



The Department of Mechanical Engineering presents:

The Master's Thesis Defense of Joseph Redenius

**Tuesday, May 28, 2019,
9AM in Bourns Hall A265**

Master of Science, Graduate Program in Mechanical Engineering
University of California, Riverside, March 2019
Dr. Marko Princevac, Chairperson

Title: Design and Construction of an Open Circulating Water Channel

Abstract: Obtaining field measurements of environmental flows provides invaluable data. However, these experiments are often difficult to repeat due to various uncontrollable factors such as background flows and surface topography. Furthermore, studying interactions between fluid dynamics and aquatic organisms in their natural habitat can be problematic since these locations are often inaccessible. Because of this, having the capability to perform and repeat hydrodynamic experiments in a controlled setting is essential because one can isolate and control these factors with relative ease of access. With this in mind, an open circulating water channel was designed and manufactured by the Laboratory for Environmental Flow Modeling at the University of California, Riverside. This channel will provide opportunities for students and researchers to study fluid behavior. The assembly was designed and optimized by integrating both fluid dynamic and mechanical design requirements of the system. The water channel consists of two settling tanks and a 13 foot long, 40 inch wide, 36 inch tall test section. One settling tank is fully transparent to enable measurements of stratified layer mixing by organism dynamics. The design process, calculations, fabrication, assembling, and future recommendations of the water channel are described in detail in this presentation.

**MECHANICAL ENGINEERING
THESIS DEFENSE**