EVERETT REGION
PUGET SOUND MARITIME DISASTER RESILIENCE WORKSHOP REPORT

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Cover photo courtesy of the Port of Everett

Executive Summary – Everett Maritime Area Workshop

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Project Contacts

Program Coordinator:
Sasha Rector
Regional Catastrophic Program Coordinator, King County Emergency Management
srector@kingcounty.gov
206-205-4071

Workshop Coordinator:
Brandon Hardenbrook
Deputy Director
Pacific NW Economic Region
brandon@pnwer.org
206-443-7723

Contributing Participants

- Daniel Eungard, Geologist-Subsurface Lead/Tsunami Hazards, WA Geological Survey
- Maximilian Dixon, Hazards and Outreach Program Supervisor, WA EMD
- Amy Lucas, Snohomish County DEM
- Ed Madura, Security Director, Port of Everett
- Bryan Caraveo, Maritime Homeland Defense/Defense Support to Civil Authorities Analyst, US Third Fleet/ Booz Allen Hamilton
- Tim Lupher, USCG, Sector Puget Sound
- Chuck Wallace, Safety and Disaster Coordinator, Port of Edmonds
- Jim Grieco, Everett OEM CERT and Auxiliary Communications Service

Purpose

The Six Maritime Area Workshops were designed to identify specific strengths and gaps in response and recovery planning, build relationships and trust between emergency managers and the marine industry, and to inform development of the Maritime Resilience Framework through the identification of maritime assets, plans, and capabilities available after a major earthquake or tsunami incident. For a full recording of the workshop, please see **link here.**

Overview

Exercise Participation: The Everett area workshop hosted 43 public and private stakeholders from a variety of organizations: Emergency Management; City, County, and State Government; Port Authorities and Operators; Public and Private Ferry Lines; Maritime Shipping Associations; Tug, Towing, and Barge Companies; Merchant Mariners; and the US Coast Guard.

Anticipated Earthquake and Tsunami Threats: WA Emergency Management Division and WA Geological Survey provided anticipated earthquake and tsunami impacts for the Puget Sound Region as well as specific information for the Everett Maritime Area.

Local Response to Anticipated Impacts Panel: Specific areas discussed by members from both the maritime and emergency management sectors included concerns from the various sectors, immediate information needs after an incident, and how long will do citizens need to be prepared to be on their own.

All Hands Discussion: A communication and information-sharing discussion was held regarding the Tonga volcanic eruption and tsunami impacts. Information regarding communication tools and gaps were also discussed.

Best Practices: Current volunteer management updates and planning initiatives were presented by Snohomish County DEM.

Brief Overview of the Maritime Resilience Framework: Development objectives and processes to identify maritime assets and the resilience of those assets was presented.

Puget Sound Regional Catastrophic Preparedness Grant Program
King County Emergency Management
Pacific NorthWest Economic Region
CRDR Center for Regional Disaster Resilience

Everett Maritime Area Workshop Results

Identified Plans or Planning Initiatives:

- US Navy, Joint Logistics Over the Shore Plan
- Sector Puget Sound Maritime Transportation System Recovery Plan (MTSR)
- WA Tsunami Mitigation Planning Initiative (Port of Bellingham)
- Snohomish County Volunteer Management Planning
- Regional Community Points of Distribution Siting and Planning Initiative RCPGP Open Data
- Snohomish County Auxiliary Communications Service Planning
- WA State Ferries Long Range Plan
- WA Geological Survey and DNR effort to develop a clearinghouse for reporting damage assessment data
- The Port of Everett partnership with the cities of Everett and Marysville to develop a plan to transport critical workers across the water if the transportation system is disrupted.
- FEMA Cascadia M9 Response Plan
- Tsunami Design Zone Maps for Washington State Building Code

Identified Gaps

- Communications capabilities and interoperability in the event of a large-scale power outage
- Development and maintenance of a notification contact database for marina terminals, including longshore, tenants, and marine terminals contacts
- The need for the development of regional rapid damage assessment protocols & coordination strategy along with a clearinghouse for reported damage information
- Ongoing coordination and communications between all levels of government planners with maritime transportation system stakeholders
- Process for registering and training marine volunteers as part of county volunteer management

Recommendations

The following recommendations were developed based on stakeholder comments, presentations, and panel discussions throughout the workshop to help close gaps highlighted:

- Create regular opportunities for maritime stakeholders to coordinate with emergency management planners to build trusted relationships.
- Continue to identify key maritime assets and capabilities that could assist in response and recovery.
- Develop communication and information-sharing strategies to reach maritime stakeholders.
- Develop and maintain an emergency contact list of cell phone numbers and emails for marine partners, including marinas, terminals, and staff for rapid communications.
- Develop a regional maritime and emergency planning communications working group to identify gaps and improvements across the Puget Sound.
- Encourage the Port of Everett and surrounding area to work with WA Emergency Management to develop a tsunami mitigation framework.
- Coordinate marine volunteer management best practices across the Puget Sound Region.
- Develop and share coordinated rapid damage assessment plans and capabilities across the region.
- Create a standardized process for sharing assessed damage of critical maritime transportation facilities with key organizations and decision makers.
- Explore resources to host an annual regional maritime resilience exercise to test and update plans.

Regional Catastrophic Preparedness Grant Program (RCPGP)
Everett Area Maritime Resilience Workshop Report

Project Overview

The Federal Emergency Management Agency (FEMA) provided a Regional Catastrophic Preparedness Grant (RCPG) to King County on behalf of Central Puget Sound partners to address the enormous risk the region faces from a catastrophic earthquake. The purpose of this project is to maximize the ability of the Maritime sector to assist in the disaster response and recovery from a catastrophic earthquake when road, rail, and air transportation may be disrupted for weeks, months, and even years.

Puget Sound waterways provide a means to transport all manner of personnel, goods, and materiel that may be needed to respond to, recover from, and restore the region after a catastrophic earthquake. The RCPG project focuses on six maritime areas across Puget Sound, involves public and private partners from the region and Alaska, and works to identify maritime assets and capabilities that could play a role in response, recovery, and restoration efforts.

Following a catastrophic earthquake, supplying the Puget Sound Region with life-sustaining commodities such as water and food will require a tremendous, coordinated effort. Current planning to supply Community Points of Distribution (CPODs) assumes that resupply will come via land routes over the Cascade Mountains from the east or by air. These delivery routes are not assured due to the significant potential for large landslides to block the few mountain passes, for bridges to collapse, for airfield runways and facilities to be significantly damaged, and for uncertain availability of aircraft.

The Regional Catastrophic Preparedness Grant (RCPG) project focuses on public and private maritime assets in the following six maritime areas of focus in the Puget Sound Region, and also involves stakeholders from the State of Alaska:

Bellingham	Bremerton	Everett
Seattle	Tacoma	Olympia

Workshop Overview

Facilitated by the Pacific Northwest Economic Region (PNWER), the Everett area workshop focused on the port and surrounding maritime transportation system assets and capabilities. The workshop was designed to identify specific strengths and gaps in response and recovery planning, build relationships and trust between emergency managers and the marine industry, and to inform development of the Maritime Resilience Framework. A full recording of the workshop can be found at https://kingcounty.gov/depts/emergency-management/emergency-management-professionals/Regional-Catastrophic-planning.aspx

43 public and private stakeholders attended the workshop from a variety of organizations. . Examples of the disciplines represented include—

- Emergency Management
- City, County, and State government
- Port Authorities and Operators
- Public and Private Ferry Lines
- Maritime Shipping Associations
- Tug, Towing, and Barge Companies
- Merchant Mariners
- U.S. Coast Guard

Workshop Goal: Work to identify maritime assets, plans and capabilities available that could play a role in response, recovery, and restoration efforts after a major earthquake and subsequent tsunami.

Objectives:

1. Orient stakeholders to maritime supply chain response and Community Points of Distribution (CPOD) concepts.
2. Connect maritime stakeholders with emergency management and supply chain planners across the region.
3. Identify specific rapid damage assessment plans and information sharing protocols and procedures.
4. Elicit information about stakeholder capabilities, practices, and plans that support maritime supply chain response and recovery efforts.

Sponsor: Funding for the workshop was provided through a Regional Catastrophic Preparedness Grant (RCPG) funded by the Department of Homeland Security to King County Office of Emergency Management on behalf of the eight-county region that is part of the Regional Catastrophic Planning Team (RCPT).

Workshop Design: A planning team consisting of regional and local stakeholders provided input during several planning meetings on the development of the agenda and by identifying specific speakers and topics for discussion. The planning team included:

- Brandon Hardenbrook, Pacific NorthWest Economic Region (PNWER)
- Sasha Rector, Regional Catastrophic Program Coordinator, King County
- Eric Holdeman, Director, Center for Regional Disaster Resilience, PNWER
- Emily Rankin, Program Coordinator, PNWER
- Jeannie Beckett, AICP, The Beckett Group
- Ed Madura, Port of Everett
- Amy Lucas, Snohomish County Emergency Management
- Brent Stainer, Emergency Management, City of Everett
- Chuck Wallace, City of Edmonds
- John DeRousse, Everett Police

Everett Maritime Area: The Port of Everett Seaport is located in Everett, Washington on about 125 acres 25 miles north of Seattle. It is a natural deep-water, self-operating seaport supporting nearly $21bn worth of U.S. exports annually and ranks as the #2 export customs district in Washington State - #5 on the U.S West Coast.

The Port of Everett is the third largest container port in Washington State and is the region's premier

breakbulk cargo facility, handling high-value, conventional, and oversize cargoes in support of the aerospace, construction, manufacturing, agriculture, energy, and forest products industries. Most notably, the Port of Everett serves as an extension of the aerospace manufacturing process, accommodating all the oversized aerospace parts for the Boeing 747, 767, 777, 777X, and KC Tanker programs.

Snohomish County contains additional ports and maritime facilities, including the Port of Edmonds, Naval Station Everett, and the Washington State Ferry Terminals in Mukilteo and Edmonds. Other maritime transportation system facilities in the area include marinas, piers, boat launches, and docks that are owned and operated by city and county government and private sector partners.

Workshop Summary

Project Welcome - Brendan McCluskey, Director of King County Office of Emergency Management
As the project lead for the eight-county region, Brendan McCluskey welcomed everyone on behalf of the Regional Catastrophic Preparedness Grant Team. He spoke about the importance of the maritime sector and the need to collaborate with all transportation sectors to better coordinate as we prepare for a major disaster. This workshop is the first of many opportunities to strengthen our regional relationships and build new partnerships to become more resilient.

Host Welcome - Lisa Lefeber, CEO, Port of Everett
Lisa Lefeber kicked off the workshop and reviewed the investments made in the Port since 2009, retrofitting the Terminal for moving large aerospace parts and increased intermodal traffic. Everett now has the largest public marina on the West Coast. Along with the Port of Tacoma, Everett is a designated Strategic Port [Note: Strategic ports are U.S. ports designated to support major military force deployments]. Everett is well-placed to assist in restoring maritime transportation in the event of disaster. Port of Everett is the only regional port with extensive experience with local coastal and inland waterway shipping (aka short sea shipping) that could play a role in regional response and recovery after a disaster. Other ports could learn from Everett's experience.

Workshop Introduction and Overview
Sasha Rector, Regional Catastrophic Program Coordinator, King County Office of Emergency Management
Sasha Rector gave a brief overview of the importance of the project and some background information on regional planning underway. King County is managing the project on behalf of the Regional Catastrophic Planning Team and is working closely with partners in all the eight counties in the region.

Project Background and Workshop Goals - Brandon Hardenbrook, Deputy Director, Pacific North-West Economic Region
Brandon Hardenbrook explained that the Puget Sound Regional Catastrophic Preparedness Project consists of two phases: In Phase One, a series of workshops will introduce stakeholders to disaster risks, review existing response and recovery plans, and discussed assets and capability gaps; Phase Two facilitates development of the Maritime Resilience Framework. The Framework will create an adaptable and usable document that identifies key maritime assets to aid in emergency efforts and resource distribution.

The Everett workshop is designed to establish relationships, update current contacts, establish cross-sector trust, and understand roles and responsibilities of key players across the region. Additionally, awareness of relevant technology, such as underwater vehicles, salvage divers, and lessons learned from other disasters, should be spread. Maritime volunteer management is a unique challenge.

Anticipated Earthquake and Tsunami Threats
Daniel Eungard, Subsurface Lead and Tsunami Hazard Geologist, Washington Department of Natural Resources, and Maximilian Dixon, Hazards and Outreach Program Supervisor, Washington Military Department
Daniel Eungard provided attendees with an introduction to the geologic processes and effects that produce earthquakes and tsunamis in the Puget Sound Region. Tsunamis are waves triggered by large disturbances or displacement of seawater, most often caused by earthquakes but can be produced by landslides, volcanoes, or meteorological events.

The Cascadia Subduction Zone is an example of a distant source. The Zone is 700 miles off the West Coast, stretches from Vancouver Island to Northern California, and marks where slowly moving oceanic plates slide under North America. The Zone is the most predictable source in our region, with major events occurring every 300-600 years. The last great rupture (magnitude 8.0-9.0+ with shaking felt for three to six minutes) occurred about 1700. There is a 10-25% chance of a similar rupture within the next 50 years. A tsunami might arrive within 10 minutes to several hours. Aftershocks could continue for many years and potentially produce tsunamis themselves.

Eungard then pointed out several recent major earthquake and tsunami events that could be indicative of what the Puget Sound Region could experience including:

- The 2004 9.1 earthquake and tsunami in Sumatra which killed around 227,000 people.
- The 2011 9.1 Tohoku Earthquake and tsunami in Japan which killed around 20,000 people.
- Severe economic impacts and initial damage costs in the billions of dollars were also experienced because of these earthquakes and subsequent tsunamis.

Eungard noted that ports need to be prepared for earthquakes because they are often built on mud, sand, and fill which are prone to liquefaction. Ground shaking could result in damage to infrastructure which could lead to chemical and biological spills. Additionally, an earthquake could lead to soil settlement or the loss of pore water pressure in soils or compaction.

Eungard followed with some of the tsunami hazards that the maritime community should be aware of including:

- Strong and unpredictable currents
- Water level fluctuations
- Eddies/whirlpools
- Tsunami bores and amplified waves
- Drag--vessels left on land/docks
- Debris
- Scour and sedimentation
- Contaminated water

- Poor decision making
- Dangerous tsunami conditions can last tens of hours

Tsunami Impact:

- Everett–arrival time 1 hour 30 minutes, 3 ft approximate offshore amplitude
- Inundation depth–Whidbey Island is preventing a wave from directly impacting Port of Everett
- Current velocity: maximum current speeds of 0-3 produces minimal hazards, 6-9+ can result in major hazards

Several crustal faults in the Puget Sound Basin are potential local tsunami sources with the Seattle Fault being the largest. Less geologic history is available on these local faults, but a Seattle Fault 7.5 magnitude quake occurred in 900-930. There appear to be at least 2500 between events of this size.

Eungard concluded by providing several links for resources that he mentioned throughout his presentation. These resources can be found in Appendix F.

Following Eungard's presentation, Maximilian Dixon spoke further on the maritime earthquake and tsunami hazards in Washington State. He began by providing data on Washington State's maritime assets.

Washington Maritime by the Numbers:

- 3,000 miles of coastline
- $21.4 billion maritime industry
- 31 ports at risk of tsunami damage
- 7 Coast Guard stations and 4 Navy bases
- 700 fishing and seafood processing operations
- Over 400 private marinas
- Northwest Seaport Alliance-5th largest container gateway in the U.S.
- Largest ferry system in the U.S.
- Southern terminal for the Alaska Marine Highway
- Alaska and Hawaii dependent on goods from Washington ports

Dixon touched briefly on the tsunami hazards for harbors and boaters which include strong and unpredictable currents, sudden water-level fluctuations, tsunami bores and amplified waves, eddies and whirlpools, drag on large vessels, debris in the water, scour and sedimentation, and contaminated water and sediment. He showed visuals from the 2011 tsunami in Japan which illustrated these hazards. He also walked through visuals that showed damage in California from the recent Tonga tsunami. There was no reported damage in Washington State.

Dixon then explained the infrastructure and financial impacts that a CSZ earthquake and tsunami would have on the Puget Sound Region. Tsunami waves, liquefaction, and landslides could damage fuel piping systems and pumps; bridges, overpasses, roadway, and other vulnerable transportation infrastructure; and damage port/marina infrastructure and goods, impacting shipping and supply chains. He also gave figures from the 2011 Japanese tsunami which were substantial despite being, arguably, the most

prepared country in the world. Japanese officials estimated that 2,126 roads and 56 bridges were damaged, and 28,000+ ships were also destroyed, along with 319 ports.

Dixon followed this by displaying the HITRAC legend which serves as a color system which indicates the level of damage to infrastructure.

Unpredictable effects on each waterway and anticipated damage to the following:

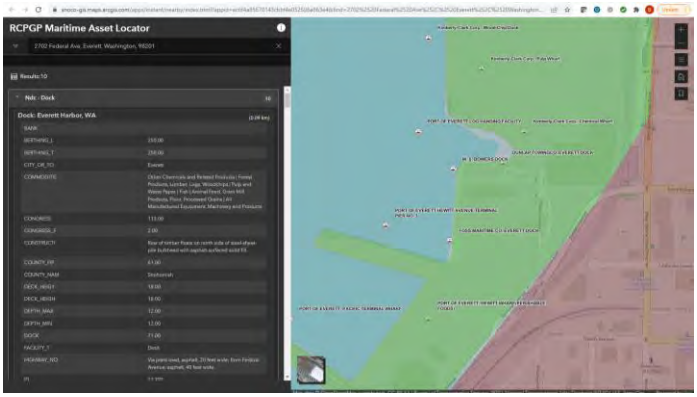
- Fuel piping systems and pumps
- Bridges, overpasses, roadways
- Prt/marina infrastructure and goods
- Supply chain issues
- Communication facilities
- Natural gas facilities
- 54 petroleum processing facilities
- 35 known potable water facilities
- Facilities [sea, air, rail, etc.] west of the I5 corridor may suffer complete to severe damage
- 2.5 years to fully restore many bridges, tunnels, and overpasses

Hazard notification for boaters:

- Reverse 911
- National Tsunami Warning Center
- NOAA weather radio
- State/Local Emergency Operations Centers
- Tsunami alert sirens
- Social media

Additional Comments/Questions
Brandon Hardenbrook: Several Ports and Emergency Planners have asked how to access tsunami alerts and other related resources.
Maximilian Dixon: These are available at tsunami.gov (Note-see Appendix F).
Workshop attendee: Have effects of Global Warming been incorporated into your modeling?
Daniel Eungard: Not in the current iteration, but this will be one of the issues we'll address in the next generation.

Maritime GIS Mapping Capability Planning Resource
Snohomish County Emergency Management and PNWER collaborated to develop an online GIS mapping tool that consists of open-source maritime transportation system assets across the Puget Sound. These assets include docks, marinas. boat launches and other capabilities that could be utilized during response and recovery efforts. This mapping resource can be found online at RCPGP Open Data - Scroll to the area of interest and click "Search this area" to view more detail about the map markers.



Local Response to Anticipated Impacts Panel:

- ***Moderator--Eric Holdeman, Director, Center for Regional Disaster Resilience, PNWER***
- ***Amy Lucas, Community Resilience Program Manager, Snohomish County Emergency Management***
- ***Ed Madura, Security Director, Port of Everett***
- ***Bryan Caraveo, Maritime Homeland Defense/Defense Support to Civil Authorities Analyst, US Third Fleet/Booz Allen Hamilton***

Amy Lucas stated that, as the Community Resilience Program Manager for Snohomish County Emergency Management, her position looks to increase the capacity of the region to provide food and water to communities in the event of a large-scale emergency. Lucas noted that her team is practicing time of day scenarios to see where populations are depending on the time of day. Ultimately, they look at how to get mass goods into the region in the event our seismic lifelines are cut off due to roadway blockages.

Ed Madura explained that as the security director of the Port of Everett, he interacts with ships that come into the port and coordinates efforts to maximize security. The Port of Everett partners with the Everett Fire Department and have developed a safety plan so that they know of any hazardous materials and products that are coming into the Port. For example, if there is a shipment of sulfuric acid, they know how much of it is at the port, where it is, and the measures implemented to keep everyone safe.

Bryan Caraveo explained that the Third Fleet decides how the Navy plans for disaster. They are military support of civil authority, which is ultimately emergency management for the Navy, and they work closely with the defense coordinating office. In the event of the CSZ earthquake, they have planned for what the states of Washington and Oregon will need. They have done practice runs of getting equipment aboard ships and practicing amphibious landings in suitable areas.

Eric Holdeman followed up by asking the panel “The ground has stopped shaking. What information are you immediately trying to find out?”

Lucas stated that the duty officer will coordinate the initial response. They will likely get in touch with the Snohomish dispatch for a more coordinated effort and will also immediately get on the phone with the Washington Military Department to assess the impact to the entire region.

Madura said he will first look at the security cameras and make sure the cranes are still standing if power is still intact. Then he will also try to understand where the shaking was centered and if there is an imminent tsunami because that will dictate what actions are taken from there. He would try to get in contact with the state, set off sirens and get people out to secure equipment and do assessments.

Caraveo explained that tsunami and earthquake alerts will indicate an event has happened and from there the ships will prepare for response. That can take up to 24 to 48 hours before they will be under way. It will take about seven days total to get from San Diego to the PNW, including notification, loading, and travel. He also noted that the Navy will help their own first, and will only provide assistance to the greater population upon request from the state. The Navy will not send in a ship if there is too much debris in the water.

Tim Lupher of the Coast Guard added that in a major event Puget Sound will be shut down until safety of navigation and damage to port infrastructure is assessed.

Holdeman followed this discussion by asking "What is the message to average citizens? How long do they need to be ready to be on their own?"

Lucas responded that Snohomish County EMD tells their community, especially those in rural areas, that everyone should expect to be cut off for two weeks. That includes supplies of food, water, medication, and any other essentials. Know the assets within your community and have a two-week supply for your household which includes pets and livestock.

Other Comments/Questions
Jay Grant: For best practices, one of the items we found through several disasters was to have protocols in place to have non-essential staff play a role in supporting families of essential staff, so they do not have to worry about their families.

Emily Rankin: The ferries have a plan for how to evacuate boats if able, or where to sit out a tsunami if they cannot be evacuated; then they will send out teams to evaluate each ferry dock for damage and determine which can receive boats.

All Hands Discussion: Tsunami Warnings Following the Tonga Volcanic Eruption
Moderated by Jeannie Beckett, AICP, The Beckett Group
Jeannie Beckett began the session by asking attendees several questions regarding the recent Tsunami alert. Questions for the group discussion included:

- What kind of communication tools did you use during the event?
  - Radios
  - Conference calls

    - Emails
    - Websites, news reports
    - FEMA notifications
    - WA Emergency Management Division alert
- What worked best?
- What needs improvement?
- Were you a part of a team that had communication protocols? Or were you on your own?

Amy Lucas stated the duty officer received the notification from NOAA, and various other sources on the duty officer phone. He then immediately called back up officers to come in and discuss with WA EMD. The Snohomish County EMD contacted the Snohomish County 911 dispatch to send out a reverse 911. As an emergency management jurisdiction, it was sent out so that citizens were aware of the event, especially anyone aboard a vessel at that time. This is not typical for every kind of emergency but when it comes to tsunamis or anything having to do with the coasts and shorelines, it was decided that events of that capacity will automatically get a 911 reverse and WIEA.

Ed Madura noted he was preoccupied when the alert went out and did not get it right away but there are other authorities at the port that received the notifications. The Port of Everett primarily responded with conference calls with the state, emails, etc. Marina tenants were notified through text messages. Ed highlighted that through this event it was brought to their attention that they do not have a listing for the marina terminals side including longshore, tenants, and marine terminals contacts so that is something the Port of Everett still needs to address.

Maximilian Dixon stated that as soon as WA EMD receives notifications of danger assessment, warnings, or advisory they immediately kick into action. They receive calls from their duty officers and immediately begin to relay that information to relevant groups and set up conference calls. If it were a warning, the state would set off sirens. When it is just an advisory, it is up to the local governments to either sound those or ask WA EMD to do so. There are 121 on the WA Coast. In this event, since it was just an advisory, nobody in the state set off any sirens.

Chuck Wallace, Safety and Disaster Coordinator, Port of Edmonds, received county and state emails about meetings, which were attended and followed up by contacting their port operations director and security team. The county sent a wireless alert to citizens and a reverse 911.

Tim Lupher described the response carried out by the Coast Guard. Once the NOAA notification was received, the Coast Guard sent out their alert through VHF marine radio through the general channel (channel 16) so that all vessels were aware. Internally, the Coast Guard made everyone aware through conference calls to different districts up the coast and their headquarters.

Beckett followed up by asking about the 911 reverse system and who it reaches. Now that it is more uncommon to have a landline, how will this be addressed?

Lucas answered that Reverse 911 is to landlines, and wireless alerts go out to cell phones.

Snohomish County EMD is currently looking to renew the system so that wireless alerts are included in that, and it should be updated by March.

Dixon added that WA EMD is currently working with their communications team for a big social media push to reach a wider audience. They are working to provide outreach teams with easy graphics to share in multiple languages to get information out as quickly and efficiently as possible.

Beckett then asked, "In the event of an emergency that knocks out all power, communication facilities, cell towers, etc. How would this be done? Is there a backup plan?"

Lupher stated the Coast Guard would remain reliant on VHF marine radio. Ed Madura said the port would also utilize VHF and HAM radio.

Dixon responded that regarding setting off sirens, it depends on how quickly cell phone towers and other networks go down. The sirens are operated through satellite and internet but can be locally sounded through radio. They run on battery power, although it is unknown how many hours they would last. He highlighted that the best indicator of a large-scale event such as an earthquake or tsunami are the physical warning signs. If you feel the ground shaking, find cover then head to high ground if you're near a body of water. He also noted that people also need to know what to do in the event they are not on land when this occurs but on a vessel.

Questions:
Brandon Hardenbrook: If the tsunami was of greater impact, how would WA EMD go about collecting impact data?

Maximilian Dixon: Corina Allen with the WA Gecological Survey and DNR are spearheading a clearinghouse that would be in place to collect that kind of information through field work once it's up and running. Without that, the typical response process would be through state level conference calls the same way we do with any other emergency.

Best Practices in the Everett Region: Volunteer Management- Amy Lucas, Community Resilience Program Manager, and Sammie Keller, Public Outreach Coordinator, Snohomish County Emergency Management

Following the communications discussion, Brandon Hardenbrook introduced Amy Lucas, Community Resilience Program Manager for Snohomish County Emergency Management, and Sammie Keller, Public Outreach Coordinator for Snohomish County Emergency Management, to highlight Snohomish County's volunteer management program as a best practice for the region. Lucas noted that Snohomish County's volunteer management program is in the process of being updated and expressed her excitement over some of the anticipated changes. She then began by reviewing Snohomish County's standards and what they had done in the past before turning it over to Sammie Keller to explain their vision for the future of the program.

Snohomish County Emergency Management has a standard operating guide for volunteer management and volunteer resource centers. They try to rely on affiliated volunteers, but they understand that following a disaster, spontaneous volunteers always show up. They follow the standard operating guide for these volunteers when possible and direct them to a volunteer resource center (VRC). Snohomish County deploys their affiliated volunteers first based on the needs of the region and the different tasks that need to be completed such as staffing CPODs or using their specialty skill sets such as search and rescue or communications. For spontaneous volunteers, Snohomish County directs them to a VRC to undergo a background check, be evaluated for relevant skills, and to then be matched with the available job opportunities. This process could take a day or two.

If communities become isolated following a disaster, more than one VRC may need to be set up. Lucas gave an example of this happening during 2014's SR 530 mudslides when the county had to set up two VRCs in Arlington and Darrington as well as a pseudo third center that was run by the community in Oso. Lucas noted that what Emergency Management wants to do is build on the Map Your Neighborhood program to ensure that communities are prepared to be isolated for several days up to two weeks especially in rural areas and areas with expected high infrastructure damage and a long-expected repair time.

Snohomish County Emergency Management also wants to make sure that they have strong Community Emergency Response Team (CERT) programs and other volunteer programs. Lucas noted the example in Snohomish County of Oso's Christina Project which was set up to manage spontaneous volunteers and to have awareness of which members of their community might be in need before an incident occurs. This information-sharing on the local level and preparing communities to be isolated is just as important as having a good standard operating guide for volunteer management.

In the event of a CSZ 9.0 event, the modeling indicates the creation of many population islands which would make it difficult for emergency management to stand up and staff volunteer resource centers. They anticipate being able to set up several large centers within some population centers where there is lower infrastructure damage; however, this likely would not happen within the first few days. Snohomish County's 0–72-hour policy is mainly focused on rapid damage assessment and standing up their EOC and their public works DOC. After 72 hours, they look at where to stand up CPODs and shelters and how to staff them.

However, Lucas noted that, while emergency management can have standard operating procedure in place, know best practices, and follow FEMA training, every event is different, and the issue that arises is how do they prepare for all the eventualities such as getting volunteers deployed to multiple population islands. The answer Lucas gave is to evolve their volunteer management program which is what Snohomish County Emergency Management is working to do. They currently have a three-year workplan to look at and develop strategies for their volunteer management program. They are looking at virtual VRC options, different ways to communicate with volunteers, and standing up localized volunteer networks. They are going to engage in a large public outreach campaign and training program that will come from the RCPGP, but Lucas can also see their volunteer management program also expanding this outside of the RCPGP's current CPOD-focused activities, helping their human services ESF 6 function with shelters, sandbagging in the event of a flood, and other activities. One other thing Snohomish County Emergency Management is looking at having on hand is a list of specialized volunteers that may not be affiliated but might have specialized equipment such as heavy machinery or large vehicles.

Lucas then introduced Sammie Keller to speak more about the vision for modernizing and streamlining the VRCs. Keller recently joined Snohomish County Emergency Management from Amazon, so she has a background in technology and building out large programs. The plan for the future of the volunteer management program is to have both an in-person and virtual application process. They are researching several volunteer application systems that allow them to not only download the application data but also tag people with specific skillsets, licenses, or specialized equipment. They are also researching application systems that can be used to email or call volunteers directly through the app. Lucas added that they do have redundancies built into the system to ensure that they can download the information from the application quarterly so that they have a paper backup with contact information for the volunteers including their ham radio handles.

Hardenbrook then asked for questions or highlights from other participants around planning for volunteer management that could benefit the maritime disaster resilience project. One best practice that he noted was a planning effort between the Cities of Marysville and Everett to transport city staff and critical staff across the Snohomish River in the event of a disaster.

Tim Lupher asked about the plans to refuel vessels and whether there is a way to determine whether vessels being refueled are being operated by experienced mariners or casual boaters who arrive to help out in an emergency. He asked how these differences are being addressed and prioritized in the maritime sector.

Hardenbrook responded that Snohomish County Emergency Management is working on this by taking note of volunteers who have specialized skills, licenses/certifications, or equipment. Ed Madura added that Brent Stainer with City of Everett Emergency Management had reached out to the Port of Everett, the Coast Guard Auxiliary, the Power Squadron, and the charter operators on this issue as well.

Lupher reiterated that the issue of refueling remains, and he foresees that the Pacific Northwest will have a major fuel shortage problem following a CSZ event. Madura agreed and added that, even with the region's short sea shipping capacity, the region does not have enough barges to move fuel in and around the Sound if the fuel pipelines are not functional. The Port of Everett is working directly with a few agencies to get contracts in place for fuel resupplying in the event of a disaster. Madura stated that if recreational boats are shuttling critical personnel such as firefighters the Port of Everett will provide them with fuel to operate.

Lucas added that Snohomish County Emergency Management is reaching out to Kitsap County Emergency Management about modeling Kitsap County's volunteer program. Kitsap County has a program where they categorize their volunteers based on skillset and certifications. One volunteer group is maritime-specific, and all the volunteers are certified as emergency volunteers through Kitsap County and one of the cities. The county has an emergency fleet that is registered with a flagship to identify the fleet as official emergency volunteers. Snohomish County is looking to work with the Cities of Everett and Marysville to develop a similar identified fleet.

Hardenbrook added that King County and Washington State are currently working on fuel planning efforts. King County is working on a fuel allocation plan to determine fuel prioritization for critical infrastructure and services.

Lupher noted that the Puget Sound does not have many barges capable of hauling products. Many of the barges with these capabilities are on the river systems such as the Columbia River. Many of the

barges in the Puget Sound are related to salvage or construction. Lucas explained that their program is asking the State to look into MOUs and pre-disaster contracts with some of these salvage companies to have them on standby.

Jim Greico, a volunteer with Everett OEM CERT and the Auxiliary Communications Service, noted that FEMA has released CERT resource typing which creates a standard for volunteers across the country.

Victor Harris, another volunteer with the Everett Auxiliary Communications Service, asked about the participation of the Washington State Ferry system and whether they were monitoring any of the maritime disaster resilience discussions. He asked about what plans were in place to reroute ferries if Everett or other ferry locations are cut off. Hardenbrook explained that the Ferries have been involved in the maritime disaster resilience discussions and workshops, and they have robust planning underway. Randy Unger, PMP, Unger Strategies, added that part of the Ferries planning involves looking at alternative sites to land or utilizing some of their smaller ferries to focus particularly on movement of emergency material and personnel. Hardenbrook continued that there are several smaller ferries in other counties and municipalities that could be employed that should be considered in the planning. Lupher added that one of the primary concerns immediately after an incident is moving first responders and resources. The Coast Guard does plan to coordinate with the ferries (WA State, Kitsap County, other local ferries) to move the responders around the region.

Brief Overview of the Maritime Resilience Framework
Presented by Daryl English, Senior Project Manager and David Cruz, Senior Port Planner of Moffat & Nichol
The Maritime Resilience Framework will be a usable document that evolves over time, identifies key maritime assets, and assesses how resilient those assets are. The document will also outline processes and actions to take before, during, and after a large-scale emergency. The purpose of the framework is to incorporate maritime and transportation resources to use, receive, and distribute the sustaining commodities to CPODs with maritime assets in the event of a CSZ or Crustal Fault Event.

Closing Remarks
Sasha Rector, King County Regional Catastrophic Program Coordinator, thanked the attendees for their contributions and their enthusiasm. The upcoming workshops will continue gathering additional information and identifying gaps, which will inform the specific goals and deliverables that will be incorporated into the Maritime Disaster Resilience Framework. A follow-on regional workshop will take place in May and will include all six maritime areas.

Recommendations
The following recommendations were developed based on stakeholder comments, presentations, and panel discussions throughout the workshop to help close gaps highlighted.

1. Create regular opportunities for maritime stakeholders to coordinate with emergency management planners to build trusted relationships.
2. Continue to identify key maritime assets and capabilities that could assist in response and recovery.
3. Develop communication and information-sharing strategies to reach maritime stakeholders.
4. Develop and maintain an emergency contact list of cell phone numbers and emails for marine partners, including marinas, terminals, and staff for rapid communications.

5. Develop a regional maritime and emergency planning communications working group to identify gaps and improvements across the Puget Sound.
6. Encourage the Port of Everett and surrounding area to work with WA Emergency Management to develop a tsunami mitigation framework.
7. Coordinate marine volunteer management best practices across the Puget Sound Region.
8. Develop and share coordinated rapid damage assessment plans and capabilities across the region.
9. Create a standardized process for sharing assessed damage of critical maritime transportation facilities with key organizations and decision makers.
10. Explore resources to host an annual regional maritime resilience exercise to test and update plans.

Acronyms

AAR	After Action Report
CRDR	Center for Regional Disaster Resilience
CPOD	Community Point of Distribution
DHS	Department of Homeland Security
EMD	Emergency Management Division
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
NANOOS	Northwest Association of Networked Ocean Observing Systems
PNWER	Pacific Northwest Economic Region
RCPG	Regional Catastrophic Preparedness Grant
RRAP	Regional Resiliency Assessment Program
USCG	United States Coast Guard

Resources

Planning Resources – During the workshop several planning and information resources were mentioned to assist in the planning and coordination after a major disaster. These can be found at--

https://www.cisa.gov/regional-resiliency-assessment-program

Maritime Coordination | RCPGP Hub - Home (arcgis.com)

Alerts | Washington State Military Department, Citizens Serving Citizens with Pride & Tradition

Emergency Management Information portals (wa.gov)

Joint Logistics Over the Shore edocs.nps.edu/dodpubs/topic/jointpubs/JP4/JP4-01.6_050805.pdf

Tsunami Warning and Alert Page https://tsunami.gov/

Geologic Information Portal https://geologyportal.dnr.wa.gov/

Tsunami Hazard Maps https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/tsunamis#tsunami-hazard-maps

Tsunami Evacuation Maps https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/tsunamis#tsunami-evacuation-maps

Tsunami Simulations https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/tsunamis#tsunami-simulation-videos

Northwest Association of Networked Ocean Observing Systems (NANOOS) Pacific Northwest - NANOOS - The U.S. Integrated Ocean Observing System (IOOS) (noaa.gov)

Nanoos Mobile Tsunami Evacuation app
http://www.nanoos.org/mobile/tsunami_evac_app.php

Tsunami Design Zone Maps for Washington State Building Code https://www.dnr.wa.gov/wa-td

EVERETT REGION MARITIME DISASTER RESILIENCE WORKSHOP

A Regional Catastrophic Planning Grant Project

Thursday | February 3, 2022, 9:00 am to 12:30 pm

INTRODUCTIONS & OPENING REMARKS | 9:00 AM

Brendan McCluskey, Director of King County Emergency Management and Lisa Lefeber, Executive Director of the Port of Everett and will provide opening remarks

PROJECT OVERVIEW | 9:15 AM

Sasha Rector, Regional Catastrophic Program Coordinator at King County Emergency Management and Brandon Hardenbrook, Deputy Director of the Pacific Northwest Economic Region will give a brief presentation on the project and the workshop goals and objectives

ANTICIPATED EARTHQUAKE & TSUNAMI HAZARDS | 9:30 AM

Maximilian Dixon, Washington Emergency Management Department and Daniel Eungard, Subsurface Lead & Tsunami Hazards Geologist will provide a briefing on what impacts the Everett area can expect when a Cascadia Subduction Zone earthquake occurs

BREAK | 10:20 AM

LOCAL RESPONSE TO ANTICIPATED IMPACTS | 10:25 AM

Short presentation on GIS map of maritime capabilities in the area, followed by a panel discussion with several key maritime and emergency management partners, including Brent Stainer, City of Everett; Ed Madura, Port of Everett; Bryan Caraveo, U.S. Navy; CDR Brian Sauerhage, U.S. Navy; and Amy Lucas, Snohomish County Department of Emergency Management. Moderated by Eric Holdeman, Director of PNWER's Center for Regional Disaster Resilience.

FACILITATED DISCUSSION: Communication and Information Sharing Tools | 11:10 AM

Attendees will be invited to join a discussion about how to build connections between the maritime industry and emergency managers and provide for better communication, information sharing, and understanding each partner's roles and responsibilities in the event of a disaster. Moderated by Jeannie Beckett, Principal at The Beckett Group

BEST PRACTICES IN THE EVERETT REGION | 11:40 AM

Amy Lucas and Sammie Keller of Snohomish County Department of Emergency Management will present on Snohomish County's experience in managing volunteers during an emergency and work underway to develop additional volunteer capabilities, including in the maritime sector.

VISION FOR MARITIME RESILIENCE FRAMEWORK | 12:10 PM

Daryl English and David Cruz from waterfront firm Moffatt & Nichol will brief their upcoming work to develop a Maritime Resilience Framework and invite input from workshop participants on how to keep the Framework updated and relevant and ensure the maritime sector can stay engaged.

ADJOURN | 12:30 PM

Visit our webpage at Kingcounty.gov

King County Emergency Management

Pacific NorthWest Economic Region

CRDR Center for Regional Disaster Resilience

Puget Sound Regional Catastrophic Preparedness Grant Program

EVERETT REGION MARITIME DISASTER RESILIENCE WORKSHOP

February 3, 2022 | 9:00 am to 12:30 pm

Featured Speakers

BRENDAN MCCLUSKEY
DIRECTOR
KING COUNTY OFFICE OF EMERGENCY MANAGEMENT

Brendan McCluskey is the Director of Emergency Management for King County. King County Emergency Management is responsible for regional emergency preparedness and operations, including mitigation, response, and recovery, and a variety of homeland security matters. Mr. McCluskey oversees all functions of the organization, from planning, to public outreach, to grant management, to operations coordination and EOC operations. McCluskey is the County Executive's representative to the King County Emergency Management Advisory Committee, a designee to the State Emergency Management Advisory Group, and a core member of the Seattle UASI. King County Emergency Management was accredited by the Emergency Management Accreditation Program (EMAP) in 2017.

Mr. McCluskey got his start as a paramedic for the Newark (NJ) EMS system and became manager of the paramedic service and the EMS training unit. He has been involved with numerous high profile events, including New Jersey's response to 9/11, and has lectured on a number of disaster, infrastructure, and continuity topics.

LISA LAFEBER
CEO
PORT OF EVERETT

Lisa Lefeber has been the CEO of the Port of Everett since 2019. Lefeber is the first female to be selected for this top leadership role in the Port's 100-year history. Prior to her role as Deputy Executive Director, Lefeber served as the Port's Chief of Policy and Communications, a position she held for more than 13 years. In this role, she managed the Port's communication and government affairs program, which includes working closely with our community and congressional delegation to understand the issues affecting the Port such as maritime trade and logistics. In 2016, she was selected to lead the Port's seaport modernization efforts, which includes more than a $100 million in infrastructure investment to allow for larger ships and additional train volumes, which is critical to support the change in the shipping industry and strategic military cargo movements at the Port.

DANIEL EUNGARD

SUBSURFACE LEAD AND TSUNAMI HAZARDS GEOLOGIST
WASHINGTON DEPARTMENT OF NATURAL RESOURCES

Daniel is the subsurface lead and tsunami hazards program data manager—he is responsible for maintaining and expanding the geospatial databases for both programs. He is a subject matter expert on tsunami science, working with local, state, and federal partners to improve public understanding of risk and encourage mitigation efforts in Washington State.

MAXIMILIAN DIXON

HAZARDS AND OUTREACH PROGRAM SUPERVISOR
WASHINGTON MILITARY DEPARTMENT, EMERGENCY MANAGEMENT DIVISION

Maximilian Dixon is the Hazards and Outreach Program Supervisor for the Washington State Military Department's Emergency Management Division (WA EMD). He manages the Earthquake, Tsunami, Volcano, Public Education, Preparedness and Outreach Programs and represents WA EMD as the subject matter expert and policy advisor on geological hazards, preparedness and outreach issues. Maximilian is responsible for coordinating geological hazard risk reduction efforts between international, federal, state, tribal, and local partners.

AMY LUCAS

COMMUNITY RESILIENCE PROGRAM MANAGER
SNOHOMISH COUNTY EMERGENCY MANAGEMENT

Amy Lucas is the Community Resilience Program Manager at Snohomish County Department of Emergency Management, and the project manager for the FY 2019 Puget Sound Regional Catastrophic Preparedness Grant Program. With a background in Healthcare, Infrastructure, and Land Use planning, she is working with regional partners and agencies to build greater resiliency and emergency response capacities within Snohomish County and its cities.

ED MADURA

SECURITY DIRECTOR
PORT OF EVERETT

As Security Director, Ed Madura is responsible for the safety of the Port of Everett's Marine Terminals and Marinas. Prior to joining the Port, Madura spent many years on the water as a U.S. Merchant Marine Officer. He was also in the U.S. Coast Guard, trained in several emergency response functions such as Search and Rescue, first aid/CPR, and in-water survival.

BRYAN CARAVEO
MHD/DSCA ANALYST
BOOZ ALLEN HAMILTON

Bryan Caraveo graduated from the U.S. Naval Academy in 1984 from which he was graduated with a Bachelors Degree of Science in Oceanography. He served as Surface Warfare Officer on both east and west coasts. He earned a Masters of Science in Management from St. Mary College in Leavenworth, Kansas in 1997. Bryan's sea tours include duty in USS RICHMOND K. TURNER (CG 20); USS LEFTWICH (DD 984); USS HALSEY (CG 23); Cruiser-Destroyer Group ONE; USS JOHN A. MOORE (FFG 19); Third Fleet; and USS CURTS (FFG 38). His shore tours included the Naval Strike Warfare Center, NAS Fallon; the Center for Information Technology; and Surface Warfare Officers School Learning Site, San Diego. Bryan retired in September 2009 and began working for Booz Allen Hamilton in Jan 2010 as an advisor for Third Fleet on Maritime Homeland Defense (MHD) and Defense Support to Civil Authorities (DSCA) issues.

BRIAN SAUERHAGE
COMMANDER THIRD FLEET
UNITED STATES NAVY

Currently CDR Sauerhage is assigned to Commander U.S. Third Fleet. He serves as the lead DSCA planner where he planned and executed the USNS Mercy deployment to Los Angeles for COVID-19 response operations. He serves as the Fleet MCM lead planner for MHD and is a co chair of the MIWP MHD working group. As the C3F 3 EOD officer, he is designated as the MCM lead planner for U.S. Third Fleet. CDR Sauerhage is an EOD Warfare Officer as well as a Surface Warfare Officer, Diving Officer and Enlisted Surface Warfare Specialist. He is a qualified Naval Parachutist. He is authorized to wear the Bronze Star with Combat Distinguishing Device, Meritorious Service Medal, Navy Commendation Medal, Army Commendation Medal, Navy Achievement Medal, Combat Action Ribbon, Good Conduct Medal, and numerous campaign and service awards.

DAVID CRUZ
ALL HAZARDS TECHNICAL LEAD
MOFFATT & NICHOL

David Cruz has more than 40 years of experience as a planner for port-wide studies and maritime facility projects. He has specialized in project management and civil design for port security projects and all hazards' studies. Mr. Cruz is ANSI/ASME certified in Risk Analysis and Management for Critical Asset Protection (RAMCAP). He has international experience including conducting port and rail facilities' assessments in Peru, Chile, South Africa, and Myanmar. Projects he has worked on include: Puget Sound Regional, All Hazards Risk Management/Mitigation Plan, Trade Resumption/Resiliency Plan, and Area Maritime Security (AMS) Assessment, Puget Sound, WA; Port of Tacoma Tideflats Facility All Hazards Assessment; and Area Maritime Security Committee Port-Wide All Hazards Management Plan, Los Angeles and Long Beach, CA.

Moderators and Facilitators

BRANDON HARDENBROOK
CHIEF OPERATING OFFICER
PACIFIC NORTHWEST ECONOMIC REGION

Mr. Hardenbrook's duties include overseeing all PNWER staff and programs in coordination with PNWER's governing board, which includes legislative leadership of each state, province, and territory as well as governors and premiers, and private sector leaders. PNWER's 22 working groups include trade & economic development, energy, border issues, agriculture, invasive species, tourism, disaster resilience, transportation, water policy and others.

ERIC HOLDEMAN
DIRECTOR
CENTER FOR REGIONAL DISASTER RESILIENCE

Eric Holdeman is the Director of the Center for Regional Disaster Resilience (CRDR), which is part of PNWER. His areas of expertise include building regional coalitions between agencies, governments, the private sector and non-profits. Building regional disaster resilience is key to what he does day-to-day. He has also authored numerous articles for professional journals and opinion pieces for local, regional and national newspapers. He is a Senior Fellow, columnist, contributing writer and blogger for Emergency Management Magazine. An experienced and accomplished public speaker, he is sought after to present at national and regional conferences. Eric has the United States' most popular blog on the topic of emergency management at www.disaster-zone.com.

JEANNIE BECKETT
PRINCIPAL
THE BECKETT GROUP

Jeannie's 40 years of expertise in provides her clients with "boots on the ground" knowledge of business continuity, emergency management and the logistics of inland transportation. Ms. Beckett works with agencies and associations to leverage their resources and build economic vitality for their regions. Before starting The Beckett Group in 2009, She had a 25 year career with the Port of Tacoma in leadership positions including Senior Director, Inland Transportation, and Director of Operations.
Jeannie has worked on projects that profile the logistics and freight delivery needs, business resiliency and recovery as well as infrastructure resiliency efforts. These projects pinpointed areas of inefficiency in the highway and rail freight delivery systems and the lack of business / infrastructure continuity planning.