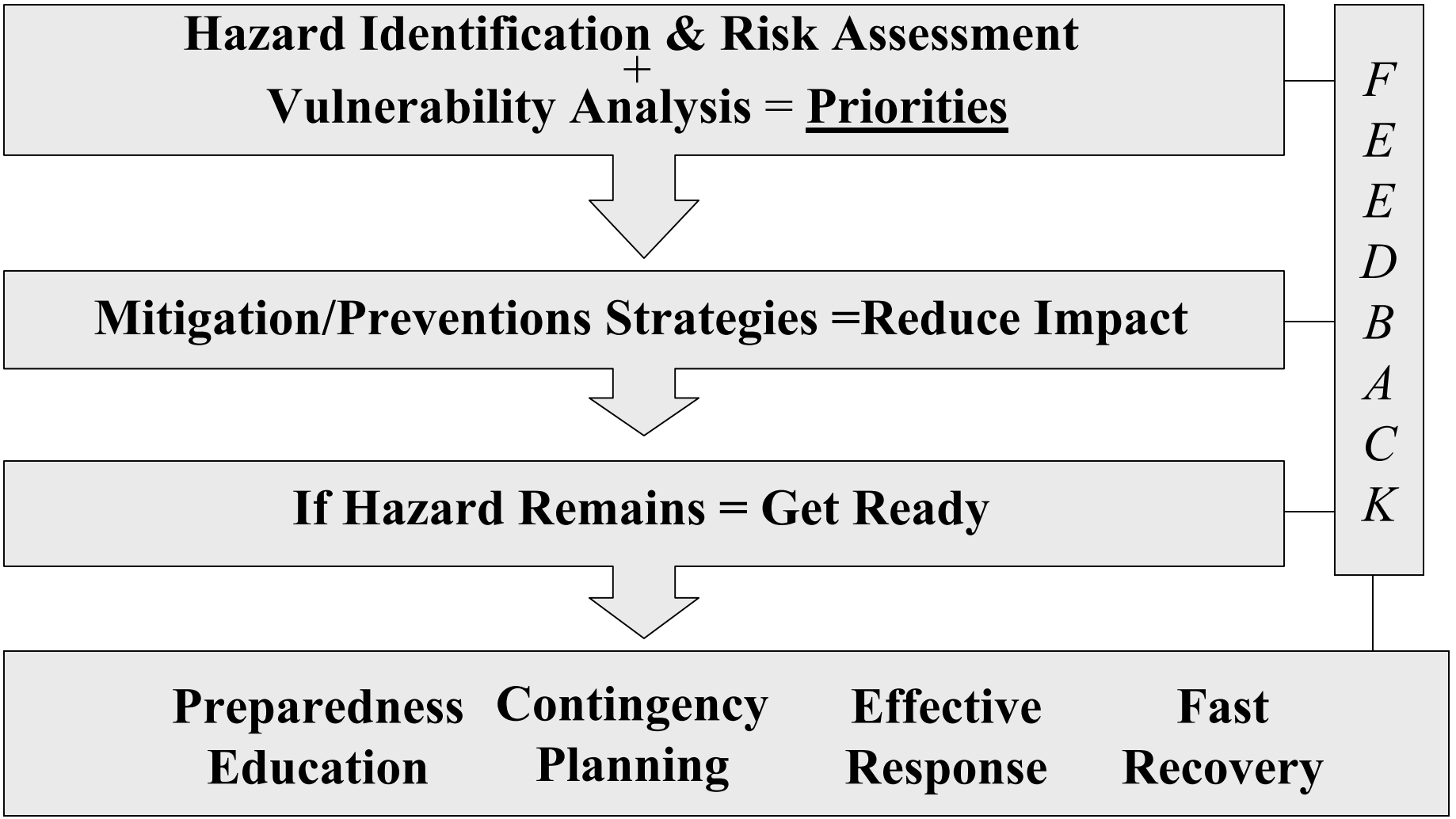
State/Local Tsunami Workgroup

- **Bottom up approach**
  - ✓**Strategies based on community needs**
  - ✓**Rapid buy in**



"Defining clear goals and objectives is one of the most important -- Initial activities provides a platform for an effective risk Communication"

An Integrated Emergency Management Approach



Hazard Identification & Risk Assessment

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Vulnerability Analysis = Priorities

Hazard Assessment

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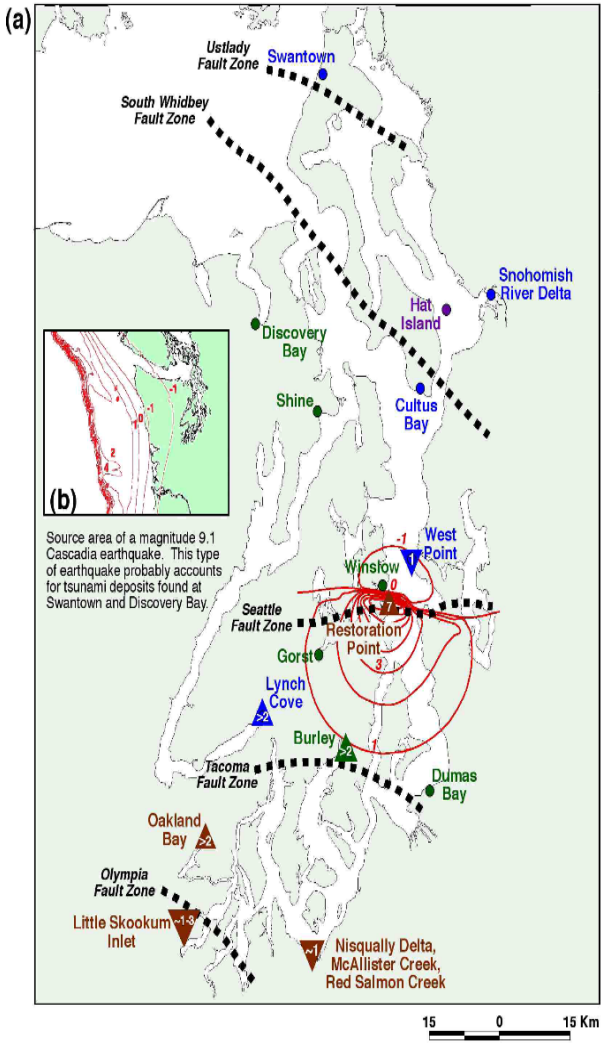
- ✓ **Scientific Studies and workshops**
- ✓ **Tsunami Modeling**
- ✓ **Inundation Mapping**

"Risk information that comes from a trustworthy source is more readily believed than information from an untrustworthy source"

Identifying the Hazard



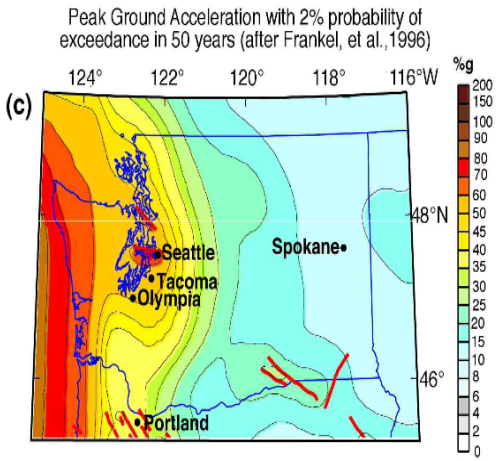
Earthquakes

Tsunami Evidence

- Published geologic tsunami deposit
- Candidate geologic tsunami deposit seen in reconnaissance
- Native American Stories

Published co-seismic Vertical Deformation Estimates (Color-coded for Tsunami Evidence)

- Uplift of n meters
- Subsidence of n meters
- Fault Zones
- Vertical deformation for Mw 7.3 Seattle Fault



Map (a) is based on discussions held during the Puget Sound Tsunami Sources workshop held in Seattle, Washington on 10 June 2002, and on subsequent reviews and discussion by workshop participants. Contributing institutions included Kent State University, National Oceanic and Atmospheric Administration (NOAA), University of Nevada, University of Washington, U.S. Geological Survey (USGS), and Washington Division of Geology and Earth Resources. The workshop was organized by NOAA's Center for Tsunami Inundation Mapping Efforts (TIME), the USGS, Washington's Department of Natural Resources (WADNR) and Washington's Emergency Management Division (WAEMD).

2002 Puget Sound Tsunami Sources Workshop

Hazard Identification & Risk Assessment
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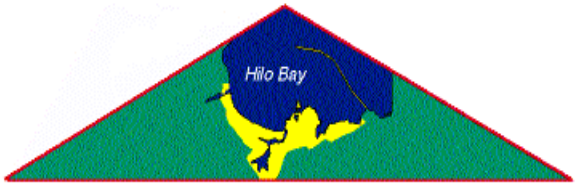
Vulnerability Analysis = <u>Priorities</u>

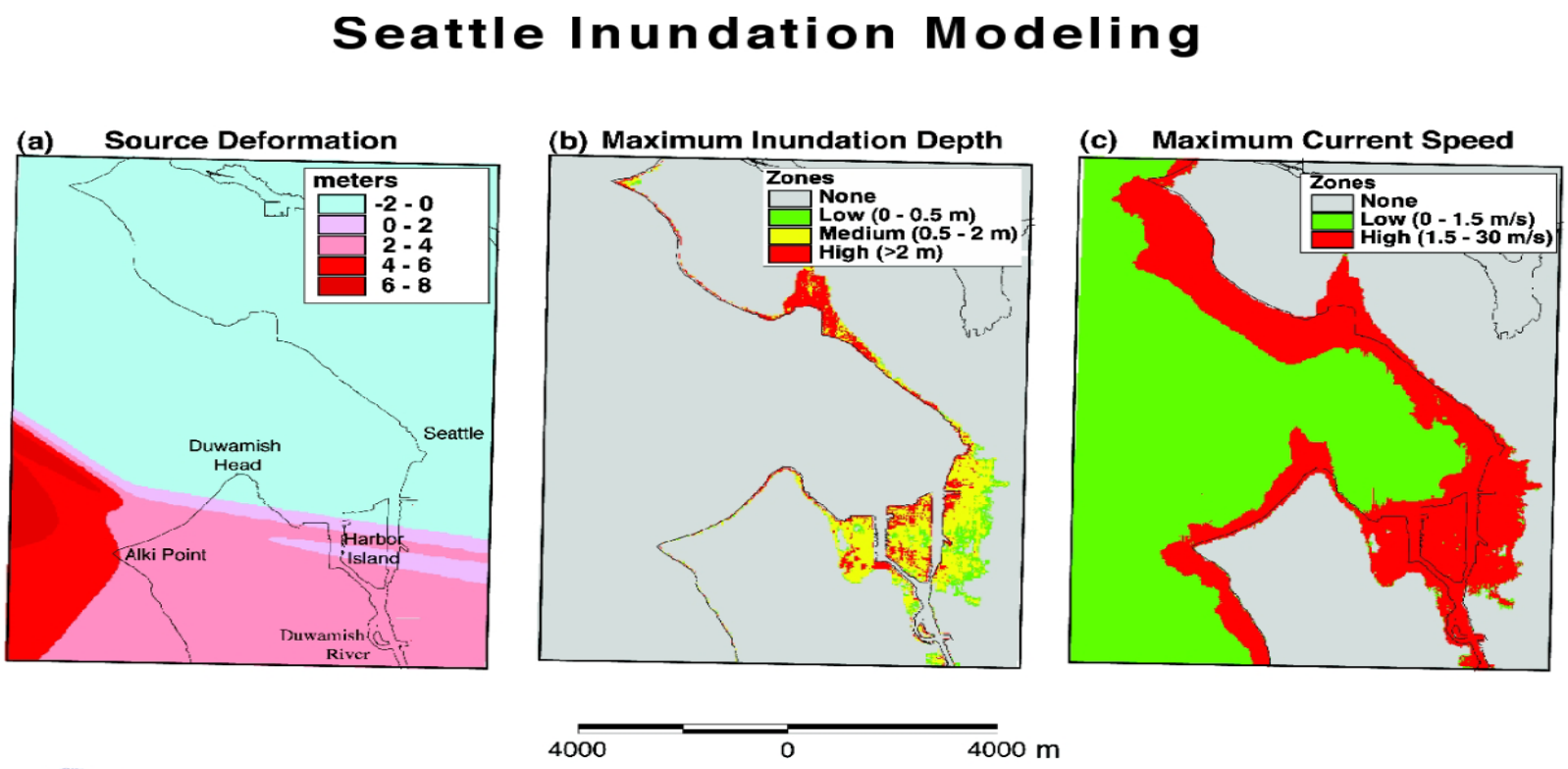
- Risk Assessment
  - ✓ A measure of the probability that damage to life, property, and/or the environment
- Vulnerability
  - ✓ Exposure to a threat
- Vulnerability Analysis
  - ✓ Identifies & quantifies what is susceptible to damage



Hazard Assessment

"Financial impact, business impact, and real estate values are often important issues to the community when discussing risk issues"

Risk Assessment +Vulnerability Analysis



If Hazard Remains = Get Ready

Preparedness Education | **Contingency Planning** | **Effective Response** | **Fast Recovery**

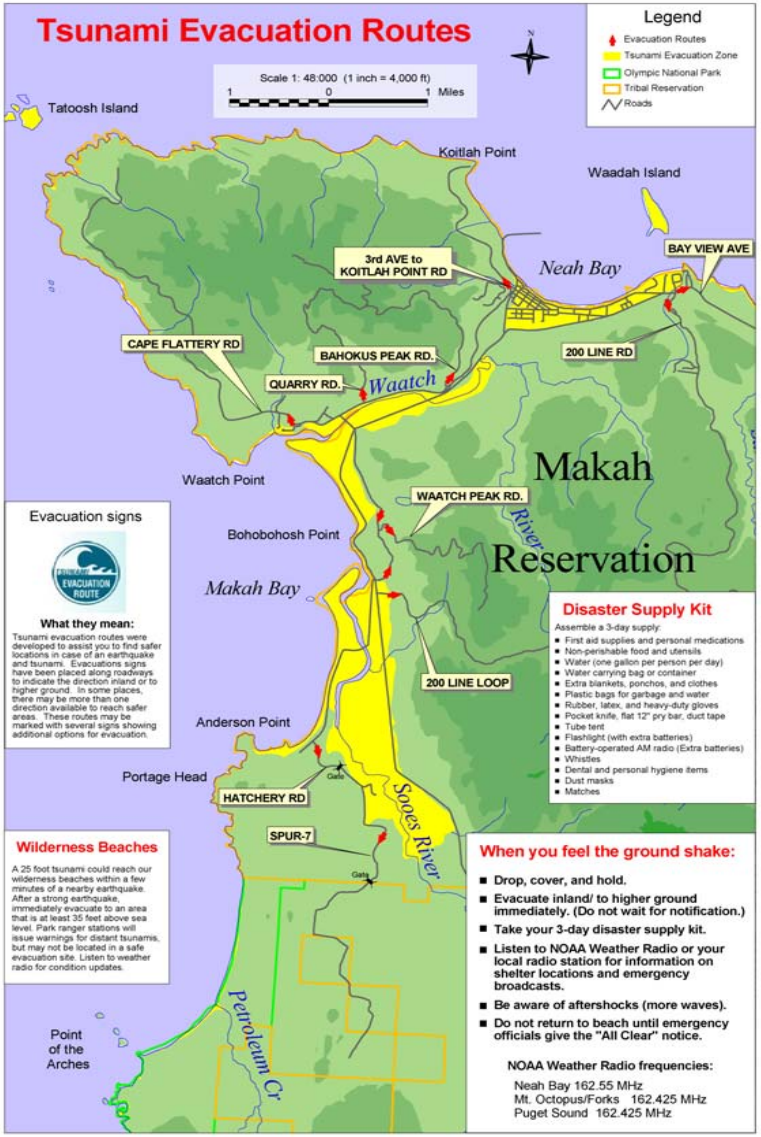
- **Develop Evacuation Routes**
- **Signage**
- **Public Education**
- **Alert and Notification Systems**

Evacuation Routes

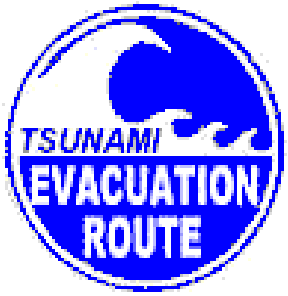
Planning Elements

- ✓ Identify ALL Stakeholders
- ✓ Workshops
- ✓ Single Access Roads
- ✓ Congregation areas

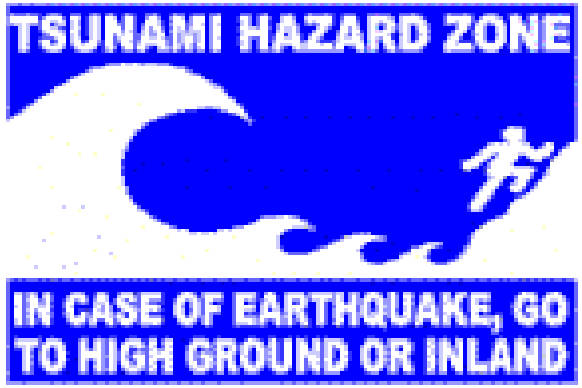
"Local tsunami evacuation maps developed based on modeling, maps and local oral history"



Tsunami Signs



- **Pre-event Awareness**
- **Evacuation Routes**
- **Consistent Message**
- **Life Safety Signs**



Preparedness Education

- **Media**
- **Interpretive Signs**
- **Education Materials**
- **Workshops**

Media

Major partner in awareness education

- ✓ **Newspaper**
- ✓ **Radio**
- ✓ **TV**

Thursday
April 23, 1998
Olympic Peninsula, Washington
35 cents

Partly cloudy
High 58, Low 43
Weather / C8

Peninsula Daily News

Good Morning
Nation: Holocaust remembered. / C1

Sports: Peninsula College hosts Kenyan basketball team. / B1

Officials plan for tsunami threat

Workshop: County and park will cooperate to install warning signs on beaches.

By Brad Lincoln
Peninsula Daily News

PORT ANGELES — Scientists can't predict when the next tsunami will hit the coast or the Strait of Juan de Fuca, but they say a wave will hit eventually.

To prepare for that event, Clallam County and Olympic National Park plan to work together to install reader boards along beaches on the coast this summer.

The signs will help people be aware of the hazards tsunamis pose and tell people to go to higher ground in the event one should happen, said Joe Ciarlo, Clallam County Emergency Management coordinator.

He and about 100 other officials met at a tsunami workshop in the Clallam County Courthouse Wednesday to talk about tsunamis, which are essentially a series of sea waves commonly caused by an earthquake beneath the sea floor.

Ciarlo said the county is well prepared to deal with tsunamis generated a long distance off — such as near Hawaii or Alaska. When a warning is issued by the West Coast/Alaska Tsunami Warning Center, the county would activate its emergency operations center.

The emergency alert system would be activated by the National Weather Service. People watching TV or radios would hear a tone followed by evacuation information.

The county would set up evacuation routes and shelters.

Information could be passed to residents in La Push, Clallam Bay-Sekiu and Neah Bay before a long-distance wave hit, Ciarlo said.

However, the county wouldn't have enough time to issue warnings to people along the coast and the entrance to the Strait of Juan de Fuca if a wave was generated by an earthquake off the coast.

TSUNAMI HAZARD ZONE

People would have to head for higher ground after feeling an earthquake, Ciarlo said.

Other officials and scientists said there are systems in place to warn people of tsunamis.

Thomas Sokolowski, director for the West Coast/Alaska Tsunami Warning Center, said an earthquake of 7.1 magnitude or above along the West, Alaska or British Columbia coasts would trigger a response by the agency.

If the quake was less than 7.1 magnitude the center would issue a tsunami advisory.

Information would be sent over the National Oceanic and Atmospheric Administration's National Weather Radio, said Ted Buehner, National Weather Service warning coordination meteorologist.

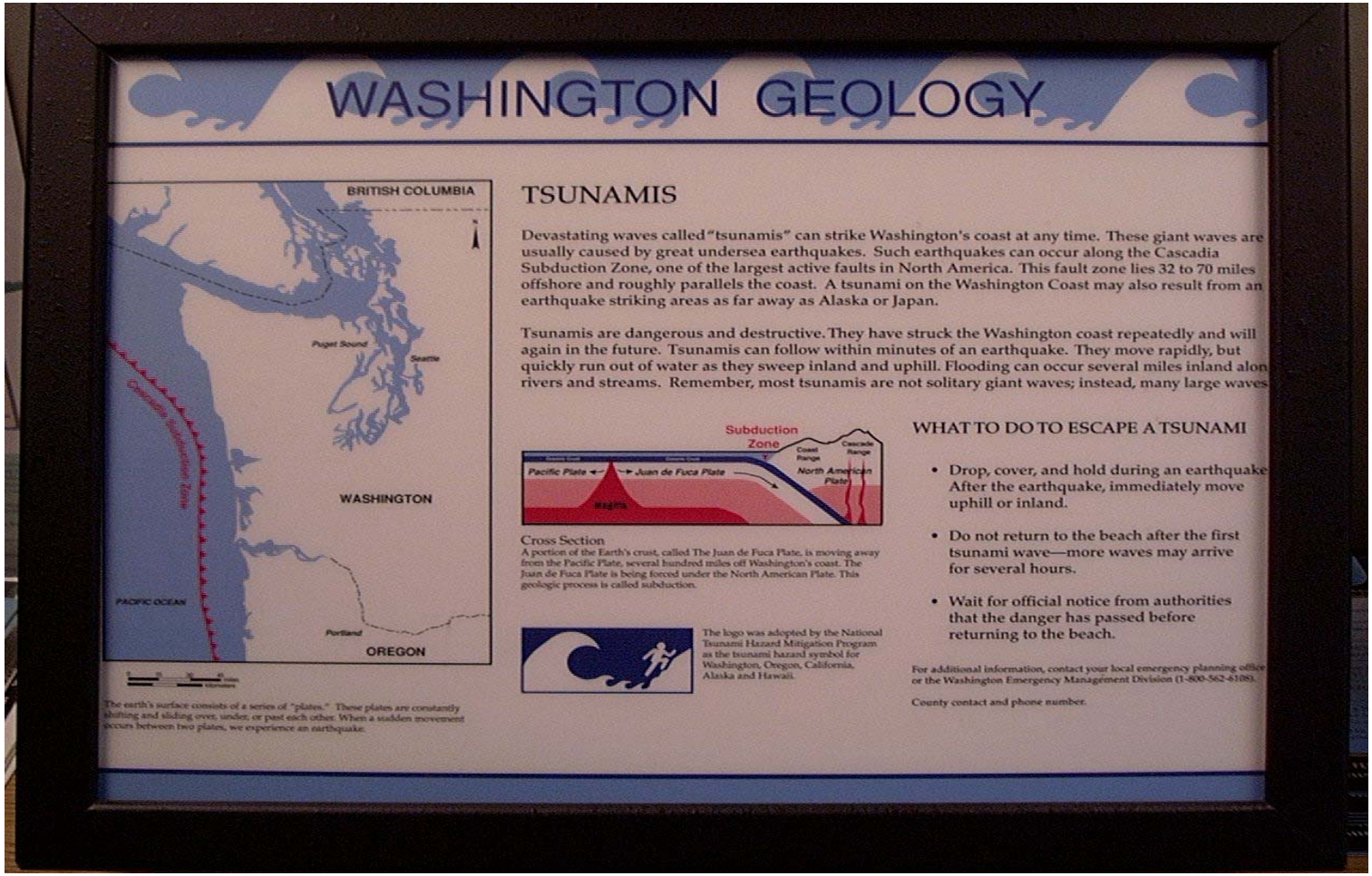
People can buy hand-sized weather radios at electronic stores.

Several stations on the Peninsula would broadcast a two-tone warning alarm for watches and warnings. A watch is to raise awareness; a warning is issued when a tsunami is expected, Buehner said.

The warning or watch would be

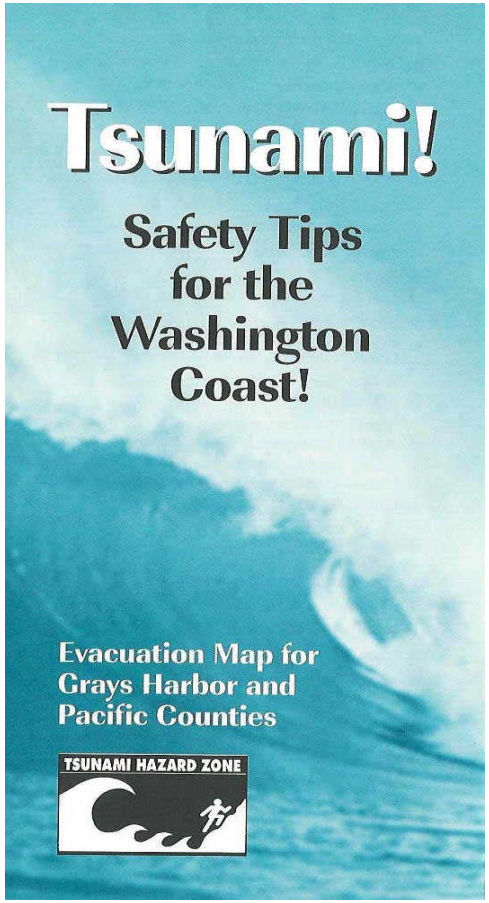
Turn to Workshop / A2

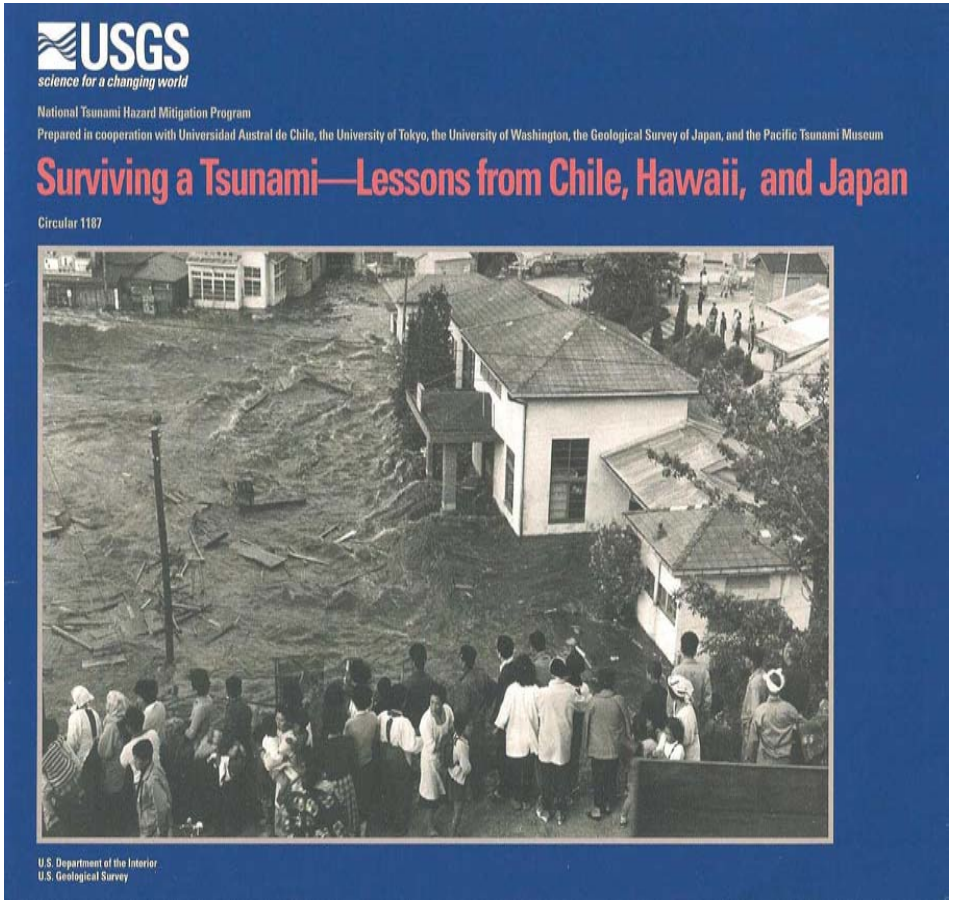
Interpretive Signs



Placed in areas that are highly trafficked

Education Materials





Workshops

Ties scientific research and emergency management principles

- **Partnership brings credibility to program and brings the program to the community**

Alert & Warning

- Getting warning to the responders
- Getting warning to the public
- Use table top exercises to identify problems and for training
- Conduct drills in the community
- Test the notification systems

NOAA
Weather Radio
Emergency Information Network

TsunamiReady Program

- **24-hour warning point**
- **Duplication of communication systems**
- **Workshops**
- **Tsunami Plan**

TsunamiReady Program