

Scholarship goes to late city police officer's daughter

A Warrenton resident was among the eight state recipients of 2019 Workers' Memorial Scholarships.

The awards help finance higher education for family members of Oregon workers fatally injured or permanently disabled on the job.

Alannah Rudduck earned three associate's degrees at Mount Hood Community College and is working toward a bachelor's degree in dental hygiene at Augusta University in Georgia.

She plans to pursue a minor in business.

Rudduck's father, Robert "Bernie" McMaster, was a Warrenton police officer who died in the line of duty in March 1996, shortly before Rudduck was born.

She is receiving a \$4,000 award.

Rudduck is a longtime volunteer, each year delivering food to hundreds of families in need in Warrenton.

She also volunteered at Legacy Mount Hood Medical Center, stocking medical carts and helping prepare rooms after discharges.

The awards were announced by the Oregon Occupational Safety and Health Division.

Each recipient has experienced personal and financial hardship resulting from a parent being lost to a workplace death or permanently disabled while on the job.

The 1991 Legislature established the Workers' Memorial Scholarship at the request of the Oregon AFL-CIO, with support from Associated Oregon Industries.

Other recipients lost parents to farm and logging accidents, on-duty car accidents, and shootings.

Spaceship technology used to determine coastal tsunami risk

BY STEVE LUNDEBERG
Oregon State University

Researchers are using a centrifuge that once tested Apollo astronauts' resistance to G-forces to better understand how a tsunami could devastate the Oregon coast.

They hope to pave the way toward greater safety for coastal residents and infrastructure by developing a better means of modeling the destructive force of tsunami waves.

Rare but potentially devastating, tsunamis can cause huge damage to coastal infrastructure, with part of the problem traced to unstable soil around the structures.

Understanding the processes through which a tsunami destabilizes soil is a key to developing engineering techniques that can make buildings, roads and bridges better able to withstand the complicated forces at work within a tsunami.

An Oregon State University team led by Ben Mason and Harry Yeh of the College of Engineering attached a container apparatus filled with soil and water to the centrifuge to make a scalable simulation of the effects of inundation.

The technique replicates in-



Lynn Ketchum/Oregon State University

Structures such as the Coos Bay bridge are among the major infrastructure facing damage when a subduction zone earthquake strikes the Pacific Northwest.

undation physics over a parcel of soil 21 meters long, nearly 10 meters deep and more than 14 meters wide – much larger than can be simulated in a traditional wave tank.

"This is the first time anything like this has been done," Mason said. "We're trying to mimic the entire process of a tsunami coming onshore and then drawing back."

Their findings were published in Nature Scientific Reports.

A centrifuge is a device that puts something in rotation around a fixed axis.

"Imagine holding a 5-gallon bucket of water that you start spinning around with, and if you spin fast enough, the water will stay in the bucket regardless of its position, and if you slow down, it will pour out," Mason said. "That's exactly the concept we were working with."

The centrifuge in the study is housed at the UC Davis Center

for Geotechnical Modeling after originally being part of NASA's Ames Research Center.

"We can use high-speed video to learn a lot about what's happening in the soil, such as scouring, and under the surface, how pore water pressure changes with time as the water moves across," Mason said. It's important to understand how soil around coastal infrastructure will be affected so engineers can learn how to protect it, he said.

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