

# OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

Vicki S. McConnell, State Geologist



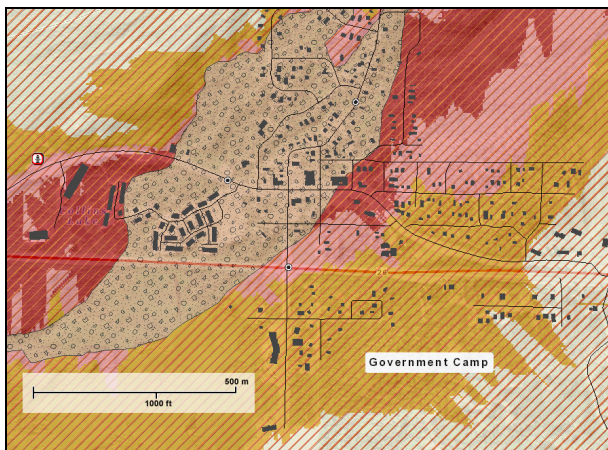
NEWS RELEASE: January 31, 2012

## Mount Hood geologic hazards study examines risk and exposure in surrounding communities

Portland, Oregon: Helping communities on or near Mount Hood become more resilient to geologic hazards including volcano, landslide, flood, channel migration, and earthquakes is the primary goal of a new study released by the Oregon Department of Geology and Mineral Industries (DOGAMI).

**DOGAMI Open-File Report O-11-16, Multi-Hazard and Risk Study for the Mount Hood Region, Multnomah, Clackamas, and Hood River Counties, Oregon**, by William J. Burns, Kaleena L. B. Hughes, Keith V. Olson, Jason D. McClaughry, Katherine A. Mickelson, Daniel E. Coe, John T. English, Jed T. Roberts, Rachel R. Lyles Smith, and Ian P. Madin.

The project area covers approximately 526 square miles and includes parts of Fairview, Gresham, Troutdale, and Wood Village in Multnomah County; Damascus, Government Camp, The Villages at Mount Hood, and Sandy in Clackamas County; Hood River and Odell in Hood River County; and some unincorporated areas within the three counties. The study estimates economic loss ratios (ratio of total value of assets in the study area to estimated loss value from the hazard) in the range of 0.5% to 5% for flood, channel migration, and landslide hazards. These hazards occur more frequently, every few decades or centuries, while earthquakes and volcanic eruptions are less frequent, occurring every few centuries to millennia. Earthquakes and volcanic eruptions, while less frequent, have much higher estimated loss ratios, in the range of 5% to 25%. The Villages at Mt. Hood have the highest multi-hazard risk within the study area.



*Screenshot of "Hazards and Assets Viewer for Mount Hood" interactive web map showing volcano and landslide hazards for the Government Camp area.*

Web viewer:

<http://www.oregongeology.org/sub/mthood/index.htm>

*DOGAMI's mission is to provide earth science information and regulation to make Oregon safe and prosperous.*

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DOGAMI conducted the study by first collecting input from stakeholders regarding

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hazard, asset, and risk analysis needs through a series of workshops and a poll. Then DOGAMI scientists and GIS analysts acquired or created digital map data describing population, zoning, building footprints, critical facilities, and primary infrastructure such as roads, dams, and electrical systems as well as geologic hazard data for the study area. Superimposing asset data on hazards data allowed DOGAMI to analyze risk.

The study employed two methods of risk analysis: 1) hazard and asset exposure analysis and 2) Hazus-MH based risk analysis. Hazus-MH (Hazards U.S. Multi-Hazard) is a nationally applicable standardized methodology developed by the Federal Emergency Management Agency (FEMA) that estimates potential losses from earthquakes, hurricane winds, and floods. DOGAMI found that both methods should be used to understand how to best allocate limited resources for disaster preparedness and mitigation.

A secondary result of this DOGAMI study is that methodologies used are applicable to other multi-risk studies.

The study also demonstrated the necessity of high-resolution lidar data for multi-hazard mapping including locating landslides and faults and redelineating flood and volcanic mudflow hazard zones. Lidar data are also critical for mapping assets such as buildings and infrastructure. The accuracy and fine-scale resolutions of the hazard, asset, and risk data make the results more credible and thus more likely to be useful in risk reduction. For example, several previously unrecognized faults, 394 deep-seated landslides, and 1,112 debris flows were mapped.

Funding for this project was provided by the U.S. Geological Survey Cascades Volcano Observatory (CVO) through an American Recovery and Reinvestment Act (ARRA) grant and by the State of Oregon. State Geologist, Vicki McConnell says, "I want to thank USGS for their interest in and support of risk study projects. We believe these types of studies and reports are how Oregon builds resilient communities."

The publication consists of a 64-page report, seven 1:72,000 scale thematic map plates, and appendices including community hazard exposure data. An online web hazards and assets viewer shows the data in this study at scales up to 1:9,028.

The publication can be previewed at:

<http://www.oregongeology.org/pubs/ofr/p-O-11-16.htm>

See the study data on an interactive web map:

<http://www.oregongeology.org/sub/mthood/index.htm>

DOGAMI Open-File Report O-11-16, Multi-Hazard and Risk Study for the Mount Hood Region, Multnomah, Clackamas, and Hood River Counties, Oregon, can be purchased on DVD for \$30 each from the Nature of the Northwest Information Center (NNW), 800 NE Oregon Street, Suite 965, Portland, Oregon, 97232. You may also call NNW at (971) 673-2331 or order online at <http://www.naturenw.org>. Printed copies of the full color 55 x 61 inch maps are \$30 each. There is a \$4 shipping and handling charge for mailed items.

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For more information about the study, its methods, limitations, conclusions, and community-specific maps and results, contact:

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The Oregon Department of Geology and Mineral Industries is an independent agency of the State and has a broad responsibility in developing an understanding of the state's geologic resources and natural hazards. The Department then makes this information available to communities and individuals to help inform and reduce the risks from natural hazards, such as earthquakes, tsunamis, landslides, floods and volcanic eruptions. The Department assists in the formulation of state policy where an understanding of geologic materials, geologic resources, processes, and hazards is key to decision-making. The Department is also the lead state regulatory agency for mining, oil, gas and geothermal exploration, production and reclamation.

Learn more about Oregon's geology online: <http://www.OregonGeology.org>

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