Lindsay Birt received her BS and MS in Biological and Agricultural engineering from Texas A&M University. She is the recipient of the 2010 Christine Mirzayan Science and Technology & Policy Fellowship from the National Academies of Science, the Purdue Doctoral Fellowship, and the Alliance for Graduate Education & Professoriate Fellow Fellowship. She is also one of Purdue's 2011 "Policy Makers". Lindsay has served as graduate student advisor to two EPA-P3 funded student design projects, and has volunteered as the National Society of Black Engineers' 2007 Special Interest Group Environmental Director. She plans to continue to bridge engineering with environmental management and public policy as an environmental engineering consultant.

Agricultural & Biological ENGINEERING

Dissertation Defense

Speaker: **Lindsay Birt**

Title: Development of Environmental Performance Indicators of Watershed Management

Major Professor(s): **Dr. Jane Frankenberger**

Date: **Wednesday, August 03, 2011**

Time: **8:00 am**

Location: **ABE 301**

Abstract:

Broader efforts are needed to demonstrate environmental indicators of watershed management outcomes. Environmental performance indicators, also known as environmental performance measures, can be used to assess the impacts of watershed planning and implementation projects on water quality outcomes. The overall goal was to develop a framework that watershed groups can use to examine the environmental impacts of watershed management through the use of environmental performance indicators. The output from surveys of watershed groups and coordinators helped to identify how watershed groups within Indiana are using indicators to document water quality outcomes, and determine what group, watershed, or project characteristics related to water quality indicator use. An integration of an expert panel ("bottom-up") approach with a "top-down" decision by the state agency proved to be beneficial to identifying core environmental performance indicators: nitrate+ nitrite, total phosphorus, pH, temperature, flow, Qualitative Habitat Evaluation Index (QHEI), dissolved oxygen, and temperature. Water quality improvements were estimated to nitrogen and phosphorus target values based on project's goals and eco-regions and to achievable nutrient load reductions to the minimum detectable change for groups' water quality monitoring efforts. This state-wide analysis will aid practitioners in their monitoring design and adaptive watershed management process.

Application:

The development of core environmental performance indicators would enable State agencies to have more consistent measures of water quality improvements across watersheds.