



In Partial Fulfillment of the Requirements for the Degree of

**Doctor of Philosophy**  
**Lauren Withycombe Keeler**

Will defend her prospectus

**Quenching our Thirst: Constructing Future Scenarios of Water in Phoenix, AZ with Stakeholder Values and Sustainability Principles**

**Abstract**

The greater Phoenix area is challenged by a number of sustainability issues related to water resources. Existing supplies are over-allocated and may decrease with climate change while population continues to grow. Water research is prevalent in the region, focusing, in the past, on water supply under varying climatic and population conditions and the water-intensity of different human activities and land-uses. As a boundary organization, the Decision Center for a Desert City at Arizona State University takes a broader approach to understanding water, including identifying and analyzing relationships between actors, institutions, infrastructure and the environment, associated with the acquisition, delivery, use and discharge or reuse of water resources. The proposed research will build on this systemic, actor-oriented approach to explore the normative questions, what do stakeholders in the greater Phoenix area want from their city and how can water resources be governed to meet the needs and desires of the growing, changing population sustainably? To answer these questions a multi-methodology is proposed that includes expert interviews with key stakeholders about actor roles and influence in the water system; a survey of decision-maker stakeholders to determine what they value about water resources in the future; participatory modeling of survey results using WaterSIM to portray the systemic impacts of stakeholder values; and a hybrid qualitative-quantitative, participatory, sustainability assessment of resulting value-based future scenarios. Expected results include a detailed understanding of convergence and divergence in stakeholder values related to future water governance and use; plausible and sustainable future scenarios of water in central Arizona specific to stakeholder values; and identified stakeholders, activities, and policies that can help realize agreed-upon aspects of the sustainable scenarios.

Friday, September 21st, 2012  
9:00 AM  
Wrigley Hall 481

Faculty, students, and the general public are invited.

Supervisory Committee:

Arnim Wiek, School of Sustainability, ASU (Chair)  
Dave White, School of Community Resources and Development, ASU  
Daniel Lang, Faculty of Transdisciplinary Sustainability Science, Leuphana University