NTHMP 5-Year Review
Washington State

“One Message – One Voice”

George Crawford
Washington Emergency Management Division
May 15, 2007
Washington State Role

- Washington has been impacted by tsunamis throughout history by:
  - Earthquakes
  - Delta Failures
  - Landslides

- National Tsunami Hazard Mitigation Program provides a partnership that provides 1) Hazard Assessment, 2) Warning Guidance and 3) Mitigation

- The State serves as conduit between federal partners and at-risk tsunami communities
## Washington State Annual NTHMP Budget

<table>
<thead>
<tr>
<th>FUNDING</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTHMP</td>
<td>135.7</td>
<td>338.7</td>
<td>356.0</td>
<td>309.0</td>
<td>753.8</td>
<td>1893.2</td>
</tr>
<tr>
<td>STATE</td>
<td>211.3</td>
<td>221.4</td>
<td>238.2</td>
<td>287.6</td>
<td>1703.5</td>
<td>2940.1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>347.0</td>
<td>560.1</td>
<td>594.2</td>
<td>599.6</td>
<td>2457.3</td>
<td>4833.3</td>
</tr>
</tbody>
</table>

**NOTE: Fed $ for Multi-state Project**

1. 2002 - $60,000
2. 2003 – $130,000
3. 2004 – $35,000
4. 2005 – $35,000
5. 2006 - $35,000
Washington State

Goal: Complete tsunami inundation maps for 75% of coastal communities

<table>
<thead>
<tr>
<th>Modeling Effort</th>
<th>Communities Covered</th>
<th>At-risk Residents</th>
<th>Evacuation Maps</th>
<th>% Communities Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>33</td>
<td>85213</td>
<td>23</td>
<td>80%</td>
</tr>
</tbody>
</table>

**Impact**
- Provides critical planning information to meet the intent of the Growth Management Act
- Critical to the development of evacuation maps and education materials

**Challenge**
- Providing data under Public Law to assess current State Tsunami Evacuation Policy
Washington State

NTHMP Goal: Produce evacuation maps that are consistent from state to state for mapped communities

- All Evacuation Maps are consistent with NTHMP agreed requirements
- Impact
  - Provides a seamless approach within the state to evacuation route design and important disaster management information
Washington State

State Goal: Develop Evacuation Maps for each at-risk jurisdiction versus County wide evacuation map

23 Evacuation maps have been completed during the review period

- **Impact**
  - Focuses on communities – Increase ability for community planning and response
  - Increase community buy-in and enhance education and preparedness efforts

- **Challenges**
  - Maintaining products current
  - Funding
Washington State

NTHMP/State Goal: Disseminate automated, reviewed earthquake and tsunami notifications as rapidly as is scientifically and technologically possible

- Integrating the California Integrated Seismic System into costal communities
- USGS/EMD/University of Washington Project trained 20 tribes/communities and provided software and hardware
  - Provides real-time graphic of earthquake location, magnitude, and ShakeMap
  - Provides Tsunami Bulletins (if applicable)
- Impact: Enhance capabilities to rapidly assess situation
- Challenge: Training personnel on correct use of CISN and maintaining proficiency
Washington State

Governor’s Priority: Ensure all levels of government come together in a unified response

Coastal Communities evacuate off a Tsunami Warning Message that is sent by State

- **Impact**
  - One message – one voice

- **Challenge**
  - Accuracy when calling tsunami warnings

Lesson Learned Jun 2005 Tsunami Warning

NTHMP 5-Year Review
Trained and provided guidebooks to all Seattle and 95% of coastal broadcasters

- **Impact**
  - Provides broadcasters with state and federal process and gives them evacuation maps, list of local experts and two DVD’s that can be used
  - Product given to other states, Thailand using as template, and product showcased in “Tsunami Teacher”

- **Challenge**
  - Keeping it current

---

**Lesson Learned June 2005 Tsunami Warning**

NTHMP 5-Year Review
**Washington State**

NTHMP Goal: Install evacuation notification systems in 50% of coastal communities in each state

Governor’s Priority: Meet or exceed federal funding for dissemination systems

- All at-risk tsunami communities have notification systems to disseminate and receive a tsunami message
  - NOAA Weather Radios (NWR) in ALL public/tribal facilities and many businesses in the hazard zone
  - Reverse E911 System installed in several Counties (Covers all at-risk communities)
  - 43 All-Hazard Alert Broadcasting (AHAB) Radios will be operational in at-risk tsunami communities by Jun 30, 07

- Impact
  - Communities are able to receive the message and take appropriate actions to getting the warning to the people
  - Citizens/businesses can receive the evacuation message – NWR Month provides reduce cost for NWRs

- Challenges
  - Reliability of systems, training and system utilization, funding requirements for repeater sites, and adding/upgrading systems to current technology
Washington State

State Goal: Outdoor Warning Dissemination to at-risk tsunami communities

- All-Hazard Alert Broadcasting (AHAB) Radio
  - Tone/voice outdoor system
  - All hazard system

- Impact
  - Provides verbal warning consistent with NWR
  - Change the way we do outdoor dissemination
  - System used nationally and internationally

- Challenges
  - Funding
  - Maintenance

Prototype installed in Ocean Shores July 2, 2003
Washington State All-Hazard Alert Broadcasting (AHAB) Network

TO BE INSTALLED BY JUNE 2007 (24)
- Cape Disappointment
- Clallam Bay
- Copalis Beach
- Diamond Point
- Fort Worden
- Grayland (2)
- Ilwaco
- Island County
- Long Beach
- Lower Elwha
- Lummi Nation (2)
- Pacific Park
- Port Angeles
- Port Townsend
- Ocean Park (4)
- Ocean Shores (2)
- Seaview
- Taholah (Quinault Nation)

OPERATIONAL (27)
- Aberdeen
- Bay Center
- Hoquiam
- La Push (Makah Tribe)
- McAlder
- McMillin
- Neah Bay
- Ocean City
- Ocean Shores (2)
- Orting (3)
- Pacific Beach
- Port Townsend
- Puyallup (2)
- Sandy Point
- Seattle (3)
- Sumner
- Surfside
- Tokeland (Shoalwater Bay Tribe)
- Westport (3)
Washington State

NTHMP GOAL: Use social science tools to measure tsunami resilience of communities and the effectiveness of the NTHMP

A total of 7 social science surveys have been completed in Washington

- Surveys target residents/visitors, school children, businesses and tribes

- Impact
  - Development of "How the Smart Family Survived a Tsunami"
  - Disaster Response Guidebook for Hotels and Motels on Washington’s Coast
  - Development of Map your Neighborhood
  - Crafting of State Tsunami Warning Message

- Challenges
  - Funding of focus groups, studies, surveys, and products
  - Implementing suggested changes within communities (buy-in)
Washington State

NTHMP Goal: Designate that 25% of communities at risk in each state are TsunamiReady

GMAP Quarterly Requirement

- Focus is on outer coast – 30% of recognized jurisdictions and tribes are TsunamiReady
- Six Tsunami Ready Communities
- Impact
  - Provides a foundation for communities to be prepared and stimulate continued preparedness and mitigation activities
- Challenges
  - TsunamiReady funding
  - Getting communities to apply
NTHMP Goal: Ensure that public information is available; Display education posters in 75% of coastal water oriented/recreation businesses

- Public education products have been placed in visitor centers, hotel/motels, mailings, and other areas that are visited by residents and visitors
- 10-15 major workshops in coastal areas have been held each year for citizens and businesses
- Disaster campaign held semi-annual with evacuation drills; new posters are developed each year and distributed to communities

Impact

- Social science focus groups and surveys show that awareness levels have increased
- Request for materials/publications have increased from community groups, businesses and individuals
- Education is a Governor’s Priority
Run To High Ground!

A Native American story about tsunamis and earthquakes. Featuring storyteller, Viola Riebe of the Hoh Tribe

Washington State
Native Americans - Use of traditional knowledge
Governor’s Priority: Access to Private Lands for Tsunami Evacuation

- High ground in some areas are on private land
- Project in Pacific County
  - Identified private property owners
  - Identified method that allows access without private owner liability
  - DRAFT agreement under review
- Impact
  - Agreements will allow tsunami evacuation on high ground that is close to the inundation zone
Washington State

Governor’s Priority: Exercises and Drills

- Evacuation drills are held in April and September of each year
  - Evacuation drills are done for special events (India Study Tour)
- End-to-end communications test completed 3 times a year
- Impact
  - Provides staff training and stress test of communications equipment
  - Opportunity for residents to participate in exercise program
Washington State Tsunami Construction Guidance

• **Washington lead**
  
  • **2003** – Phase 1: Examined unpublished tsunami survey reports for evidence useful for estimating of forces on buildings and structural characteristics of buildings that survived tsunami attack.

  • 2002 – Workshop held to investigate the possibility of developing design guidance for shelters subject to earthquakes and tsunamis

  • 2004 – Phase 2: In progress – Development of design guidance

Design of structures for vertical evacuation from tsunamis
State of the art report and preliminary recommendations

**2004 – Phase 2: In progress**

- Development of design guidance
Washington State
TsuInfo Alert - Multi-State Mitigation Project

- Subscribers: 350
- Bimonthly publication
- Receive hard copy or go to website www.dnr.wa.gov/geology/tsuinfo/index.html

Challenges
- Input from states
- Involving new NTHMP states

NTHMP 5-Year Review
Washington State
International Outreach

- Provided resources and support to:
  - 11 Pacific Ocean Countries, New Zealand, Australia, Thailand, India, Japan, and Indonesia
  - Briefed all Indian Ocean Countries on NTHMP program and how to apply template
  - Released all public education free to international community

- Challenge
  - Availability to support international requests
Washington State
Future NTHMP Activities

- Define coastal areas that **do not** have to evacuate for a distant event (**PRIORITY**)
- Continue to work towards a seamless approach to alert and notification, disaster planning, response and recovery initiatives
- Continue to use social science tools to effectively educate residents and visitors and integrate human behavior into models that support/impact disaster management and local/state polices
- Assess geological impacts on evacuation routes and assembly areas to include potential damage to critical infrastructure from a Cascadia Event
- $7.5M to obtain above efforts in next 5 years – Outer coast
Washington State

Challenges/Deficiencies

- Challenges
  - Maintain a basic level
  - Improving communications between federal (NTHMP) and State
  - Increased workload to support NTHMP expectations

- Deficiencies
  - Graphical products for dissemination for NOAA’s tsunami warning system
  - Lack of adequate resources at NOAA to address NTHMP
NTHMP
A Partnership Making a Difference!

Identify the hazard and source

Vulnerability

Extent of hazard

NTHMP 5-Year Review
NTHMP
A Partnership Making a Difference!

Evacuation maps

Brochure

NTHMP 5-Year Review

Communication modeling
NTHMP
A Partnership Making a Difference!

Identify Earthquake

Tsunami Data

The “Last Mile”

NTHMP 5-Year Review
If you have additional questions during the review period, you may contact George Crawford at (253) 405-9419 or Tim Walsh at (360) 791-3130.

Thank You!