2:00 – 4:00 p.m., WC Pacific Room
Ben Shivers
Faculty Sponsor: Steve Taylor

Title: Physiographic Framework of the Willamette Lowland Aquifer System

Abstract: This paper focuses on the physiographic framework of the Pacific Northwest, specifically the geology of the Willamette lowland aquifer system and its natural vegetation. The Willamette Lowland is a 5,680 sq. mi. area positioned between the Oregon Coast Range to the west, and the Cascade Range to the east. The Willamette aquifer system is separated into the five hydrogeologic units, these include: (1) the basement confining unit, (2) the Columbia River basalt aquifer, (3) the Willamette confining unit, (4) the Willamette aquifer, and (5) the Willamette silt unit. These units have variable porosity and permeability, and establish the groundwater resource base for a large percentage of Oregonians. Large Pleistocene glacial-outburst floods, coupled with volcanic activity, have covered the Willamette Valley with unconsolidated surficial deposits as thick as 250 feet. Fertile soils at the surface have given birth to approximately 11,764,000 hectares of forested area in Oregon and Washington, and the agricultural zones we see today.

2:00 – 4:00 p.m., WC Pacific Room
Ian Macnab
Faculty Sponsor: Steve Taylor

Title: Quaternary Geology and Geomorphology of the Willamette Basin, Western Oregon

Abstract: The Willamette Valley of northwestern Oregon is associated with widespread Quaternary-age sedimentary deposits. Understanding the nature of the deposits not only provides a history of Quaternary depositional environments in the valley, but also information on surficial materials that form important regional aquifer systems. The oldest of the five major Quaternary-age sedimentary units are deeply weathered, 2.5-0.5 Ma fluvial sands and gravels flanking the valley margins. Tectonic deformation isolated these terraces from further deposition. Subsequent lowering of the valley resulted in up to 500 m of fill. The upper 10 - 50 m is comprised of braided channel alluvium that interfingers with 40 - 100 m thick fans emanating from the mouths of Western Cascade drainage basins. Dividing these gravels are dozens of 15 – 12.7 ka Glacial Lake Missoula flood deposits. These strata are up to 35 m thick and are composed of gravel, sand, silt, and clay. During the past 12,000 years, the braided channel system that dominated the depositional environment of the Late Pleistocene evolved into the anastomosing and meandering system present today.

2:00 – 4:00 p.m., WC Pacific Room
Tanja Aas
Faculty Sponsor: Steve Taylor

Title: Environmental Setting and Land Use in the Willamette Basin

Part 3: Template PROPOSAL TO PRESENT Form

Session Title: "**Earthquake Hazards and Risk Mitigation in Western Washington and Oregon"**

Poster 14

Your Name: Alyssa Pratt Phone No.: Email: izzypratt@hotmail.com

Title of your Presentation:

Abstract (100 word limit) or Photograph of Art Work (3" X 5" limit):

The Portland Metropolitan area faces seismic hazards not only from the Cascadia megathrust, but also from several crustal faults located within the vicinity. An example of the latter is the Portland Hills Fault, which extends 40-60 km in length, and dips southwest beneath the western portion of the city. Recent paleoseismic work indicates that this fault is capable of generating large-magnitude earthquakes ranging from M 6.8 to 7.2.

M-6.8 ground-shaking models of the Portland hills fault indicate that potential surface accelerations from an average rupture event would exceed comparable motions generated by a M 9.0 Cascadia-subduction event. These models support the hypothesis that regional crustal faults are potentially the most hazardous in western Oregon. In addition to shaking intensity, the widespread presence of unconsolidated Quaternary sediment tends to amplify ground motion and promote liquefaction. This paper presents a synopsis of potential fault triggers in the Portland area, and provides an overview of the geological data necessary to estimate damage potential.

Session Format (e.g., Presentation, Performance, Poster): **Poster**

Length of Presentation: **2 Hours**

Audio Visual Requests: **Poster Presentation Space and Easels**

Your Faculty Sponsor: **Dr. Steve Taylor**

Major: Earth Science

Current Academic Standing (FR, SO, JR, SR): JR

Home Town:

High School:

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