Oregon
John A. Kitzhaber, MD, Governor

Department of Geology and Mineral Industries
Administrative Office
800 NE Oregon St., #28, Suite 965
Portland, OR 97232-2162
(971) 673-1555
Fax: (971) 673-1562
www.oregongeology.org

Seismic and Tsunami Hazard Projects at the Oregon Department of Geology and Mineral Industries

Testimony by the Oregon Department of Geology and Mineral Industries (DOGAMI) to the House Committee on Veteran's Services and Emergency Preparedness and the Senate Committee on Veterans and Emergency Preparedness March 14, 2013

Earthquake and tsunami mitigation are part of DOGAMI's statutory duties, which include:

- Undertake cooperative studies or programs to reduce loss of life and property by understanding and mitigating geologic hazards
- Map and identify natural hazards statewide, and estimate likelihood and potential consequences
- Study the occurrence of prehistoric subduction zone and crustal earthquakes in Oregon
- Operate a state seismic network and geodetic network in cooperation with universities or federal agencies
- Provide information and advice to governments, the public and the private sector concerning geologic hazards

Earthquake and tsunami hazard mitigation are part of DOGAMI's 2009-2015 Strategic Plan. The Plan describes the agency Mission as: *"Provide earth science information and regulation to make Oregon **safe** and prosperous"*, and the Plan objectives include:

- *Effect **earthquake risk reduction** through hazard mapping and vulnerability assessments*
- *Complete and update maps of shoreline variability, coastal erosion and **tsunami hazards***
- *Promote natural hazard information and risk mitigation products*

Past Projects

DOGAMI's earthquake program has been ongoing since 1987, when the first evidence was found that the Cascadia Subduction Zone could cause very large earthquakes. Past projects include:

- Geology-based earthquake hazard maps for Oregon cities
- Modeling and mapping Cascadia tsunami inundation
- Estimating vulnerability and risk statewide, for individual counties, and for partner agencies. A key effort was the Statewide Seismic Needs Assessment (SSNA) funded by the 2005-2007 legislature to evaluate the seismic vulnerability of Oregon public schools and emergency facilities
- Understanding faults and prehistoric earthquakes in all parts of Oregon
- Public outreach and education, policy and planning advice

These projects were carried out primarily with funding from USGS, FEMA, Oregon Cities and Counties, and some lottery funds. Most projects involved partnerships with numerous Federal, state and local agencies and Oregon universities.

Current Projects

Tsunami Hazard Mitigation Project

Funded by the National Tsunami Hazard Mitigation Program through the National Oceanographic and Atmospheric Administration by a four-year, $2.89M grant which expires at the end of the current biennium. This project has produced new state-of-the-art tsunami inundation maps for Cascadia tsunamis for the entire coast, and also produced tsunami evacuation maps for all Oregon coastal communities. The project included an intensive community outreach and education program run in partnership with Oregon Emergency Management.

Portland Urban Area Geologic Data

This project is preparing new detailed 3D maps of geologic and soil conditions in the entire METRO urban growth boundary. The new maps will be used by the USGS to create detailed maps of likely earthquake shaking from Cascadia and local earthquakes. Approximately one-third of Oregon's population will be covered by the area of these new maps. This is a multi-year project funded entirely by USGS, and ends December, 2013.

Clackamas County Risk Study

This project is primarily focused on landslide hazards, but includes earthquake damage and loss estimates. The project is funded entirely by FEMA via Clackamas County, and the contract ends December, 2013.

Future Projects

DOGAMI's primary role in increasing Oregon's resilience to a future Cascadia earthquake is to prepare, collect and disseminate the best possible information about the hazard, vulnerabilities and risk. Based on the recommendations of the resilience plan, we will work to find funding opportunities to:

- Model tsunami evacuation time for coastal communities
- Prepare tsunami hazard maps for maritime community and ports
- Improve geologic data to model Cascadia shaking and earth movement
- Improve inventory and vulnerability data for significant buildings and lifelines
- Estimate losses and assess risk for Cascadia earthquakes using updated inventory
- Continue and expand outreach, in partnership with OEM, DLCD and Universities, targeted at institutions for general resilience issues, coastal residents and visitors for tsunami evacuation and hazard mitigation
- Provide policy advice and promote mitigation measures to Oregon agencies and institutions
- Continue collaboration and support of Federal and academic partners in areas such as improving seismic and geodetic networks, advancing geotechnical engineering research and tsunami dynamics research, and Earthquake Early Warning (EEW) systems